Catalogue of artificial teeth, precious metals, stoppings, dental rubbers, furniture, instruments, laboratory apparatus, tools and sundries manufactured, imported, and sold by Claudius Ash & Sons, 6, 7, 8, & 9, Broad Street, Golden Square, London.

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C. ASH AND SONS'

DENTAL CATALOGUE.

1886.

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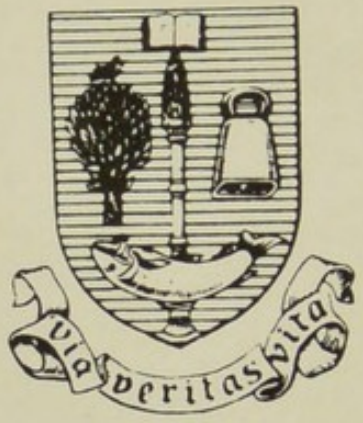

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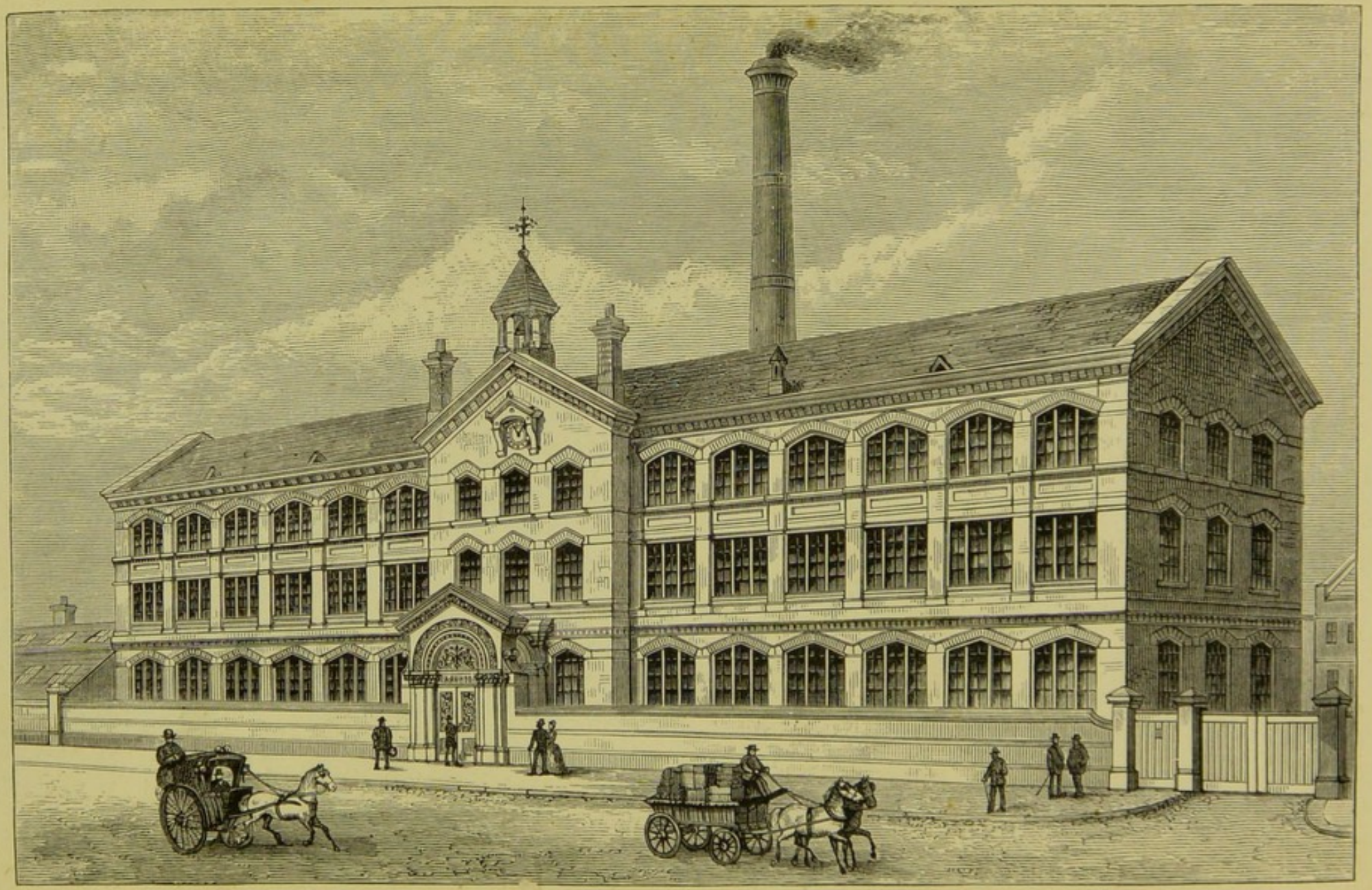


CLAUDIUS ‚SH AND SONS' MANUFACTORY.

CATALOGUE

OF

Artificial Teeth, Precious Metals, Stoppings, Dental Rubbers, Furniture, Instruments, Laboratory Apparatus, Tools and Sundries.

MANUFACTURED, IMPORTED, AND SOLD BY

CLAUDIUS ASH & SONS,

6, 7, 8, & 9, BROAD STREET, GOLDEN SQUARE,

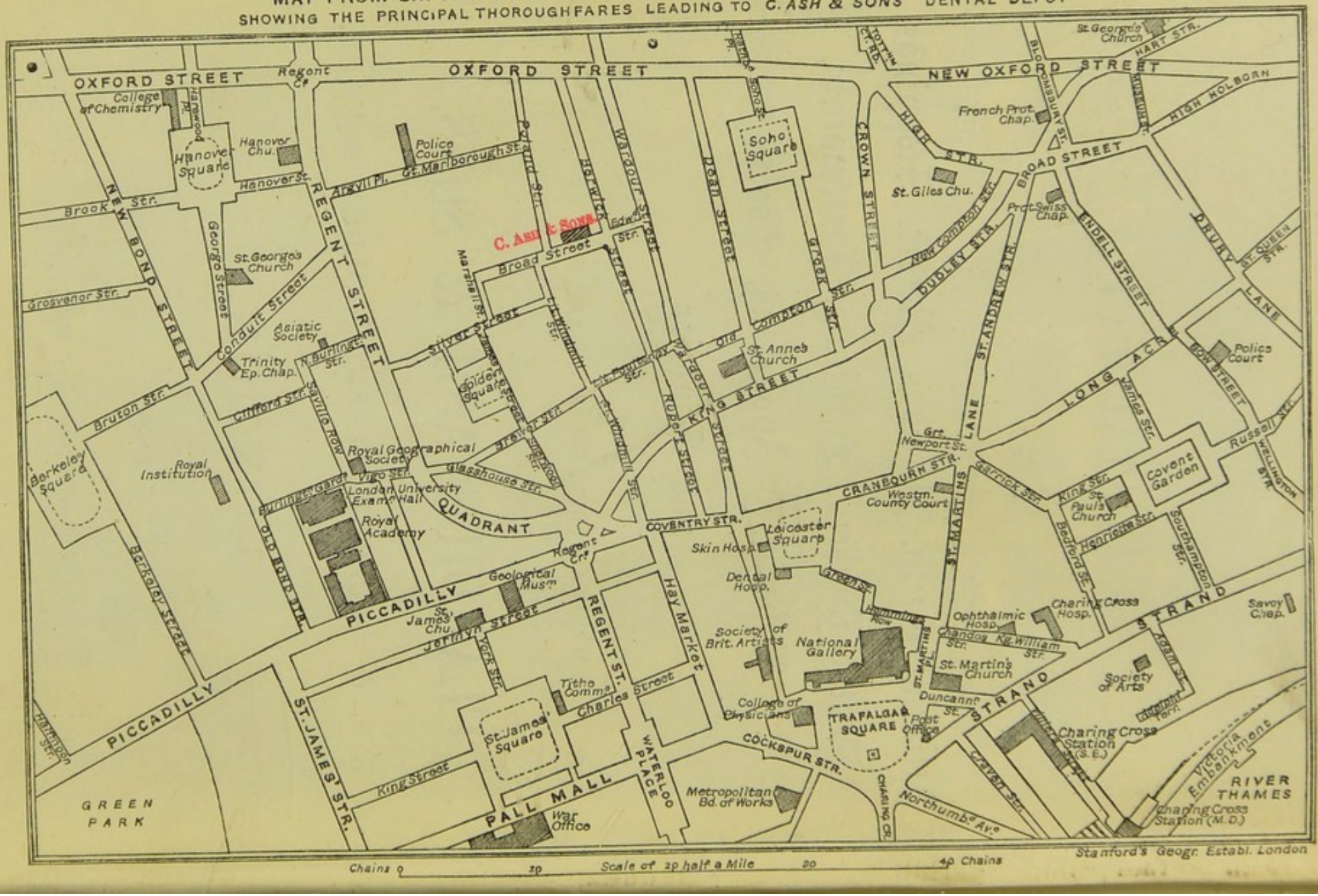
LONDON.

1886.

[*Entered at Stationers' Hall.*]

MAP FROM OXFORD STREET TO REGENT STREET AND CHARING CROSS

SHOWING THE PRINCIPAL THOROUGHFARES LEADING TO C. ASH & SONS' DENTAL DEPÔT



C. ASH AND SONS,

CENTRAL DEPÔT,

6, 7, 8, & 9, BROAD STREET, GOLDEN SQUARE, W.,

LONDON.

Address for Telegrams:—"FRENES," LONDON.

BRANCHES:

England.

LIVERPOOL	83, Mount Pleasant.
MANCHESTER	82, Grosvenor Street.

France.

PARIS	22, Rue du 4 Septembre.

Germany.

BERLIN	68, Jägerstrasse.
HAMBURG	62 & 63, Gänsemarkt.

Austria.

VIENNA	5, Judenplatz.

Denmark.

COPENHAGEN	3, Boldhusgade.

Russia.

ST. PETERSBURG	19, Kleine Morskoy.

CORRESPONDENCE IN FRENCH, GERMAN, SPANISH, AND ITALIAN.

On parle et on écrit le Français, l'Allemand, l'Espagnol, et l'Italien.

PRIZE MEDAL.

AWARDED TO C. ASH AND SONS,

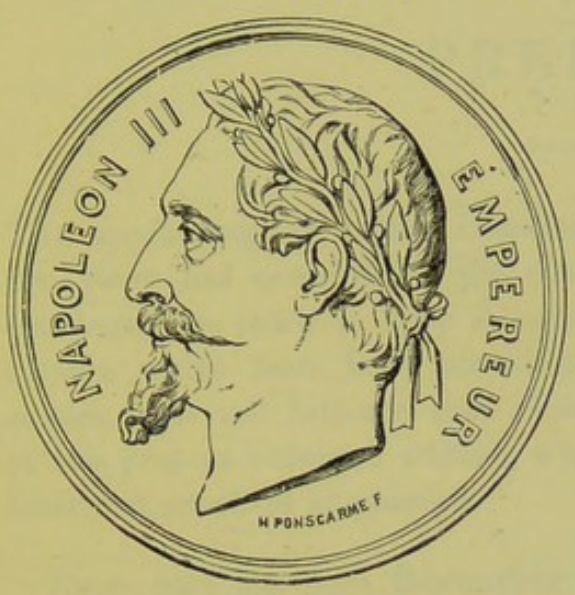


AT THE INTERNATIONAL EXHIBITION, LONDON,

1862.

THE GOLD MEDAL

AWARDED TO C. ASH AND SONS,





AT THE PARIS EXHIBITION, 1867.

OTHER AWARDS.

MEDAL FOR PROGRESS.

VIENNA, INTERNATIONAL EXHIBITION, 1873.

SILVER MEDAL AND CERTIFICATE OF MERIT

FOR EXCELLENCE OF WORKMANSHIP.

LONDON, CUTLERS' EXHIBITION, 1879.

FIRST-CLASS CERTIFICATE

FOR GENERAL EXCELLENCE.

LONDON, INTERNATIONAL MEDICAL AND SANITARY EXHIBITION, 1881.

LONDON:
PRINTED BY WILLIAM CLOWES AND SONS, LIMITED,
STAMFORD STREET AND CHARING CROSS.

PREFACE.

The rapid progress which Dentistry has made during the past twenty-five years has necessitated the continual revision of C. Ash and Sons' Catalogue, in order to keep it complete as a book of reference. The articles which have been introduced since the publication of the 1875 edition have not hitherto been illustrated, and this has led to the issue of the present enlarged edition, which they have endeavoured to make as clear and practical as possible.

Every part has been thoroughly revised and brought up to date, and a great number of new illustrations have been added. In the several sections, C. Ash and Sons have availed themselves of engravings placed at their disposal by the S. S. White Dental Manufacturing Company, of whose goods they keep a large and varied stock; and illustrations of the latest patterns of Fletcher's Furnaces, Burners, Blowpipes, &c., have been inserted in the Laboratory section.

The great and ever increasing demand for C. Ash and Sons' manufactures is a satisfactory proof to them that their constant endeavours to meet the wants of the Profession are appreciated; and, while offering their thanks for past favours, they look forward with confidence for renewed support. As it is their intention to adhere rigidly to those principles upon which for more than seventy years their business has been conducted, they hope to maintain and extend the reputation which they have thus obtained.

For the purpose of making known as widely as possible new and useful materials and appliances, C. Ash and Sons publish a Quarterly Circular, which they believe will serve as a valuable addition to this Catalogue, and which may be had on application, free of charge, by any registered Dentist. The five numbers that have already been issued have given general satisfaction, and no effort shall be spared to make subsequent numbers really serviceable to the Profession.

January 1886.

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REMARKS ON ORDERING GOODS, &c.

It will facilitate the correct execution of orders if the Catalogue is used as far as possible. When ordering Instruments, &c., the number of the page and the name or figure of the article, if illustrated, should be quoted.

A fresh line should be commenced for each article.

The Address to which the Goods are to be sent should be distinctly written, and if any particular conveyance or route be preferred the same should be named. When no forwarding instructions are given, discretion will be exercised as to the best manner of sending.

Dentists residing at a distance will find the post a convenient and safe means for the conveyance of small packages of Gold, Teeth, &c. Precious metals of the value of five shillings and upwards are registered at the expense of the purchaser unless otherwise ordered.

The Parcel Post is also a convenient and cheap medium for small parcels up to 7 lbs. in weight, the rates to any part of the United Kingdom being :

For 1 lb.	3*d.*
Over 1 lb. to 3 lbs.	6*d.*
„ 3 lbs. to 5 lbs.	9*d.*
„ 5 lbs. to 7 lbs.	1*s.*

Postage is only charged on heavy articles of small value.

Goods that can be distinctly specified can be ordered by Telegraph. It should however be borne in mind that unless the name of the Sender be inserted in the Telegram it will not be transmitted.

C. Ash and Sons supply to their Customers, on application, free of charge, Printed Order Books with a counterfoil attached, so that a record of the goods ordered can be kept. Printed envelopes addressed to " C. Ash and Sons " are also supplied if desired.

Goods of other manufacturers, English or American, obtained to order.

Orders received up to 3 o'clock p.m. are usually despatched by post or rail the same evening.

Goods to the Colonies and foreign parts are insured at the expense of the purchaser, unless ordered otherwise. All orders should state whether the packing cases are to be plain or lined with zinc.

The Parcels Posts now in operation between England and India, Germany,

Belgium, Egypt, and some of the Colonies, afford an inexpensive and quick means for the transmission of small parcels.

Orders from the Colonies and foreign parts must be accompanied by a remittance, unless an Agent in London is appointed who will pay the amount of Invoice on delivery of the goods.

Accounts are only opened on receipt of approved references.

All goods are despatched at the risk of the purchaser.

Bankers' Drafts, Cheques, &c., should be crossed "Union Bank of London."

Post-Office Orders and Postal Orders should be made payable at the Chief Office, St. Martin's le Grand, London, to CLAUDIUS ASH and SONS.

A discount of 5 per cent. is allowed off all accounts for Teeth, Instruments, and Sundries, of not less than £5 in amount, for cash **on delivery of the goods.** Precious Metals are invoiced at **net cash** prices.

OLD METALS, &c.

C. ASH and SONS purchase old Gold, Silver, Platinum, Board and Floor Sweep. They do not object to buy small quantities, but as every lot has to be tested separately to ascertain its intrinsic value, the larger the quantity sent, the greater will be the advantage to their Customers, the expense of a number of testing trials being thereby avoided.

C. ASH AND SONS' REGISTERS.

Registers are kept by C. ASH and SONS—of "Partnerships and Practices for Disposal,"—of "Dentists requiring Assistants,"—and of "Dentists' Assistants" seeking Engagements.* No Charge is made for Registering, and Copies of the Registers are supplied Free of Cost on application. Dentists' Assistants must produce a Certificate from their last or present employer, as to Ability and Character, before their names can be entered on the Register.

Hours of Business from 9.0 a.m. to 6.0 p.m. On Saturdays until 2.0 p.m.

* In order that these Registers may always be as correct as possible, C. ASH and SONS will be obliged by Dentists immediately informing them when they have engaged an Assistant, stating the name, so that it may be taken off their books. Assistants, when engaged, should inform them in like manner.

SEE ALSO PAGE 137.

C. ASH AND SONS'

MINERAL TEETH.

C. Ash and Sons' stock comprises a most extensive assortment of Tube, Pivot, Vulcanite, and Flat Teeth, of various forms, sizes, and colours. These Teeth have long been esteemed for their excellence and similarity to Natural Teeth in form and colour, and also because they are generally so free from porosity (or air-bubbles) in their texture, that they can be ground and polished to any extent that may be necessary to suit special cases.

The greatest care and attention is bestowed on this, the staple branch of their Manufactures, and new forms, sizes, and colours, are being continually added to their stock, in order to meet as far as possible the requirements of an art which has for its object the close imitation of Natural Teeth in their infinite varieties of form, colour and general appearance.

To aid Dentists in ordering, C. Ash and Sons supply an improved Set of Shades, consisting of 36 Teeth, which represents the colours and shades chiefly in demand.

Each Tooth in the Set is mounted on a separate slip of brass, nickel-plated, bearing the colour and shade—a letter indicating the colour, and a number the shade. **The Charge for the Set is 25s.**

(A smaller Set than the above, showing only the **most useful** shades, may be had for 17*s.* 6*d.*)

This arrangement enables the Operator to place any Tooth against those in the mouth of the Patient, and, when he has found the shade which matches, it is only necessary for him to write for B/3, D/4, &c., in order to obtain the colour and shade he requires.

The shades in this set are not intended to show all that are kept in stock, but they are useful as proximate shades, and will be found very convenient as a means of reference when patterns cannot be sent.

ORDERS FOR TEETH should contain the fullest possible information to ensure their prompt and accurate execution. **A written order is always preferred.** It is necessary to state clearly—

Kind—Whether Flat, Vulcanite, Diatoric, Tube, or Gum.

Size—Whether large, medium, or small.

Length—Whether long or short enamel.

Number—Whether in sets of 6, 14, or 28.

Surface—Whether smooth, corrugated, or natural pattern.

Colour—When a pattern cannot be sent, please quote from the Set of Shades.

C. ASH and SONS' FLAT TEETH.

Incisors and Canines	In sets of 6,	Upper or Lower.
Full Dentures	,, 14,	,, ,,
Complete Dentures	,, 28,	Upper and Lower.
Incisors	,, 4,	Upper or Lower.
Incisors and Canines	In pairs	,, ,,
Bicuspids and Molars	In sets of 4,	,, ,,
,, ,, ...	,, 8,	,, ,,

Note.—C. Ash and Sons' Flat Teeth are all made with long Platinum Pins, and can be used either for Plate or Vulcanite work.

Price 5*d.* each, or 40*s.* per 100.

FLAT TEETH WITH GUMS.

In Pairs and Sets as above .. .. price 8*d.* each, or 60*s.* per 100.

TEETH FOR VULCANITE.

In Pairs and Sets like the Flat Teeth .. price 5*d.* each, or 40*s.* per 100.

TEETH WITH GUMS FOR VULCANITE.

In Pairs and Sets like the Flat Teeth; also in sectional pieces of 2, 3, and 4 Teeth .. .. .. price 8*d.* each, or 60*s.* per 100.

TEETH FOR WOOD PIVOTS.

In Sets of 4 and 6, Incisors and Canines, Uppers only.
Price 5*d.* each, or 30*s.* per 100.

DIATORIC TEETH.

In Sets like the Flat Teeth, but not in Pairs.
Price 3*d.* each, or 20*s.* per 100.

C. ASH and SONS' TUBE TEETH.

Incisors and Canines	In sets of	6, Upper or Lower.
Full Dentures	„	14, „ „
Complete Dentures	„	28, Upper and Lower.
Incisors and Canines	In pairs, Upper or Lower.	
Bicuspids and Molars	In sets of	4, „ „
„ „	„	8, „ „

Price 8*d.* each, or 60*s.* per 100.

TUBE TEETH WITH GUMS.

In Pairs and Sets as above. Price 1*s.* each, or 90*s.* per 100.

MINERAL SPECIMENS.

		s.	*d.*
Full Dentures, Upper or Lower	each	20	0
Complete Dentures, Upper and Lower to match	„	40	0

		s.	*d.*
Wax in sheets for holding Teeth ..	per lb.	5	0

A very extensive assortment of **Odd teeth** of all kinds is kept in stock, and every facility is afforded for selecting them to suit special cases.

Broken sets of Teeth are made up for Dentists at the ordinary selling prices.

AMERICAN TEETH.

C. ASH and SONS have always in stock a large and varied supply of S. S. White's and Justi's Teeth.

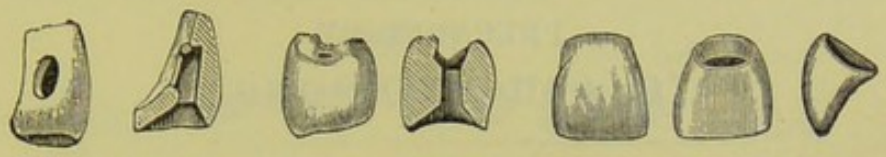
PRICES FOR TEETH IN QUANTITIES.

	From 250 To 500		500 1000		2500 5000		
	£	*s*	£	*s.*	£	*s.*	
Flat and Vulcanite, C. Ash and Sons'	18	0	16	0	15	0	per 1000.
Diatoric .. .. „ „	9	0	8	0	7	10	„
Tube and Gum .. „ „	27	0	24	0	22	10	„
Flat and Vulcanite, American ..	18	0	16	0	15	0	„
Gum .. .. „ ..	27	0	24	0	22	10	„

The number selected may consist of all kinds.

A discount of 5 per cent. is allowed for Cash, off sums of £5 and upwards on purchases of English and American Teeth.

PORCELAIN CROWNS FOR PIVOTING.



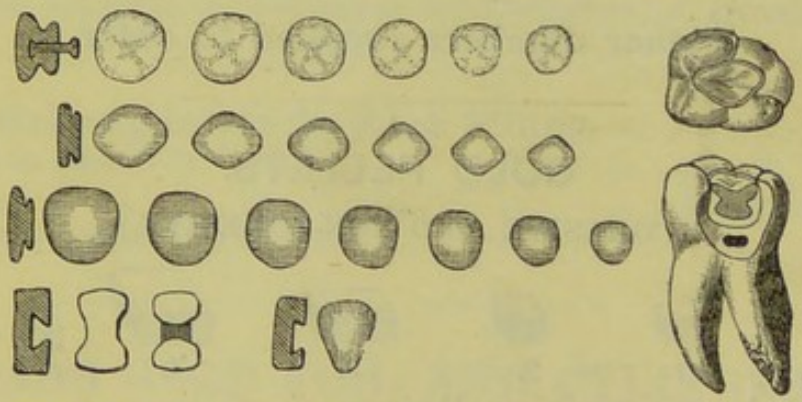
		s.	d.
Crowns (Dr. Bonwill's) various shades and sizes, forms as illustrated	each	1	0
Pins in Dental Alloy for Pivoting	„	0	6
Comer's Crowns, various forms, shades and sizes	„	1	0
„ Pivot Screws with nut	„	2	0
„ Screw Platinum Wire	per oz.	39	0
Weston's Crowns, various forms, shades and sizes ..	each	0	8
„ Pins for Pivoting	„	2	0

How's, Foster's, Logan's, and Richmond's Crowns, &c., obtained to order.

For Pivoting Instruments, see pages 212 to 215.

PORCELAIN CAVITY STOPPERS.

FOR FILLING LARGE CAVITIES.



These are used in conjunction with Plastic Fillings, and will be found very useful in restoring teeth which are much decayed. They are made with smooth and serrated surfaces, and can be had with or without Platinum Pins. In five varieties, different sizes as illustrated.

Price 4*d.* each, or 30*s.* per 100.

For Cases to hold selections of Teeth, see page 427.

GOLD FOILS, PELLETS AND CYLINDERS

PREPARED BY

C. ASH AND SONS.

For many years past C. Ash and Sons' Gold Foils, Pellets and Cylinders have been prepared by an improved method which enables them to guarantee uniformity of thickness and quality and absolute purity.

Every effort will be made to maintain and develop their excellence. In the **Foils** the numbers 4, 5, 6, 8 indicate the number of grains in each sheet.

COHESIVE GOLD FOIL.

		s.	d.
Nos. 4, 5, 6, 8	per oz.	125	0
,, ,, ...	per $\frac{1}{8}$ oz.	16	3

Higher numbers supplied to order.

SOFT NON-COHESIVE GOLD FOIL.

This Foil can readily be made **cohesive** by gently annealing over a spirit flame before using. In employing it, the operator is therefore in possession of a Foil which is either non-cohesive or cohesive at pleasure.

		s.	d.
Nos. 4, 5, 6, 8	per oz.	125	0
,, ,, ...	per $\frac{1}{8}$ oz.	16	3

Higher numbers supplied to order.

GOLD PELLETS.

(COHESIVE AND NON-COHESIVE.)

Square



						s.	d.
					per oz.	128	0
In sizes	1.	2.	3.	4.	per $\frac{1}{8}$ oz.	16	6
Sample boxes containing all sizes					,,	16	6

(NON-COHESIVE.)

Pyramidal



					s.	d.
				per oz.	128	0
In sizes	1.	2.	3.	per $\frac{1}{8}$ oz.	16	6
Sample boxes containing all sizes				,,	16	6

The Pyramidal Pellets can be made **cohesive** by annealing over a spirit flame just before using.

GOLD CYLINDERS.

(NON-COHESIVE.)

Style A.

			s.	d.
Loosely rolled 	per oz.	128	0
In sizes .. 1. 2. 3. 4.	per $\frac{1}{8}$ oz.	16	6
Sample boxes containing all sizes	„	16	6

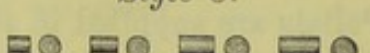
All C. Ash and Sons' Gold Cylinders can be made cohesive by annealing immediately before using.

Style B.

			s.	d.
Closely rolled 	per oz.	128	0
In sizes 1. 2. 3. 4.	per $\frac{1}{8}$ oz.	16	6
Sample boxes containing all sizes	„	16	6

These Cylinders contain about twice the quantity of gold that there is in Style A.

Style C.

			s.	d.
Extra dense ..  ..	per oz.	128	0
In sizes .. 1. 2. 3. 4. ..	per $\frac{1}{8}$ oz.	16	6
Sample boxes containing all sizes	„	16	6

Introduced in response to a demand for Cylinders of greater density than style B.

Pointed Gold Cylinders for Root Filling,		s.	d.
Made in sizes Nos. 1, 2, 3	per oz.	128	0
„ „ „	per $\frac{1}{8}$ oz.	16	6
Sample boxes containing all sizes	„	16	6

WOLRAB'S GOLD FOIL AND CYLINDERS.

As Used by Dr. Herbst in his System of Filling.

		s.	d.
Foil: sizes 4, 5, 6, 7½ and 10	per oz.	125	0
„ „ „	per $\frac{1}{8}$ oz.	16	3
Cylinders .. 	per oz.	128	0
In sizes .. 0 1 2 3 4	per $\frac{1}{8}$ oz.	16	6
Sample boxes containing all sizes of cylinders ..	„	16	6

AMERICAN GOLD FOILS.

	per ⅛ oz. s.	d.	per oz. s.	d.
Abbey's, cohesive and non-cohesive	17	6	136	0
S. S. White's Quarter century, cohesive and non-cohesive	16	6	128	0
„ Globe, extra- and semi-cohesive and „	16	6	128	0
Kearsing's, cohesive and non-cohesive	16	6	128	0
Nickold's, improved soft	16	3	125	0
Williams', cohesive and non-cohesive	17	6	132	0

The above Foils are supplied in Nos. 4, 5, 6.

Other Foils obtained to order.

	s.	d.	s.	d.
Watts' Crystal Sponge Gold, Nos. 1, 2, 3, 4	**17**	**6**	**135**	**0**

AMERICAN GOLD PELLETS.

	per ⅛ oz. s.	d.	per oz. s.	d.
Pack's, semi-cohesive and soft	16	6	128	0
Kearsing's, plastic surface blocks	16	6	128	0
Nickold's, soft, triangular and square	16	6	128	0

The above Pellets are supplied in sizes 1, 2, 3, 4.

Other Pellets obtained to order.

AMERICAN GOLD CYLINDERS.

	per ⅛ oz. s.	d.	per oz. s.	d.
Pack's, semi-cohesive and soft, sizes ½, 1, 2, 3, 4 ..	16	6	128	0
Williams', A style, sizes ½, 1, 1½, 2, 3, and 3·6 ..	17	6	132	0
„ , B „ „ 1, 2, 3, 4, 5, 10, 15, 20 ..	17	6	132	0

Other Cylinders obtained to order.

GOLD FOILS, PELLETS AND CYLINDERS.

(ALL KINDS.)

A reduction in price is made on purchases of **three ounces of one or more kinds of Gold Foils, Pellets, and Cylinders—**

	per oz. s.	d.		per oz. s.	d.	
From ..	125	0	to	120	0	for 3 ounces.
„ ..	128	0	to	125	0	„
„ ..	132	0	to	125	0	„
„ ..	136	0	to	132	0	„

TIN FOILS.

		s.	d.
C. Ash and Sons', Nos. 4, 6, 8	per book	1	9
S. S. White's No. 6	,,	1	9
,, Extra tough, Nos. 4, 6, 8, 10, 14, 18, 20 ..	,,	1	9
,, Globe ,, 4, 6, 8, 10, 14, 18, 20 ..	,,	2	0

TIN CYLINDERS.

		s.	d.
C. Ash and Sons', Sizes 1, 2, 3, 4	per ¼ oz. pkt.	5	0
Sample boxes containing all sizes	,,	5	0

GOLD AND OTHER SPRINGS.

(C. ASH AND SONS'.)

		s.	d.
Gold, 16 carat, Nos. 7 weakest, 8, 9, 10, 11, 12 strongest	per oz.	80	0
,, ,, Nos. 13 and 14 extra strong	,,	80	0
Gold, 13 carat, Nos. 6½ weakest, 7½, 8½, 9½, 10½ strongest	,,	70	0
Palladium	per pair	5	0
Silver	,,	1	8
Silver Gilt	,,	2	8
Steel Gilt, in packets of six pairs	per pkt.	2	0

C. Ash and Sons' Gold Springs retain their elasticity even after long use, and for this reason they have been extensively used by the Profession for more than fifty years.

GOLD AND OTHER SWIVELS, &c.

(C. ASH AND SONS'.)

		s.	d.
Gold, 16 carat	per set of 4	9	0
Gold, 13 carat	,,	7	0
Gold-Headed, with Dental Alloy stems	,,	4	6
,, with Silver stems	,,	4	0
Platinum, best quality	,,	6	6
,, second ,, ...	,,	5	0
Dental Alloy, best ,, ...	,,	3	0
,, second ,, ...	,,	2	6
Silver	,,	2	0
Gold Washers, round or square	,,	0	8
Dental Alloy Washers, round or square	,,	0	4
Silver Washers, square	,,	0	3

C. Ash and Sons allow **full intrinsic value for Old Gold, Silver, Platinum, &c.**, either in large or small quantities.

To facilitate business all parcels should bear the sender's name and be advised by post.

GOLD PLATE AND WIRE.

			s.	d.
20 carat	Plate, in large pieces	per oz.	78	0
20 „	„ cut to pattern	„	80	0
20 „	Wire	„	80	0
18 „	Plate, in large pieces	„	70	0
18 „	„ cut to pattern	„	72	0
18 „	Wire	„	72	0
17 „	Plate, alloyed with Platinum, for bands ..	„	72	0
17 „	Wire „ „ for hooks ..	„	72	0
16 „	Plate, in large pieces	„	64	0
16 „	„ cut to pattern	„	66	0
16 „	„ for bands or clasps	„	66	0
16 „	Wire, hard	„	66	0
16 „	„ in straight 6 in. lengths, for Tube Teeth, Blocks, Pins, &c.	„	66	0
16 „	„ half round, for clasps	„	66	0
16 „	„ soft, for riveting	„	66	0
16 „	„ „ for tying	„	66	0
16 „	Perforated for strengthening Vulcanite pieces ..	„	70	0

PLATINUM.

(HARD AND SOFT.)

			s.	d.
Platinum	Plate, in sheet, and wire in coil	per oz.	34	0
„	Wire in 6-inch lengths, for Tube Teeth, &c. ..	„	37	0
„	Plate, cut to pattern	„	37	0
„	Gauze	„	39	0
„	Perforated, for strengthening Vulcanite pieces	„	37	0

N.B.—The price of Platinum fluctuates.

All Precious Metals are supplied according to the Decimal System of Troy weight, in compliance with the "Weights and Measures Act, 1878." This Act abolishes the use of Pennyweights and Grains, and substitutes a decimal division of the ounce, viz.: tenths, hundredths and thousandths.

Card giving the Equivalents between the Old and New Systems, and Tables for calculating prices, at C. Ash and Sons' selling rates, sent, post free, on application.

DENTAL ALLOY.

		1st quality.		2nd quality.	
		s.	*d.*	*s.*	*d.*
Plate cut to pattern	per oz.	20	0	18	0
„ in sheet	„	18	6	16	6
Wire in coil, over 1 oz.	„	18	6	16	6
„ in lengths	„	20	0	18	0
Plate, or Wire in coil, over 5 ozs.	„	17	9	15	9
„ „ „ 10 „	„	16	9	14	9
„ „ „ 20 „	„	16	3	14	3

SILVER.

		s.	*d.*
Sterling Silver Plate	per oz.	6	6
„ „ Wire	„	6	6
Fine Silver	„	5	9

To aid Dentists in ordering Plate and Wire, C. Ash and Sons supply, free of charge, Brass Patterns of all their sizes, which are marked 4, 5, 6, 7, 8, 9, **for Plate**; A, B, 1, 2, 3, 4, 5, 6, 7, 8, **for Wire.**

GOLD AND SILVER SOLDERS.

		s.	*d.*
Gold Solder. No. 1. Best quality	per oz.	63	0
„ No. 2. Medium	„	57	0
„ No. 3. Most fusible	„	50	0
Fine Gold, flatted thin, for soldering Platinum ..	„	87	6
Silver Solder	„	6	0

The Gold Solders Nos. 1, 2, and 3, are much esteemed for their liquidity when in a state of fusion, and the perfect combination they effect between the parts united by them.

AMALGAM STOPPINGS.

C. ASH AND SONS' METALLIC FILINGS.

(FIRST QUALITY.)

This Metallic Stopping is a compound of Gold and other unobjectionable Metals, and requires but a small quantity of Mercury to convert it into a paste. When applied to the Tooth the stopping soon becomes a hard compact body, that will not change colour or decompose in the mouth, provided Pure Mercury is used; and after the cavity is filled it will take a high polish by first smoothing with pumice and then finishing with a burnisher or precipitated chalk, &c.

While it becomes sufficiently hard for the purpose of mastication, it can if necessary, be removed from the cavity by means of a sharp drill, either by Hand or with the Dental Engine.

It contains more Gold than any other Amalgam in use, and has been very extensively used for over thirty years by Dentists all over the world, so that its reputation is well established.

The combination between the Mercury and the Filings is so perfect, that it becomes as one metal, and there is no possibility of the Mercury ever separating from it. Stoppings which have been eight or ten years in the mouth after being slightly scratched on the surface are found to be as bright and solid as when first applied.

		s.	*d.*
In ¼ oz., ½ oz., and 1 oz. Envelopes	per oz.	22	0
,, ,, ,, Bottles	,,	22	0

Full directions for use accompany each packet.

AMALGAM STOPPINGS—*continued.*

C. ASH AND SONS' METALLIC FILINGS.

(SECOND QUALITY.)

This Metallic Stopping has been in use for over thirty years, and the sale increases every year, so that it has become an established stopping. It is composed of unobjectionable metals, and requires but a small quantity of Mercury to make it into a paste; it soon sets in the tooth, and will take a high polish, and does not change colour or decompose in the mouth. **It is unequalled by any Amalgam which is sold at a similar price.**

		s.	*d.*
In ½ oz. and 1 oz. Envelopes	per oz.	9	6
„ „ Bottles	„	9	6
In 1 oz. packets, with Mercury	per pkt.	10	6

Full directions for use accompany each packet.

MERCURY.

		s.	*d.*
Distilled and chemically purified	per lb.	10	0
„ „ „ ..	3 ozs. in glass bottle	2	3
„ „ „	1 oz. in wooden drop bottle	1	3
Electrically purified	per oz.	2	0
„ „	2 oz.	3	10
„ „	3 oz.	5	6
„ „	per lb.	25	0

N.B.—It is absolutely necessary that pure Mercury be used for Amalgam Stoppings. The Mercury commonly sold as pure is known to contain Lead, Antimony, &c., which impurities cannot be separated by mere distillation, and if used with the Filings alters the compound and causes it to become discoloured in the mouth. The varying price of Mercury is governed by the fluctuations of the market.

AMALGAM STOPPINGS, Various.

In packets of	¼ oz.	½ oz.	1 oz.
	s. *d.*	*s.* *d.*	*s.* *d.*
Arrington's New Amalgam	..	5 0	10 0
Bonwill's Amalgam with Mercury	7 0	..	..
Caulk's Par-excellence Alloy	..	6 0	12 0
Davis's Gold Amalgam	..	12 6	25 0
„ „ No. 2 Amalgam	..	6 6	13 0
Dougan's Ne plus ultra Amalgam	..	12 6	25 0
Eckfeldt and Dubois' Standard Dental Alloy ..	..	12 0	24 0
Fletcher's Platinum Amalgam	..	10 0	20 0
„ Expanding „	..	10 6	21 0
„ No. 1 Submarine Alloy	..	4 6	..
„ „ 3 Contour „	..	9 0	..
„ „ 5 Facing „	..	8 0	..
„ „ 6 Standard „	..	11 0	..
„ „ 1, 3, 5, 6, four ¼ oz. bottles in one packet	..	..	18 0
Gregory's White Metallic Filling	..	12 6	25 0
Herbst's Gold Amalgam	..	12 6	25 0
Lawrence's Amalgam	..	6 0	12 0
Nickold's „	..	6 3	12 6
Palladium, Præcipitated	36 9	73 6	147 0
Robertson's Standard Amalgam	..	12 6	25 0
„ X L „	..	6 3	12 6
S. S. White's Globe „	..	6 0	12 0
Townsend's „	..	4 0	8 0
„ Improved „	..	5 0	10 0

OTHER AMALGAMS OBTAINED TO ORDER.

Note.—A reduction of 10 per cent. is made when 5 ounces of one or more kinds of amalgam are purchased.

This note does **not apply** to Palladium.

COPPER AMALGAMS.

		s.	*d.*
Stewart's.	Introduced by Mr. Claude Rogers: In 1-oz. bottles, with directions for use .. per oz.	4	6
„	„ „ „ „ .. per 5 ozs.	20	0
Sullivan's.	In ½-oz. packets, with directions for use .. per packet	2	6
„	„ „ „ „ .. per oz.	4	6
„	„ „ „ „ .. per 5 ozs.	20	0
Ladle in Ebony handle for heating these Amalgams ..		2	9

GUTTA-PERCHA STOPPING.

PREPARED BY

H. L. JACOB, M.R.C.S. Eng.

The durability and general excellence of this Permanent Stopping has long been recognised by the Dental Profession, and, owing to its low specific gravity, one ounce of it is equal in bulk to several ounces of any other preparation of Gutta-percha in the market.

It is supplied in the form of **Tablets** and cylindrical **Pellets**, each packet sufficing for more than a hundred fillings, in the following shades:—

No. 1—White.
„ 2—Brownish, for teeth that are somewhat discoloured.

		s.	d.
Tablets weighing 2 dwts., in boxes, either shade	.. per box	4	0
Pellets in bottles containing 2 dwts. „	.. per bott.	4	0

GUTTA-PERCHA AND IODOFORM.

FOR FILLING NERVE CAVITIES.

			s.	d.
Richard's.	Introduced by Professor Poinsot: In boxes containing 20 grammes	.. per box	8	0

GUTTA-PERCHA STOPPINGS, VARIOUS.

			s.	d.
Caulk's.	In Tablets, Pellets and Cylinders; also in Points for root-filling. In ½-oz. boxes	.. per oz.	8	0
Caulk's Hydraulic Pebbles	.. .. ..	.. per pkt.	6	0
Hill's Gutta-percha in Tablets.	In ½-oz. boxes	.. per oz.	16	0
Premium „	in Sticks. In ½-oz. boxes	.. „	8	0
„ „	in Cakes „	„	8	0
Richard's „	in Cakes. In boxes of 20 grammes	per box	4	0
„ „	in Pellets „ ..	„	4	0
S. S. White's Gutta-percha Pellets, in ½-oz. boxes		.. per oz.	8	0
„ „	Points for root-filling	.. per pkt.	2	0

Other Gutta-percha Stoppings supplied to order.

PHOSPHATE CEMENT.

(C. ASH AND SONS'.)

A large number of testimonials have been received concerning the excellence of this Stopping, and ever since it was first introduced the demand for it has steadily increased. C. Ash and Sons can confidently recommend it as equal, if not superior, to any Oxyphosphate Cement before the Profession. To obtain the best results it should be thoroughly mixed with a stiff Spatula.

It possesses the following advantages :—

The Powder is fine and soft, and perfectly dry.
The Liquid is very fluid and neutral, and never crystallises.
The Cement is readily mixed and easily manipulated.
It makes good, sound, reliable plugs.
It does not set too rapidly to admit of thorough kneading.
It is devoid of irritating chemical action.
It is not affected by contact with saliva.
It can be contoured and modelled when quite submerged.

Prepared in five different shades, as under :—

A.—Pale Yellow. B.—Pale Grey. C.—Light Yellowish Grey.
D.—Dark Yellowish Grey. E.—Greenish Grey.

		s.	d.
Powder and Liquid in box, large size	per packet	6	0
Powder only	per bottle	3	6
Liquid „	„	3	0
Packet containing 4 Powder, small size, and One Liquid, large size	per packet	8	0

Directions for use accompany each packet.

IMPROVED ROCK CEMENT.

(OXYCHLORIDE OF ZINC.)

This well-known Stopping is very easily worked, and when mixed to the consistence of putty becomes hard in two minutes, and in six or eight can be polished with an agate burnisher. If not required to set so quickly it should be mixed a little thinner. The powder being very fine will take a high polish.

Prepared in five shades :—

A.—White. B.—Pale Yellow. C.—Dark Yellow.
D.—Pale Blue. E.—Dark Grey.

		s.	d.
Powder and liquid in box, large size	per packet	6	0
Powder only	per bottle	3	6
Liquid „	„	3	0
Packet containing 3 Powder, small size, and one Liquid, large size	per packet	8	0
Phosphoric Cement in Glass Tubes, hermetically sealed	per box	6	0
Improved Rock „ „ „ „ „		6	0

CEMENT STOPPINGS, VARIOUS.

		s.	d.
Agate Cement in ½ oz. packets	per pkt.	6	0
Caulk's Diamond Cement, one powder and one liquid	„	4	0
„ „ „ two „ „	„	8	0
„ „ „ liquid only	per bottle	2	0
Excelsior Cement, large size	per pkt.	6	0
Flagg's Plastic Enamel	„	8	0
Fletcher's Dentine for nerve capping	„	4	0
„ „ powder only	per bottle	3	6
„ „ liquid „	„	0	6
„ Porcelain	per pkt.	6	0
„ „ powder only	per bottle	4	0
„ „ „	2 oz. pkt.	10	0
„ „ paste only	per bottle	2	0
„ White Enamel	per pkt.	6	0
„ „ powder only	per bottle	3	6
„ „ liquid in corked bottle ..	„	1	0
„ Colouring matter, Pink, Drab, or Blue	„	0	6
„ Copal Ether Varnish	„	1	0
Fossiline	per pkt.	6	6
„ powder only	per bottle	3	0
„ liquid „	„	3	6
Foundation Cement in ½ oz. packets	per pkt.	6	0
Poulson's Mineral Cement, 9 shades	„	7	6
„ „ „ 6 shades in box with glass slab and spatula ..	per box	45	0
„ „ „ crystals only	per bottle	3	9
Robertson's Ossilite	per pkt.	6	6
„ „ powder only	per bottle	3	3
„ „ liquid „	„	3	3
Weston's Insoluble Cement, slow- and quick-setting	per pkt	6	0
„ „ „ new ivory colour ..	„	6	0
„ „ „ 4 shades in box ..	„	9	0
„ Non-irritant Cement for nerve-capping ..	„	3	0
Worff's New Enamel Cement	„	7	6
„ „ powder only	per bottle	4	0

Other Cement Stoppings obtained to order.

C. ASH AND SONS'
DENTAL RUBBERS.

It is of the utmost importance to Dentists to know where they can readily and with certainty obtain those compounds of India-rubber which are best adapted for use in the mouth, and upon the purity of which they can absolutely rely.

Ever since Vulcanite was first introduced as a base for artificial teeth C. Ash and Sons have devoted special attention to the manufacture of Dental Rubbers, and the extensive and increasing demand for their preparations is a gratifying proof that their constant endeavours, to meet one of the greatest wants of the Profession, have been successful.

In order to maintain uniformity and excellence, all C. Ash and Sons' Rubbers are made under their own personal supervision; they are thoroughly tested for strength, colour, &c., before being offered for sale; the materials of which they are composed are of the best and purest that can be obtained, and are quite free from everything which can injuriously affect the gums or general health of the wearer. Professor Attfield, F.C.S., who has put C. Ash and Sons' Dental Rubbers to severe tests in order to settle the question of such a possibility, thus concludes his exhaustive report upon them:

"I am of opinion that vermilion vulcanite teeth-plates are practically unaffected by saliva or by any substance which ever gains access to the mouth; and, in short, that the pink and red vulcanite gums and palates are absolutely harmless."

ON VULCANIZING.

C. Ash and Sons take this opportunity of urging upon Dentists the necessity of accurately observing the vulcanizing directions supplied with each packet of the Rubbers for Base, because it is on the body of a piece that the strength depends. The great object to be attained in vulcanizing is not to see in how short a time the wonderful chemical changes, which take place during the process, can be effected, but to conduct the operation in such a manner as to obtain the greatest possible amount of strength and elasticity.

COATING RUBBERS.

All C. Ash and Sons' Pink Rubbers, which are used for coating, may be vulcanized for the same length of time, and at the same temperature, as the Rubber which forms the base of the piece. When used alone, the directions sent with each packet should be followed.

VULCANIZERS, &c.

Great care is necessary to see that Vulcanizers are always steam-tight, that Thermometers or Gauges register correctly, that the heat is not got up too quickly for the first half hour, and that when up it is never allowed to exceed the temperature recommended. The non-observance of these particulars is the cause of porosity and brittleness.

For Vulcanizers, Flasks, &c., see pp. 386 to 396.

COATING RUBBERS.

These are much esteemed for their good colour, fine texture, &c. They are all about the same strength, but differ in shade, ranging from pale to deep pink. Pieces coated with any of them can be solarized without being placed in spirits of wine. A few hours' sunlight will sufficiently develop the colour without removing the polish.

The **New Pink** is very soft in the raw state; it can be packed cold if desired; it comes out of the vulcanizer a good pink colour, and need not be solarized, should the case be urgently wanted, but, if time will allow, a very beautiful pink can be obtained by exposing the piece to the sun for a few hours.

RUBBERS FOR BASE.

The **S.P.**, though inferior in colour to the other Pink Rubbers, is strong enough to be used for entire dentures. It contains much less foreign matter than any other Pink Rubber which has yet been made. If the colour is not considered sufficiently gum-like, it can be coated with any of C. Ash and Sons' Pink Rubbers.

The **White** Rubber is much liked by some Dentists on account of its approximation to the colour of bone. Its strength is about the same as that of the Pink Rubbers.

Child's G Rubber is very strong and tough, easily worked, and takes a high polish. The original recipe is only in the possession of C. Ash and Sons.

A. E. Elastic, W. Elastic, and **Whalebone Nos. 1 and 2,** are extremely strong and elastic, and if carefully worked very thin pieces can be made from them. They are all very plastic, and can be packed without difficulty.

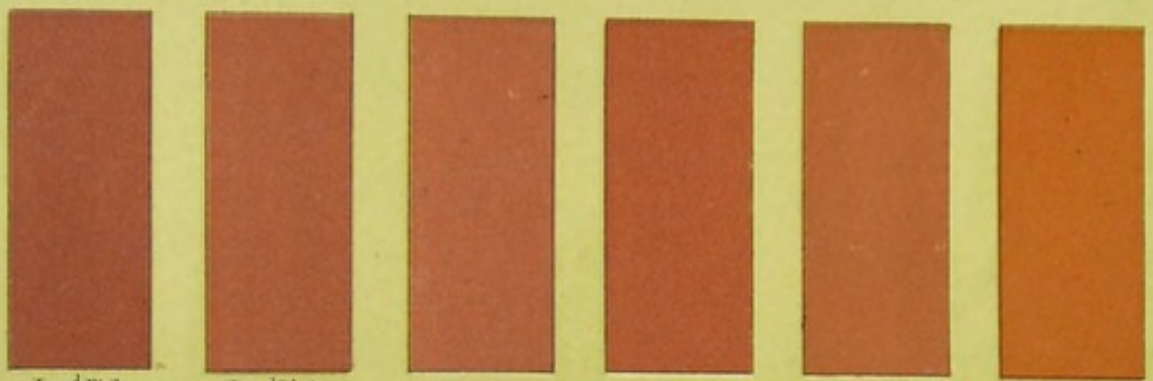
The **Solid Base** is recommended for its solidity, strength, texture, and colour. Very thick pieces can be made from it; it is equal to the strongest rubber base that is made; it is close in texture, very hard, and takes a high polish, and the colour harmonizes exceedingly well with C. Ash and Sons' Pink Rubbers.

The remaining Rubbers are quite equal, if not superior, to any that are made and sold at the same prices.

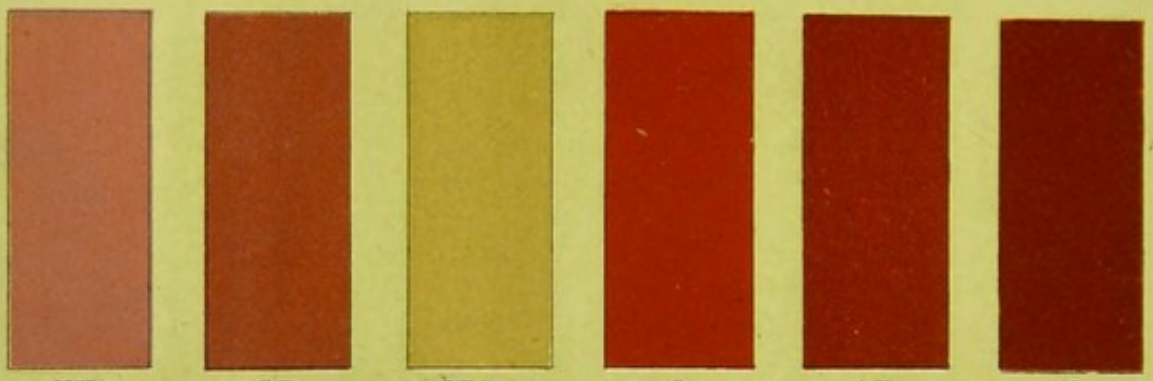
The **Special Rubbers, Soft Pink, Soft Dark Red,** and **Vela** are useful for the purposes mentioned on page 31.

C. ASH & SONS' DENTAL RUBBERS.

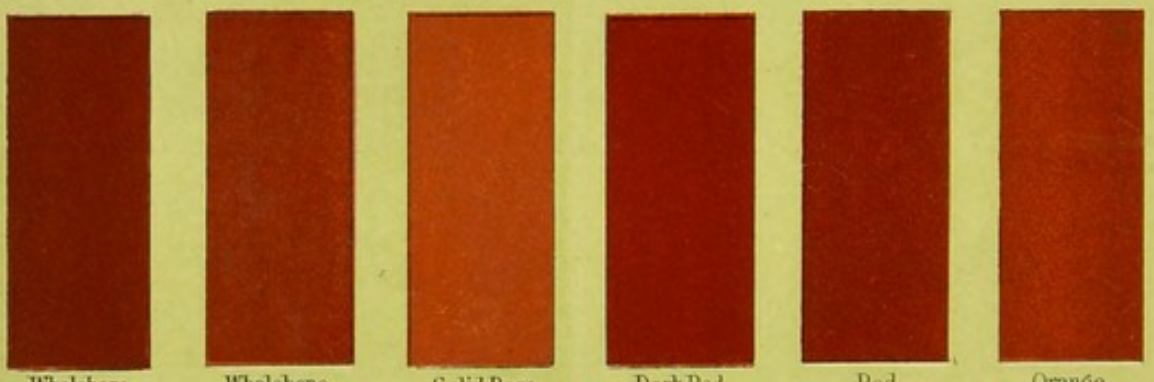
COLOURS WHEN VULCANIZED.



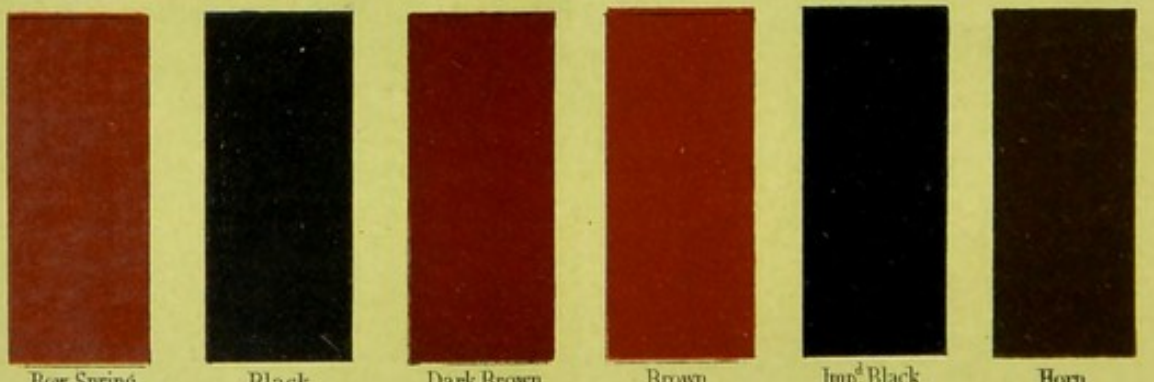
Imp^d. Pink SHADE 1. | Imp^d. Pink SHADE 2. | New Pink | N°1x | N°1 | N°2x



N.V. | S.P. | White | G | A E | W



Whalebone N°1. | Whalebone N°2. | Solid Base | Dark Red | Red | Orange



Bow Spring | Black | Dark Brown | Brown | Imp^d. Black | Horn

Pawson & Brailsford Lith. Sheffield.

C. ASH AND SONS' DENTAL RUBBERS.

FOR COATING.

	Colour.		s.	d.
Improved Pink, Shade No. 1 ..	Deep pink	per lb.	25	0
„ „ „ No. 2 ..	Pale „			
New Pink	Deep „	„	21	0
No. 1x „	„ „	„	21	0
No. 1 „	Pale „	„	21	0
No. 2x „	Deep „	„	18	0
N.V., without Vermilion ..	„ „	„	21	0

The time recommended for vulcanizing each kind is 75 minutes.

FOR BASE.

	Colour.		s.	d.
S. P.	Deep pink	per lb.	16	0
White, for Side Blocks, &c.	Bone colour	„	16	0
Child's G.	Bright red	„	16	0
A. E. Elastic	Dark brown	„	16	0
W. Elastic	„ „	„	16	0
Whalebone, No. 1	„ „	„	16	0
„ No. 2	Light „	„	14	0
Solid Base	Pink „	„	14	0
Dark Red	—	„	12	0
Bow Spring	Light Brown	„	12	0
Horn	—	„	12	0
Red	—	„	10	0
Orange	—	„	10	0
Black	Horn colour	„	10	0
Dark Brown	—	„	10	0
Brown	—	„	10	0
Improved Black	Jet black	„	10	0

The time recommended for vulcanizing each kind is 75 minutes, at a temperature of 315° Fahrenheit.

SPECIAL.—FOR TENDER GUMS, &c.

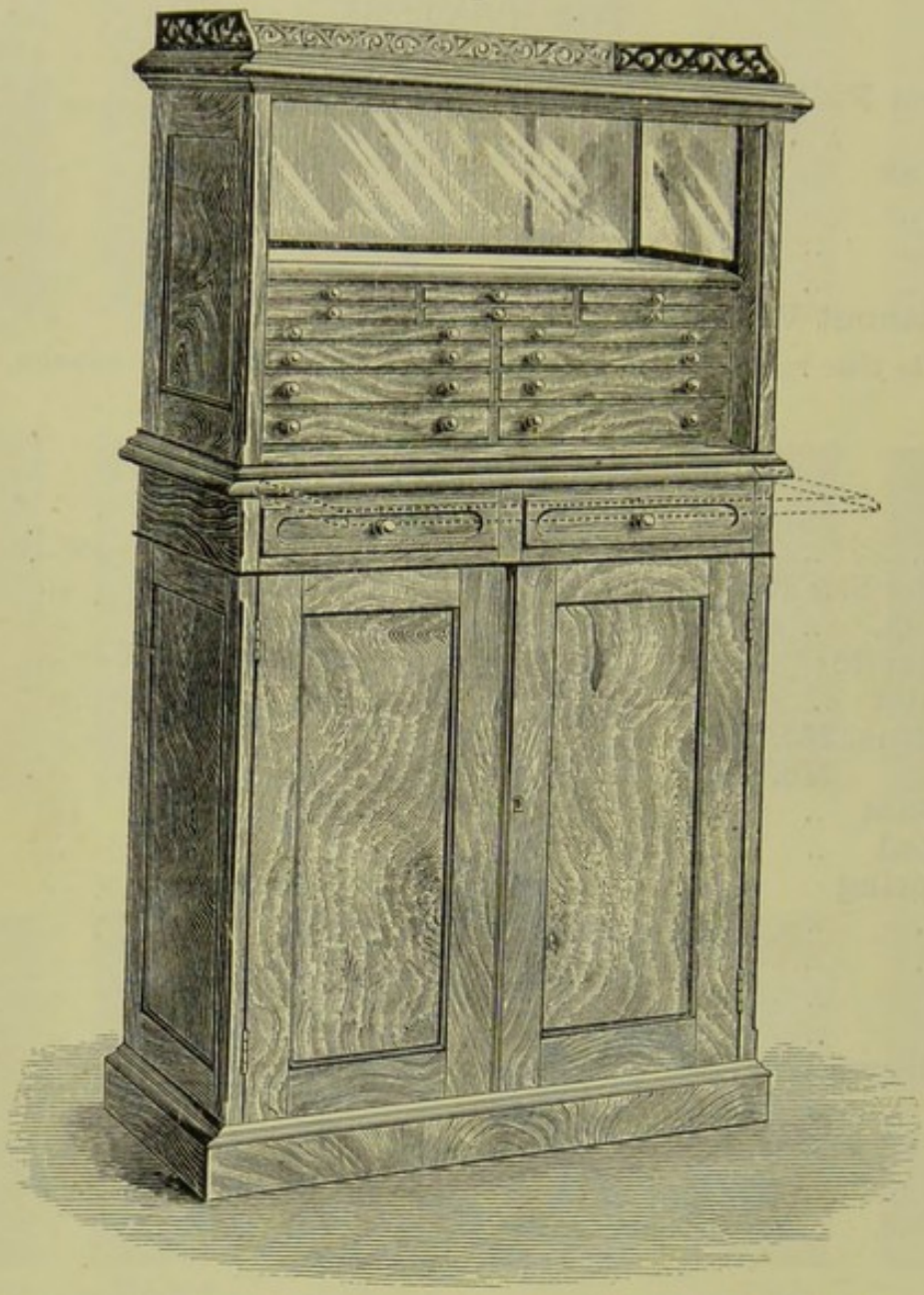
	Degrees Fahrenheit.	Time. H. M.		s.	d.
Soft Pink, for lining Palates	310	1 15	per lb.	21	0
Soft Dark Red „ „	310	1 15	„	12	0
Vela, for making artificial palates ..	270	6 0	„	21	0

All the above Rubbers are supplied in ½ lb. Boxes and ¼ lb. Packets. Those kinds above 10s. per lb. are also supplied in 2-ounce packets. Ten per cent. discount allowed when 5 lbs. are purchased at one time. This quantity may consist of several kinds.

American and other Rubbers kept in stock.

ASH'S IMPROVED CABINET.

Fig. 1.



Outside dimensions, 58 inches high ; 28 inches wide ; 15 inches deep.

For workmanship and finish this Cabinet stands unrivalled, and forms a very handsome and valuable addition to the Operating Room.

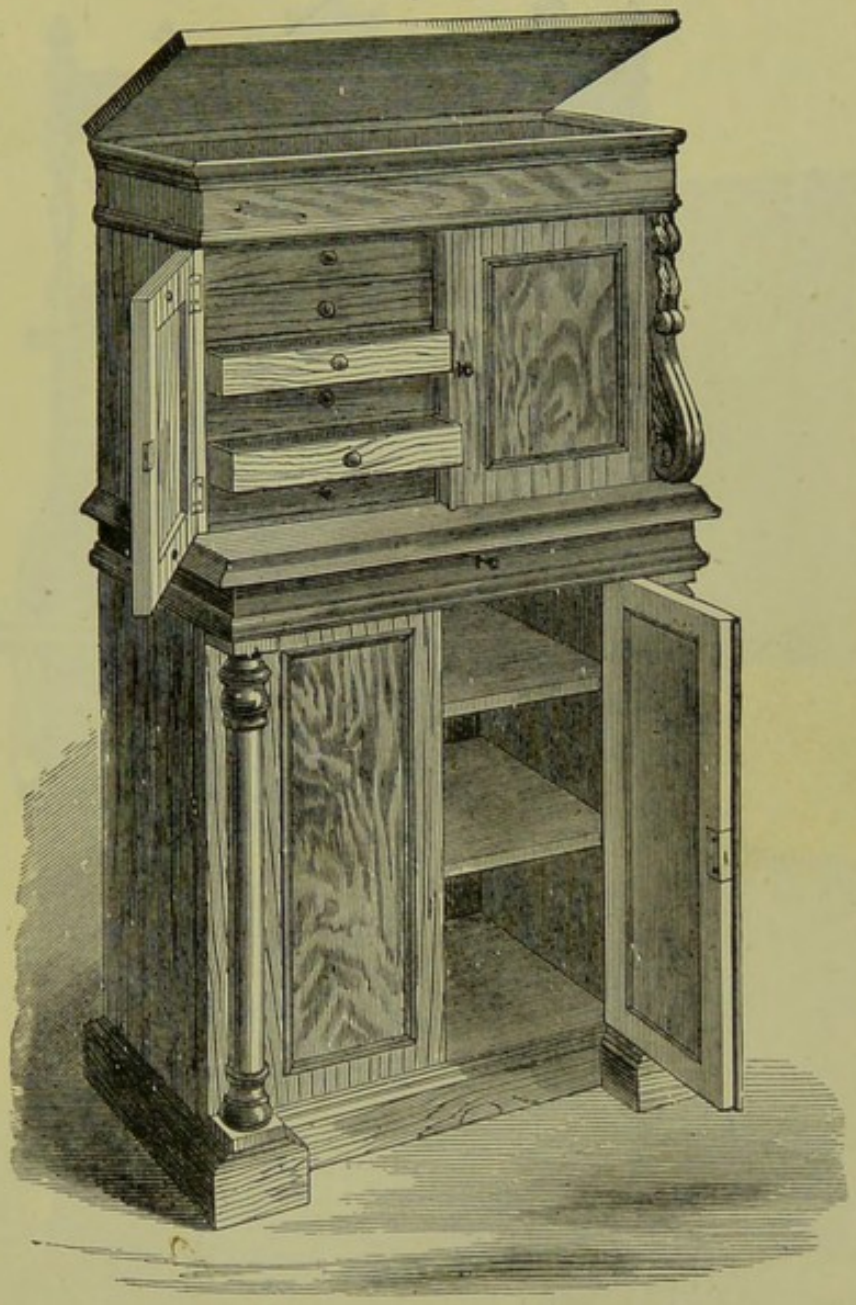
The top compartment contains back and side mirrors and a marble shelf, beneath which are placed fourteen drawers, varying in depth from half an inch to 1½ inches. Immediately under the drawers is a pull-out shelf for instruments, the width of the Cabinet, 9½ inches from back to front. When not in use the whole of the upper part is covered by a revolving shutter, which is fitted with lock and key. All the drawers are nicely lined with green cloth.

The lower portion of the Cabinet is occupied by two drawers, 2 inches deep; and a cupboard, with two adjustable shelves, which measures inside 26 inches high, 24 wide, 13 deep. Each of the drawers and the cupboard are provided with lock and key.

	s.	*d.*
In well-seasoned Walnut and Ebony, highly polished (Fig. 1)	**320**	**0**

DENTAL CABINET.

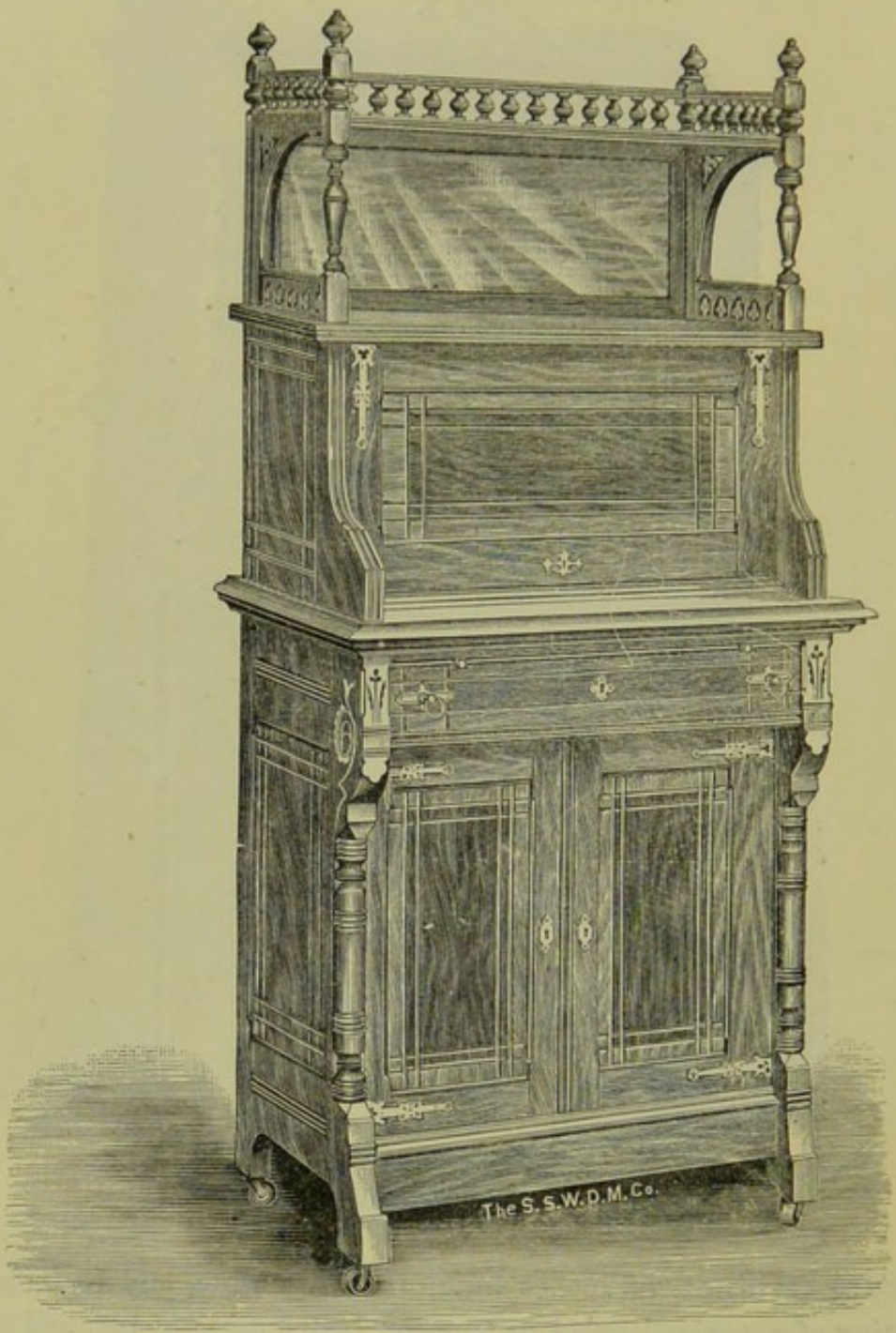
Fig. 3.



Dental Cabinet, 53 inches high, 27 inches wide, and 15 inches deep, consisting of a covered space or tray for Instruments at top, and one long drawer 2 inches deep. A nest of twelve drawers for Instruments, lined with cloth, 10 inches long by 12½ inches wide and 2½ inches deep, outside measure, enclosed with folding doors. The lower part fitted with shelves and folding doors, and a long drawer 2½ inches deep.

		s.	*d.*
In highly polished Walnut	(Fig. 3)	260	0

AMERICAN CABINET.
(EASTLAKE PATTERN.)

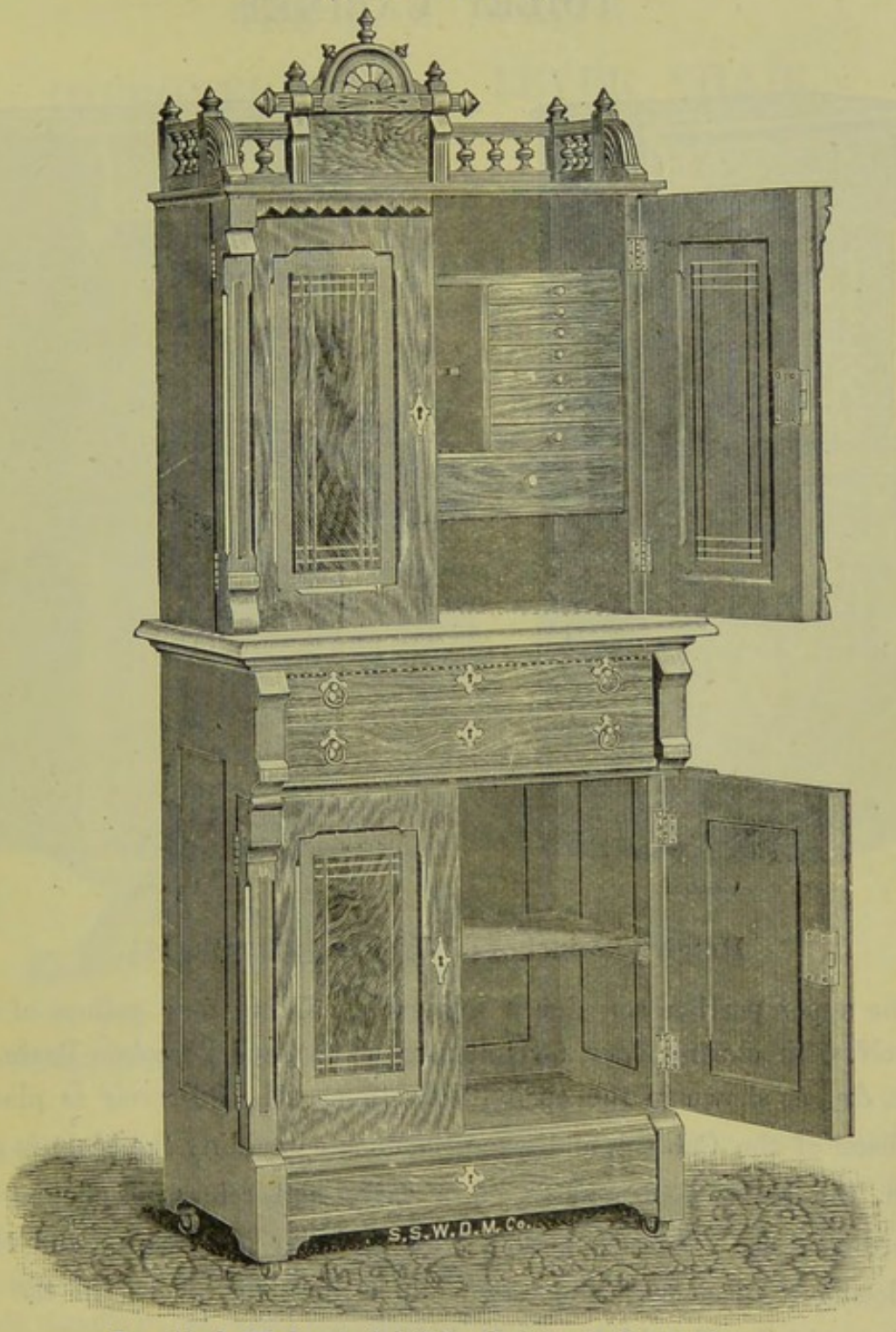


In oiled Walnut, well finished in all parts.

The total outside height from floor to top of ornamentation is 5 feet 9 inches, width 32¾ inches, depth 20¾ inches. The upper portion contains ten drawers, each 12½ by 8½ inches; two of these are 1¾ inches deep, and the others 1¼ inches deep inside. Below these drawers are three open spaces. This entire portion is covered by a falling slide. Above this portion is an open space 27¼ inches long, 10 inches high, 14 inches deep; the back of this space contains a plate-glass mirror. The lower portion below the marble slab contains one drawer 25 by 17 by 3 inches inside, a closet 21½ inches high, 28 inches wide, 14½ inches deep, and a slide 26¼ by 11¾ inches, covered with felt cloth.

	s.	*d.*
Price, including Boxing	320	0
„ **with double doors in place of the falling slide, and Boxing**	340	0

THE MODEL DENTAL CABINET.
(AMERICAN.)

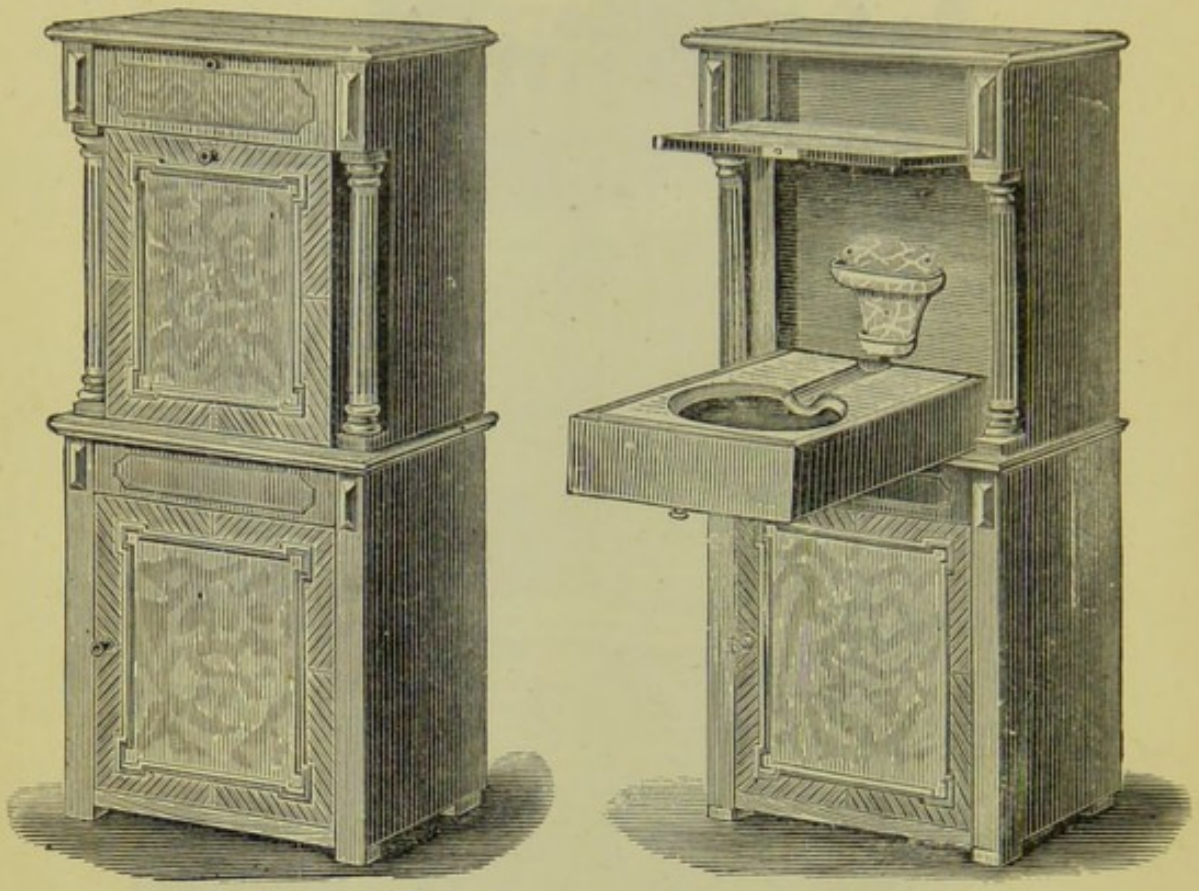


In oiled Walnut, highly finished throughout.

The outside dimensions are: Height, from floor to top of ornamentation 6 feet; length of marble slab, 28 inches; width of same, 17 inches. The upper portion contains sixteen drawers, and spaces for books, office preparations, &c. The dimensions of the drawers are about as follows: Six, 8 by 7 by ½ inches; four, 8 by 7 by ¾ inches; four, 8 by 7 by 1⅛ inches; two, 11½ by 7 by 2½ inches. This entire portion is inclosed by two ornamental doors having polished panels inside and outside. Below the marble slab are two drawers, one of which is 22 by 13 by 1½ inches, the other 22 by 13 by 2¾ inches, and a closet 20 inches high, 24¾ inches wide, 12 inches deep—divided in the centre by a shelf, and inclosed by two doors with polished panels. The mountings are all Nickel-plated.

	s.	*d.*
Price, including Boxing	320	0

TOILET CABINET.



Closed. Open.

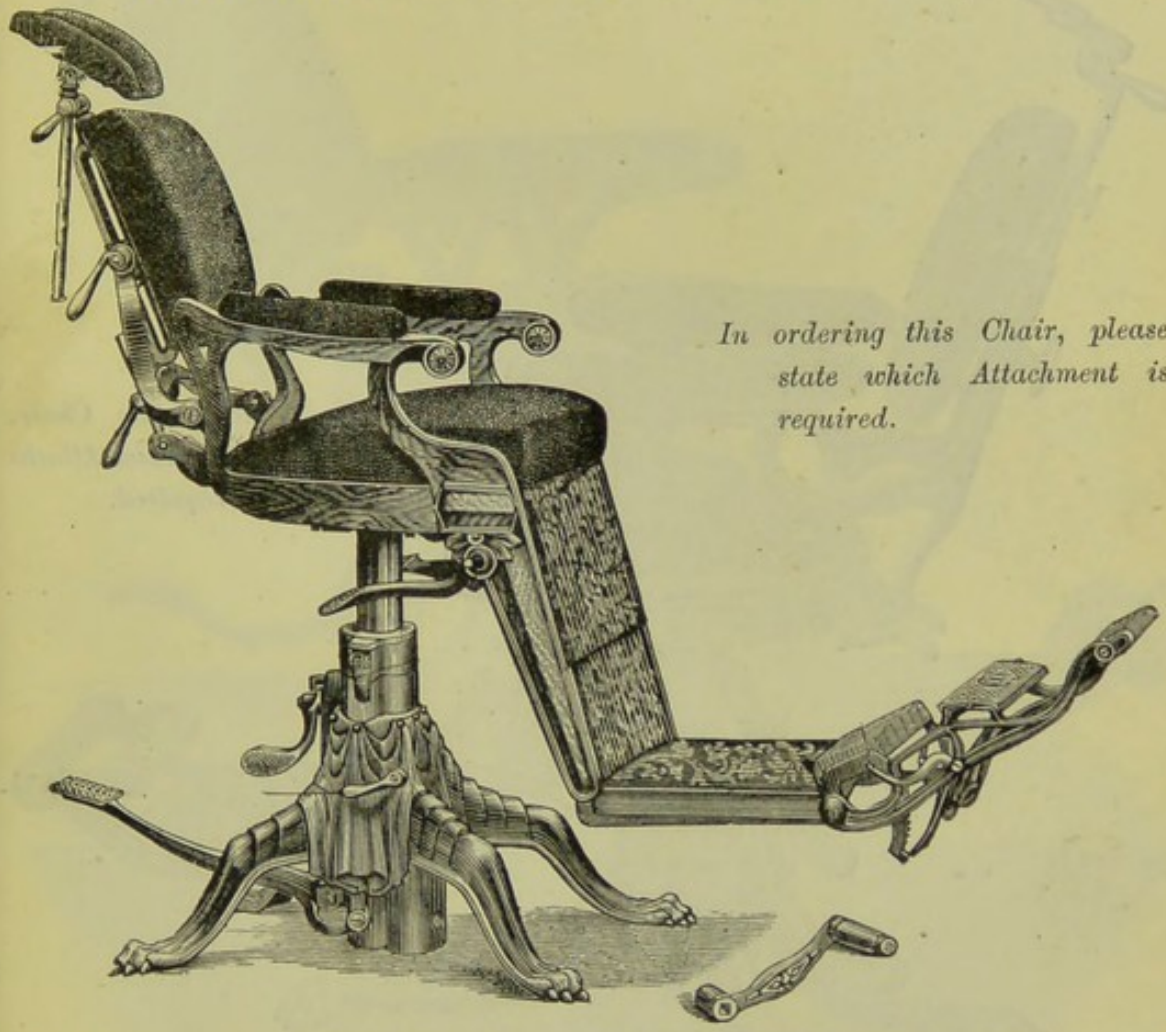
Height, 55 inches; Width, 22; Depth, 14½.

The upper portion contains a Reservoir, holding four gallons of water, a Shelf, with closing door, for toilet requisites, and Porcelain Basin, Soap Dish, &c., as shown in the open illustration. The Reservoir is placed in the back of the Cabinet, and when the door containing the basin is pulled down, the inside end presses on a valve and releases sufficient water for ordinary use. After it is done with the door is lifted up, and the act of closing it discharges the water into a Receiver, placed in the lower portion, which will hold four and a half gallons.

The Cabinet is substantially made, and will prove a convenient and ornamental addition to the Operating Room.

	s.	*d.*
Price complete with Receiver	160	0

THE S. S. WHITE
IMPROVED PEDAL LEVER CHAIR.



In ordering this Chair, please state which Attachment is required.

Highest position, 34 inches; Lowest, 23 inches; Width of Seat, 19 inches.

Valuable improvements have been made in this Chair, particularly in the Back and Head-Rest. It may be used with equal facility by either a right- or left-handed Operator, being so constructed that all its principal movements may be made from either side.

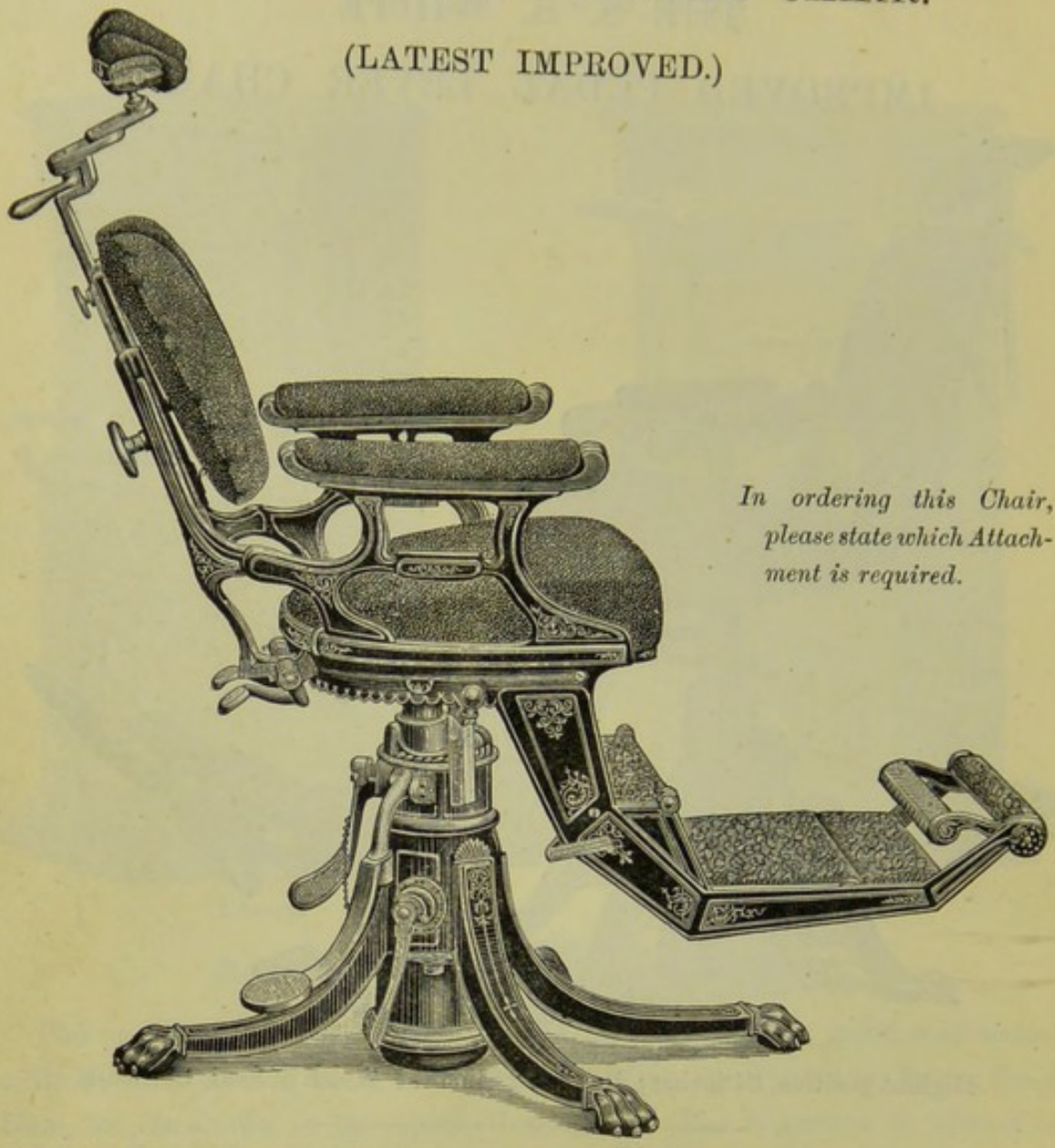
Full description sent on application.

	s.	*d.*
In best quality Green, Crimson, or Maroon Plush, and Boxing ..	720	0
In Crimson Plain Turkey Morocco or Leather, „ ..	720	0

For Attachments and Spittoons see pages 51–53.

THE WILKERSON DENTAL CHAIR.

(LATEST IMPROVED.)



In ordering this Chair, please state which Attachment is required.

Made in three different heights known as:

	Lowest position.	Highest position.
Low-base	20 inches.	28 inches.
Medium-base	23 „	34 „
High-base	26 „	40 „

Width of Seat 19 inches.

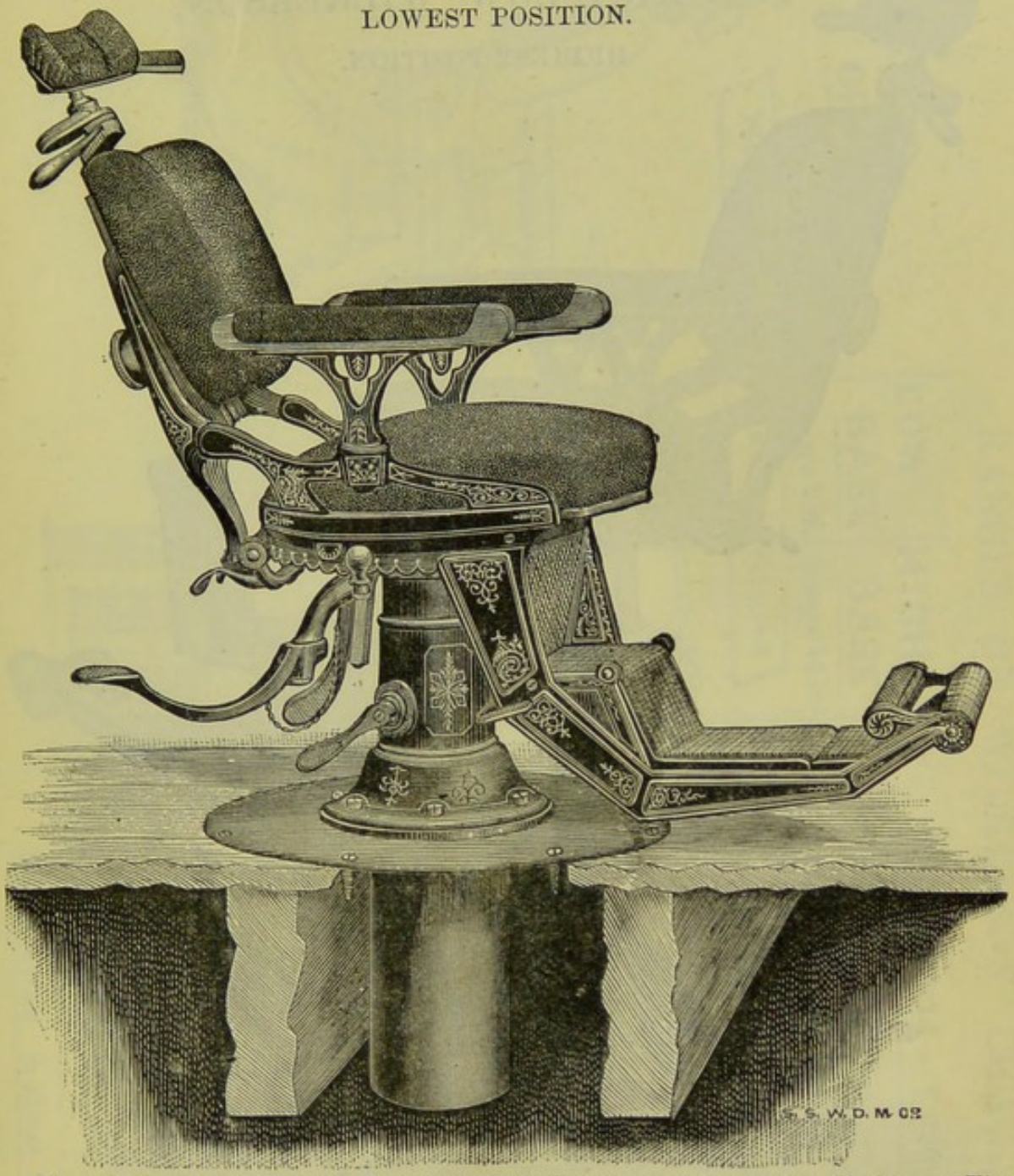
Full description sent on application.

	s.	*d.*
In best quality Green or Maroon Plush, and Boxing	720	0
In Crimson Plain Turkey Morocco or Leather, and Boxing	720	0

For Attachments and Spittoons see pages 51–53.

THE HIGH-LOW WILKERSON.

LOWEST POSITION.



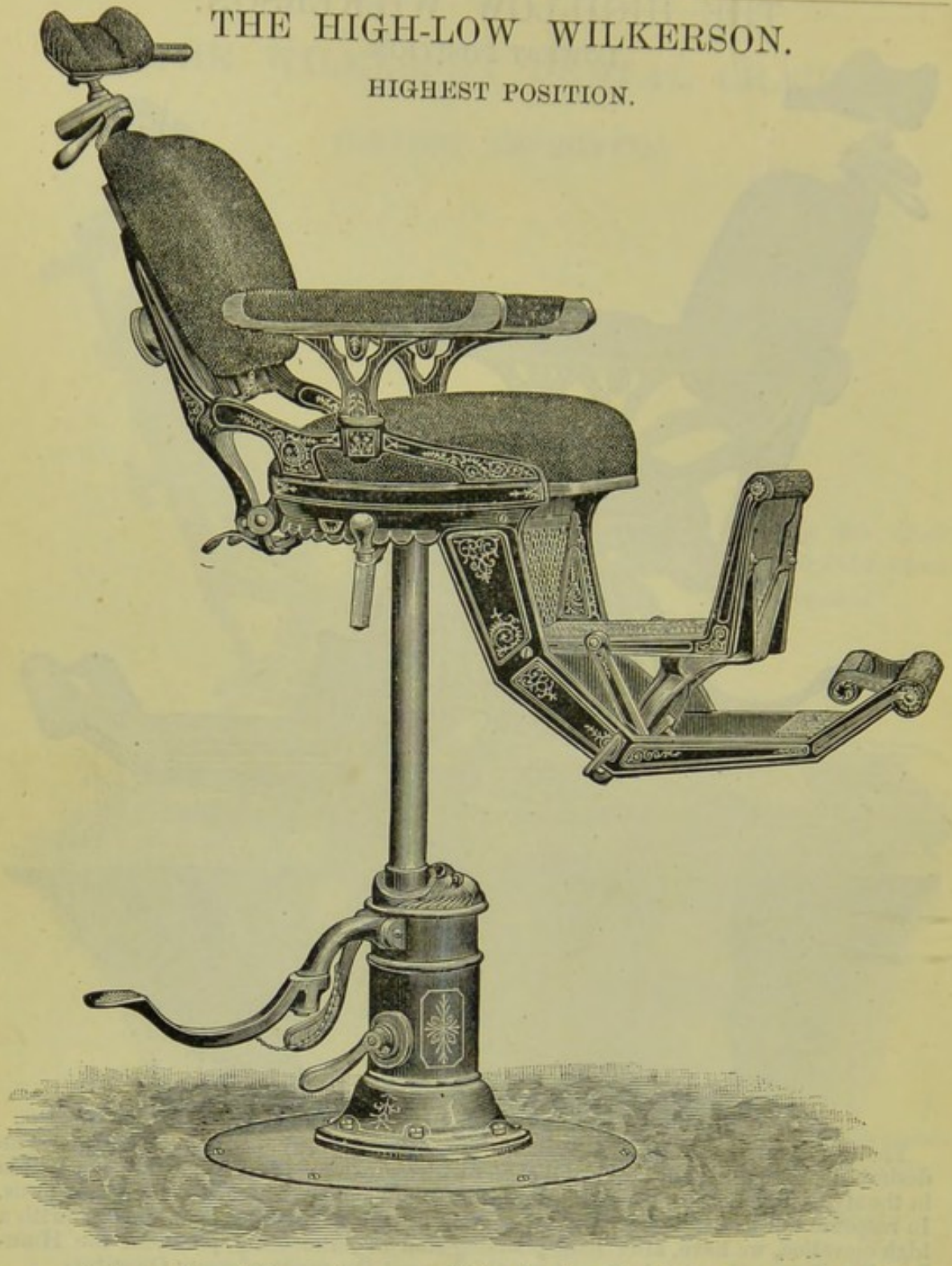
The S. S. White Dental Manufacturing Company say of this Chair: — "The desirability of making our *best dental chairs* with a greater vertical range than is possible in the styles in which we have been building them has been frequently suggested to us. In response to this demand for a chair combining the advantages of a low base with a high elevation, we have, after long planning and experimenting, produced the HIGH-LOW WILKERSON CHAIR, which will, we think, meet the needs of many Operators.

"There is, of course, but one way to secure the high range in a low-base chair operated as the Wilkerson is—the extra length of cylinder required for the longer piston must extend below the floor on which the chair stands. To permit this, a hole is cut in the floor of the operating room, or, where cutting the floor is not desirable, a platform sufficiently large for the convenience of the Operator may be built for the chair. Instead of legs, an iron disk, 24 inches in diameter, embracing the cylinder, and bolted to the collar or cylindrical base of the chair, is screwed to the floor, giving firm support to the chair in any position.

"We have adopted four sizes, having a vertical range of 15, 17, 19, and 21 inches

THE HIGH-LOW WILKERSON.

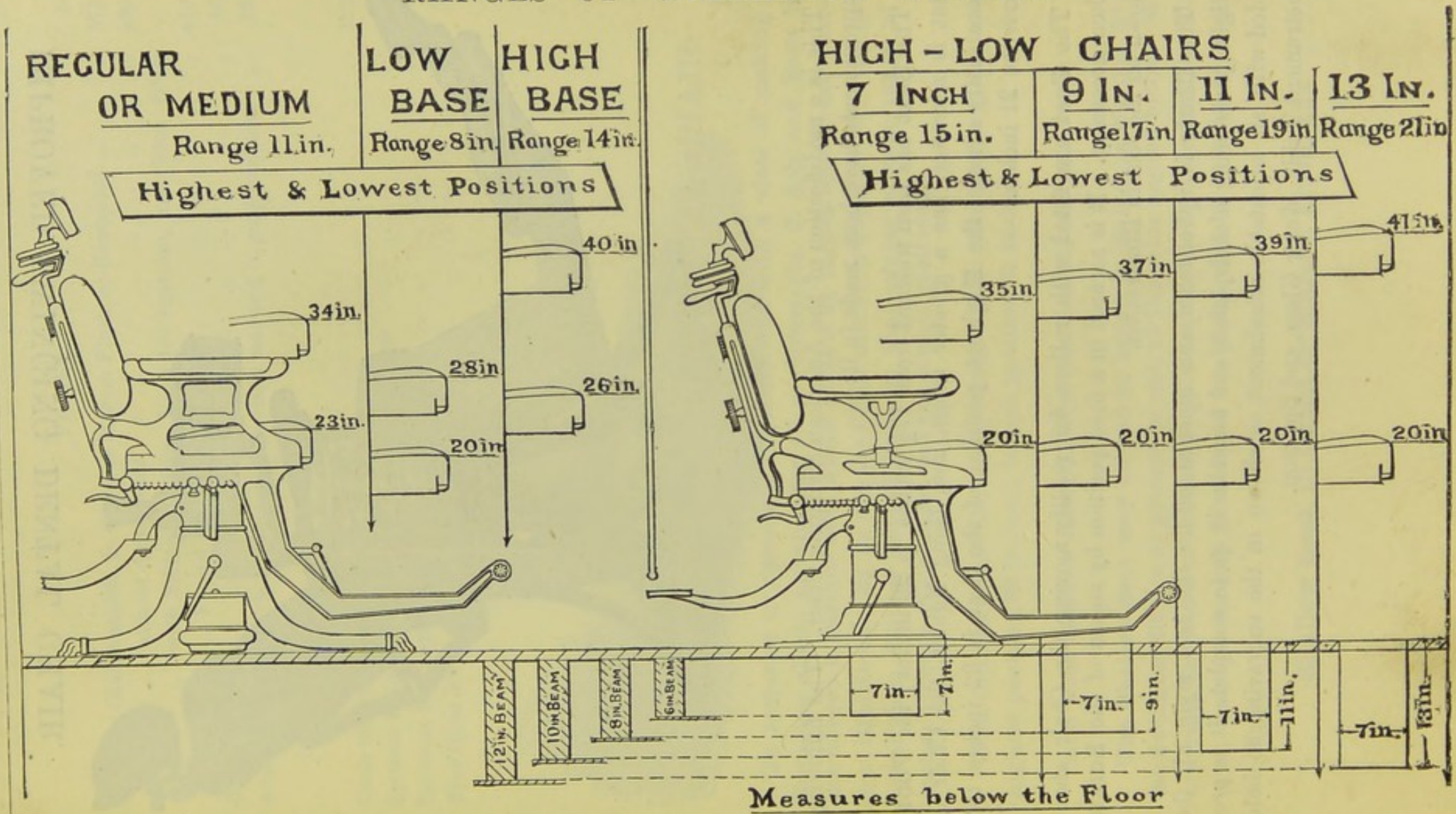
HIGHEST POSITION.



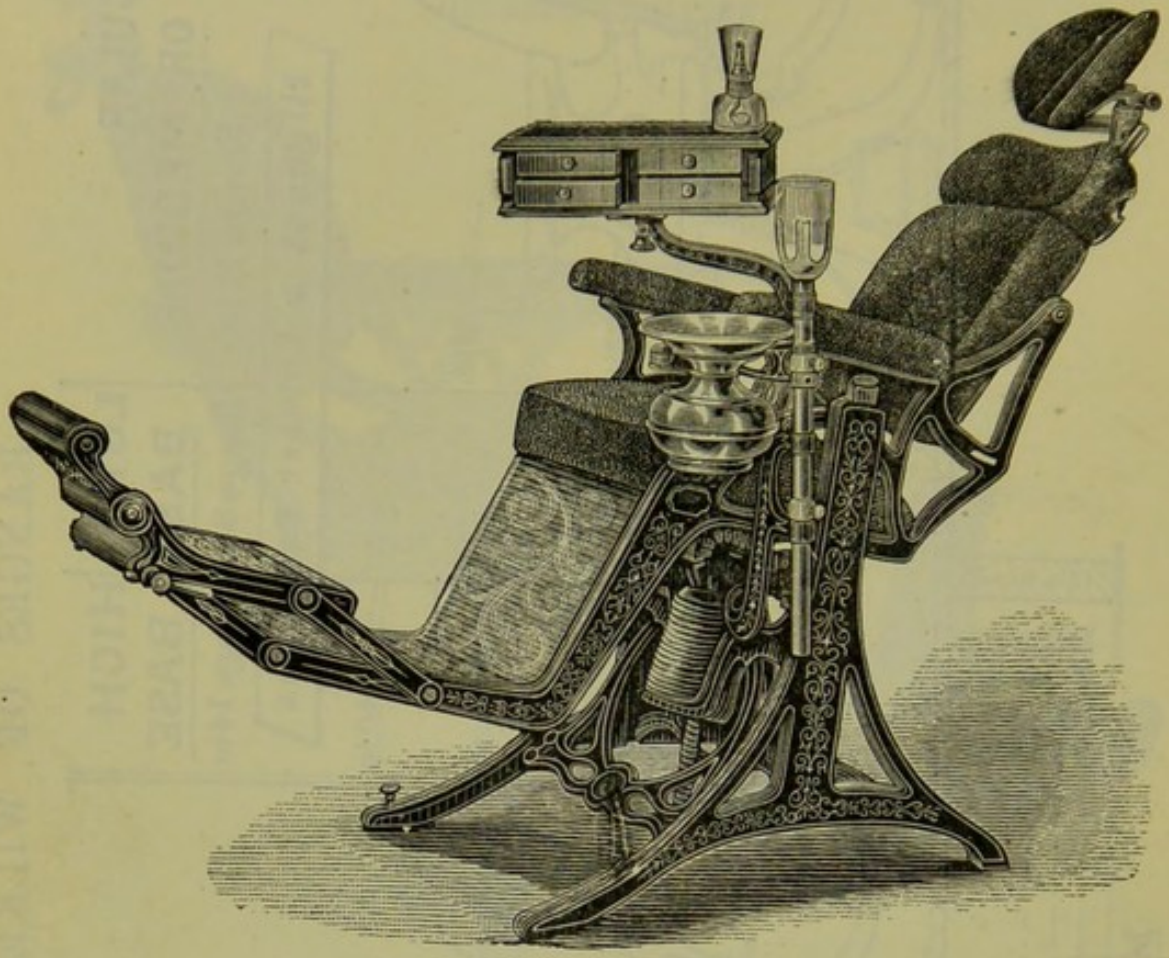
respectively, and requiring a clear space below the floor-level of 7, 9, 11, and 13 inches, necessitating floor timbers of 6, 8, 10, and 12 inches. The lowest position of each is 20 inches; the highest 35, 37, 39, and 41 inches. The various sizes will be known as the 7-inch, 9-inch, 11-inch, and 13-inch High-Low Wilkerson Chairs. The illustrations show the High-Low Chair in its normal position and the highest elevation of the 13-inch style. The outline illustrations on the opposite page show the relative elevations of the different styles of the Wilkerson Chair; also the depth of the floor timbers or staging required for the various sizes of the High-Low modification."

	s.	*d.*
In Best quality Maroon, Crimson, or Green Plush, and Boxing	900	0

RANGES OF WILKERSON CHAIRS.



IMPROVED SWINGING DENTAL CHAIR.



This is a modification of the American Swinging Chair. The following improvements have been made in it:—

The **Seat** has been widened from 17½ inches to 20 inches; the **Foot-rest** is narrower, has a greater range, and, being lighter, the Chair is more easily swung; the **Highest** position of the Seat is 32 inches, the **Lowest** 21 inches.

The **Feet** are fitted with rollers for readily moving the Chair about when necessary. It is secured in a fixed position by means of the **Screw** shown on the foot in illustration.

The **Chair** is upholstered and finished off in the best style, all the bright parts being nickel-plated, and to make it quite complete it is provided with an adjustable attachment, as shown in the engraving, to hold Instrument Table, Water Glass, and Spittoon.

PRICES:	s.	d.
Swinging Chair complete, in Green or Maroon Plush, as illustrated	575	0
„ „ without Attachment	450	0
„ „ with Spittoon Holder, Nickelled Spittoon, and Blue Glass Funnel	470	0
Boxing extra	20	0
Amount allowed for Case if returned Carriage paid and in good condition ..	15	0

Parts separately :—

Chair attachment complete, as illustrated	125	0
Spittoon Holder, for Arm of Chair, Nickel-plated	15	0
Spittoon, Nickel-plated	10	6
Blue Glass Funnel for Spittoon	2	0

SHALLOW SEAT

FOR THE

IMPROVED SWINGING DENTAL CHAIR.

In response to numerous inquiries, and with a view of making the Swinging Chair suitable for all requirements, C. Ash and Sons have introduced a shallow seat which gives a 2½ inches lower base than the seat illustrated. By its use the Chair can be lowered to 18½ or 1½ inches lower than the low base Wilkerson, thus giving a clear range of 13½ inches between the highest and the lowest positions.

With Ordinary Seat the measurements are : Width of seat 20 inches ; highest position 32 inches ; lowest position 21 inches.

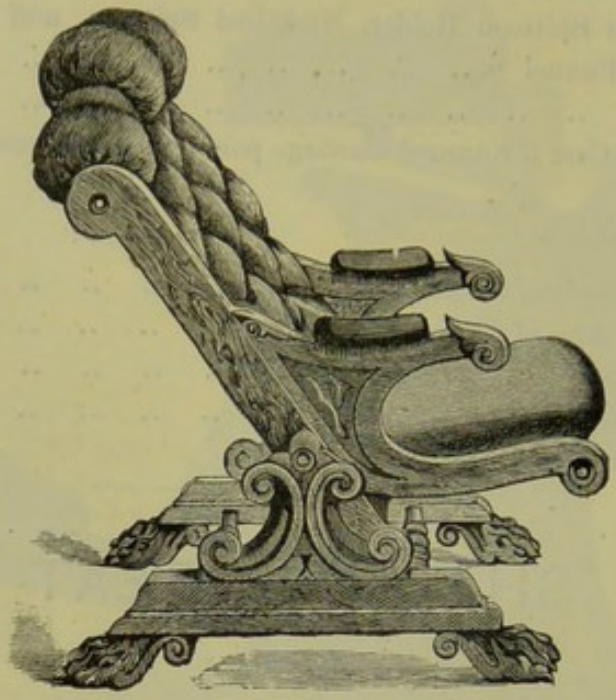
And with Shallow Seat: Lowest position 18½ inches.

The Shallow Seat may be had to order, in Green or Maroon Plush, for Swinging Chairs at present in use, at the price quoted below. When ordering, the width of the seat supplied with the Chair across the widest part, and the length from front to back, should be sent as a guide for size.

Shallow Seat, in Green or Maroon Plush, 15s.

IMPROVED DENTAL CHAIR.

(Mr. OWEN'S.)



Highest position, 28 inches; Lowest, 16 inches; Width of Seat, 21 inches.

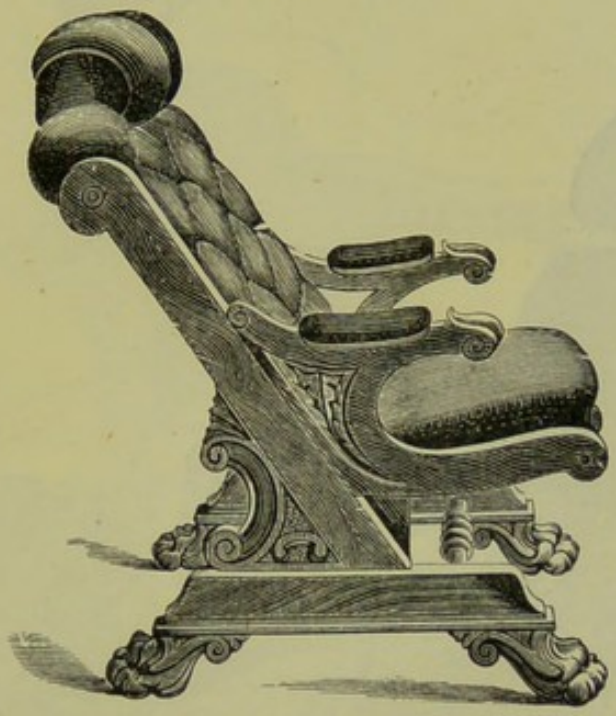
The Body of this Chair is made to work on two centres, so that by the aid of a foot lever it can be moved backwards or forwards, and fixed at any angle required. The seat and arms are raised or lowered by means of pulleys, turned by a handle at the side. The Head-rest moves backwards or forwards, and is fixed at any point by a ratchet.

	s.	*d.*
In Walnut Wood, covered with Green Velvet	460	0
In Mahogany, covered with Velvet or Morocco	470	0
Self-adjusting Spittoon- and Glass-Holder with Socket, for Owen's Chair, japanned black, relieved with gold lines, 18 inches high	17	0
Spittoon, Nickel-plated (Ash's)	10	6
Blue Glass Funnel for Spittoon	2	0
Holland Cover for Chair	5	6

DENTAL CHAIR.

(Mr. OWEN'S.)

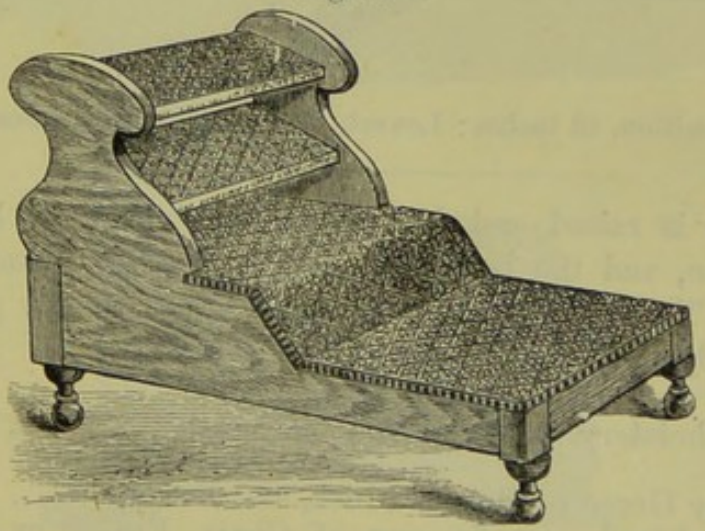
Fig. 7.



This Chair lacks the *backward* and *forward* movement, but in all other respects it is similar to the Improved pattern shown on the previous page.

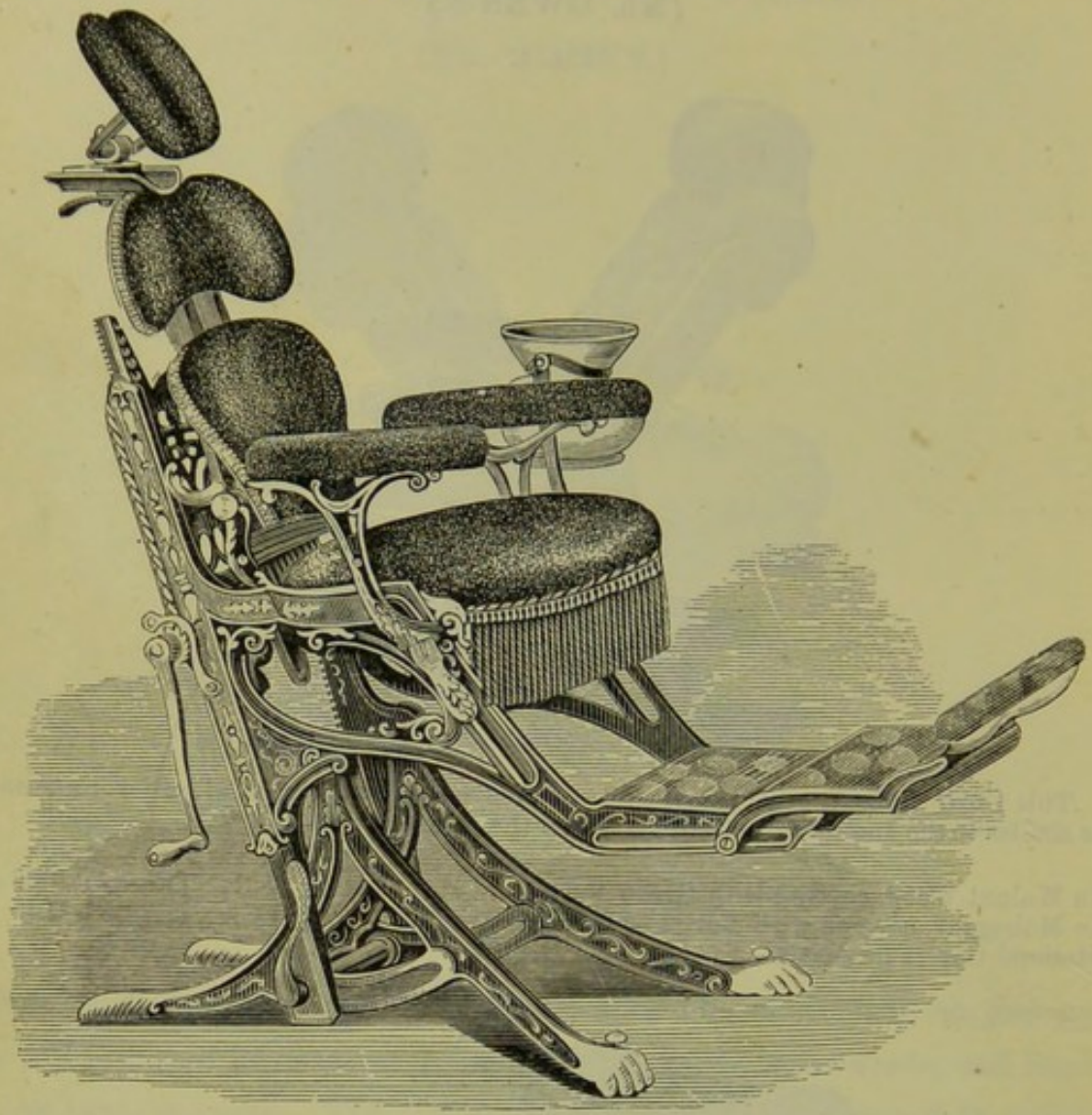
		s.	d.
In Walnut Wood, covered with Green Velvet	(Fig. 7)	336	0
In Mahogany, covered with Velvet or Morocco	(„ 7)	345	0
Holland Covers for Chairs	each	5	6

Fig. 1.



			s.	d.
Footstool in Walnut, 30 inches long by 18 inches wide, with four steps carpeted. Highest step 19 inches high, lowest step 7 inches high.	(Fig. 1)	from	45	0
„ „ „ with carved sides		„	55	0

THE MORRISON DENTAL CHAIR.

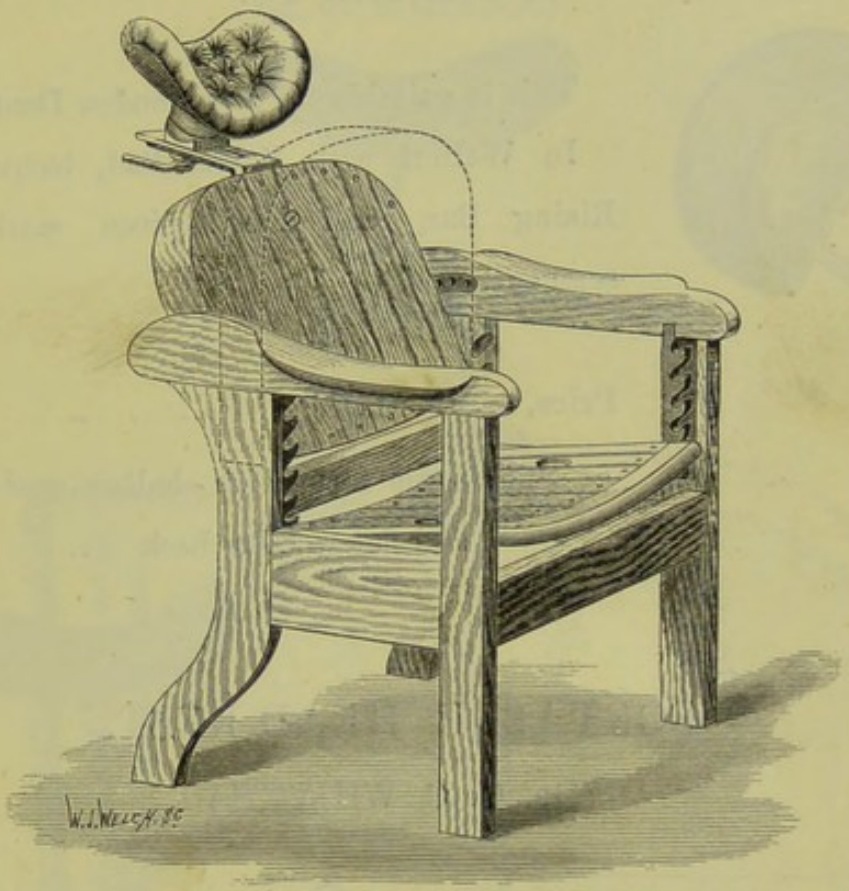


Highest position, 42 inches; Lowest, 15 inches; Width of Seat, 17½ inches.

This Chair is raised and lowered by means of the handle shown in the illustration, and the backward and forward movement is regulated by a foot lever. The Head-Rest can be fixed in almost any position, and the back can be adjusted to suit every patient.

	s.	*d.*
In Corded Upholstery, for Students, and Boxing	440	0
In best quality Green or Garnet Plush, and Boxing	520	0
Spittoon Attachment for arm of Chair, Fig. 2 or Fig. 3, with Socket Fig. 3,—see page 52	16	0
Spittoon, Nickel-plated (Ash's)	10	6
Blue Glass Funnel for Spittoon	2	0

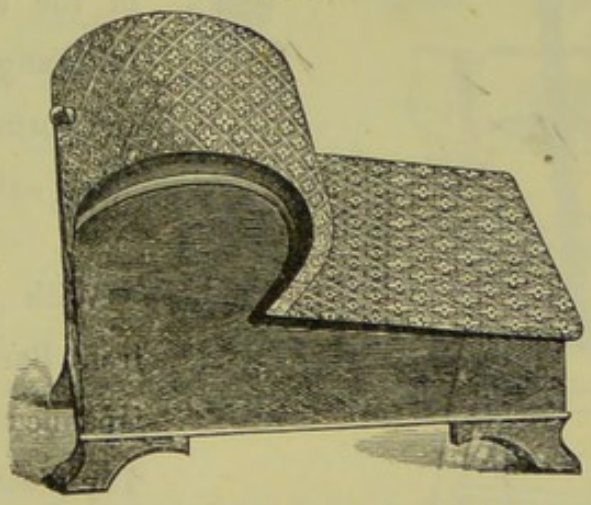
HOSPITAL CHAIR.



	s.	d.
Chair as illustrated, supplied to the London Dental Hospital	170	0
Chair (Mr. Owen's) Improved—see page 44—In Birchwood, with Footstool attached, and Head-rest covered in Leather, as supplied to the Liverpool Dispensary	325	0
Hospital Chair, with simple movements, *new form*	92	0

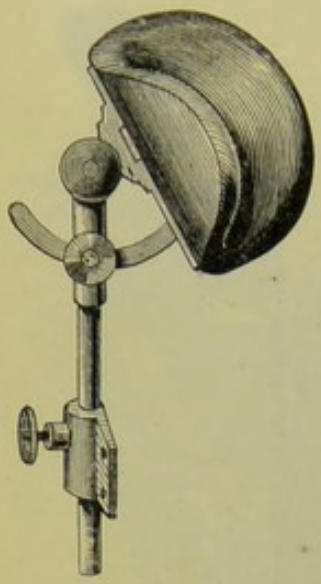
NOTE.—*The above prices are only to Hospitals and Charitable Institutions.*

Fig. 2.



	s.	d.
Footstool in Walnut, 20 inches long by 16½ inches wide, with two steps covered with carpet, which can be raised or lowered, and fixed at different elevations by means of a spring ratchet. Highest step 12 inches, which can be raised to 15 inches; lowest step 5 inches, which can be raised to 7 inches .. .. (Fig. 2)	42	0
,, ,, not covered	34	0
,, ,, without ratchet action	30	0

HEAD-RESTS.



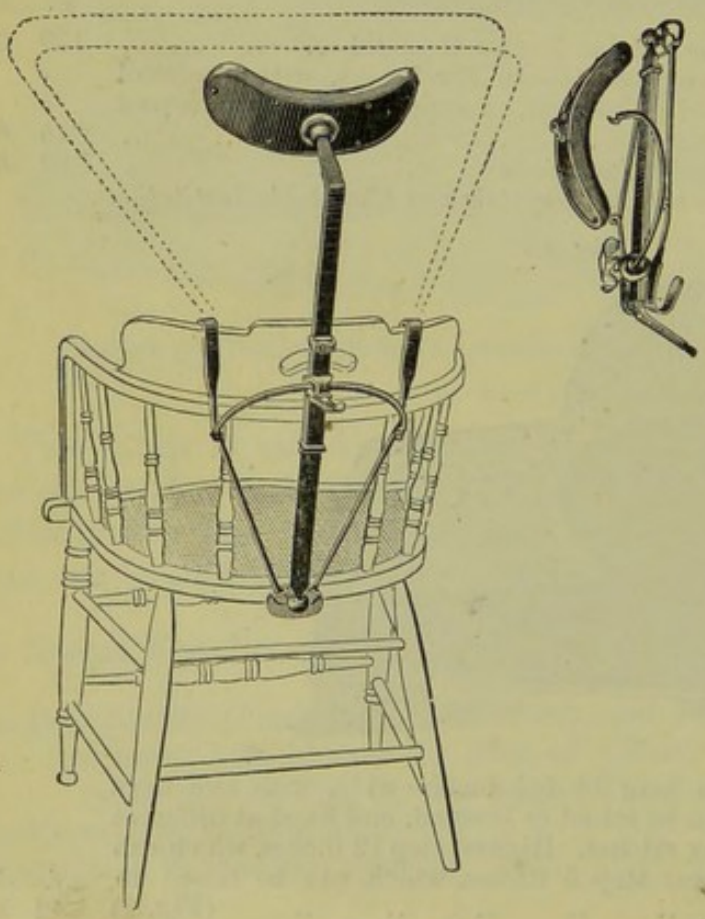
This is suitable for any wooden Dental Chair.

In Walnut with Velvet Pad, lacquered Brass Rising Bar, and Head-piece working on a segment.

	s.	d.
Price, as illustrated	40	0
The same form with shallow cushion and flat wooden back	35	0

PORTABLE HEAD-REST.

(Dr. O. C. WHITE'S.)

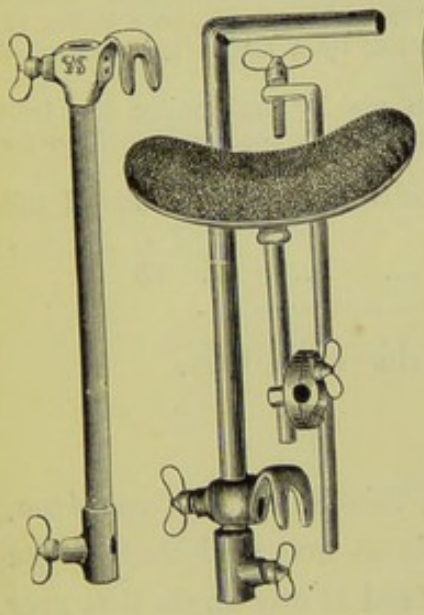


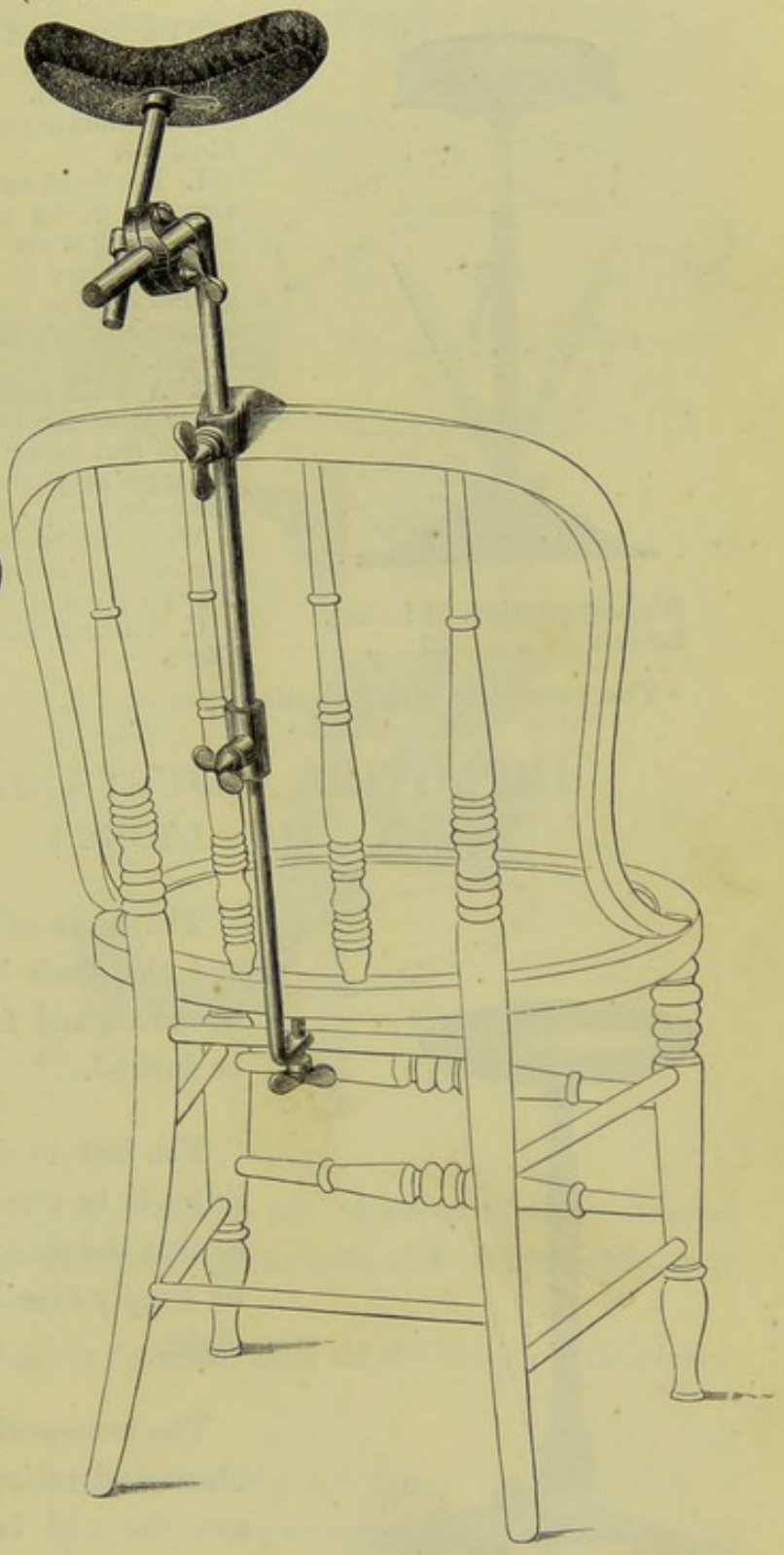
Constructed to fit an ordinary Operating Room Chair. The dotted lines in the engraving show its full range. It is very light and portable, the total weight being only $4\frac{3}{4}$ lbs.

With japanned wrought-iron Bars and Slide-Rods, japanned Thumb-screw and Top-piece, Head-rest covered with Rep .. .. s. 30 d. 0

PORTABLE HEAD-REST.

(S. S. WHITE'S.)





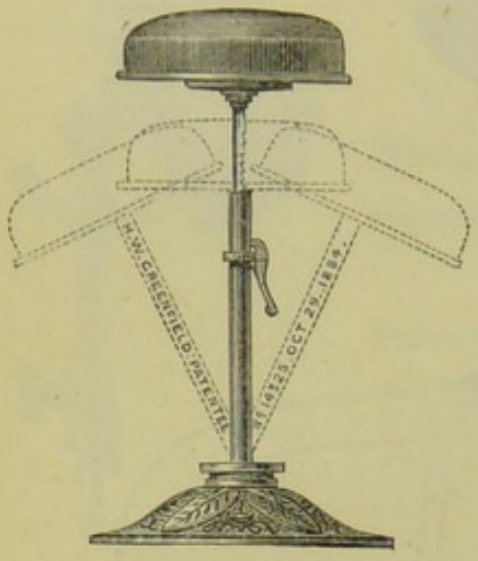
This Head-Rest has almost as free and full movement in all directions as the well-known Head-Rest of the Pedal-Lever Dental Chair, and it may be adjusted with equal facility to suit a very tall man or a small child. It can be attached with ease to almost any style of chair. In the cut it is shown in position on an ordinary chair. It weighs but five and a quarter pounds, and when folded up, as shown in the small side cut (on the same scale as the larger one), and packed for transportation, it occupies but little space, being adapted in these particulars to the needs of the travelling practitioner.

It is substantially made and nicely finished; all the metal parts Nickel-plated. The head-pad is upholstered in the best manner and with best materials.

	s.	*d.*
Price	48	0

PATENT ADJUSTABLE STOOL.

(Mr. GREENFIELD'S.)



Highest position, 31 inches.
Lowest „ 23 „

With japanned cast-iron base, wrought-iron pillar, and wooden seat covered with **green** or **maroon** plush.

The following advantages are claimed for this Stool :—

1. The **Seat** can be raised without the Operator vacating it, by placing the hands underneath and lifting it up. It is lowered by pressing the spring, shown on the pillar, and allowing it to go down. The bar to which the Seat is attached is notched, so that it can be secured at any height.

2. **A ball and socket joint** connects the pillar with the base of the Stool, which admits of the seat being moved forwards, backwards, or sideways at pleasure, by a slight inclination of the body.

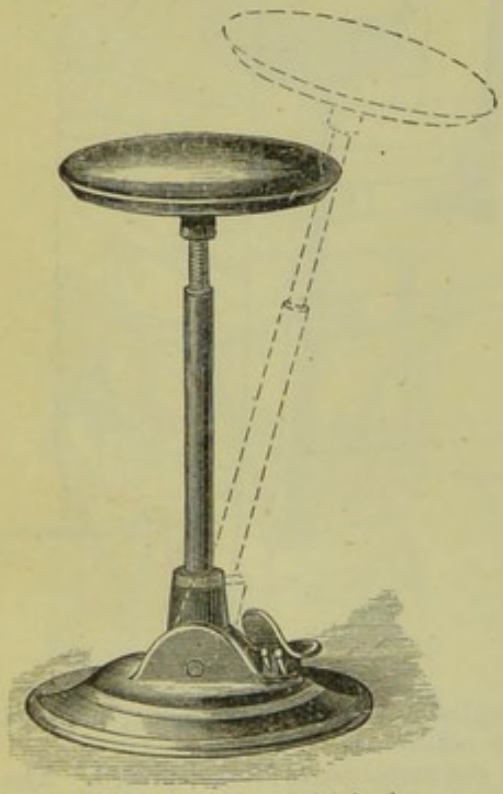
Wear is taken up by tightening the iron washer on the base with a spanner provided for that purpose.

C. Ash and Sons can strongly recommend this Stool.

	s.	*d.*
Price, complete with Adjusting Spanner	65	0

IMPROVED ADJUSTABLE STOOL.

(Dr. LYONS'.)



Highest position, 34 inches.
Lowest „ 23 „

The **base** of this Stool is of cast-iron, and the shaft is so arranged that it can be moved and fixed at any angle that may be desired.

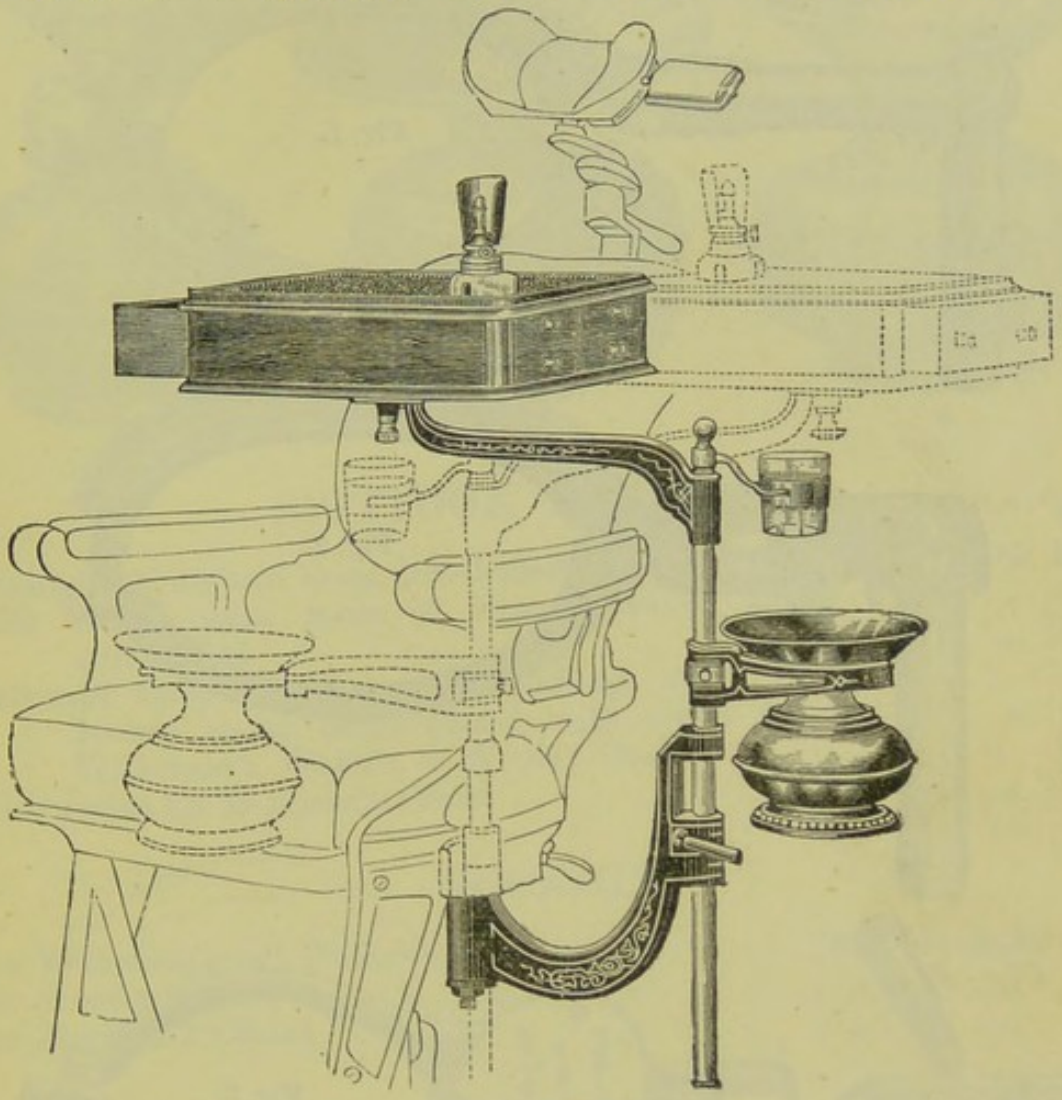
The **bar** to which the **Seat** is attached is made to screw into the lower portion, so that the **Seat** can be raised or lowered by simply turning it to the left or to the right.

The iron-work of the Stool is japanned black and relieved with gold bands, &c., and the seat is covered with **green** or **maroon** Plush.

	s.	*d.*
Price, complete as illustrated,	65	0

COMBINATION CHAIR ATTACHMENT

FOR S. S. WHITE'S AND WILKERSON'S CHAIRS.



Consisting of:

Swinging crane and upright, to which are attached spittoon bracket and spittoon, tumbler holder and water glass, arm, slide plate, instrument table and lamp.

Substantially made and highly finished, with all the bright parts nickel-plated.

					s.	d.
Complete, with	Plain rosewood	Table and	No. 4 Spittoon	..	120	0
„	„ Allan's	„	„ as illustrated	..	140	0
„	„ Holmes'	„	„ No. 4 Spittoon	..	220	0

For illustrations of Tables and Spittoons see the following pages.

SPITTOON BRACKETS AND SOCKETS.

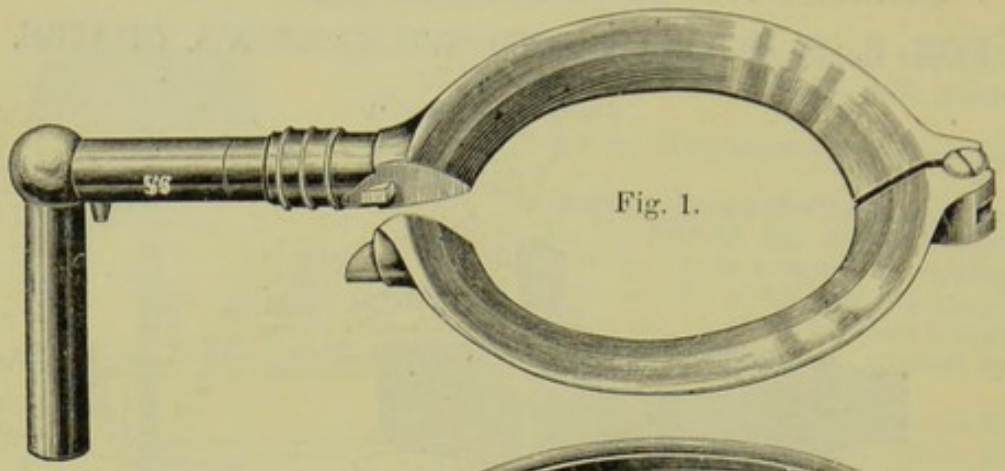


Fig. 1.

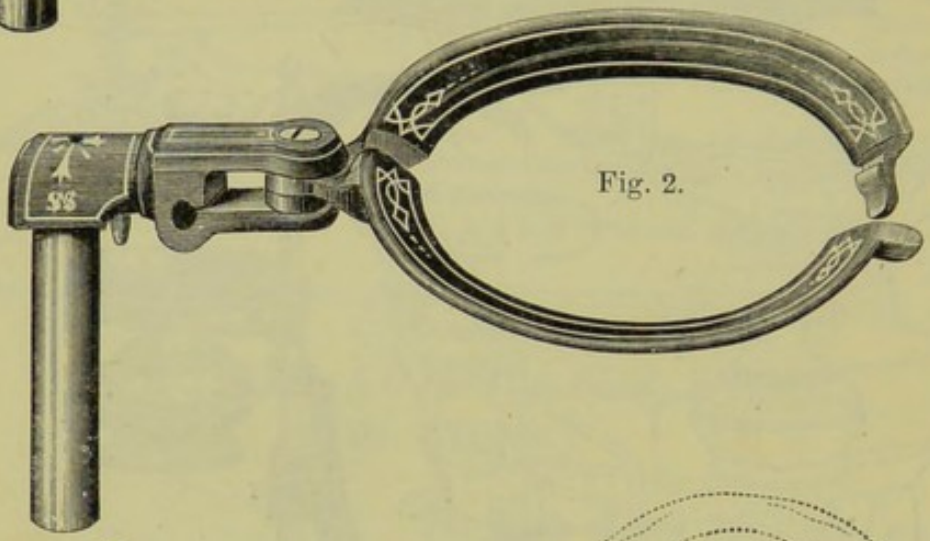


Fig. 2.

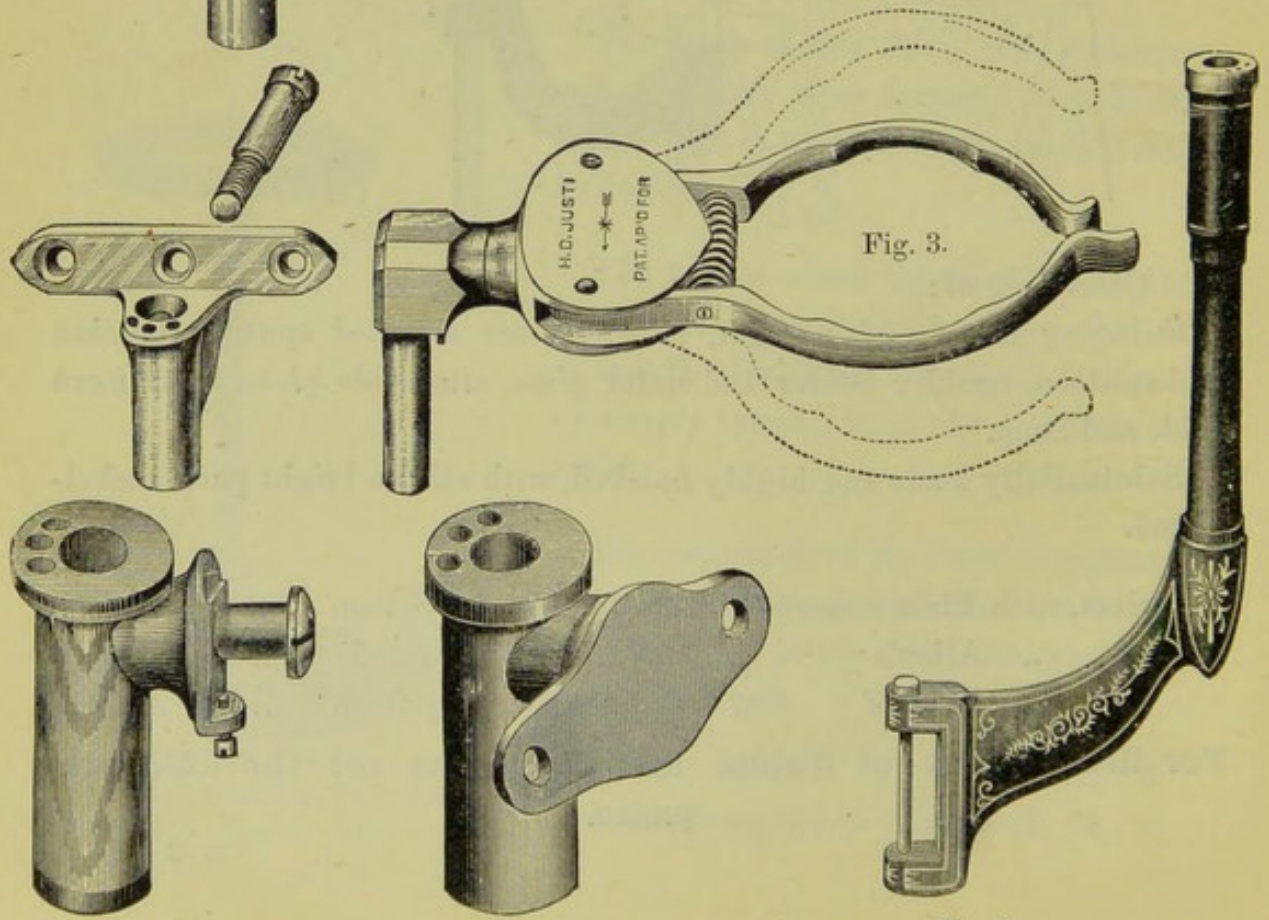


Fig. 3.

Fig. 1. Fig. 2. Fig. 3.

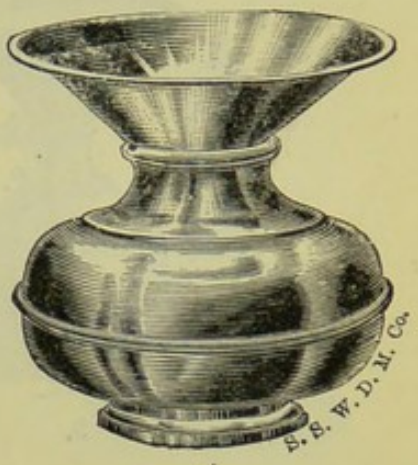
SPITTOONS FOR BRACKETS.



2.



3.



4.

SPITTOON BRACKETS.

		s.	d.
Closing-ring, made of brass, nickel-plated	(Fig. 1) each	22	0
With swivel joint, made of iron, japanned and ornamented	(„ 2) „	10	0
Universal Cuspidor Clamp, self-locking, made in bronze metal, nickel-plated, with socket for Wilkerson's, White's, or Wooden Chairs ..	(„ 3) „	12	0
With socket for Morrison's Chairs	(„ 3) „	16	0

SOCKETS.

		s.	d.
For Wilkerson's and White's Chairs	(Fig. 1) each	2	0
For Wooden Chairs	(„ 2) „	2	0
For Morrison's Chairs	(„ 3) „	6	0

SPITTOONS.

		s.	d.
In spun brass, nickel-plated	(Fig. 2) each	36	0
„ „	(„ 3) „	10	6
„ „	(„ 4) „	16	0
In imitation Majolica,*	„	3	3

* C. Ash and Sons have introduced this Spittoon, which is elegant in shape, to meet the wishes of those Operators who prefer **Earthenware** to **Metal** Spittoons.

		s.	d.
Funnels for nickel-plated Spittoons, in blue glass ..	each	2	0
„ „ „ in claret-coloured glass	„	3	0

In ordering extra glass Funnels, please state for which spittoon they are required.

HAND SPITTOONS.



5.



6.

These Spittoons are coloured to imitate Jet, Malachite, and Majolica, and are made in two sizes, 10½ and 9½ inches high.

			Size 2.		Size 3.	
			s.	*d.*	*s.*	*d.*
Jet or Malachite, with handle	(Fig. 5)	each	9	0	8	0
„ „ without „	(„ 5)	„	8	6	7	6
Majolica with „	(„ 5)	„	7	6	6	6
„ without „	(„ 5)	„	6	6	5	6
Jet or Malachite, without „	(„ 6)	„	8	6	7	6

Water Bottles, 12 inches high, with Plates, to match Spittoons:

		s.	*d.*
Jet or Malachite	each	7	6
Majolica	„	4	6

FUNNELS FOR PEDESTAL SPITTOONS.

		s.	*d.*		*s*	*d.*
In Blue Glass	each from	5	0	to	7	6
In Metal	„ „	9	6	„	12	6
„ Nickel-plated	„ „	18	0	„	21	0

When ordering these Funnels, please state the extreme diameter required, including the rim.

HAND SPITTOONS, &c.—*continued.*



8.



9.



10.

Hand Spittoons:

			s.	d.
Jet or Malachite, with gold line	(Fig. 8)	each	9	0
Jet, with gold scroll ornamentation	(„ 8)	„	12	0
Dull black, with painted human figures ..	(„ 8)	„	15	0

Hot Water Jugs to match Spittoons:

			With Metal Lid.		With Earthenware Lid.	
			s.	d.	s.	d.
Jet or Malachite, with gold line ..	(Fig. 9)	each	4	6	3	0
Jet, with gold scroll ornamentation ..	(„ 9)	„	4	9	4	0
Dull black, with painted human figures	(„ 9)	„	4	9	4	6

Water Bottles with Plates to match Spittoons:

			s.	d.
Jet or Malachite, with gold line	(Fig. 10)	each	6	6
Jet, with gold scroll ornamentation	(„ 10)	„	7	6
Dull black, with painted human figures ..	(„ 10)	„	10	6

NOTE.—The Jugs with earthenware lids have the "Patent Lids," which are loose, but they do not fall off when the Jugs are turned over in pouring out the water.

Heights of above: Spittoons, 10 inches; Jugs, 8 inches; and Bottles, 12 inches.

COMBINED SALIVA EJECTOR,

INSTRUMENT TABLE AND SPITTOON AND TUMBLER HOLDER.

For several years past there has been an increasing demand for this apparatus. Since its first introduction C. ASH AND SONS have improved the Saliva Ejector and the Stand. All the bright parts are nickel-plated, and the lower portion of the Upright and the Stand are tastefully japanned and ornamented.

The apparatus complete forms a most useful and convenient addition to the Operating Room.

Extract from the "British Journal of Dental Science," for March 15th, 1884.

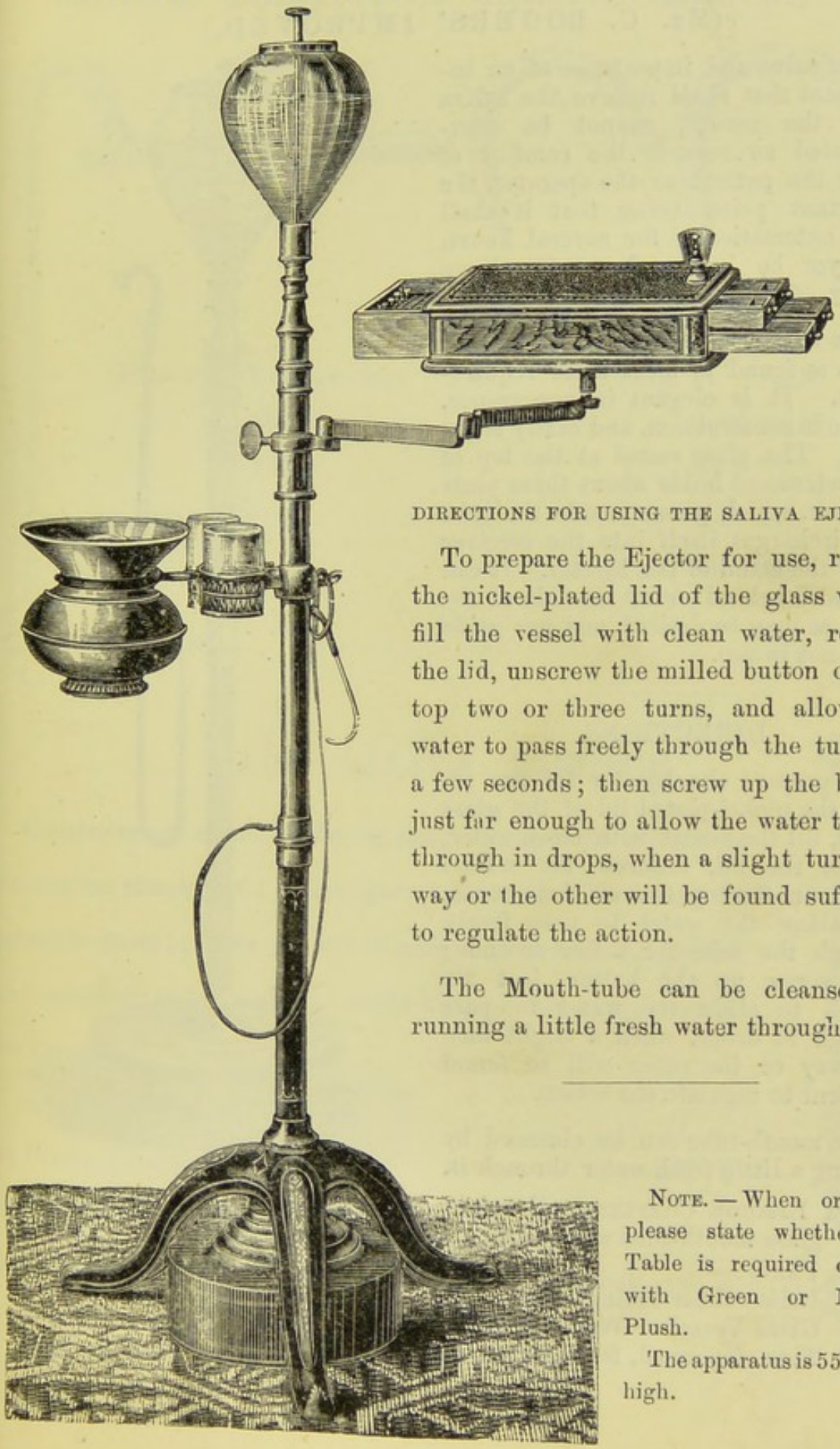
"Messrs. C. ASH AND SONS have manufactured a most elegant and comprehensive apparatus, as represented by woodcut. With nickel-plating, glass, and ornamentation it is very handsome indeed. The engraving gives so accurate an idea of its usefulness that little else is necessary. It may, however, be mentioned, that it is provided with the ordinary Allan's table and bracket lamp, nickel-plated spittoon with blue glass funnel, two tumbler holders, and that an important improvement has been made in the Saliva Ejector by placing the india-rubber tubing lower down the stem to give the water a greater fall from the reservoir, and so creating a greater degree of suction."

PRICES:

			s.	d.
APPARATUS COMPLETE, as illustrated	.. ..		157	6
„ „ with Plain Rosewood Table	.. ..		137	6
GLASS VESSEL OR WATER HOLDER, extra	.. ..		5	0
MOUTH TUBES, Glass, with T-shaped ends	.. .. ..	each	1	0
„ „ „ „ Bulbous „	.. .. ..	„	0	9
„ „ „ „ Plain „	.. .. ..	„	0	6
„ „ German Silver, with Plain Ends	.. ..	„	1	9
„ „ „ „ „ Bulbous and T-shape Ends		„	3	0
INDIA-RUBBER TUBING		per foot	0	4

For illustrations of the Mouth Tubes see page 59.

COMBINED SALIVA EJECTOR, &c.—*continued.*



DIRECTIONS FOR USING THE SALIVA EJECTOR.

To prepare the Ejector for use, remove the nickel-plated lid of the glass vessel, fill the vessel with clean water, replace the lid, unscrew the milled button on the top two or three turns, and allow the water to pass freely through the tube for a few seconds; then screw up the button just far enough to allow the water to pass through in drops, when a slight turn one way or the other will be found sufficient to regulate the action.

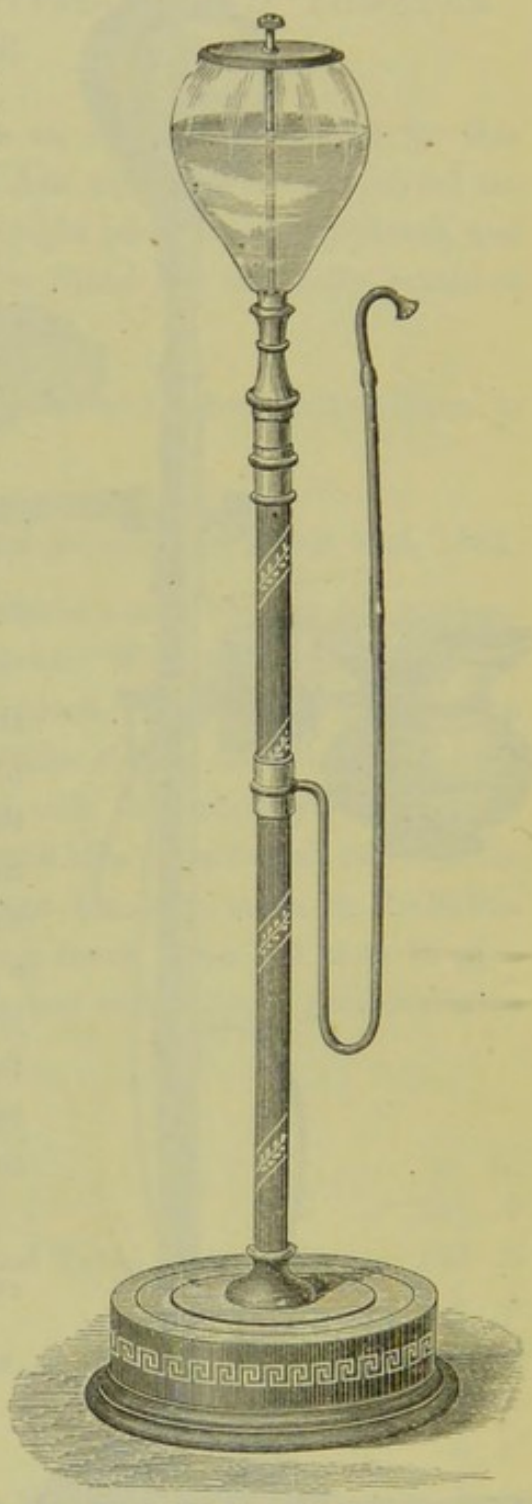
The Mouth-tube can be cleansed by running a little fresh water through it.

NOTE. — When ordering, please state whether the Table is required covered with Green or Maroon Plush.

The apparatus is 55 inches high.

SALIVA EJECTOR.

(Mr. C. ROGERS' IMPROVED.)



The value and importance of an instrument that shall remove the saliva from the mouth, cannot be over-estimated as regards the comfort of either the patient or the operator, the important point being that it shall work automatically for several hours, and yet be independent of a large supply of water.

The Saliva Ejector is an instrument which is found to meet these requirements. It is elegant in appearance, simple in construction, and easily regulated. The glass vessel at the top of the instrument holds about three pints of water, which passes inside the tube and discharges itself into the receiver under the stand of the Ejector. It can be placed behind or at the side of the chair, as may be desired, and put aside when not in use.

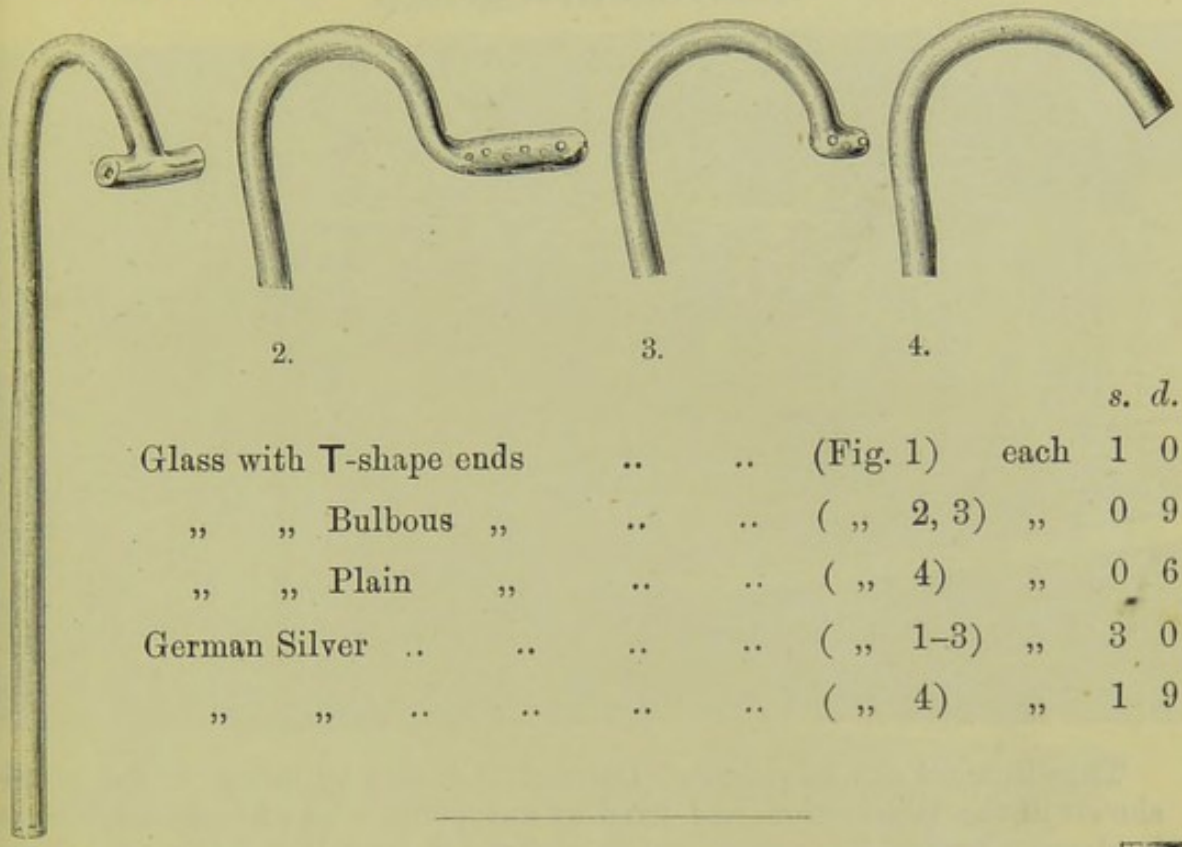
DIRECTIONS.

To prepare the Ejector for use, remove the nickel-plated lid of the glass vessel, fill the vessel with clean water, replace the lid, unscrew the milled button on the top two or three turns, and allow the water to pass freely through the tube for a few seconds; then screw up the button just far enough to allow the water to pass through in drops, when a slight turn one way or the other will be found sufficient to regulate the action.

The mouth-tube can be cleansed by running a little fresh water through it.

		s.	d.
Saliva Ejector Complete, all bright parts Nickel-plated, with glass mouth-tube and length of india-rubber tubing ..		60	0
Extra Parts:—			
India-rubber tubing	per foot	0	4
Glass Vessel or Water Holder		5	0
Tins, Japanned, for Saliva Ejector to stand in ..	each	3	6

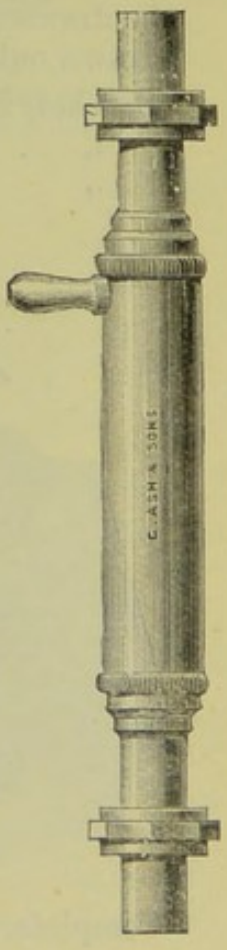
MOUTH TUBES FOR SALIVA EJECTORS.



1. 2. 3. 4.

		s.	d.
Glass with T-shape ends	(Fig. 1) each	1	0
„ „ Bulbous „	(„ 2, 3) „	0	9
„ „ Plain „	(„ 4) „	0	6
German Silver	(„ 1–3) „	3	0
„ „	(„ 4) „	1	9

WALL SALIVA EJECTOR.

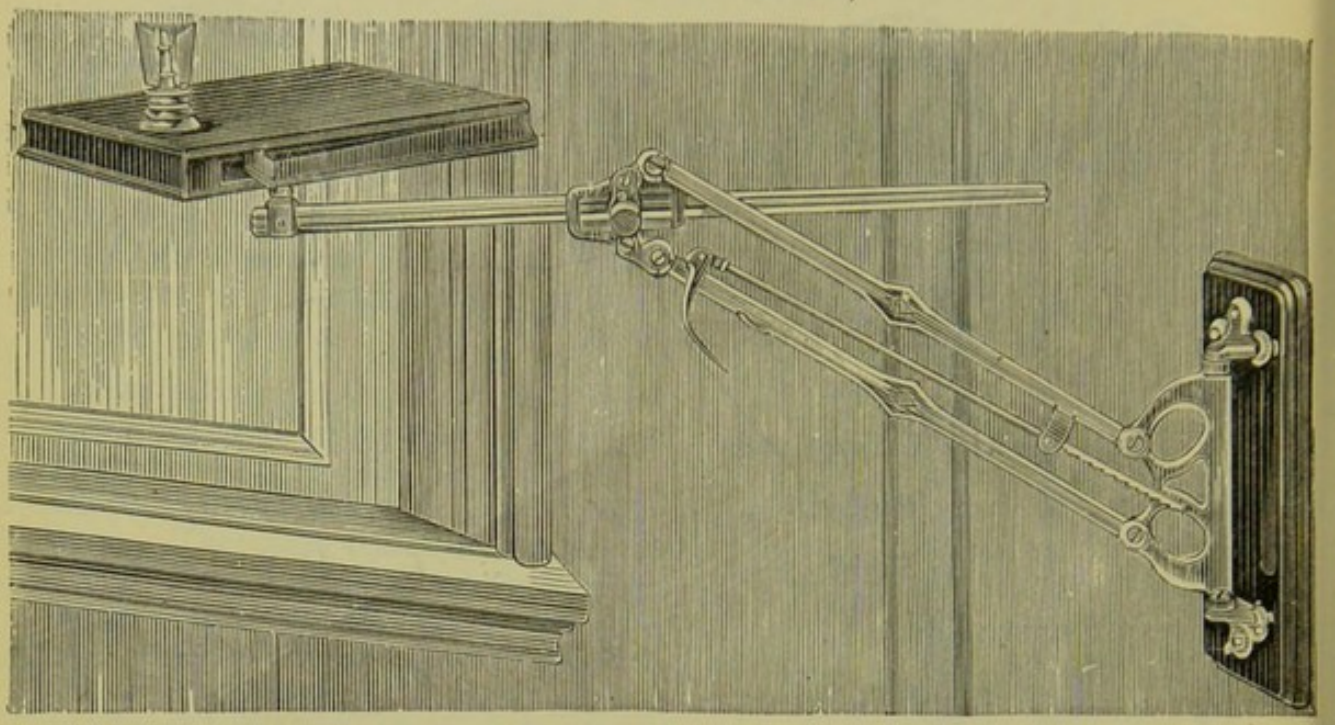


Consisting of a metal tube, 5½ inches long, with adjustable unions for attaching to piping against the wall. There are no intricate parts in it to get out of order; it is simple, efficient and economical in working, easily cleaned and always ready for use.

		s.	d.
In Brass, Nickel-plated		25	0
Mouth Tubes—see above.			
India-rubber Tubing	per foot	0	4

COMBINATION BRACKET.

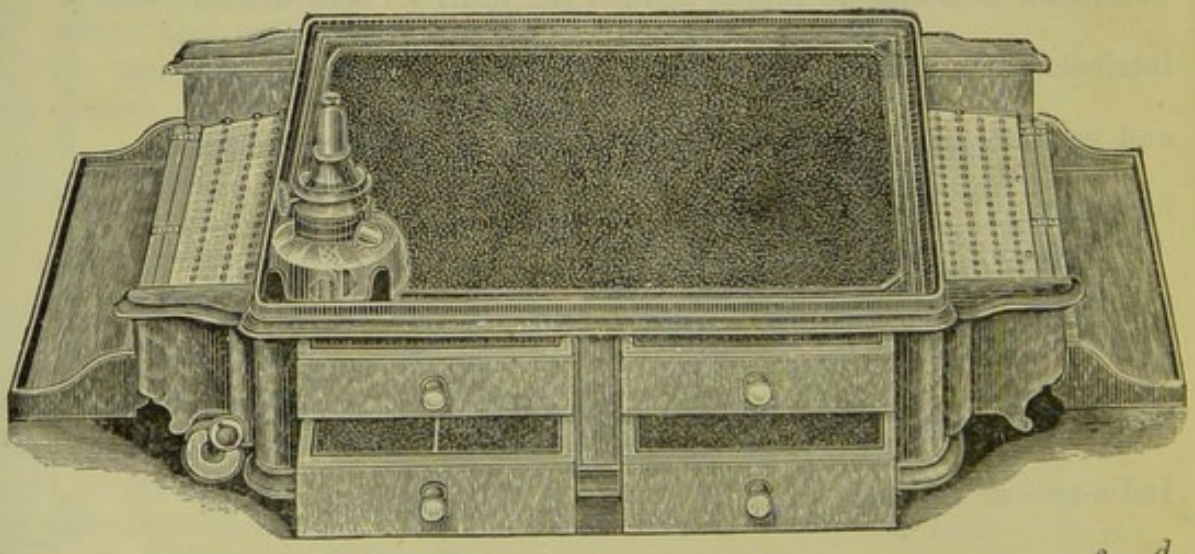
(C. ASH AND SONS'.)



This Bracket can be raised or lowered 24 inches by means of the handle shown in the illustration, and fixed at any point. The horizontal bar can be drawn forward 27 inches, and is controlled by a thumb screw. When drawn out to its fullest extent the Bracket is 49 inches long.

	s.	d.
Bracket, Nickel-plated throughout, with Spirit Lamp	78	0
" " with Allan's Table and Lamp	100	0
" " with Holmes' " "	180	0

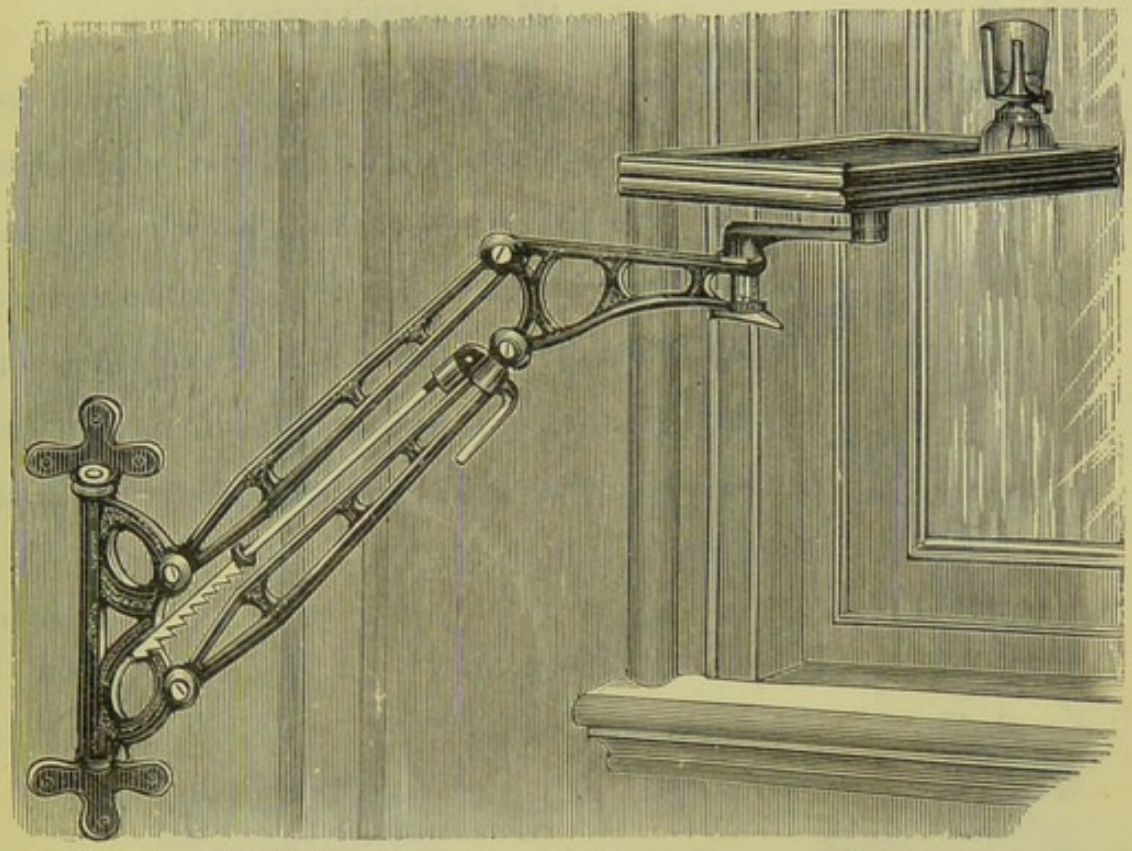
HOLMES' BRACKET TABLE.



	s.	d.
Complete, as illustrated, with Lamp and Shield	120	0

S. S. WHITE'S DENTAL BRACKET.

(LATEST IMPROVED.)

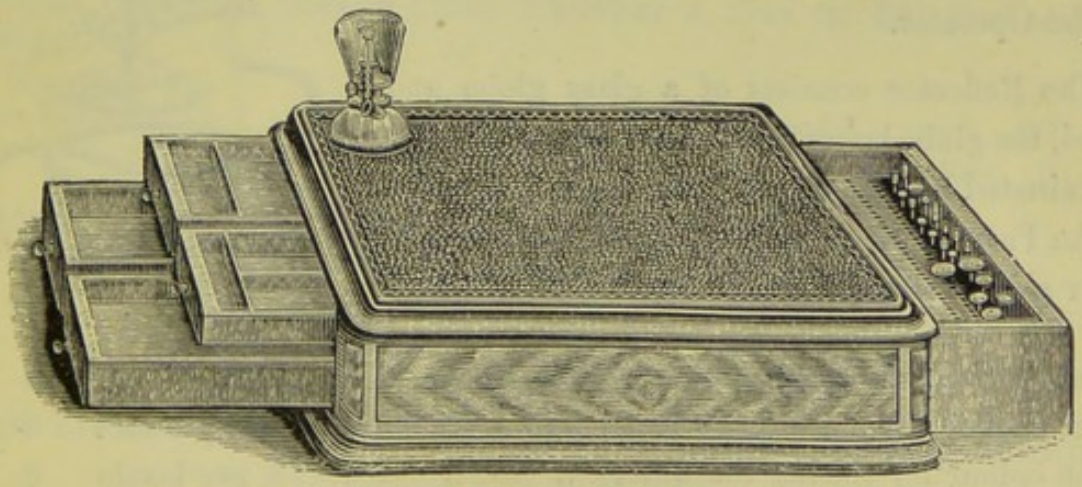


The latest form of this admirable Bracket has a horizontal adjustment of 15 inches, which, with the reach of the pivoted arms, permits it to be swung 45 inches from the wall. The illustration shows the table at its highest position. From this point it can be lowered 19 inches.

Prices:	s.	d.
Bracket Japanned, with Rosewood Table, Lamp and Shield	80	0
" " Allan's " " "	100	0
" " Holmes' " " "	180	0

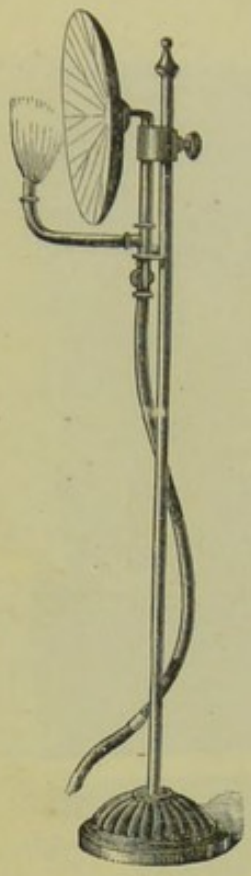
Other styles obtained to order.

ALLAN'S BRACKET TABLE.



	s.	d.
Complete, as illustrated, with Lamp and Shield	48	0

DENTAL REFLECTOR.

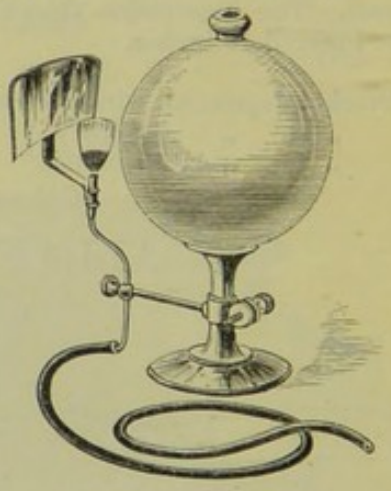


(Mr. STEWART'S.)

Consisting of an Iron Stand and upright 5 feet high, with a corrugated Glass Reflector which slides up and down the stand, and has a lateral movement, so that the light can be directed as may be required. The position of the Reflector does not require to be changed with every movement of the Patient, as the whole face and upper part of the Chair are illuminated.

	s.	d.
Reflector as illustrated	42	0
Holland cover for ditto	2	0

GLOBE REFLECTOR.



This Reflector can be placed on the bracket table attached to the operating chair, or in any other convenient place near the chair.

It gives a soft, steady, clear light, which is not glaring or unpleasant to either the Patient or the Operator.

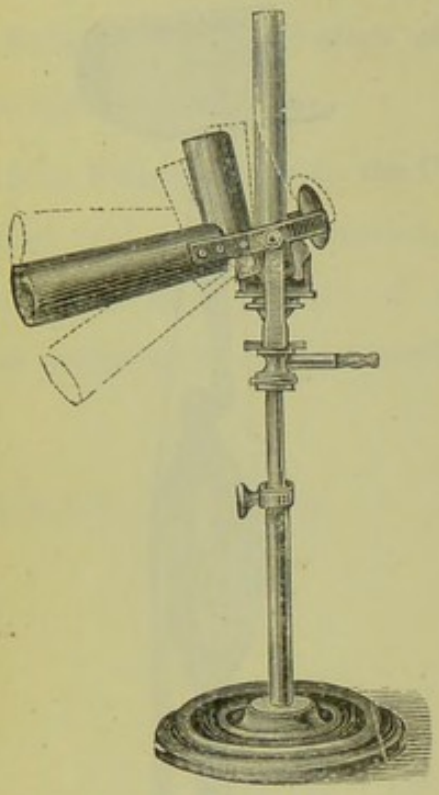
The Reflector consists of a glass globe and stand, the globe being filled with tinted water and illuminated by a jet of gas. The light is directed to the Patient's face by means of a small nickel-plated shield placed on the outer side of the flame.

		s.	d.
Reflector, without India-rubber tubing		15	0
India-rubber tubing, 5 or 10 feet lengths, black ..	per foot	0	6
Green colour for tinting the water	per bottle	0	3

DENTAL REFLECTORS.

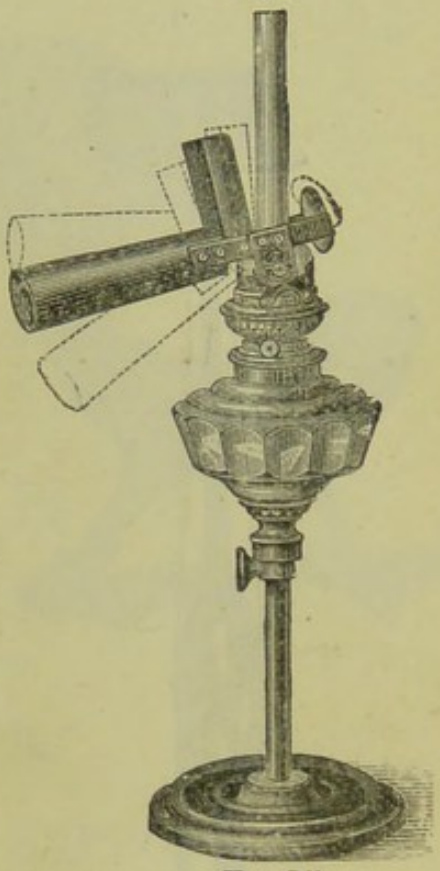
(Dr. TELSCHOW'S.)

Fig. 1.



For Gas.

Fig. 2.



For Oil.

These Reflectors give a very intense and concentrated light, which is confined to the region of the mouth. Their full range, which has been found sufficient for Dental operations, is shown by the dotted lines in the illustrations. The tube containing the lens can be adjusted at any point between these lines by means of a thumb screw, which is placed near the chimney.

When ordering, please state whether a Gas or Oil Reflector is required.

			s.	d.
Price, either kind	(Figs. 1 and 2)	each	40	0
India-rubber Tubing for the Gas Reflectors		per foot	0	6

Other styles, as under, for Oil, supplied to order :—

	s.	d.
Lamp with handsome Bronze Pedestal, mitrailleuse Burner, Reflector, and Globe	55	0
„ with fancy Pedestal, Nickel-plated	55	0
„ with Crystal Vase and Nickel-plated Pedestal ..	45	0

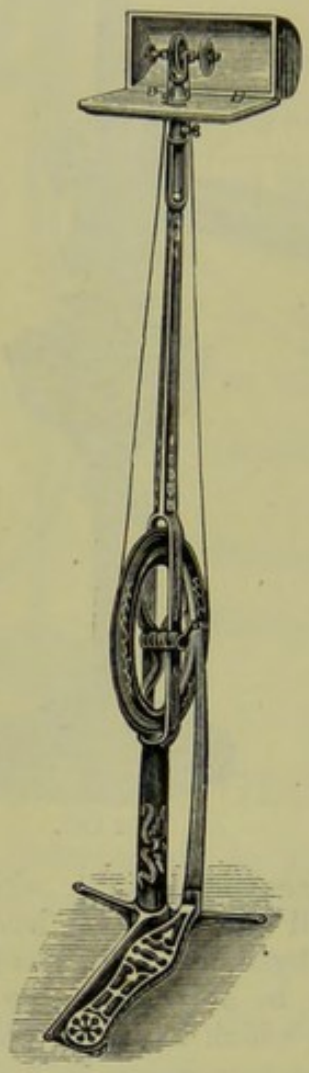
These are adapted for use both as Reflectors and Reading Lamps.

Illustrations sent on application.

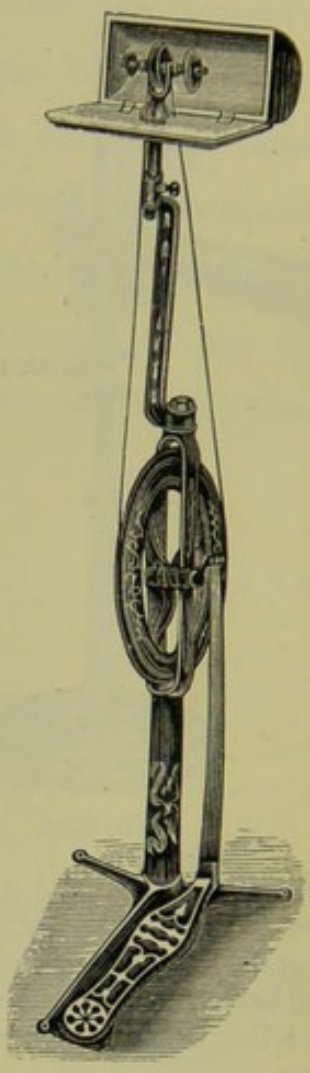
OPERATING-ROOM LATHES.

FOR GRINDING AND POLISHING.

1.



2.



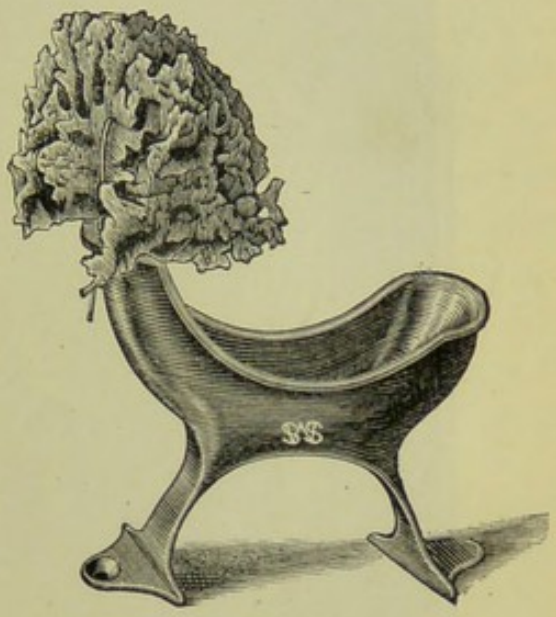
Suitable for light work in the operating-room, or when travelling.

No. 1 is 3 feet 8 inches high to the centre of the pulley-head, and requires the Operator to stand while using it.

No. 2 is 2 feet 11 inches high to the centre of the pulley-head, and, to permit the Operator to sit while using it, the pulley-head has been brought forward 5 inches from the perpendicular line.

	s.	*d.*
No. 1 with set of 3 Corundum Wheels, 1 Brush and Spanner ..	65	0
No. 2 „ 3 „ „ 1 „ „ ..	65	0
Chuck for holding Broaches and Drills, &c.	2	0

DRIP CUP AND SPONGE.

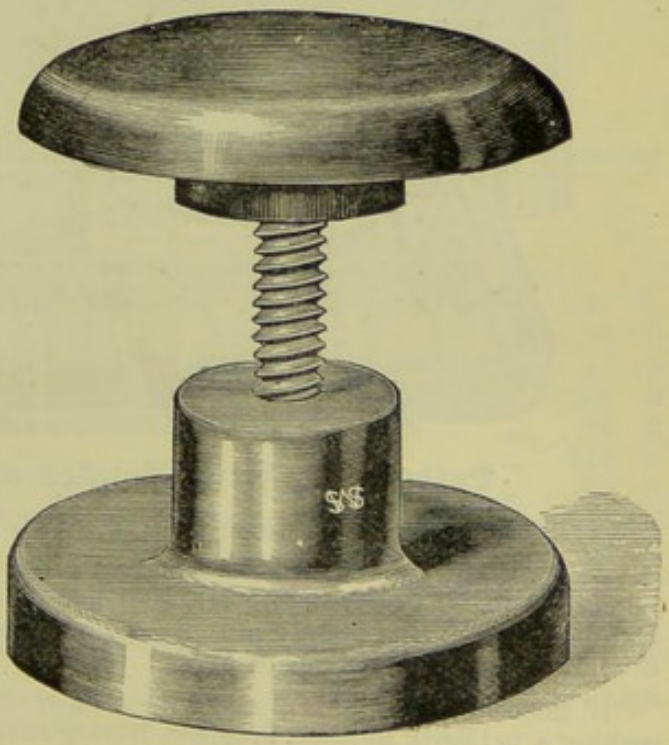


Suitable for the Lathes shown on the opposite page.

It is designed to keep the Corundum wheel wet while in motion, and to catch the drip. Made of cast-iron, and lacquered to prevent rusting.

	s.	*d.*
Complete, with Sponge ..	2	0

REST OR HAND SUPPORT.

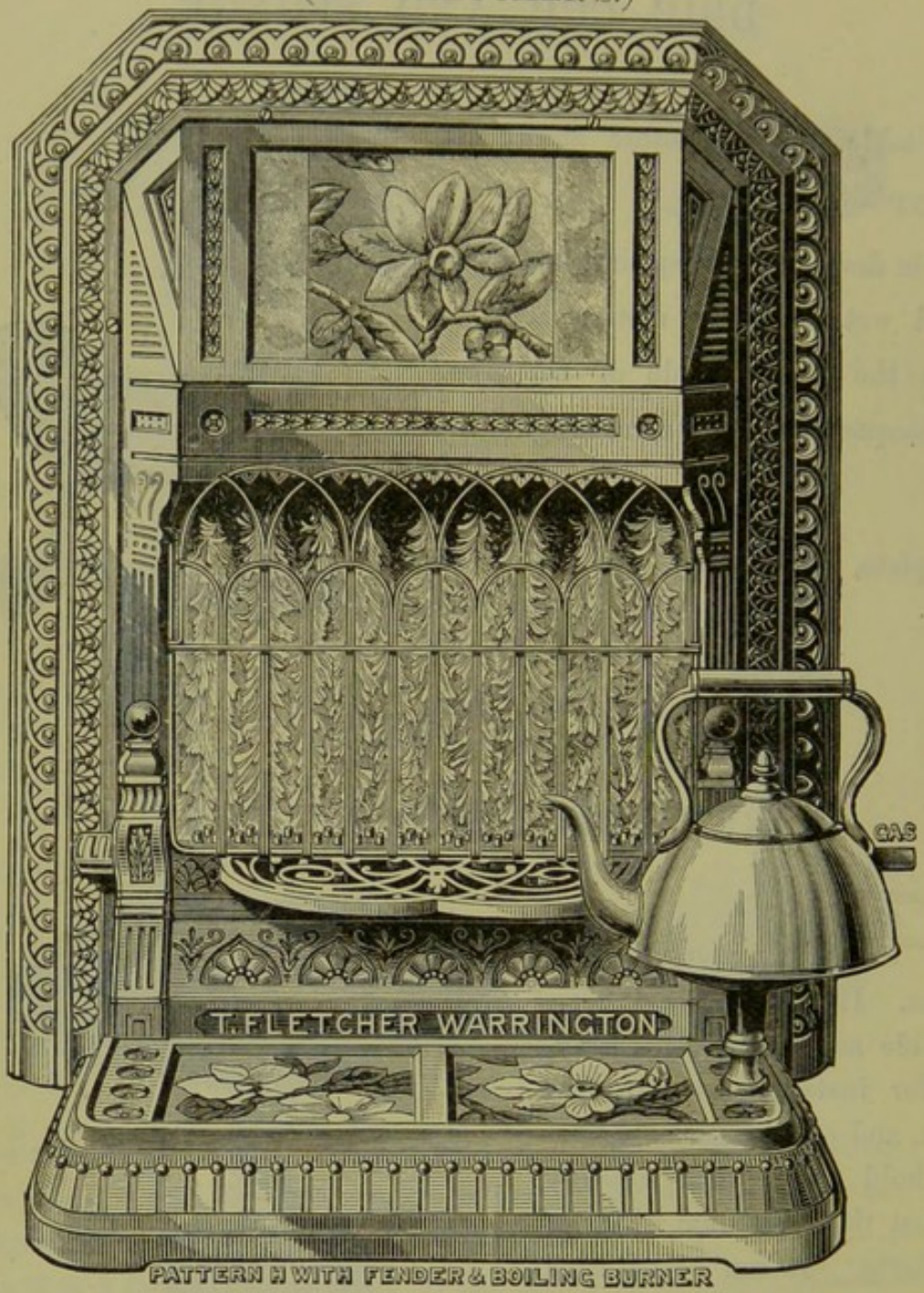


A useful auxiliary to the lathes. It affords an easy, comfortable support for the hand, as, for instance, in grinding teeth, and enables the operator to hold the work steadily against the corundum wheel of the lathe. It can be adjusted to the proper height by means of the screw. Made of metal, japanned.

	s.	*d.*
Complete, as illustrated	1	6

INCANDESCENT ASBESTOS FIRE.

(Mr. FLETCHER'S.)



Pattern H, with Fender and Boiling Burner.

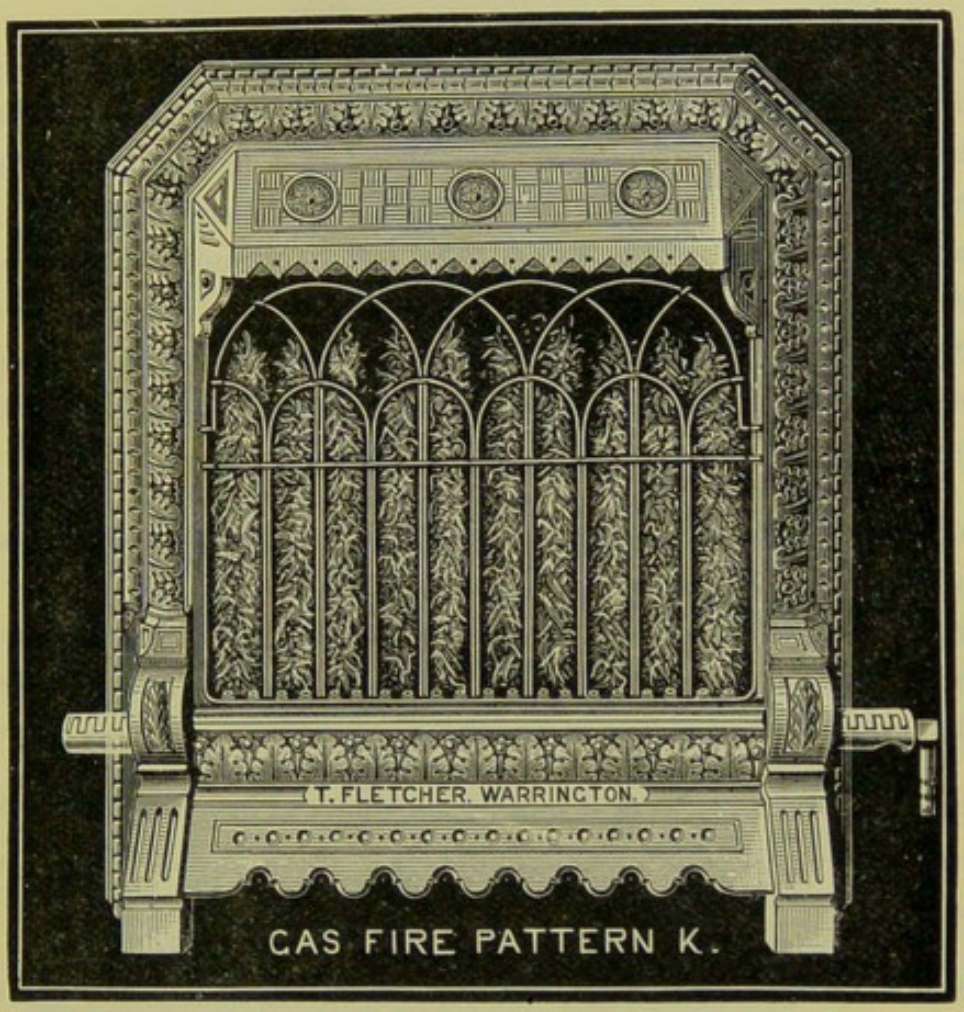
Size : 29 in. high ; 22 in. wide ; 6 in. back to front.

Average Gas Consumption : 20 feet per hour at full power. Designed for heating rooms up to 16 feet square. Mr. Fletcher says : "This form is specially suitable for Dentists' use." Gas supply pipe fixed on either side as ordered. Size of clear open fire : 13 inches wide ; 8 inches high.

If the coal fire-grate is closed with a sheet of iron fitted in, this will stand in front, making a perfectly finished fireplace, having every appearance of being built in.

INCANDESCENT ASBESTOS FIRE.

(Mr. FLETCHER'S.)



Size: 15 in. wide; 17½ in. high; 5¼ in. back to front.

Average Gas Consumption: 17 feet per hour at full power. Suitable for heating rooms about 14 feet square.

Gas supply pipe fixed on either side as ordered.

	Prices:			s.	d.
Pattern H.	Fine cast	.. ..	each	40	0
„	With Tiles, in canopy	.. ..	„	48	0
„	Enamelled Black and Bronze, with Tiles	.. .. ..	„	62	0
„	Enamelled, with bright mouldings, &c., best finish	.. ..	„	74	0
„	Electro Bronze, very handsome	.. ..	„	110	0
Fender	to match, with hand-painted Tiles, fine cast	.. .. ..	„	11	0
„	„ and Boiling Burner, as engraved	.. .. ..	„	15	0
„	„ Electro Bronze	.. ..	„	30	0
Pattern K.	Fine cast	.. ..	„	21	0
„	Enamelled Black	.. ..	„	32	0
„	Enamelled bright Black, with dead Panels	.. .. ..	„	40	0

For smaller and cheaper patterns, prices from 15*s.* each, see Mr. Fletcher's list, which will be sent on application.

DENTAL INSTRUMENTS.

C. Ash and Sons have for many years given their special attention to this branch of their business, knowing how much depends upon the shape of each Instrument, the quality of the steel used in its manufacture, and the care which is exercised in the hardening and tempering; and so confident are they of the excellent quality of their Instruments, that they will be most ready to exchange any sent from their Establishment, which may be found to be defective either in material, construction, or degree of hardness, provided such Instruments are returned soon after they are purchased.

In this Edition the names and prices of many new Instruments have been added, and C. Ash and Sons beg to call special attention to the immensely increased variety they keep in stock in order to suit the requirements of all their Customers, and they invite Dentists to inspect the same at their convenience.

Having made considerable improvements as to form, temper, and finish, they feel no hesitation in saying that for quality and price they are unequalled.

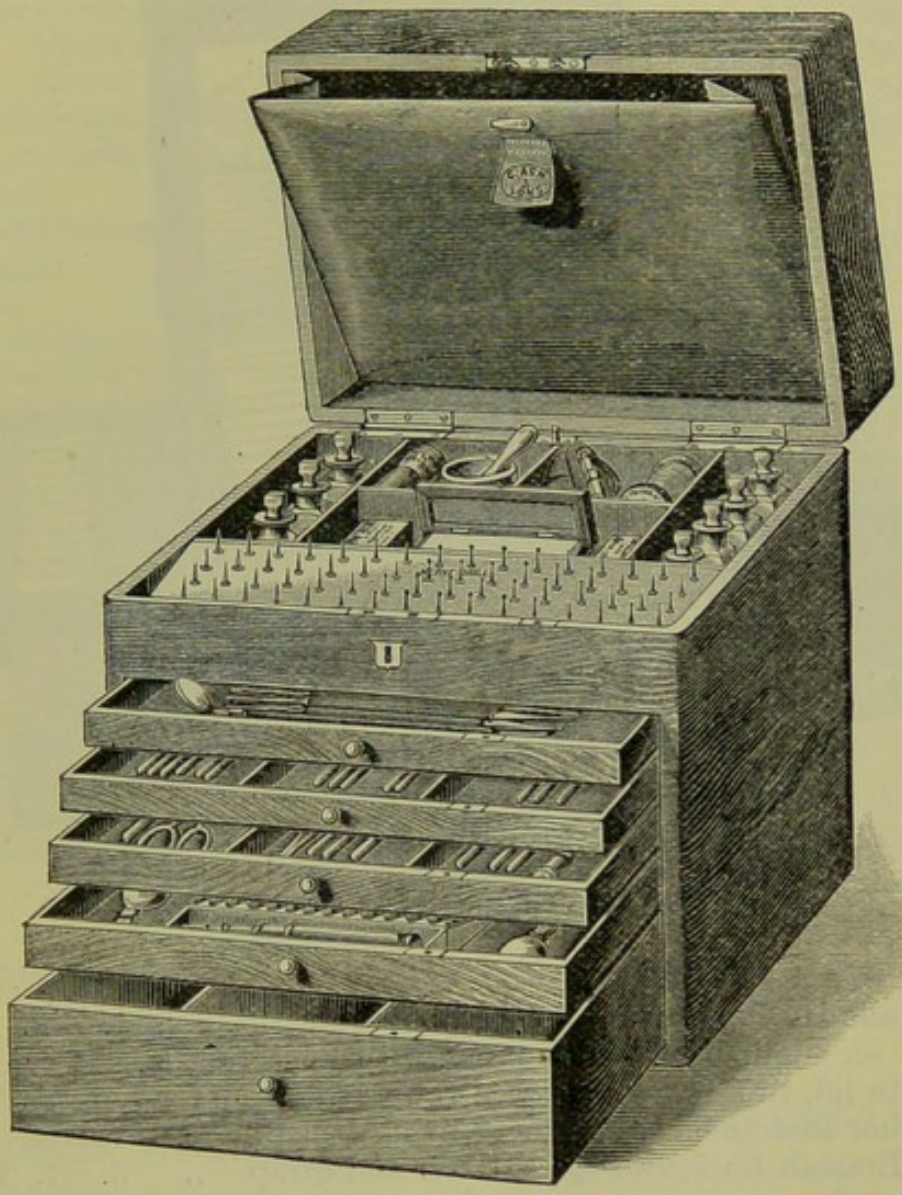
The following Engravings represent some of the various Instruments made under their direction. They have been drawn with great care, so that the form or shape of each Instrument is accurately represented, and in the case of Stoppers, Scalers, Excavators, Drills, Burnishers, &c., the *actual* size is also given, so that the exact form and size of the Instrument can be seen as well from the Engraving as from the Instrument itself.

Dentists, when ordering, have only to give the page in the Catalogue and the number of the Illustration, in order to receive the exact Instrument they desire.

Cases of Instruments made and fitted up to special directions.

Dental Instruments Repaired or Re-polished with the least possible delay.

INSTRUMENT CABINET.



11¾ inches long; 8¾ wide; 10 deep outside measurement.

Made in mahogany, lined throughout with blue cloth, and fitted with lock and key.

It has five drawers, varying in depth from ⅜ to 2¼ inches, designed to hold all kinds of instruments, with steel handles; also coffer-dam appliances, gum and foil scissors, syringe, stoppings of all kinds, amadou, canes, and other sundries.

Drawer No. 4 is furnished with rack for Snow and Lewis's Automatic Mallet and Points.

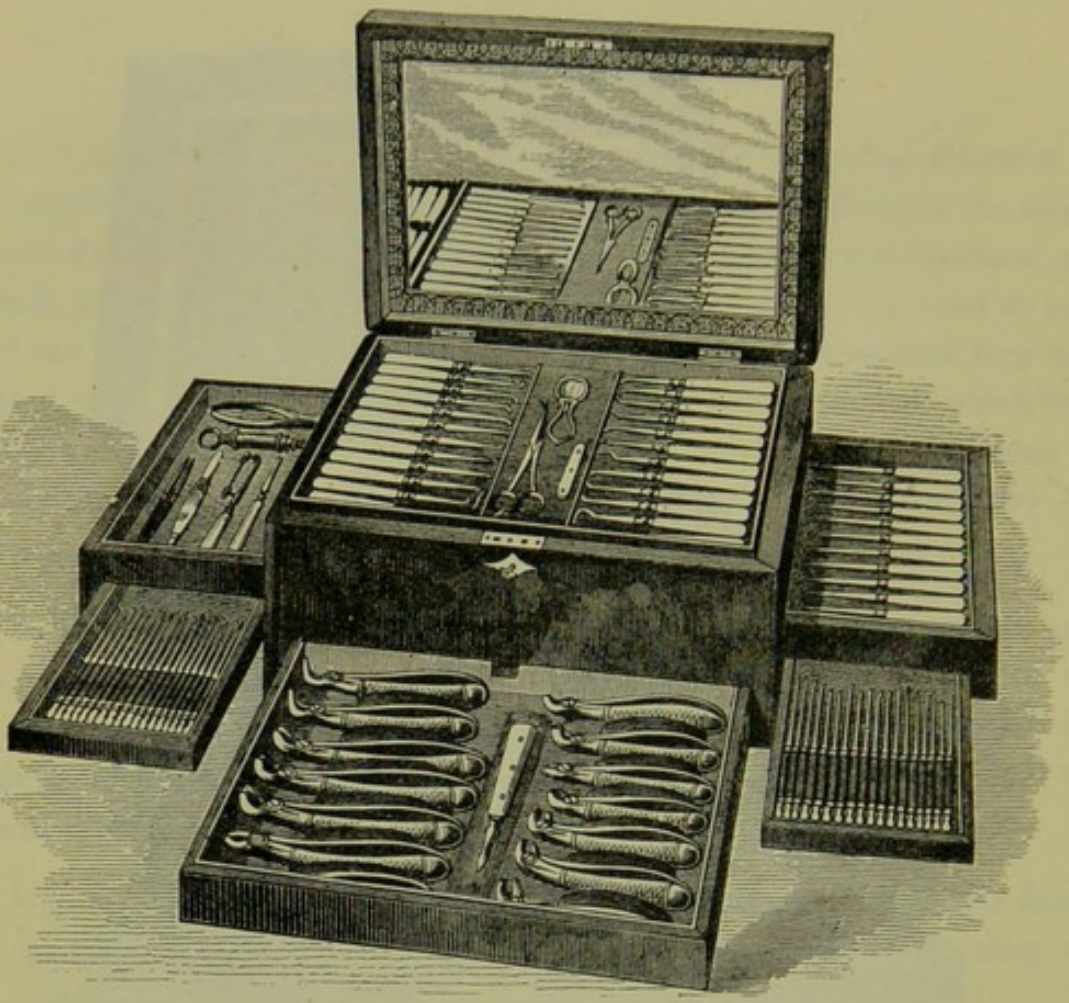
There is a pocket in the lid suitable for Foils, Rubber-dam, Bibulous Paper, &c.

The upper part of the case is provided with rack for Engine Instruments, and divisions for small boxes, bottles, Arkansas Stone, Pestle and Mortar, Mixing Slab, &c.

If required with instruments, the selection is left to the purchaser.

	s.	*d.*
Cabinet without instruments	**45**	**0**

Fig. 1.



Dental Case in Coromandel or Rosewood, 15½ in. by 11½ in. and 8 in. high, bound with brass, with Reflecting Mirror or Glass in lid, two Trays and five Drawers fitted up for Forceps and other Instruments, Foils, &c., lined with Blue Silk Velvet. With Bramah Lock, two Keys, Cover and Strap .. .. .. *s.* 250 *d.* 0

Forceps for Upper Incisors and Canines, Nickel-plated	(Fig. 1, p. 74)	9	3
„ Lower „ „ „	(„ 4, „ 74)	9	3
„ Upper Bicuspids .. .. „	(„ 7, „ 75)	9	3
„ Lower „ .. .. „	(„ 8, „ 75)	9	3
„ Upper Molars, right .. „	(„ 17, „ 77)	10	3
„ „ „ left .. „	(„ 18, „ 77)	10	3
„ Lower „ .. .. „	(„ 21, „ 78)	10	3
„ Upper Wisdom .. .. „	(„ 19, „ 77)	10	3
„ Lower „ .. .. „	(„ 20, „ 77)	10	3
„ Upper Stumps .. .. „	(„ 30, „ 79)	9	3
„ Lower „ .. .. „	(„ 31, „ 79)	9	3
„ Upper Incisors and Canines (Children's), Nickel-plated	(„ 37, „ 80)	8	3

Continued.

		s.	d.
Forceps for Lower Incisors (Children's) Nickel-plated	(Fig. 38, p. 80)	8	3
„ Upper Molars „ „	„ 39, „ 80)	9	3
„ Lower „ „ „	„ 40, „ 80)	9	3
Excising Forceps, straight „ „	„ 57, „ 84)	8	9
Elevator, straight, in Ivory octagon handle & Silver	„ 4, „ 109)	7	6
19 Stoppers „ „ assorted forms		130	0
4 Enamel Cutters „ „ „			
1 Burnisher „ „	(Fig. 20, p. 210)		
12 Scalers „ „	(Set B, „ 113)	50	0
36 Burs, Drills, and Excavators, Steel, Nickel-plated, assorted ..		37	6
Mouth Mirror, Nickel-plated (Size 3)	(Fig. 58, p. 238)	11	0
Mouth Saw, in Ivory handle	„ 245)	10	6
Scissors, 8-inch, for cutting Foils, plated	„ 219)	6	0
Ditto 4½ inch, curved, for cutting Gum, plated	„ 244)	4	3
Gum Lancet, 3-bladed, in Ivory	„ 242)	5	6
Spatula, with Ivory handle, Mr. Rowney's ..	„ 223)	3	3
Tweezers and Plugger, Steel octagon, Nickel-plated	(Fig. 11, „ 216)	7	9
Syringe, with 2 Nozzles, plated	„ 3, „ 226)	9	0
File Carrier in Ebony Handle	„ 291)	6	6
Nerve Instrument Holder, Ivory Handle	„ 14, „ 124)	3	0
Assortment of Saw Blades, Nerve Instruments, Separating Files and Polishing Tapes ..	.. .. ..	7	9
Case complete		700	0

STUDENTS' ROLL-UP LEATHER CASE

s. 10 *d.* 6

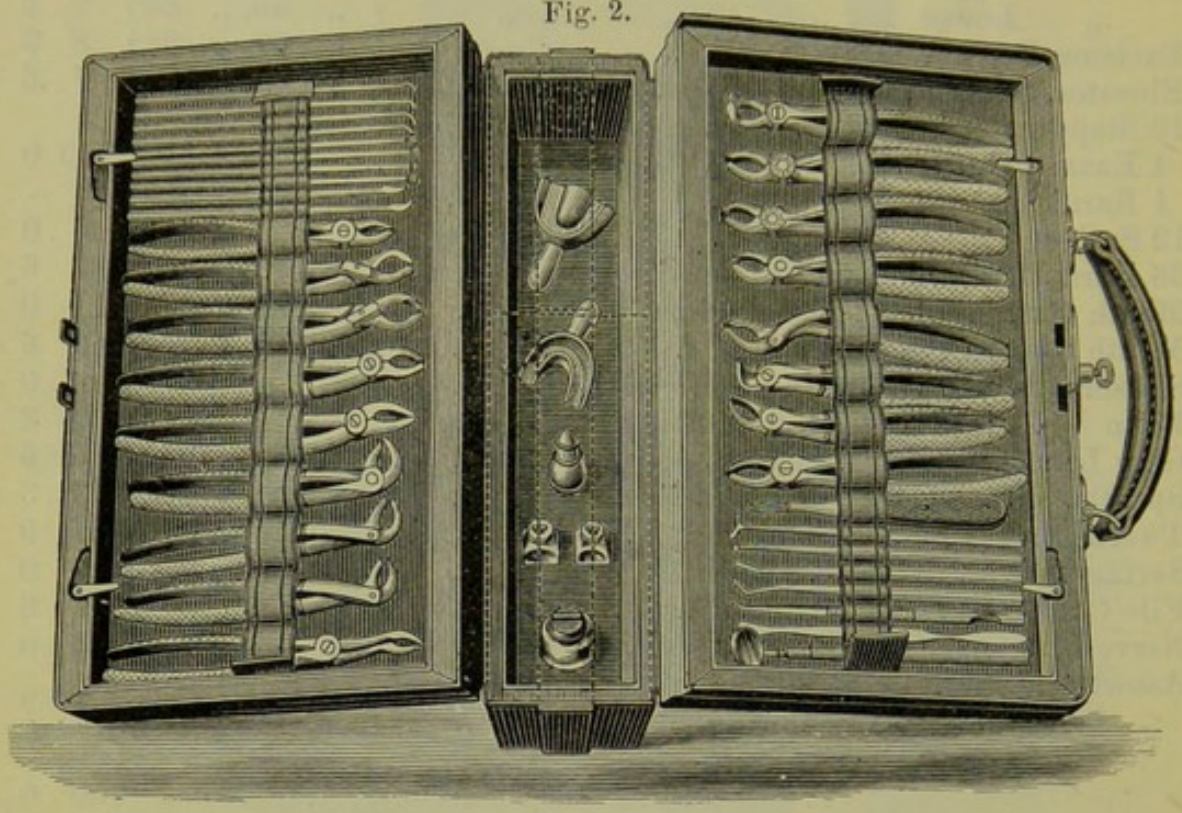
To hold the following instruments :—

	s.	d.
1 Mouth Mirror in Ebony handle	7	0
1 Bistoury and Tenotome Lancet in Tortoise-shell handle ..	7	0
1 Plugging Tweezers, Steel, Nickel-plated	7	9
2 Probes „ „	2	0
1 Spatula „ „	2	1
28 Burs, Drills, and Excavators „	28	6
16 Scalers, Enamel Cutters and Stoppers, Nickel-plated ..	24	0
1 Burnisher, double-headed „	1	9
1 Set Howe's Scalers „	6	0
1 dozen Dividing Files, Stubs'	3	3
½ „ Finishing „ „	2	0
Polishing Tapes, &c.	2	2
Complete	104	0

	s.	d.
Students' Roll-up Leather Case Without Instruments	10	6

PORTABLE INSTRUMENT CASE.

Fig. 2.



14 inches long; 11 inches deep; full width when open 20 inches.

With partitions as illustrated and Tray underneath.

Adapted to hold 16 Forceps, Stump Elevator, Mouth Mirror, Gum Lancet, and an assortment of Burs, Drills, Excavators, Stoppers, Scalers, &c., and provided with Well for Impression Trays, Stoppings, Bottles, and useful Sundries.

This Case is specially designed for the Dental Surgeon when visiting. If required with Instruments the selection is left to the purchaser.

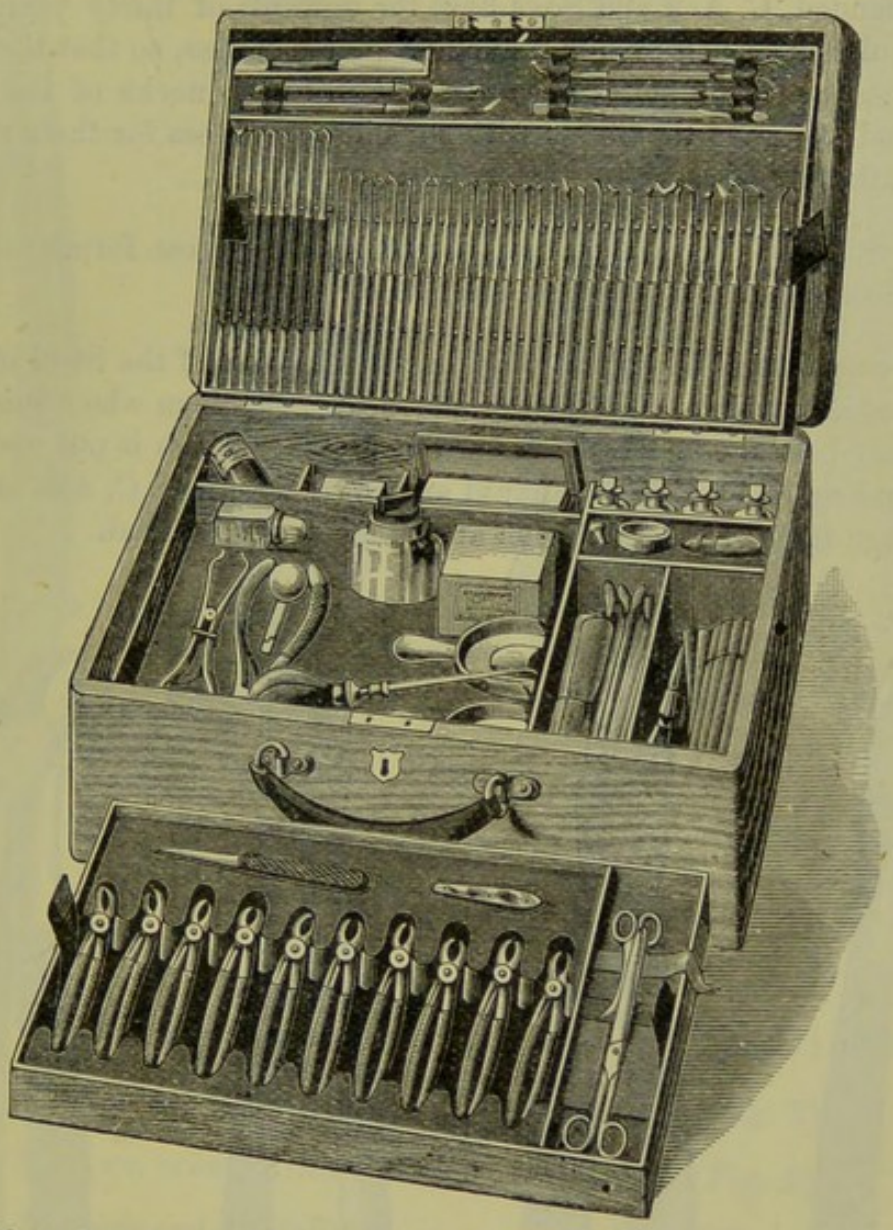
	s.	d.
In Morocco, with Nickel-plated Mounts and Lock and Key, without Instruments	60	0

Portable Dental Case, No. 7, with handles, covered with Morocco Leather, and lined with velvet. Dimensions when closed, 12 in. by 9 in., and 3½ in. deep, with compartments for Forceps and other Instruments, Foils, Bottles, &c., with padded lids to protect Instruments. Lock and Key. from

	s.	d.
	37	6

C. ASH AND SONS'
PORTABLE OR STUDENTS' INSTRUMENT CASE.

Fig. 5.



16 inches long; 11 wide; 5½ deep, outside measurement.

Made of Mahogany and provided with two Trays for Forceps and other Instruments, underneath which are compartments for Bottles, Files, Canes, &c. There is also a pocket in the Lid to hold Foils, Bibulous Paper, &c. Lined throughout with blue cloth, and fitted with lock, two keys, and handle in front.

The case is equally suitable for the Operating Room, for Visiting, or for Dental Students at the Hospitals.

If required with instruments the selection is left to the purchaser.

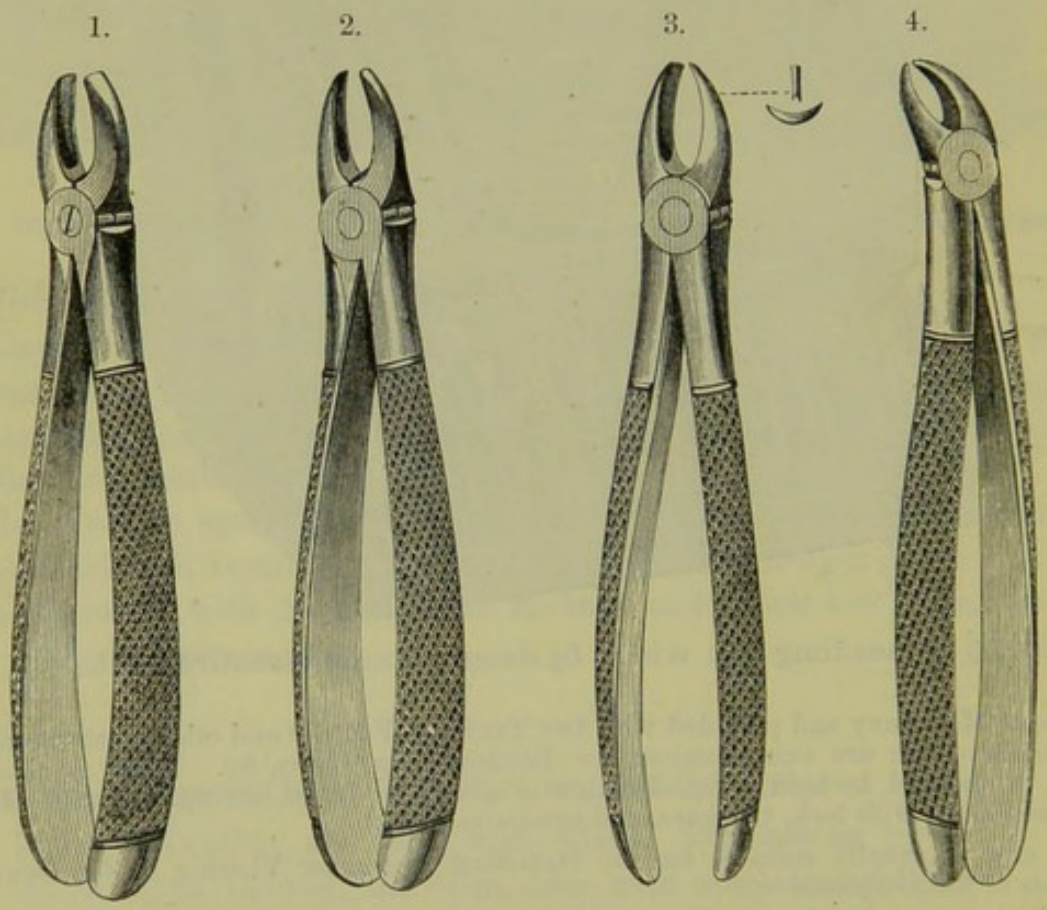
	s.	*d.*
Price, without Instruments	70	0
Leather Cover for protecting the wood, extra	11	6

C. ASH AND SONS' FORCEPS.

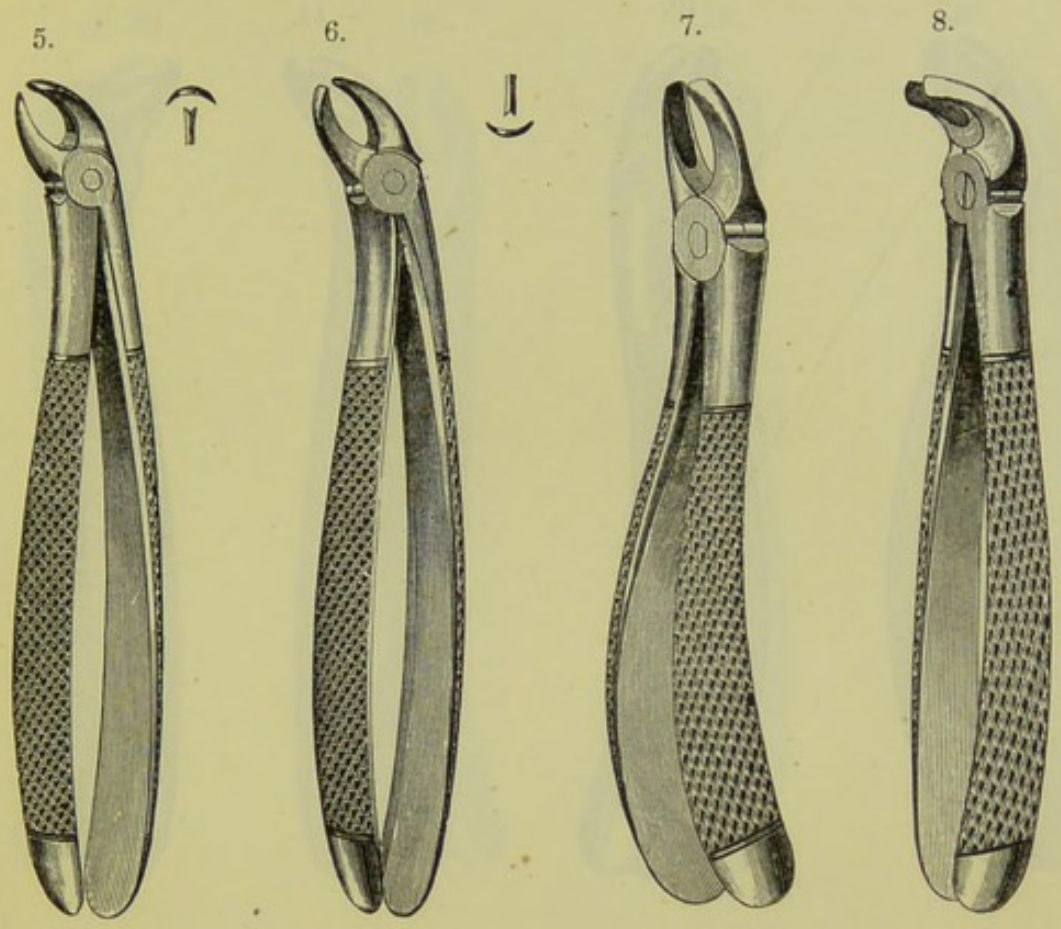
As the successful operation of extraction depends so much upon the exact adaptation of the mouths of Forceps to the particular Tooth for which they are intended, C. Ash and Sons have for upwards of thirty years given their particular attention to this branch of their business, so that their Forceps, in consequence of being accurately fitted to the necks of the Teeth, will be found to grasp the fangs with sufficient firmness for their removal without the danger of crushing the crowns.

Their Stock of Forceps principally consists of those forms which are used and recommended by the best operators.

Great care also is taken, not only in the selection of the Steel of which they are made, but also in hardening and tempering them when finished, so that they may bear the necessary amount of pressure which is put upon them without bending or breaking. Should any prove defective, C. Ash and Sons will exchange them if returned soon after they are purchased.



N.B.—The right or left side *in* the Patient's mouth is meant when speaking of right and left Forceps in the following pages.

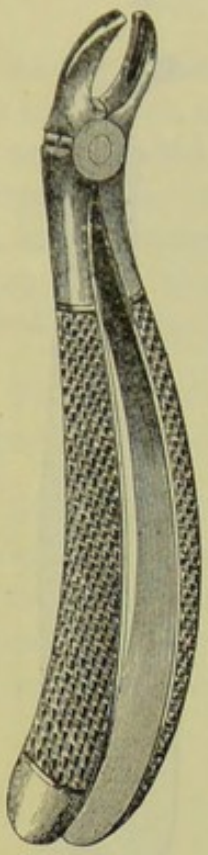


FORCEPS.

		s.	d.
For Upper Centrals and Canines	(Fig. 1) each	8	0
„ „ Laterals and Bicuspids	(Fig. 2) „	8	0
„ „ Incisors, crowded internally or externally	(Fig. 3) „	8	0
„ Lower Incisors and Canines	(Fig. 4) „	8	0
„ „ Incisors, crowded internally	(Fig. 5) „	8	0
„ „ „ „ externally	(Fig. 6) „	8	0
„ Upper Bicuspids for either side	(Fig. 7) „	8	0
„ Lower Bicuspids „	(Fig. 8) „	8	0

Nickel-plated, extra each, 1/3.

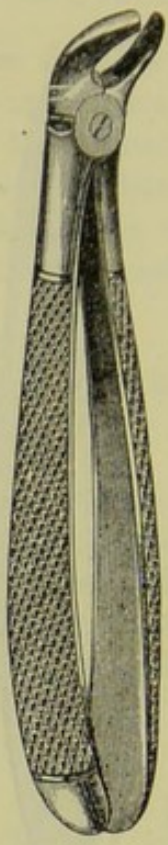
9.



10.



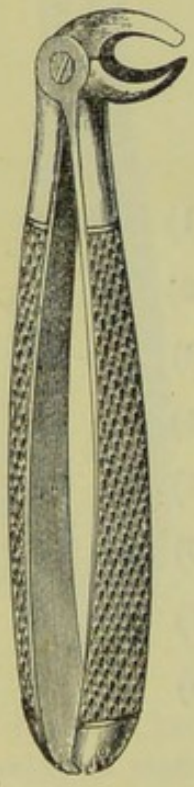
11.



12.



13.



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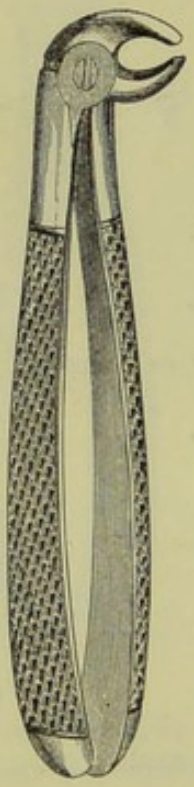

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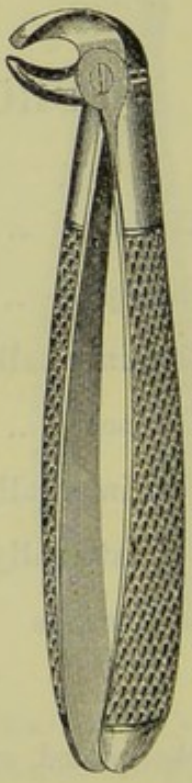

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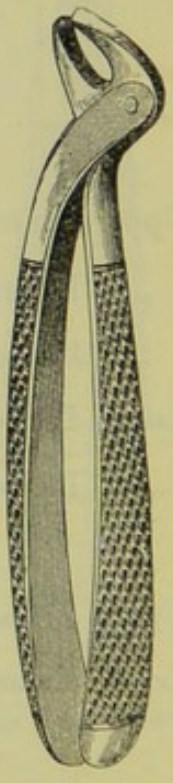
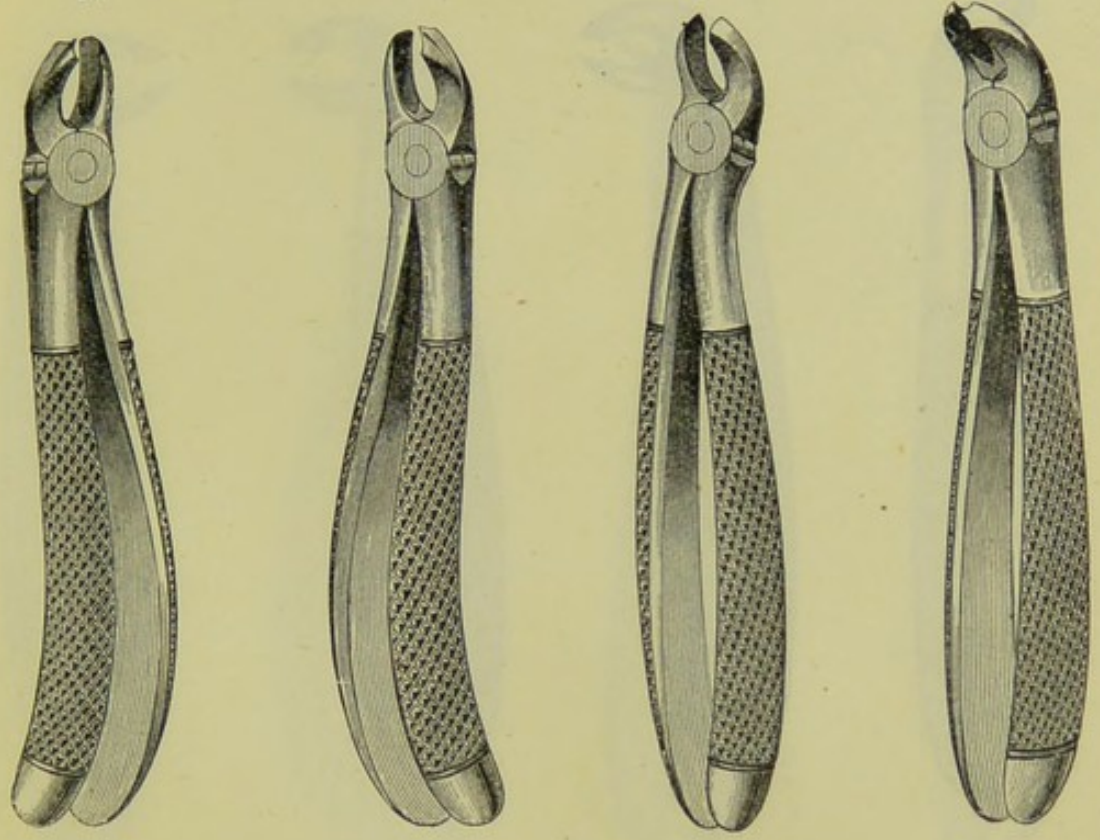


17. 18. 19. 20.



FORCEPS.

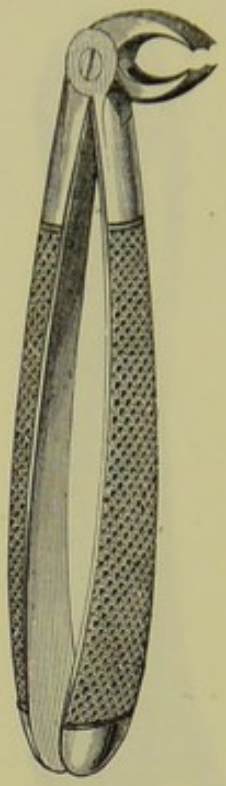
				s.	d.
For Upper Bicuspids, right	(Fig. 9)	each		8	0
„ „ Bicuspids, left	(Fig. 10)	„		8	0
„ Lower Bicuspids, right	(Fig. 11)	„		8	0
„ „ Bicuspids, left	(Fig. 12)	„		8	0
„ „ Bicuspids, straight (Hawk's Bill)	(Fig. 13)	„		8	0
„ „ Bicuspids, right „	(Fig. 14)	„		8	0
„ „ Bicuspids, left „	(Fig. 15)	„		8	0
„ „ Bicuspids (Box joint)	(Fig. 16)	„		8	0
„ Upper Molars, right	(Fig. 17)	„		9	0
„ „ Molars, left	(Fig. 18)	„		9	0
„ „ Wisdom, for either side	(Fig. 19)	„		9	0
„ Lower Wisdom „	(Fig. 20)	„		9	0

Nickel-plated, extra each, 1/3.

21.



22.



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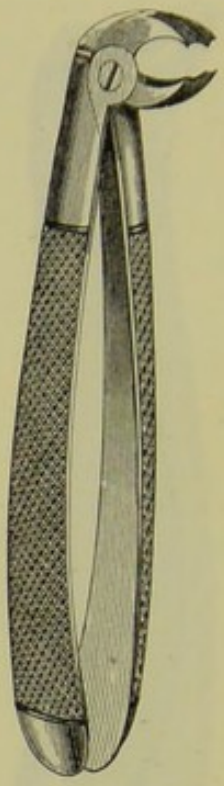

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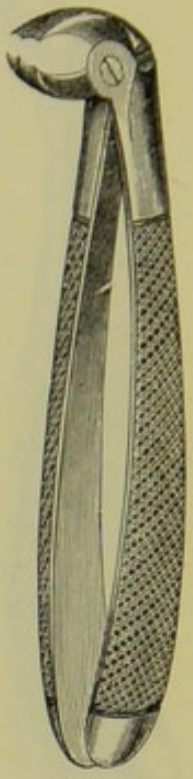

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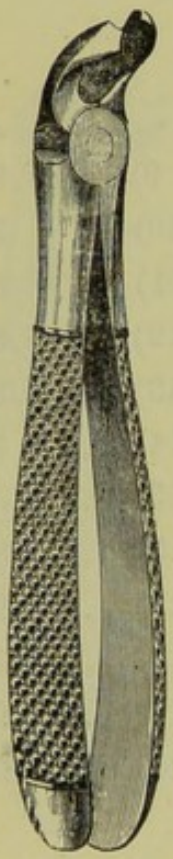
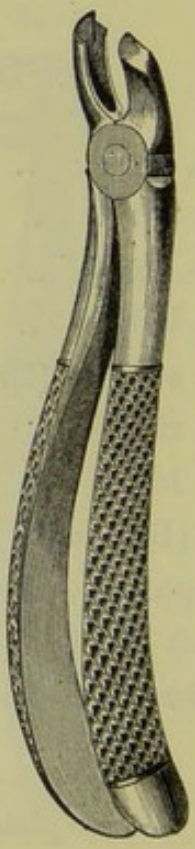


26.



27.



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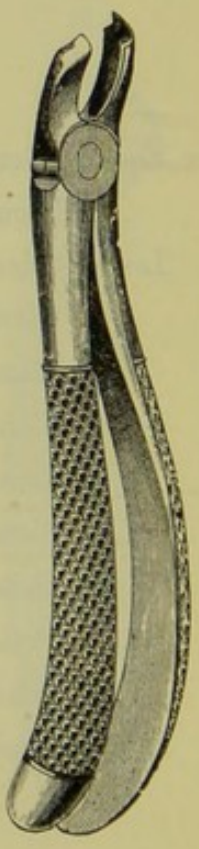
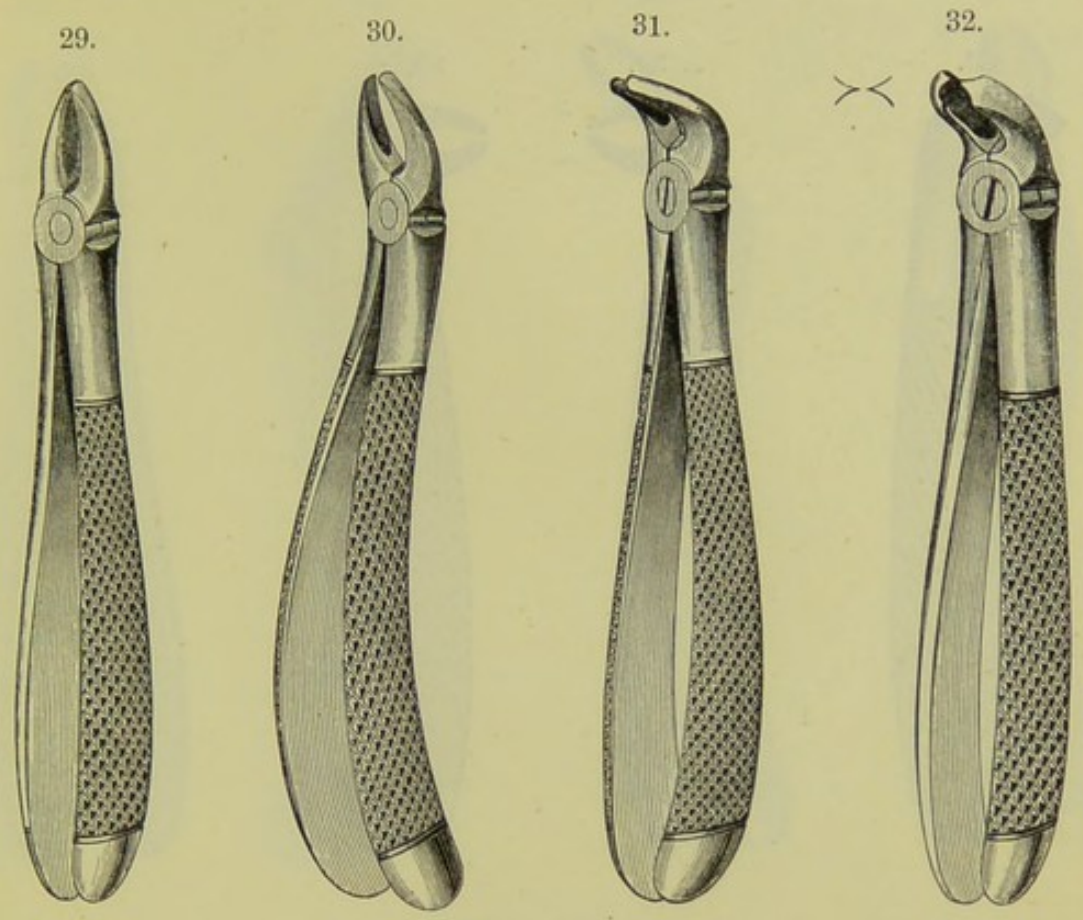


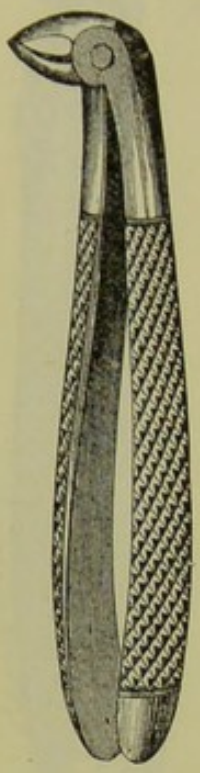


FORCEPS.

		s.	d.
For Lower Molars, on either side	(Fig. 21) each	9	0
,, ,, Molars, straight (Hawk's Bill)	(Fig. 22) ,,	9	0
,, ,, Molars, right ,, ...	(Fig. 23) ,,	9	0
,, ,, Molars, left ,, ...	(Fig. 24) ,,	9	0
,, ,, Molars, right, ordinary	(Fig. 25) ,,	9	0
,, ,, Molars, left ,, ...	(Fig. 26) ,,	9	0
,, Upper Molar Stumps, right	(Fig. 27) ,,	9	0
,, ,, Molar Stumps, left	(Fig. 28) ,,	9	0
,, ,, Stumps, straight for either side	(Fig. 29) ,,	8	0
,, ,, Stumps, curved ,, ...	(Fig. 30) ,,	8	0
,, Lower Stumps ,, ...	(Fig. 31) ,,	8	0
,, ,, Molar Stumps ,, ...	(Fig. 32) ,,	9	0

Nickel-plated, extra each, 1/3.

33.



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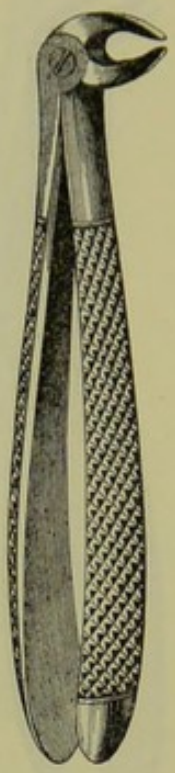

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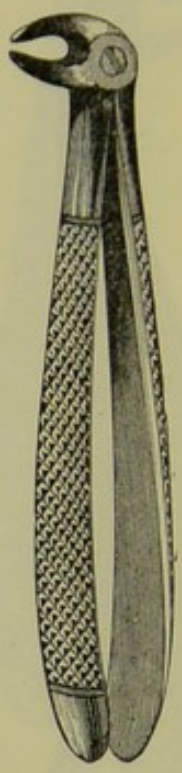

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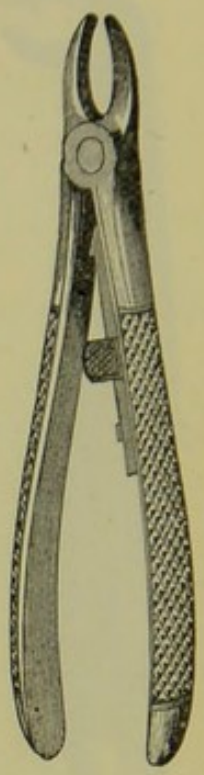

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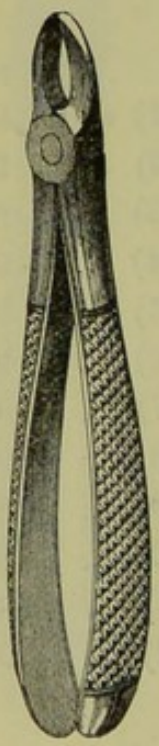

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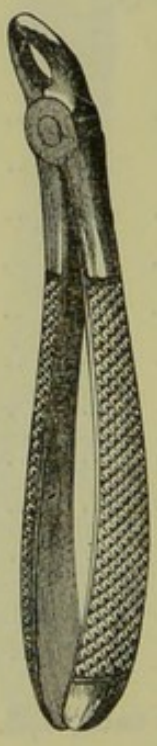

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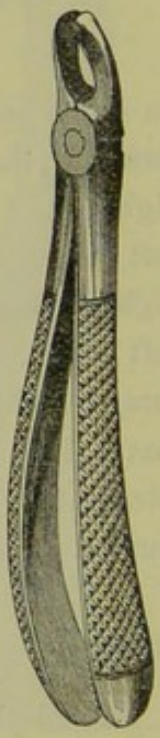
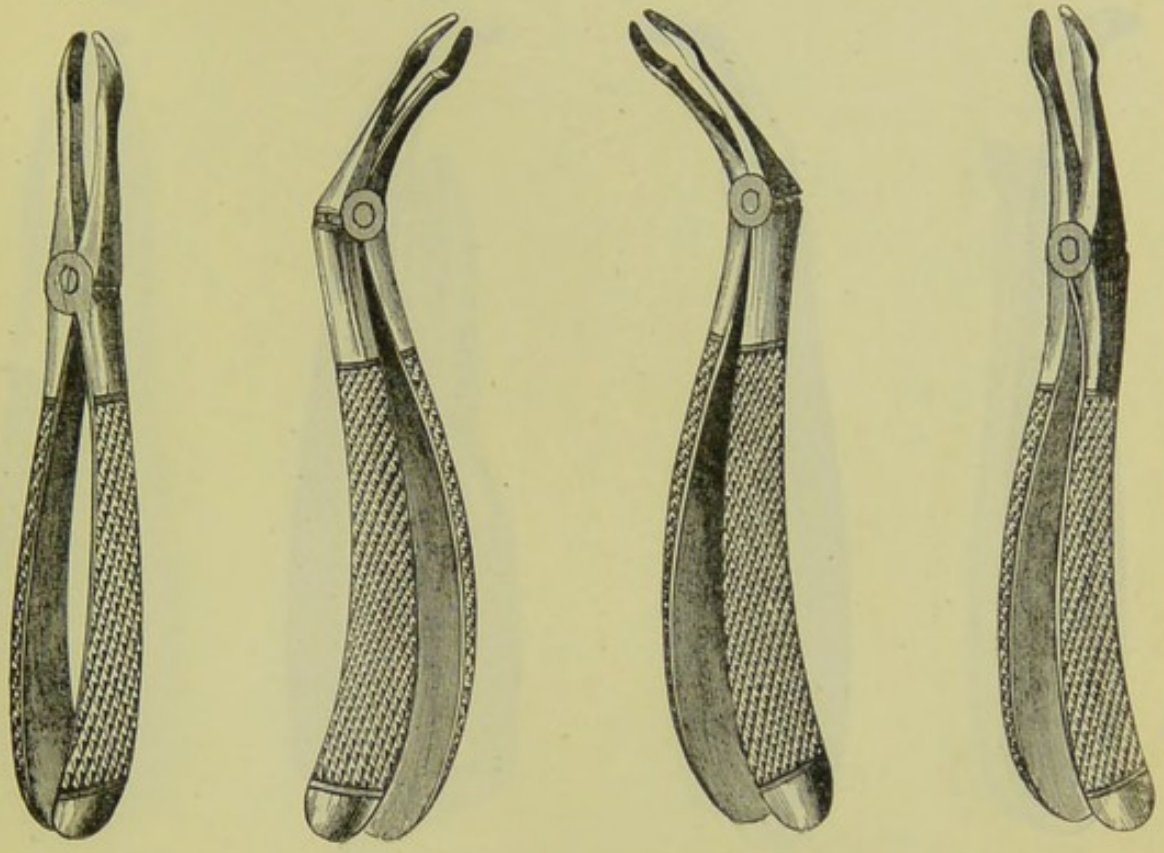


40.



41. 42. 43. 44.



FORCEPS.

		s.	d.
For Lower Stumps, straight (Hawk's Bill)	(Fig. 33) each	8	0
,, ,, Stumps, right ,, ...	(,, 34) ,,	8	0
,, ,, Stumps, left ,, ...	(,, 35) ,,	8	0
Alveolar Forceps (Mr. Cattlin's), with File-cut and Saw-edged beaks, for enlarging the opening and cutting deeply into the Alveolus, so as to grasp firmly teeth which are much decayed	(Fig. 36) each	10	6

(FORCEPS FOR CHILDREN'S TEETH.)

For Upper Incisors and Canines	(Fig. 37) each	7	0
,, Lower Incisors and Canines	(,, 38) ,,	7	0
,, Upper Molars, for either side	(,, 39) ,,	8	0
,, Lower Molars ,, ...	(,, 40) ,,	8	0
,, ,, Molars (Hawk's Bill)	,,	8	0

(FORCEPS WITH LONG BEAKS.)

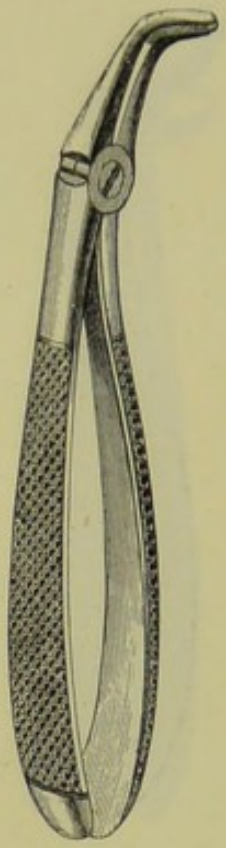
For Upper Stumps, straight	(Fig. 41) ,,	8	0
,, ,, Stumps, left	(,, 42) ,,	8	0
,, ,, Stumps, right	(,, 43) ,,	8	0
,, ,, Stumps, curved	(,, 44) ,,	8	0

Nickel-plated, extra each, 1/3.

45.



46.



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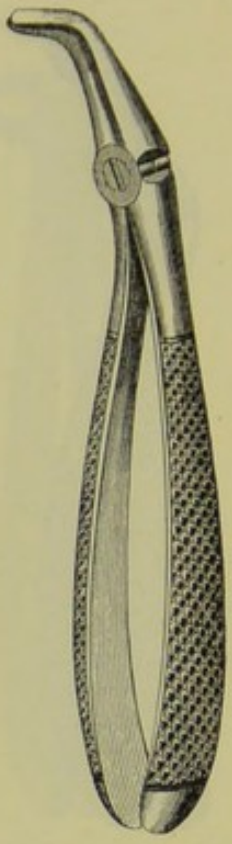


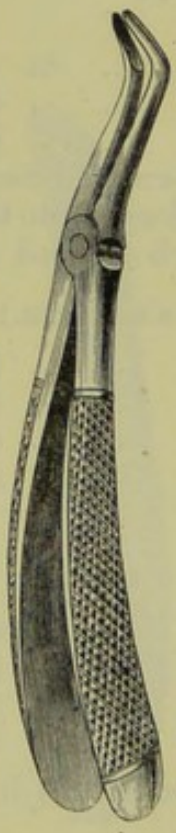
48.



49.



50.



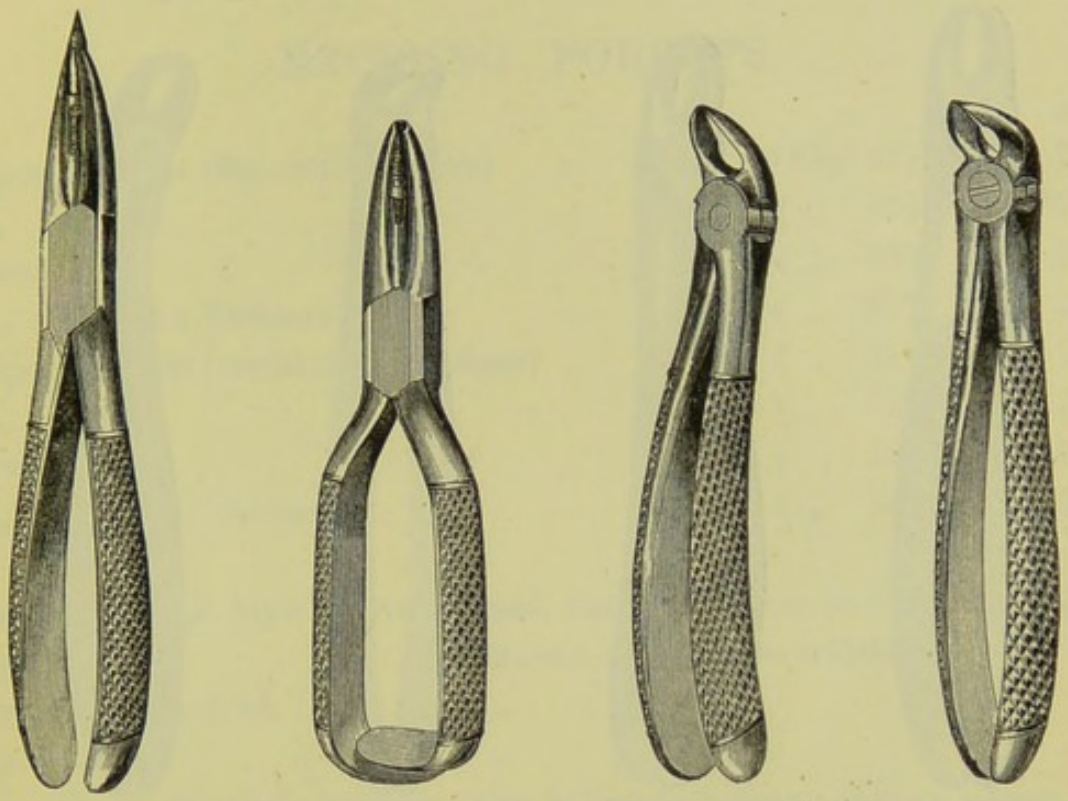
51.



52.



53. 54. 55. 56.



FORCEPS.

(WITH LONG BEAKS.)

		s.	d.
For Lower Stumps, on either side	(Fig. 45) each	8	0
„ „ Stumps, right	(„ 46) „	8	0
„ „ Stumps, left	(„ 47) „	8	0
„ „ Stumps, curved, for either side	(„ 48) „	8	0
„ Upper Stumps (double bend), straight handles for either side	(„ 49) „	8	0
„ „ Stumps „ curved handles, do. ..	(„ 50) „	8	0
„ „ Stumps (Bayonet), narrow beaks, do. ..	(„ 51) „	8	0
„ „ Stumps „ broad beaks	(„ 52) „	8	0
Screw Forceps (for Stumps), straight handles ..	(„ 53) „	10	6
„ „ (for Stumps), bent handles	(„ 54) „	10	6
Splitting „ for separating Upper Molar Roots	(„ 55) „	8	0
„ „ for separating Lower Molar Roots	(„ 56) „	8	0

Nickel-plated, extra each, 1/3.

57.



58.



59.



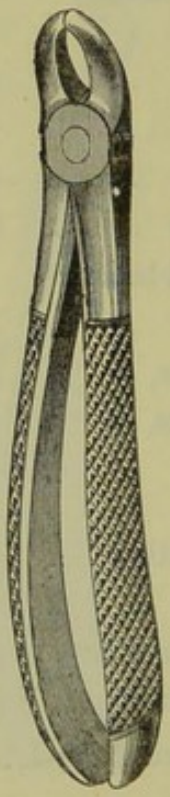
60.



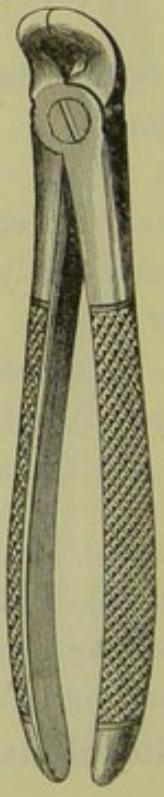
61.



62.



63.



64.



EXCISING FORCEPS.

			s.	d.
Upper, straight (flat cutting edges)	(Fig. 57)	each	7	6
„ curved „	(„ 58)	„	7	6
Lower, bent „	(„ 59)	„	7	6
„ „ for Incisors „	(„ 60)	„	7	6
Upper, straight (round cutting edges)	(„ 61)	„	7	6
„ curved „	(„ 62)	„	7	6
Lower, bent „	(„ 63)	„	7	6
„ „ for Incisors „	(„ 64)	„	7	6

Figs. 57, 58, 59, kept in Extra Broad, Broad, Medium, and Narrow widths.
Fig. 60, „ in Medium and Narrow widths.
Figs. 61, 62, and 63, „ „ „
Fig. 64, „ „ „
Figs. 57, 58, 59, made to order, with hollow or concave cutting edges.

EXCISING FORCEPS.

(SMALLER AND LIGHTER THAN ABOVE.)

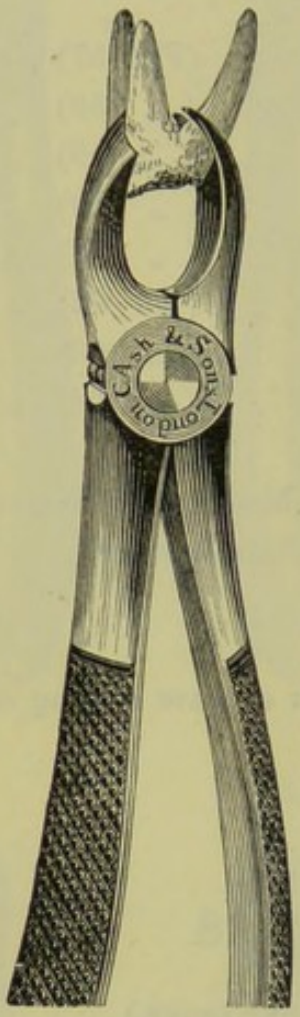
			s.	d.
Upper, straight (flat cutting edges)	(Fig. 57)	each	7	0
„ curved „	(„ 58)	„	7	0
Lower, bent „	(„ 59)	„	7	0
„ „ for Incisors „	(„ 60)	„	7	0
Upper, straight (round cutting edges)	(„ 61)	„	7	0
„ curved „	(„ 62)	„	7	0
Lower, bent „	(„ 63)	„	7	0
„ „ for Incisors „	(„ 64)	„	7	0

These Forceps are kept in Medium and Narrow widths only.

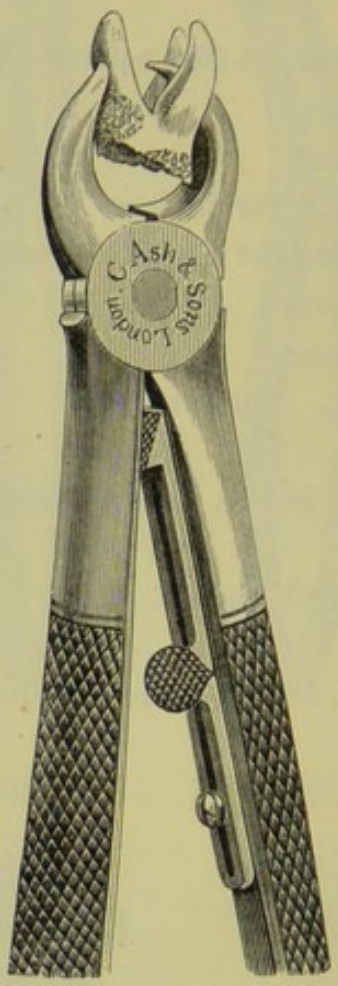
Nickel-plated, extra each, 1/3.

FORCEPS FOR UPPER MOLAR STUMPS.

65.



66.



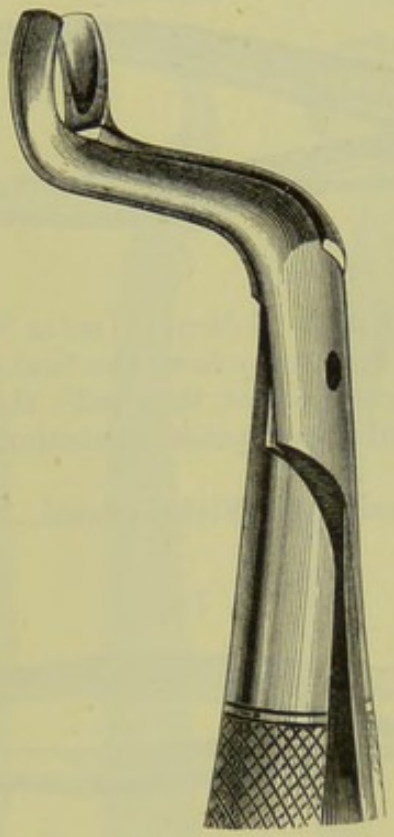
Forceps (Mr. Stevens'), Fig. 65, for extracting Stumps with 3 fangs when the crowns are very much broken down. The palatine blade is divided into two points, which slide on each side of the palatine root, grasping it so firmly that it cannot slip. *s.* *d.*
In right and left sides .. .. each 9 0

Forceps (Mr. Baly's), Fig. 66, for the same purpose as the above, but constructed so that the buccal blade passes between the two fangs and splits them if required. The palatine blade is roughened to prevent slipping, and the stop is to prevent the jaws closing too much when it is possible to extract the three roots at once.
In right and left sides .. .. each 10 6

The above **Nickel-plated,** extra .. .. „ 1 3

FORCEPS, VARIOUS.

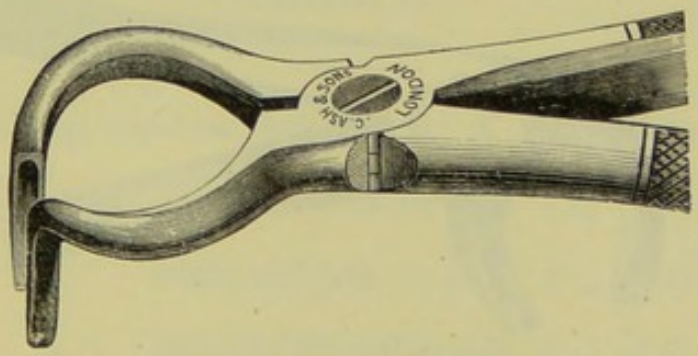
67.



Forceps, Fig. 67, Bayonet, Upper Wisdom, used for either side, are much liked on account of the long bend from the shaft, which enables the Operator to reach to the back of the mouth and extract the wisdom teeth more readily.

Each 9/0; Nickel-plated, 10/3.

68.

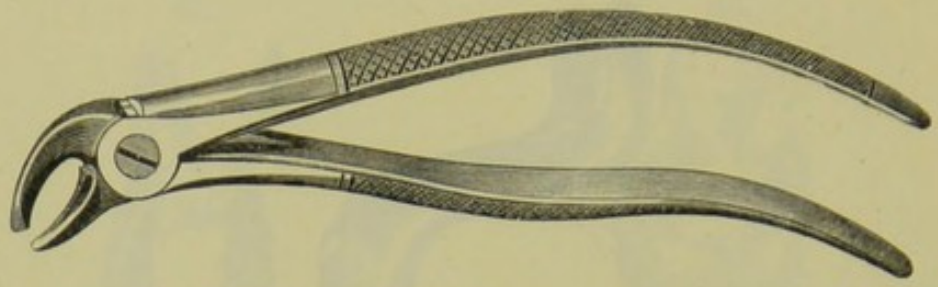


Forceps, Fig. 68 (Mr. Ryding's), Lower Stump, used for either side, are so constructed as to keep the cheek away from the beaks, and to enable the Operator to see more clearly the stump he is about to extract.

Each 9/0; Nickel-plated, 10/3.

FORCEPS, VARIOUS.

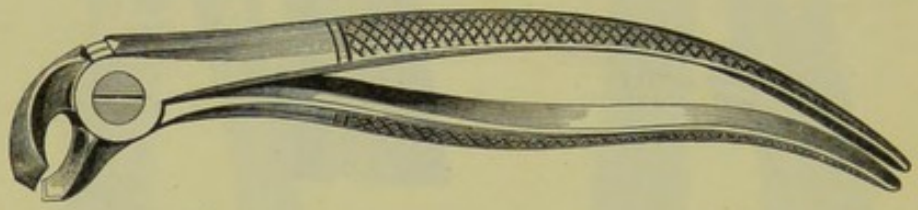
69.



Forceps, Fig. 69 (King's College), Lower Stump, used for either side. The handles of these are bent away from the beaks so that the Operator can see the teeth to be extracted better than with the ordinary form, and they are considered very useful when quick extractions, during anæsthesia, &c., are necessary.

Each 9/0; Nickel-plated, 10/3.

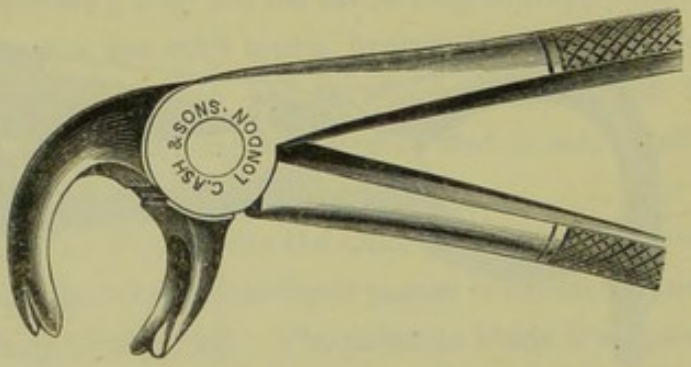
70.



Forceps, Fig. 70 (King's College), Lower Molars, used for either side, made with the same bend, and for the same object as Fig. 69.

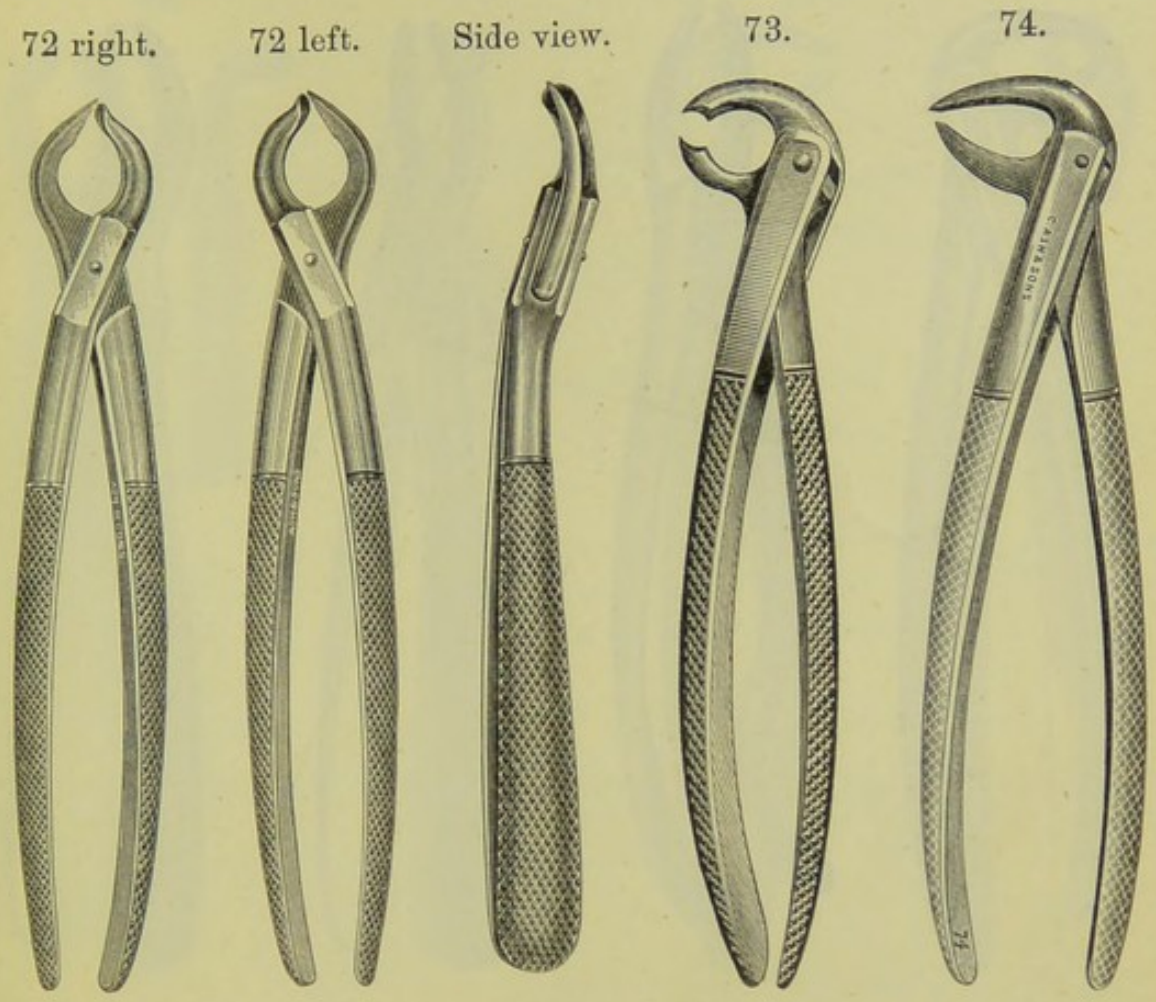
Each 10/0; Nickel-plated, 11/3.

71.



Forceps, Fig. 71 (Mr. Hutchinson's), Lower Molar Stump, are made right and left. The beaks are so formed and grooved as to fit on each side of the two fangs of a Lower Molar Stump.

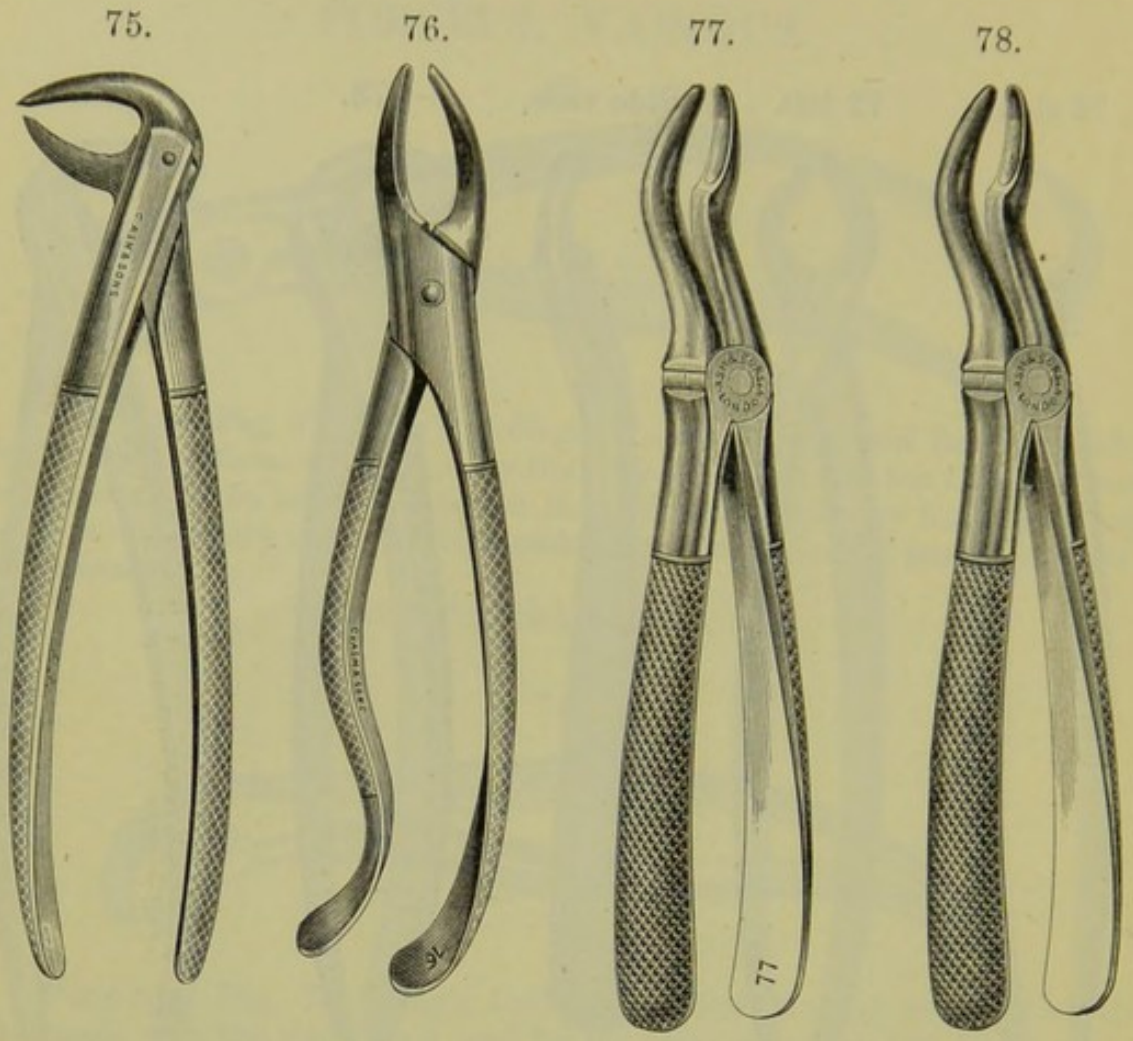
Each 9/0; Nickel-plated, 10/3.



FORCEPS.

					s.	d.
Upper	Molar	Splitting, right and left ..	(Fig. 72)	each	9	0
Lower	,,	Hawk's bill, straight for either side	(,, 73)	,,	10	0
,,	,,	,, right and left ..	(,, 73)	,,	10	0
,,	Stump	,, straight for either side	(,, 74)	,,	9	0
,,	,,	,, right and left ..	(,, 74)	,,	9	0

Nickel-plated, extra each, 1/3.

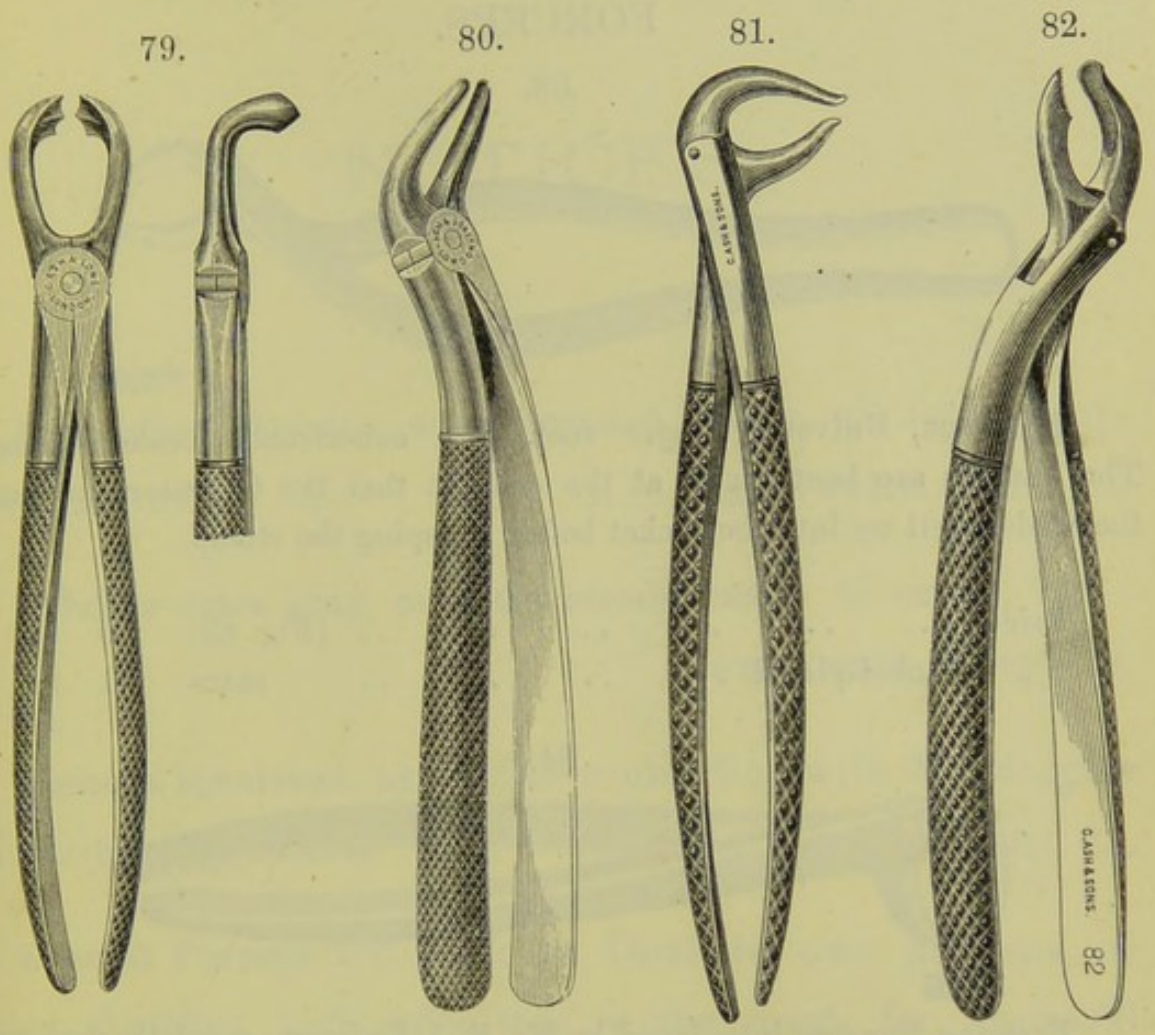


FORCEPS.

			s.	d.
Lower Bicuspids, Hawk's bill, straight for either side	(Fig. 75)	each	9	0
„ „ „ right and left ..	(„ 75)	„	9	0
Upper Stump (Mr. L. Read's), with serrated beaks	(„ 76)	„	9	0
„ (Dr. Redman's) „ narrow ..	(„ 77)	„	8	0
„ „ „ broad ..	(„ 78)	„	8	0

Nickel-plated, extra each, 1/3.

Note.—The handles of Fig. 76 are bent away from the beaks so that the Operator can see the tooth to be extracted better than with the ordinary form. They are considered very useful when quick extractions, during anæsthesia, &c., are necessary.



FORCEPS.

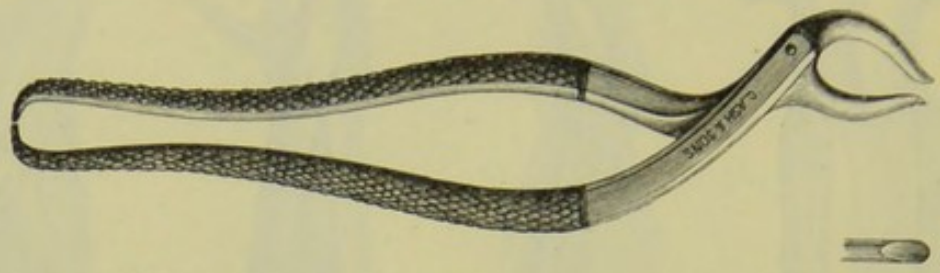
			s.	d.
Lower Molar and Wisdom	(Fig. 79)	each	9	0
Upper Wisdom and Molar Stump (Mr. Coleman's)	(„ 80)	„	8	0
Lower Bicuspids, with sub-alveolar beaks	(„ 81)	„	9	0
Upper Splitting and Extracting	(„ 82)	„	9	0

Nickel-plated, extra, 1/3.

Fig. 79 is so designed that the Operator can distinctly see the tooth to be extracted as he places the beaks of the Forceps upon it.

FORCEPS.

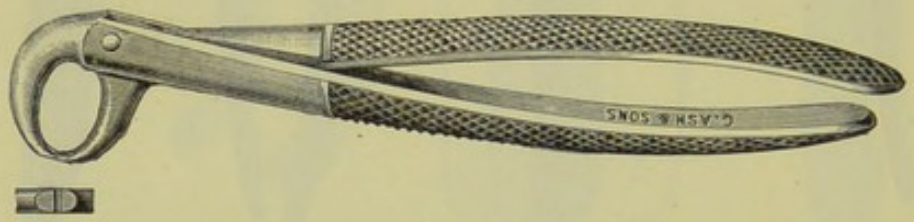
83.



Forceps, Universal upper root, with sub-alveolar beaks serrated. The handles are bent round at the ends so that the Operator can push the blades well up into the socket before grasping the stump.

		s.	*d.*
Price	(Fig. 83)	9	0
„ Nickel-plated	extra	1	3

84.



Excising Forceps, introduced by Mr. E. J. Ladmore, specially designed to give the Operator a clear view of the tooth to be excised.

			s.	*d.*
Price	(Fig. 84)	each	9	0
„ Nickel-plated	(„ 84)	„	10	3

LEATHER POUCHES FOR FORCEPS.

With double Strap and Handle, lined with crimson or blue velvet, or with chamois leather.

To hold	4	6	8	10	12	14	16	18	20	Forceps.
Price	5/3	6/-	8/-	10/-	11/6	13/-	15/-	17/-	20/-	each.

Leather Pouches to hold Forceps Stoppers, Scalers, Excavators, &c., made to order.

NOTICES.

Extracting Forceps with serrated beaks, all forms, supplied to order ... ... extra each 1*s.*

Forceps extra long, or extra strong, made to order, extra each, from 1*s.*

Forceps insulated, as used in connection with Mr. Snape's Electrical Apparatus ... ... extra each 1*s.*

Special Forceps are made to Dentists' own patterns, or exact sketches, and submitted **in the rough** for approval before they are finished.

Forceps repaired and re-polished at moderate charges.

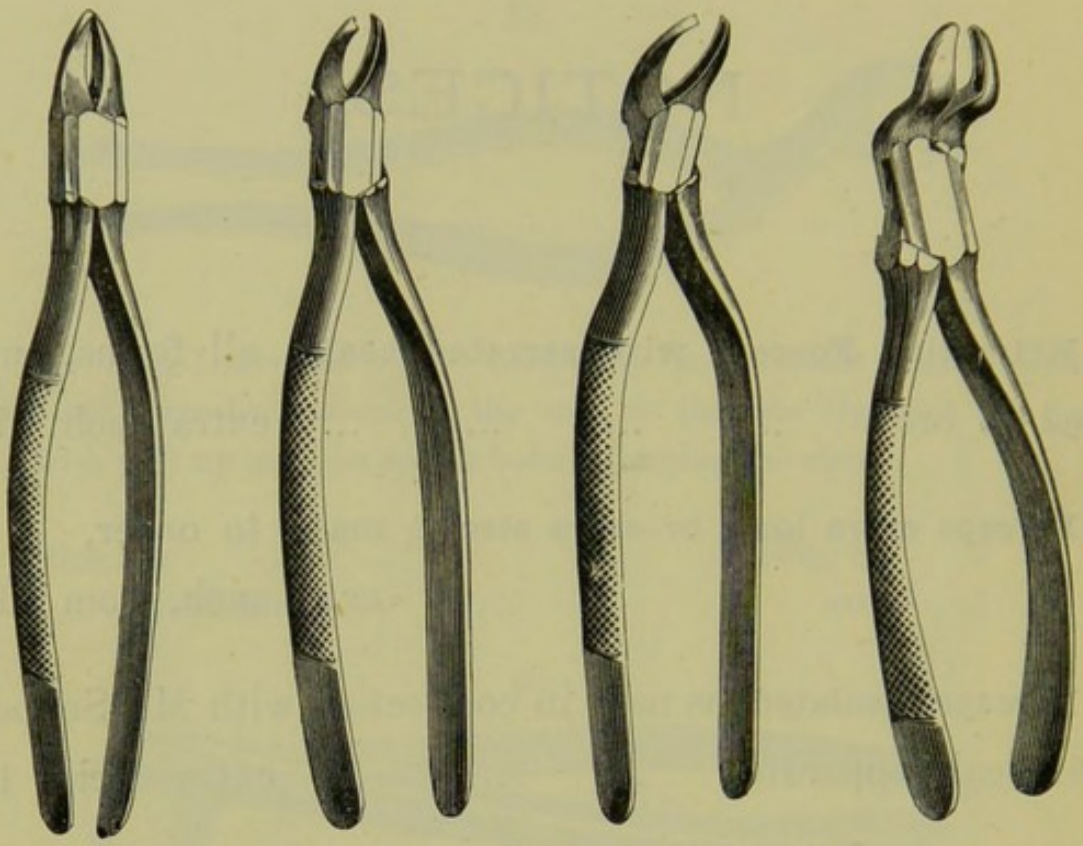
Forceps polished and nickel-plated, each 1*s.* 9*d.*

All special orders and repairs are executed as promptly as possible.

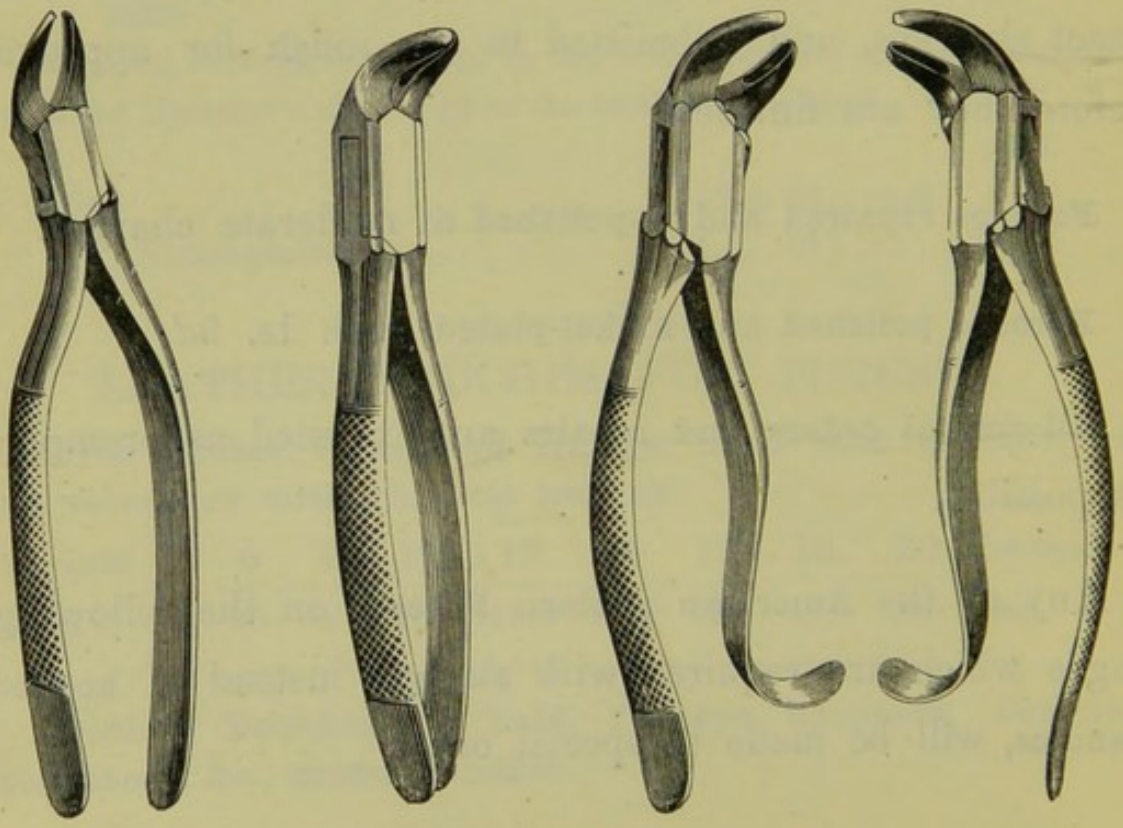
Any of the **American pattern Forceps** on the following pages which are required with **straight** instead of **hooked handles,** will be made to special order.

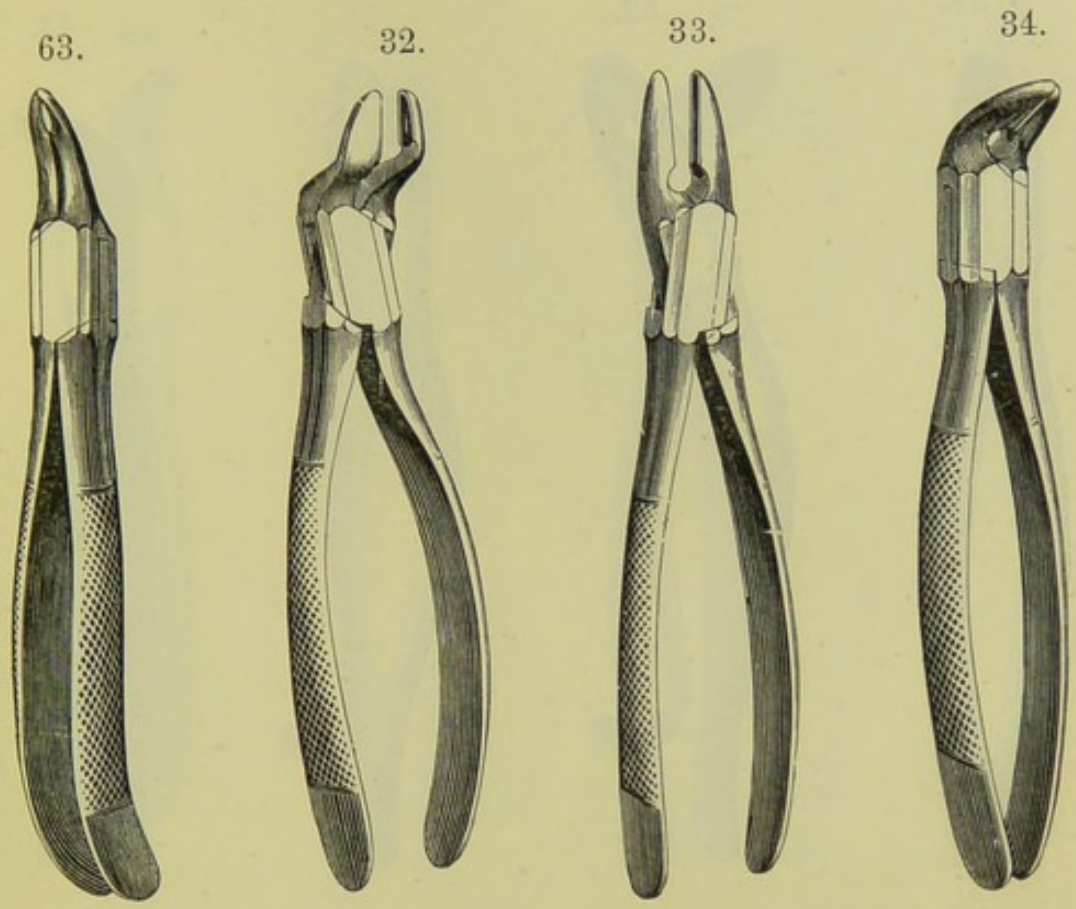
AMERICAN PATTERN FORCEPS.

1. 2. 3. 35.



7. 49. 50.





AMERICAN PATTERN FORCEPS.

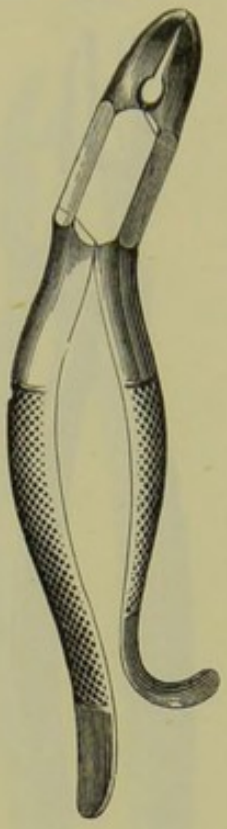
Upper Front Root, straight	(Fig. 1)
„ and Lower Root, half curved	(„ 2)
Lower Front Root, full curved	(„ 3)
Upper Root, Bayonet	(„ 35)
„ Back Root, Universal	(„ 7)
Lower Molar „ with Crowns	(„ 49)
„ „ right and left	(„ 50)
Universal Spicula	(„ 63)
Upper Bayonet-shape, Alveolar (Dr. Parmly's)	(„ 32)
„ Straight Beak „ „	(„ 33)
Lower, Curved „ „ „	(„ 34)

Each 10*s.* 6*d.*; **Nickel-plated,** 11*s.* 9*d.*

39.



52.



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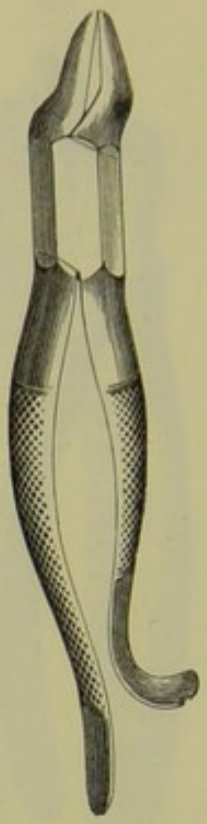

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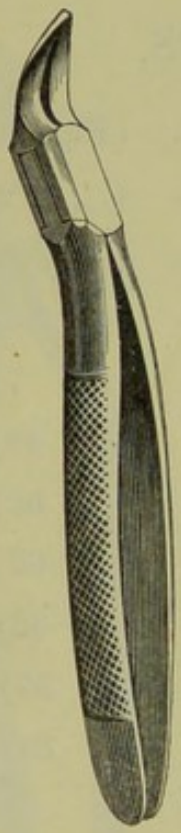
42.



43.



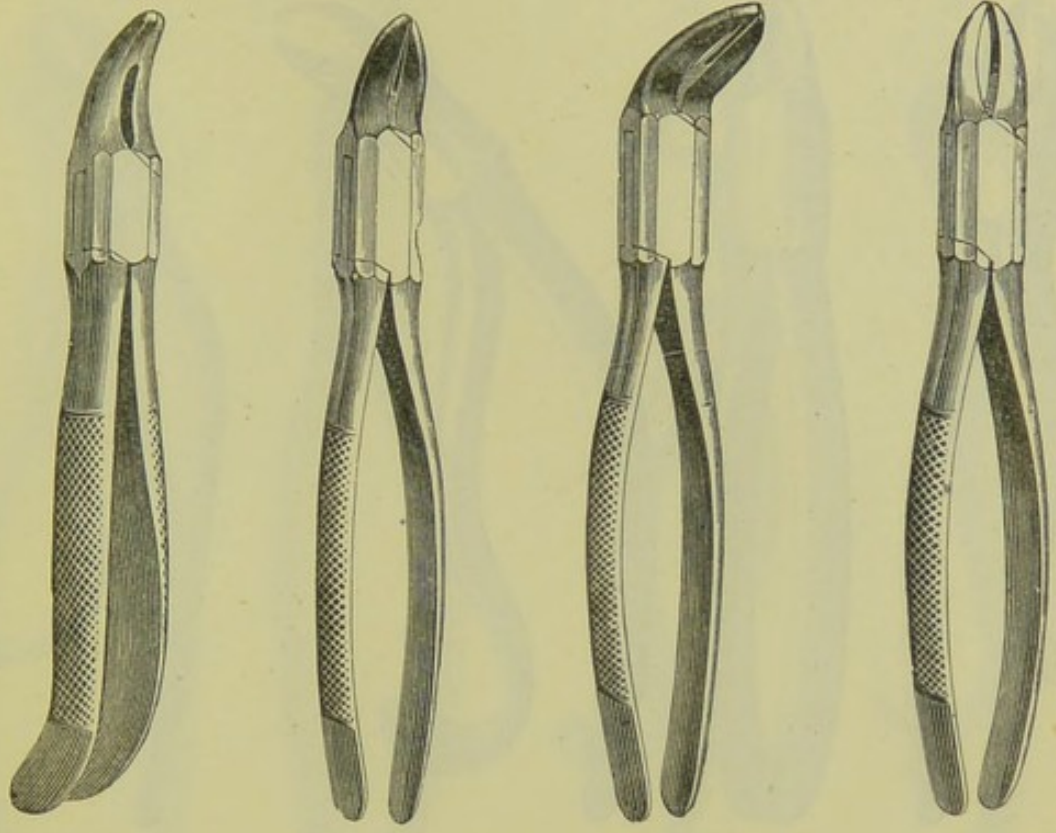
41.



61.



64. 36. 37. 38.



AMERICAN PATTERN FORCEPS.

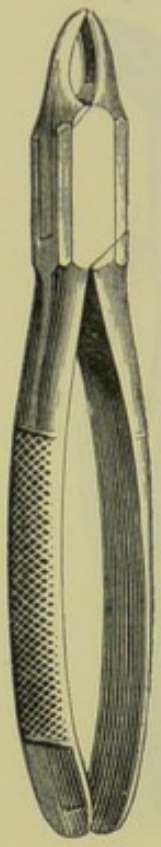
Upper Half-curved Beak—Alveolar (Dr. Parmly's) .. .. (Fig. 39)
Lower for either side „ „ .. .. („ 52)
Upper Incisors and Canines „ .. .. („ 58)
Lower Long Beak, full curved „ .. .. („ 44)
Upper Back Long Beak .. „ .. .. („ 42)
„ Straight „ „ .. .. („ 43)
„ Half-curved „ „ .. .. („ 41)
„ Back, Alveolar Nipping, for cutting away process after extraction .. .. („ 61)
„ Front „ „ „ „ („ 64)
„ Narrow Beak, half curved, for Crowded Teeth .. („ 36)
Lower „ full „ „ „ .. („ 37)
Upper „ straight „ „ .. („ 38)

Each 10*s.* 6*d.*; **Nickel-plated**, 11*s.* 9*d.*

13.



48.



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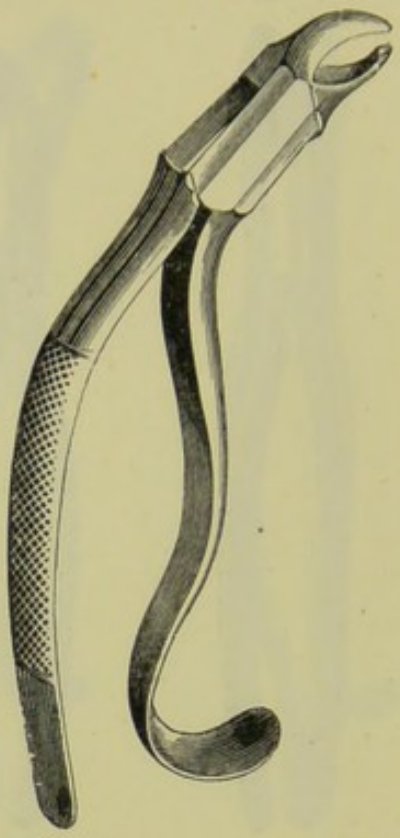

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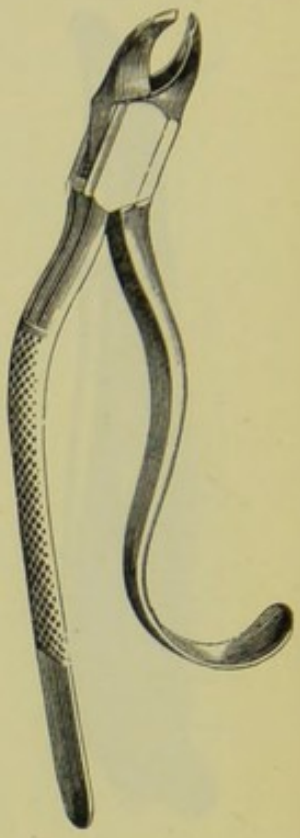

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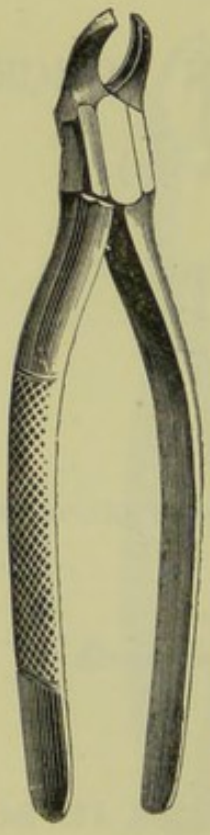
4.



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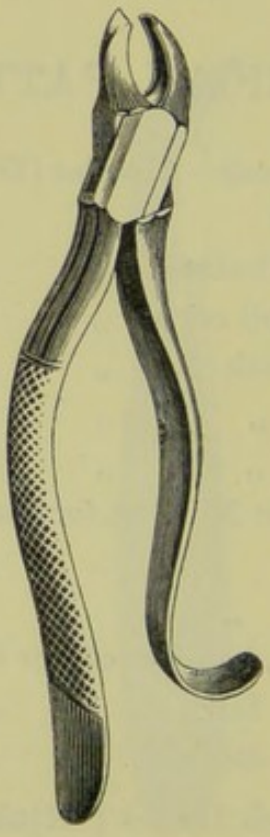

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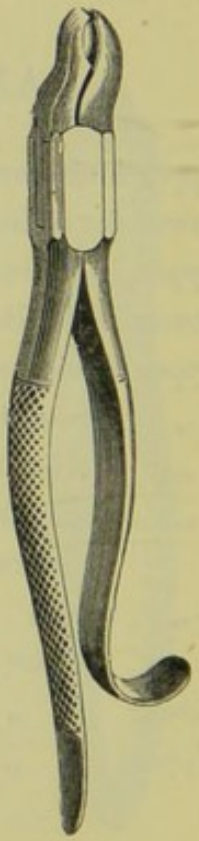
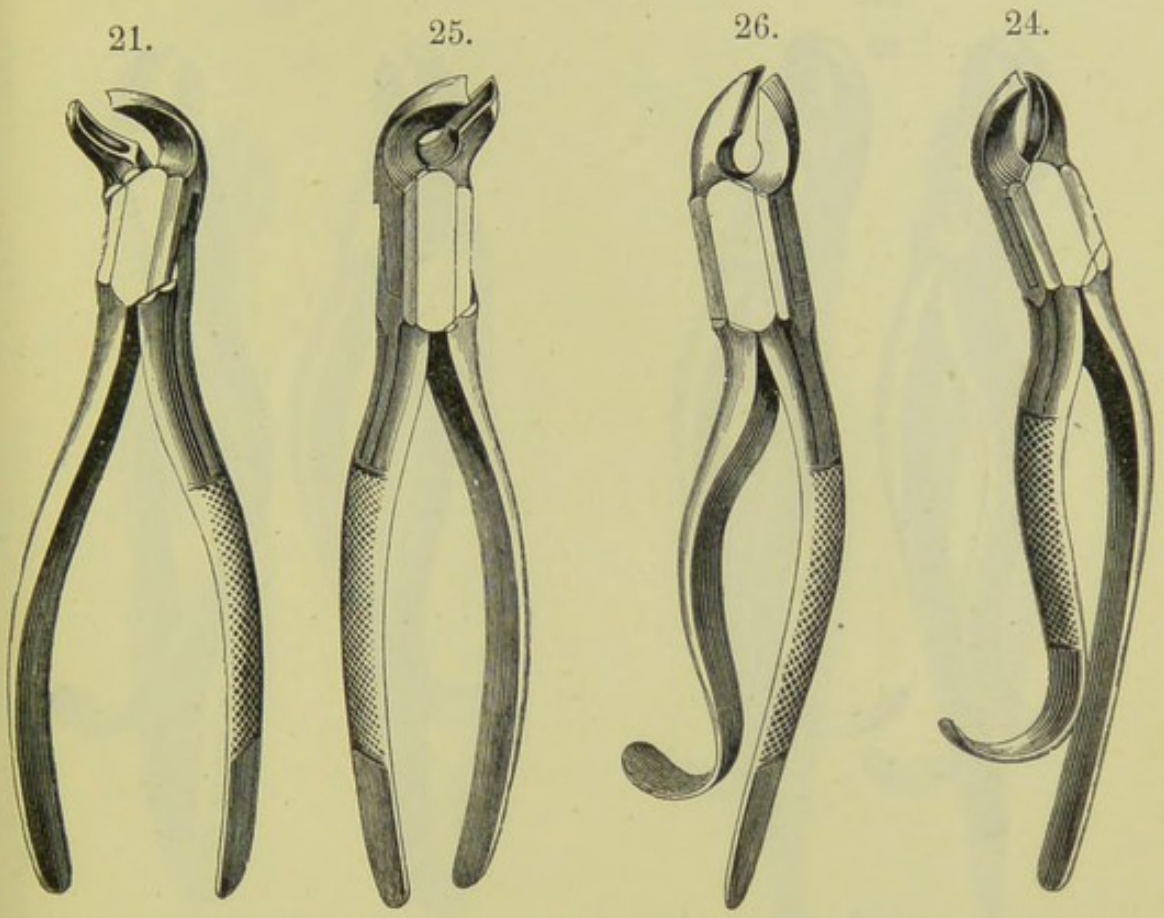


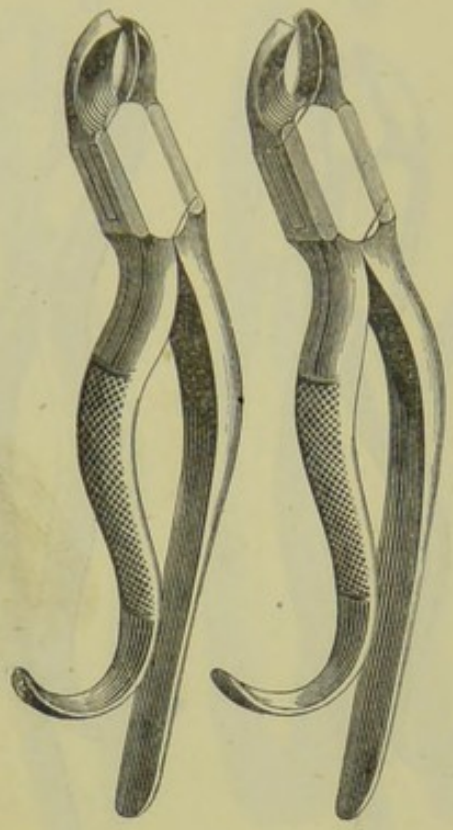


AMERICAN PATTERN FORCEPS.

Upper Incisor	(Fig. 13)
„ Lateral Incisor	(„ 48)
Lower Incisor Hawk's Bill	(„ 9)
„ „ and Bicuspid, for either side	(„ 14)
„ „ and for Crowded Teeth, Hawk's Bill	(„ 46)
Upper and Lower Bicuspid, half-curved	(„ 4)
„ Bicuspid and Canine	(„ 11)
„ „ and Incisor	(„ 40)
Lower „ and Canine	(„ 21)
„ „ Safety	(„ 25)
Upper „ „	(„ 26)
„ Molar, for either side	(„ 24)

Each 10*s.* 6*d.*; **Nickel-plated,** 11*s.* 9*d.*

18.



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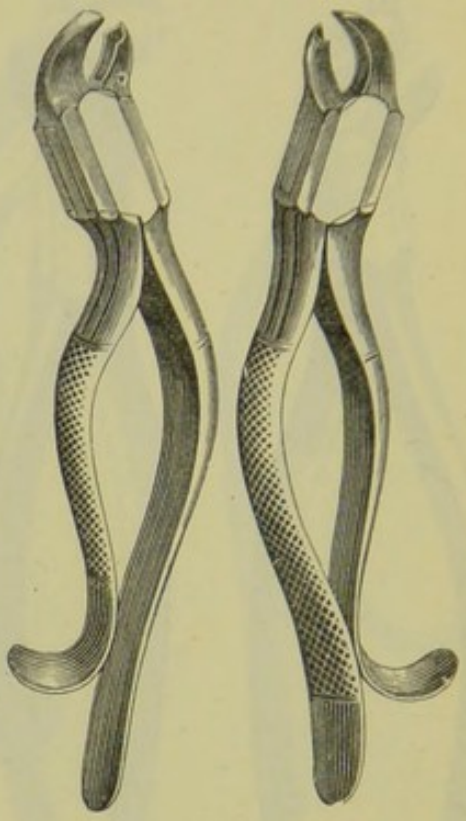

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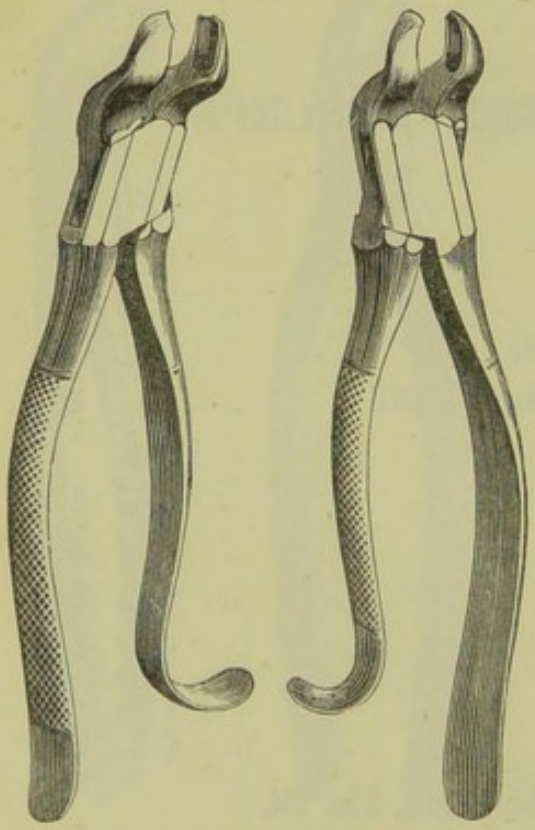

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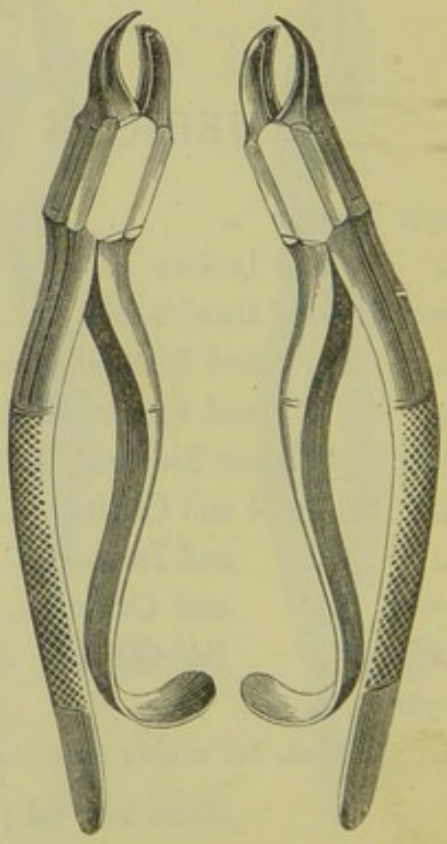
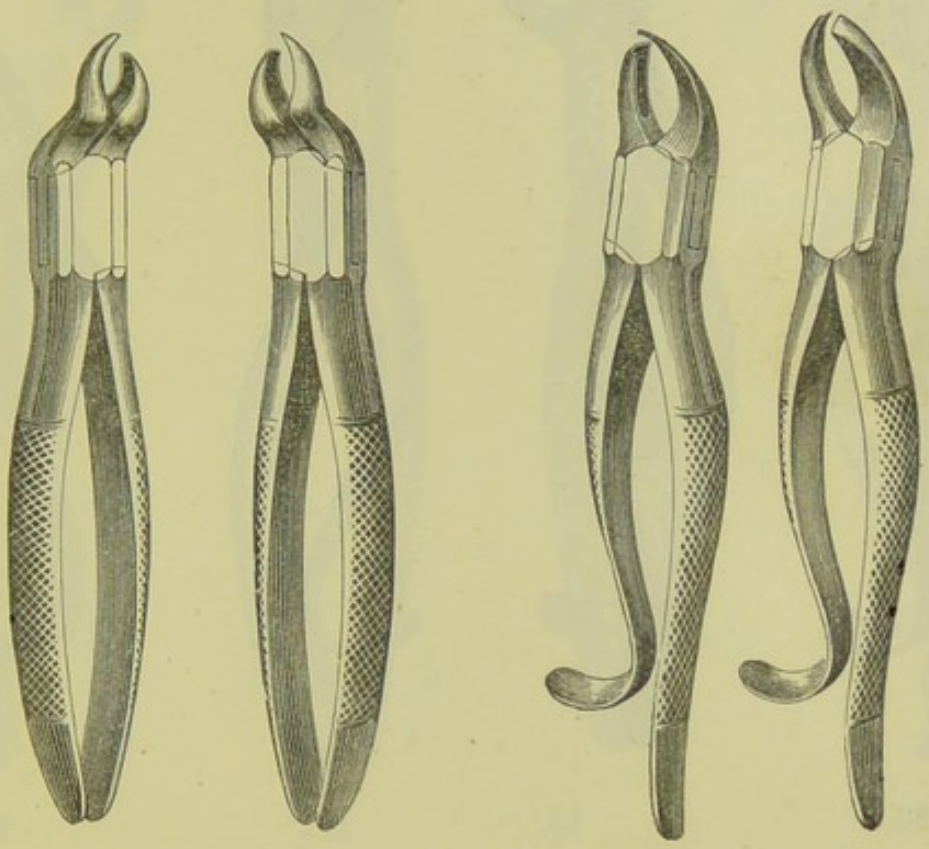


57. 59.



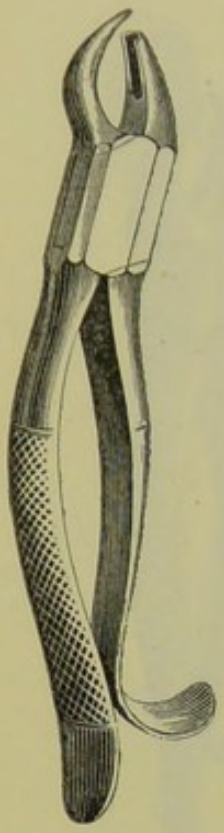
AMERICAN PATTERN FORCEPS.

Upper Molar, right and left (Dr. Harris's)	..	..	..	(Fig. 18)
,,	,,	..	..	..	..	..	(,, 19)
,,	,,	..	..	..	..	..	(,, 53)
,,	,,	Cow-horn	..	..	..	(,, 20)
,,	,,	,,	..	..	..	(,, 57)
,,	,,	,,	..	..	..	(,, 59)

Each 10*s.* 6*d.*; **Nickel-plated**, 11*s.* 9*d.*

Any of the **American pattern Forceps** which are required with **straight** instead of **hooked** handles will be made to order.

45.



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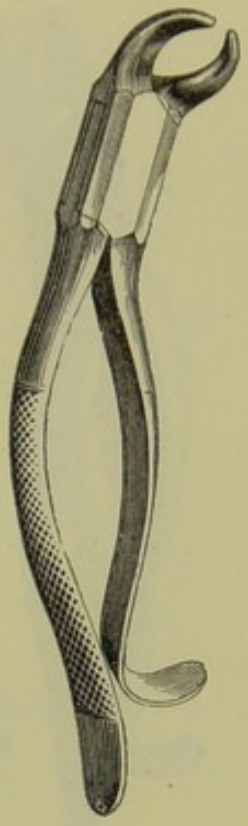

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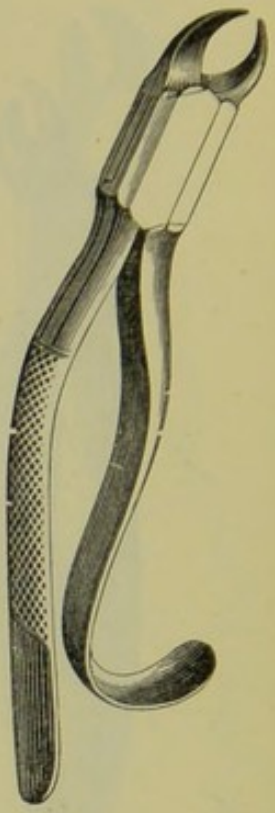

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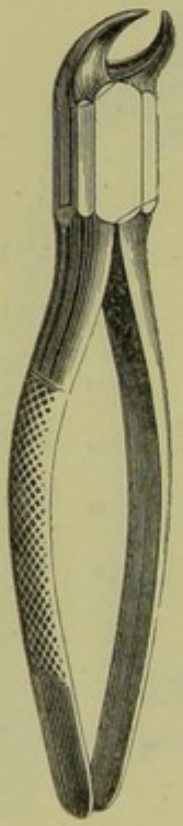

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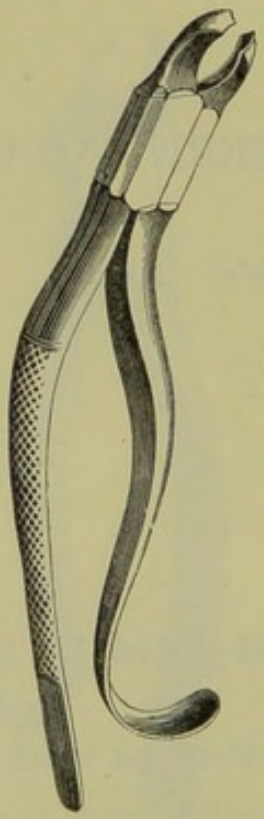

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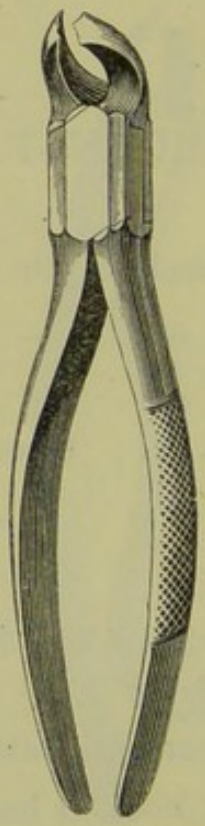

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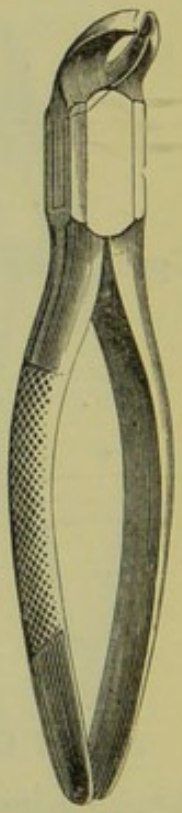
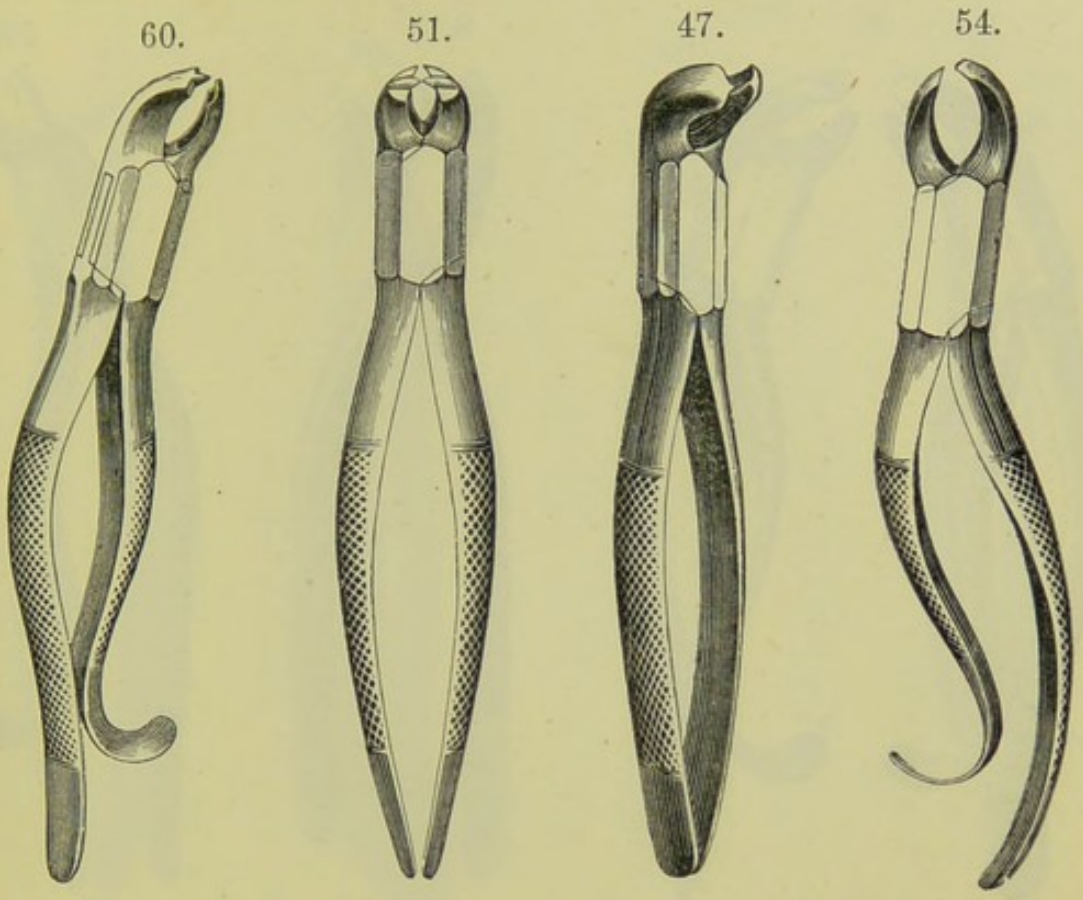




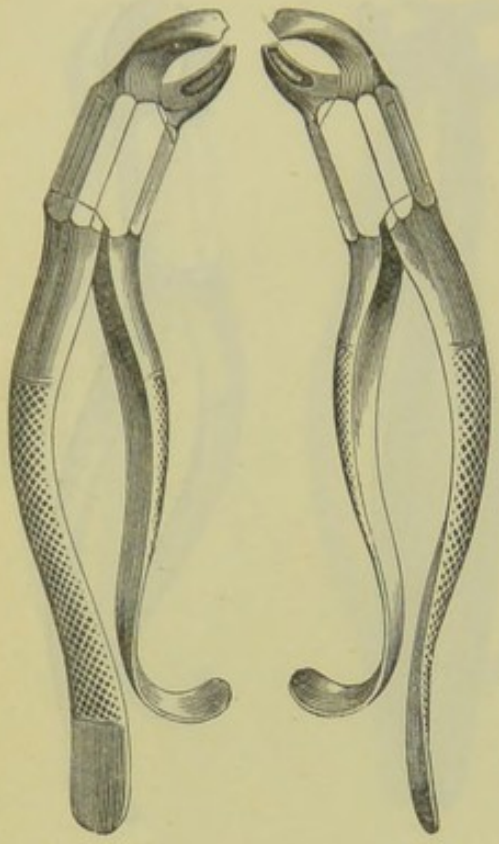
AMERICAN PATTERN FORCEPS.

Upper Molar, Cow-horn,	for either side	(Fig.	45)
Lower Molar „	for right side	(„	55)
„ „	for left side	(„	56)
„ „	for either side	(„	16)
„ „	„	(„	23)
„ (Dr. Harris's)	„	(„	15)
„	„	(„	17)
„ Plain Beak	„	(„	27)
„ (Dr. Wolverton's)	„	(„	60)
„ „	„	(„	51)
„ (Mr. Hutchinson's)	„	(„	47)
„ for left side	.. .. ..	(„	54)

(Fig. 28 is used for the right side to Fig. 54.)

Each 10*s.* 6*d.*; **Nickel-plated,** 11*s.* 9*d.*

28.



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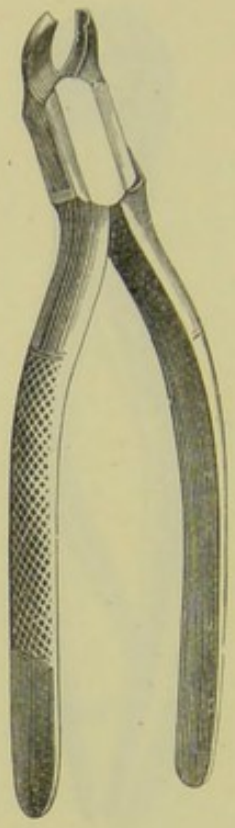

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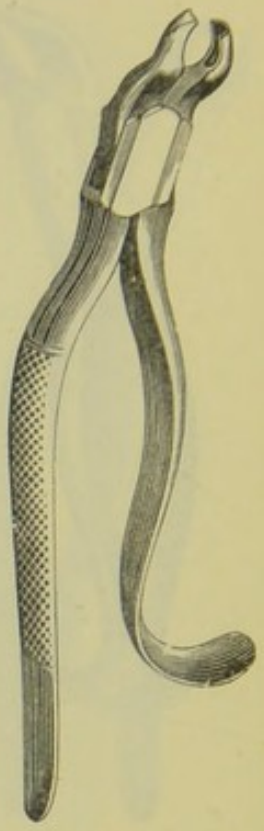

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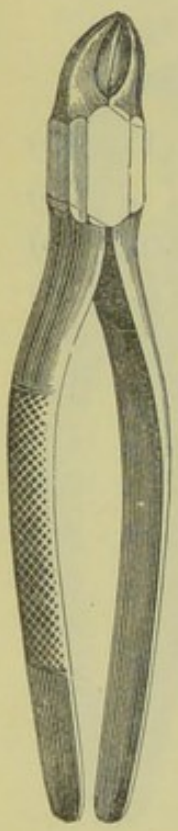

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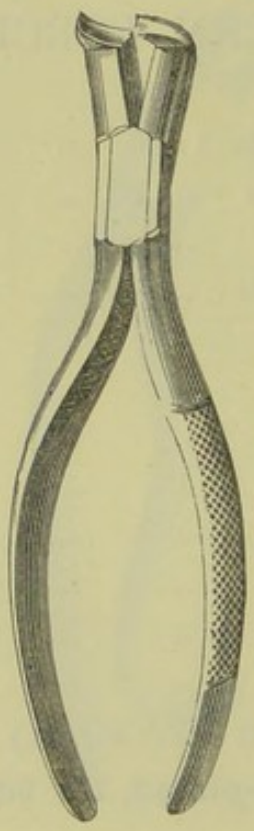

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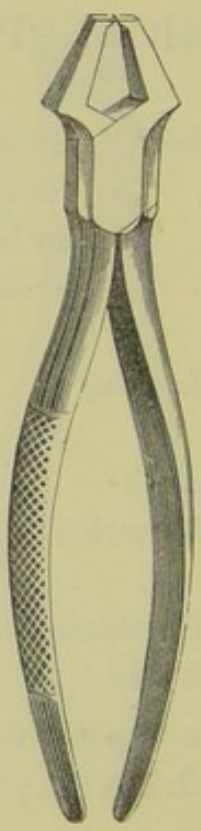
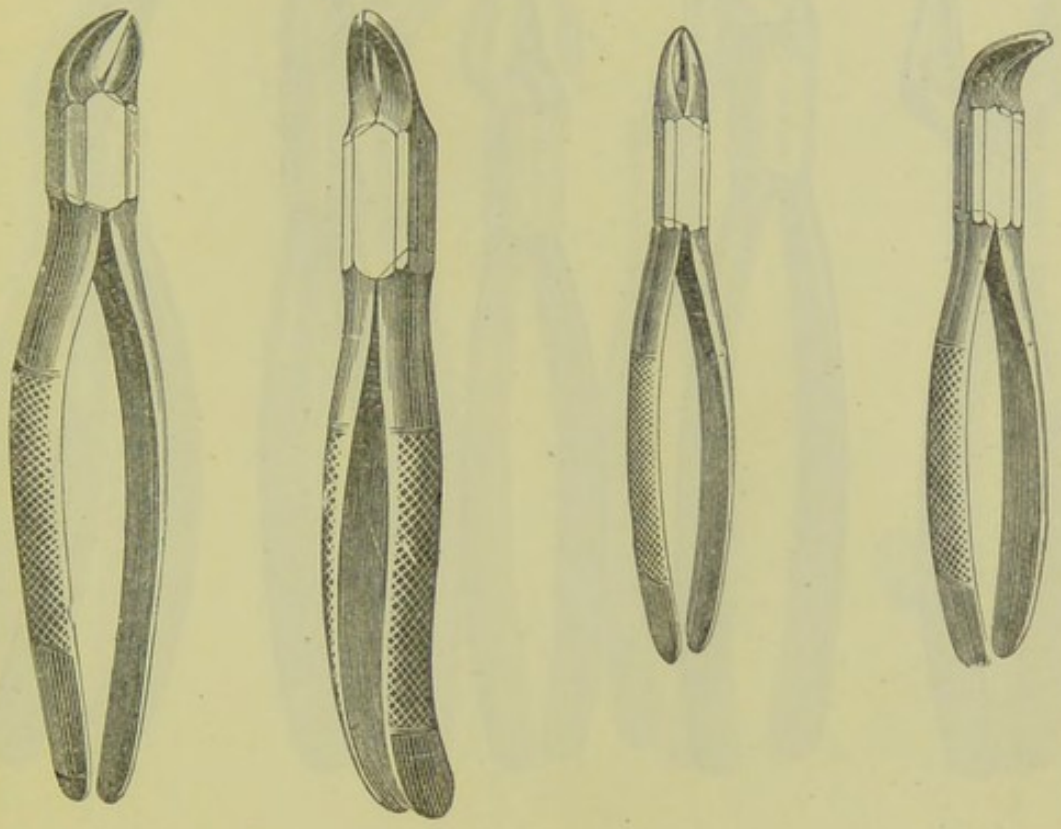


31.



6. 62. 30. 29.

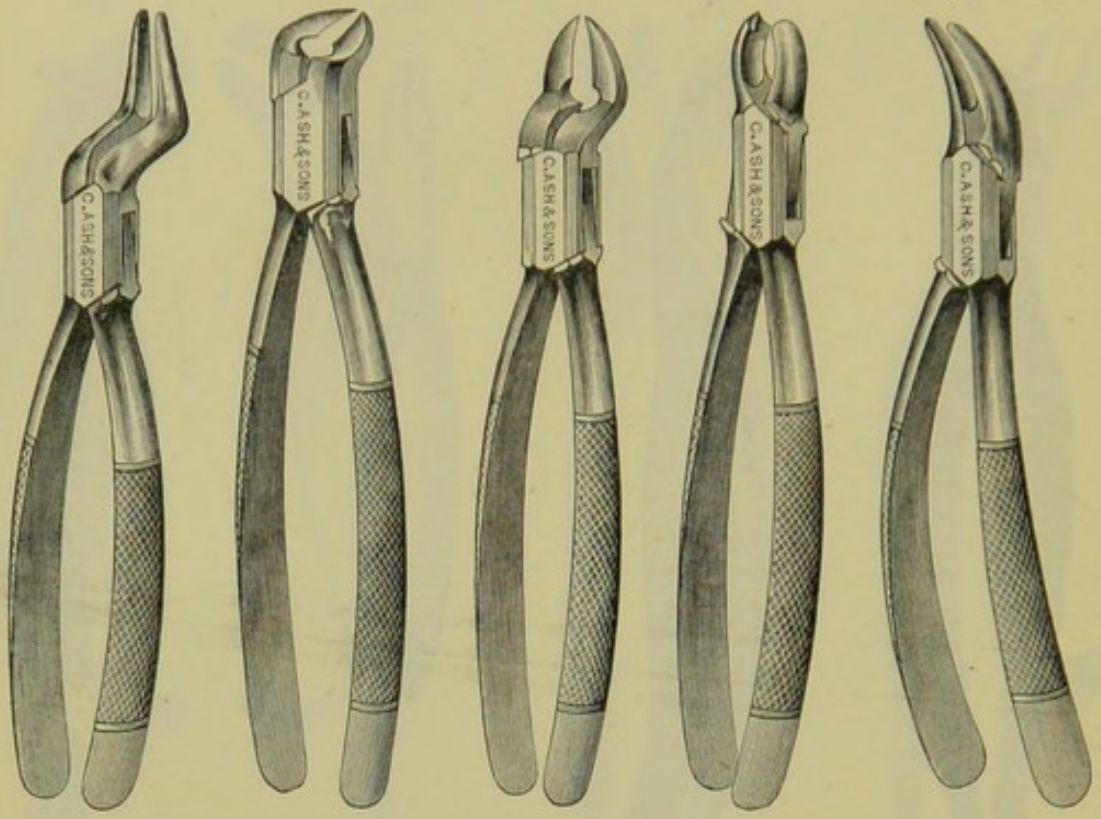


AMERICAN PATTERN FORCEPS.

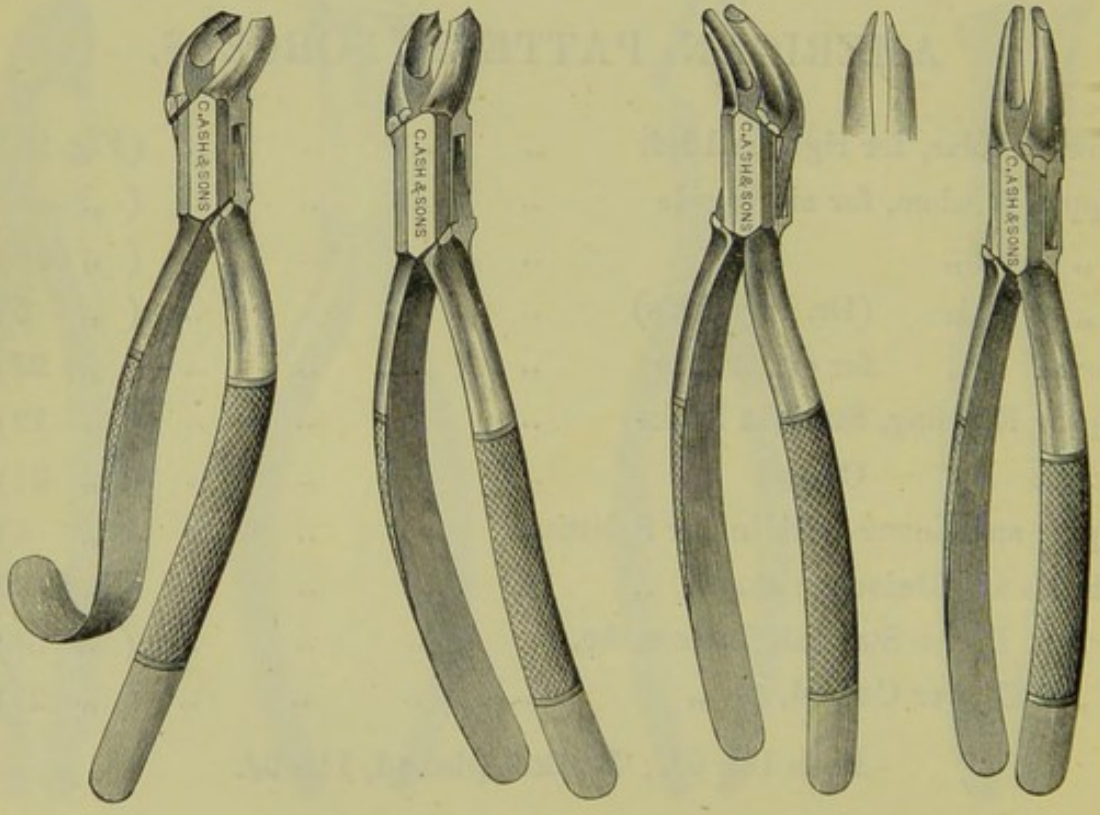
Lower Molar, for right and left	(Fig. 28)
Upper Wisdom, for either side	(„ 8)
„ „ „	(„ 10)
„ „ (Dr. Physick's)	(„ 5)
Lower „ for either side	(„ 22)
Upper Excising, Straight Beaks	(„ 12)
Lower „ Curved „	(„ 31)
Upper and Lower Dividing or Splitting	(„ 6)
Child's and Universal Root	(„ 62)
„ Upper Straight, Incisor, &c.	(„ 30)
„ Lower Curved, „	(„ 29)

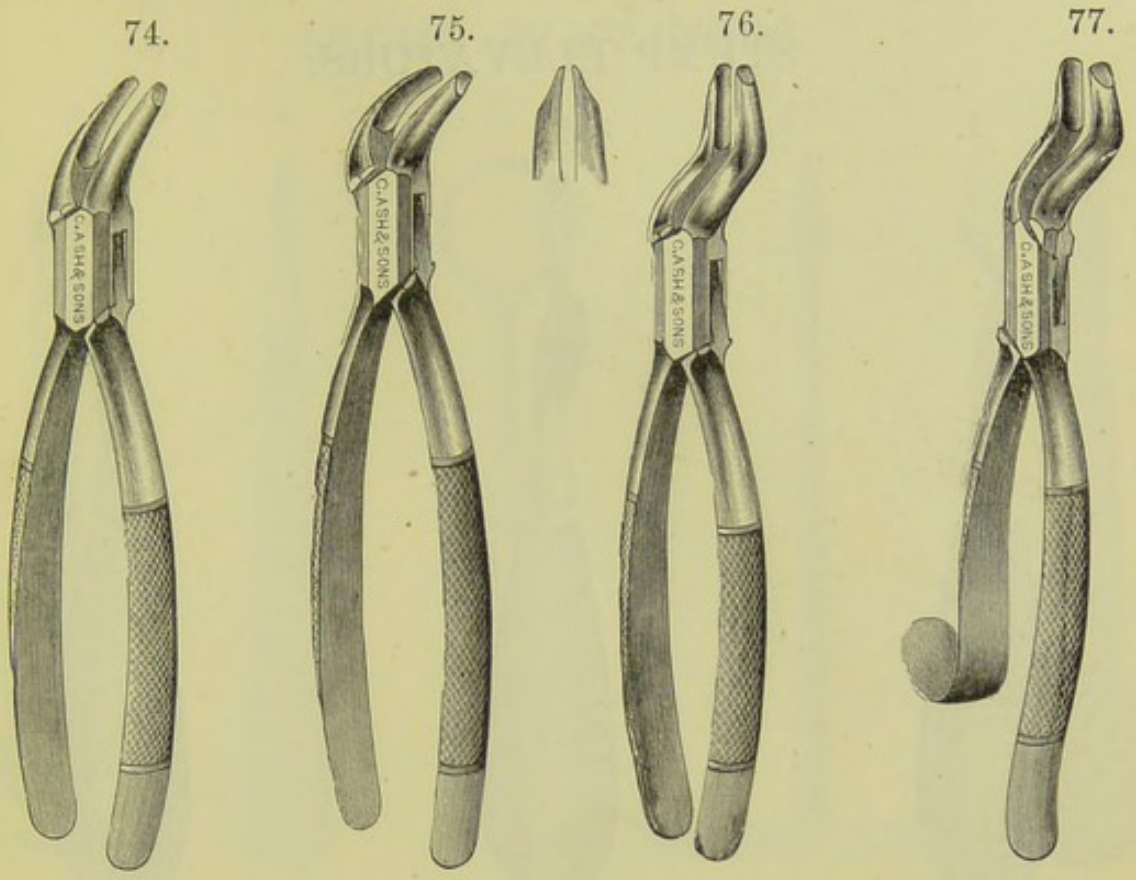
Each 10*s.* 6*d.*; **Nickel-plated**, 11*s.* 9*d.*

65. 66. 67. 68. 69.



70. 71. 72. 73.





FORCEPS, AMERICAN PATTERNS.

Universal Root, Bayonet form (Dr. Arrington's) .. .. (Fig. 65)
Lower, Separating and Elevating Root (Dr. Stellwagen's) .. („ 66)
Upper, „ „ „ .. („ 67)
„ Molar, straight for either side „ .. („ 68)
Universal Root (Mr. Tomes') .. .. („ 69)
Lower Molar for either side (Dr. Harris's) .. .. .. („ 70)
„ „ „ .. .. („ 71)

Dr. TEES' SUB-ALVEOLAR FORCEPS.

Upper Root, universal .. .. (Fig. 72)
Upper Front Root, straight .. .. („ 73)
„ and Lower Root, half-curved .. .. („ 74)
Lower Front Root, full-curved .. .. („ 75)
Upper Root, Bayonet form .. .. („ 76)
Upper Wisdom Root „ .. .. („ 77)

Each 10*s.* 6*d.*; **Nickel-plated,** 11*s.* 9*d.*

STUMP ELEVATORS.

1.



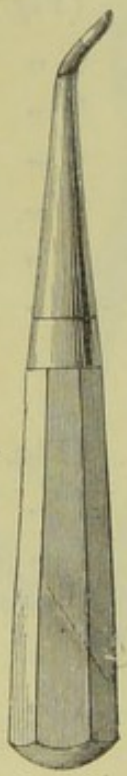
2.



3.



4.



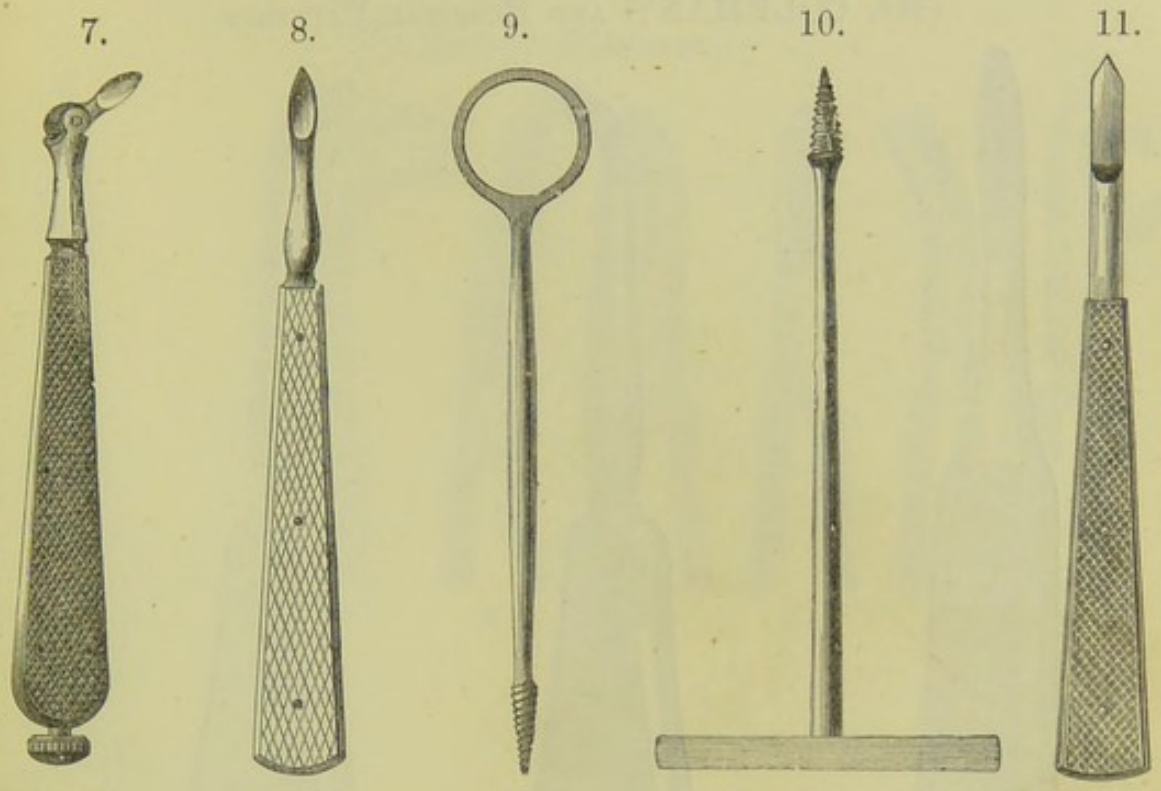
5.



6.



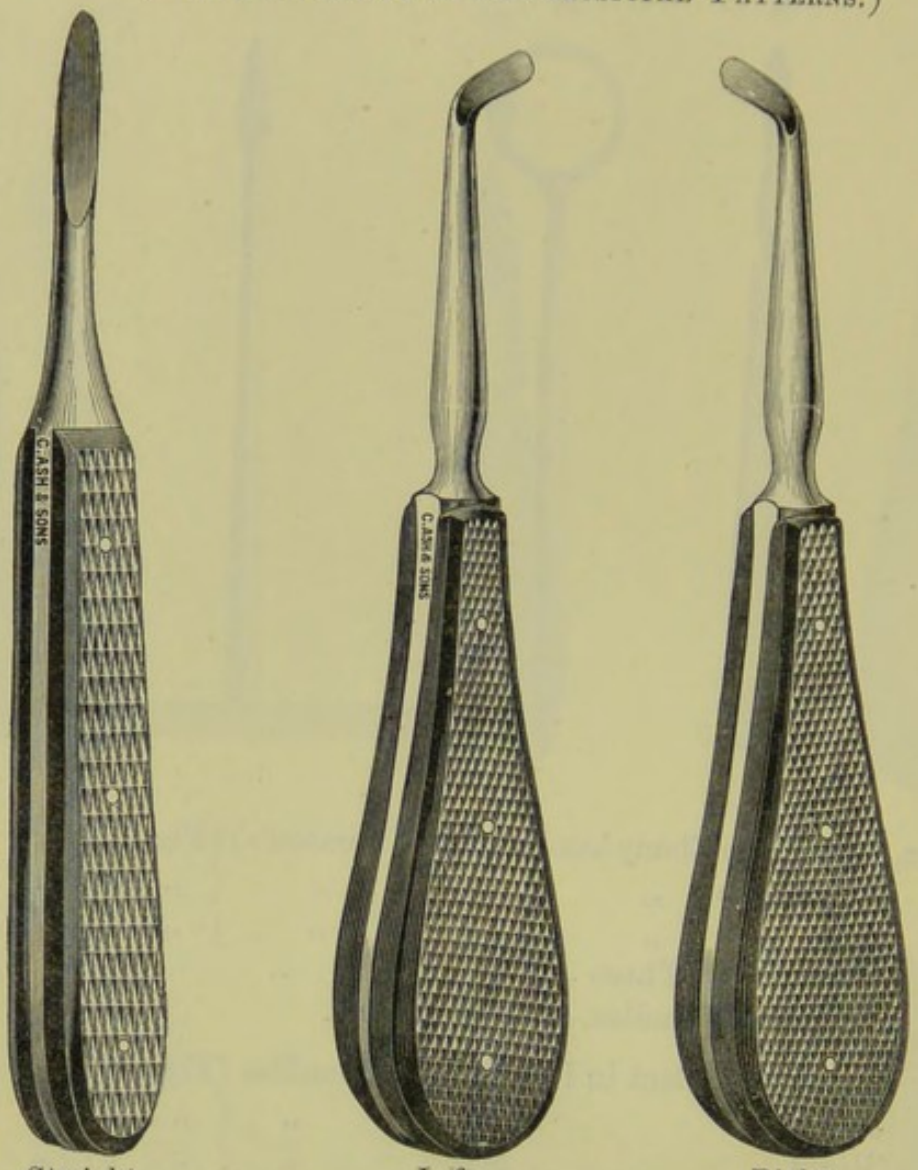
STUMP ELEVATORS.



							s.	d.
Elevators,	Straight, in Ebony handles (Mr. Thomson's)				(Fig. 1)	each	7	6
,,	Right side	,,	,,	,,	(,, 2)	,,	7	6
,,	Left	,,	,,	,,	(,, 3)	,,	7	6
	The Set of Three						21	0
	In Ivory Handles, made to order.							
,,	Straight or Bent in Ivory octagon handles				(Fig. 4)	,,	6	6
,,	Left side	,,	,,		(,, 5)	,,	6	6
,,	Right ,,	,,	,,		(,, 6)	,,	6	6
	In Ebony Handles, German Silver Ferrules					,,	4	6
,,	Adjustable, in Ebony handles				(Fig. 7)	,,	7	6
	,, in Ivory ,, made to order.							
,,	Straight, in Ivory handles (Mr. Tomes')				(,, 8)	,,	6	6
,,	,, in Ebony handles		,,		(,, 8)	,,	5	0
,,	,, in Ivory ,,		(Mr. Cartwright's)			,,	8	0
,,	,, in Ebony ,,		,,			,,	5	0
,,	,, ,, ,,		(Mr. George's)		(Fig 11)	,,	6	0
Screws for Stumps,	all steel, plain				(,, 9)	,,	2	9
,,	,, ,, ,, ...				(,, 10)	,,	2	9
,,	,, Nickel-plated, extra					,,	0	6

STUMP ELEVATORS.

(Mr. COLEMAN'S and Hospital Patterns.)



Straight. Left. Right.

These are all made with serrated blades, and form a very useful set.

			s.	d.
Straight, in Ebony handles (Mr. Coleman's)	.. ..	each	6	0
Left „ „ (Hospital Pattern)	.. ..	„	7	6
Right „ „ („ „)	.. ..	„	7	6

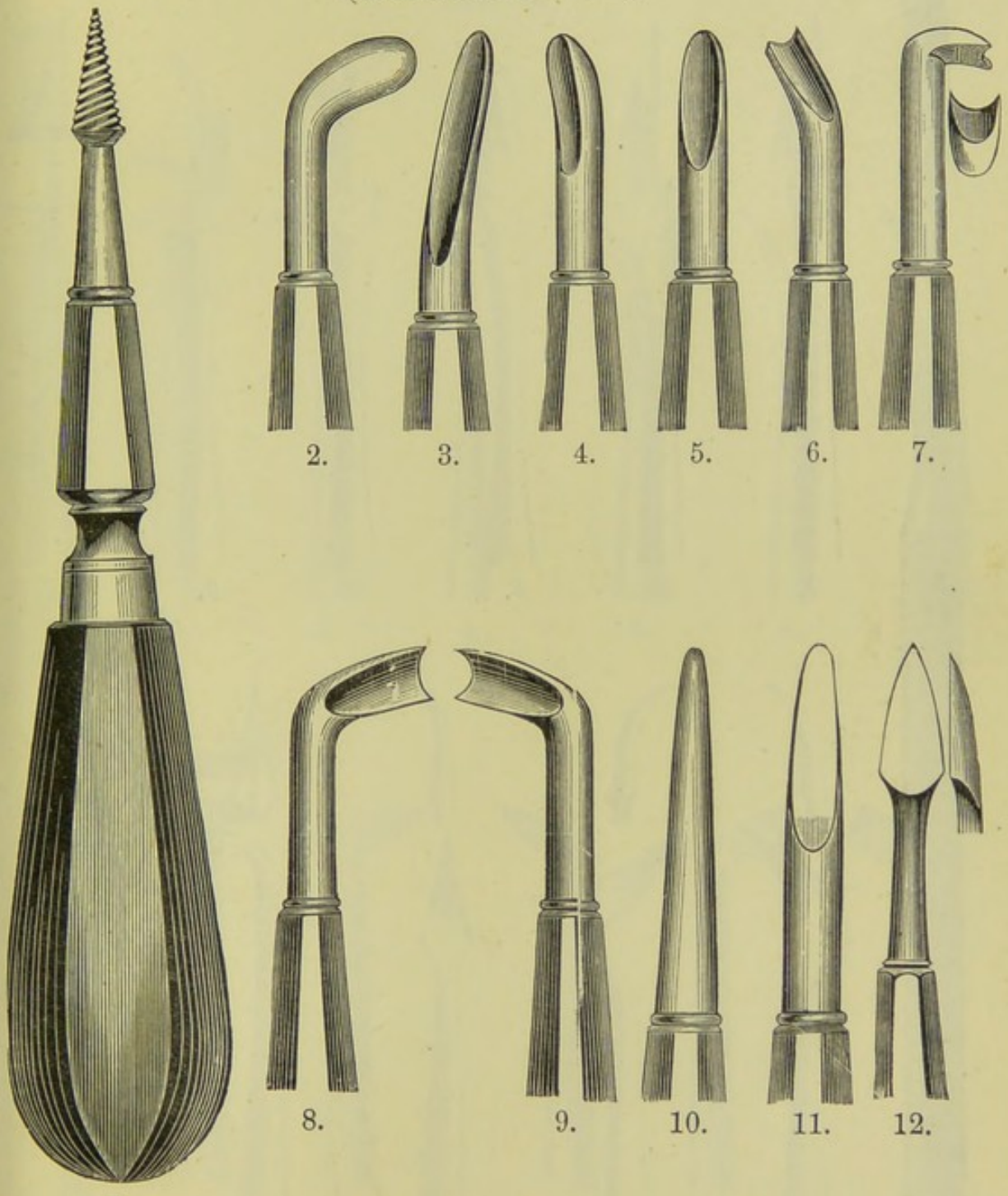
(*Not Illustrated.*)

Straight, in Ebony handles (Mr. L. Read's)	.. ..	each	6	0

Mr. Read's Elevator is similar in shape to Mr. Coleman's, but it has a plain blade slightly hollowed.

STUMP ELEVATORS.

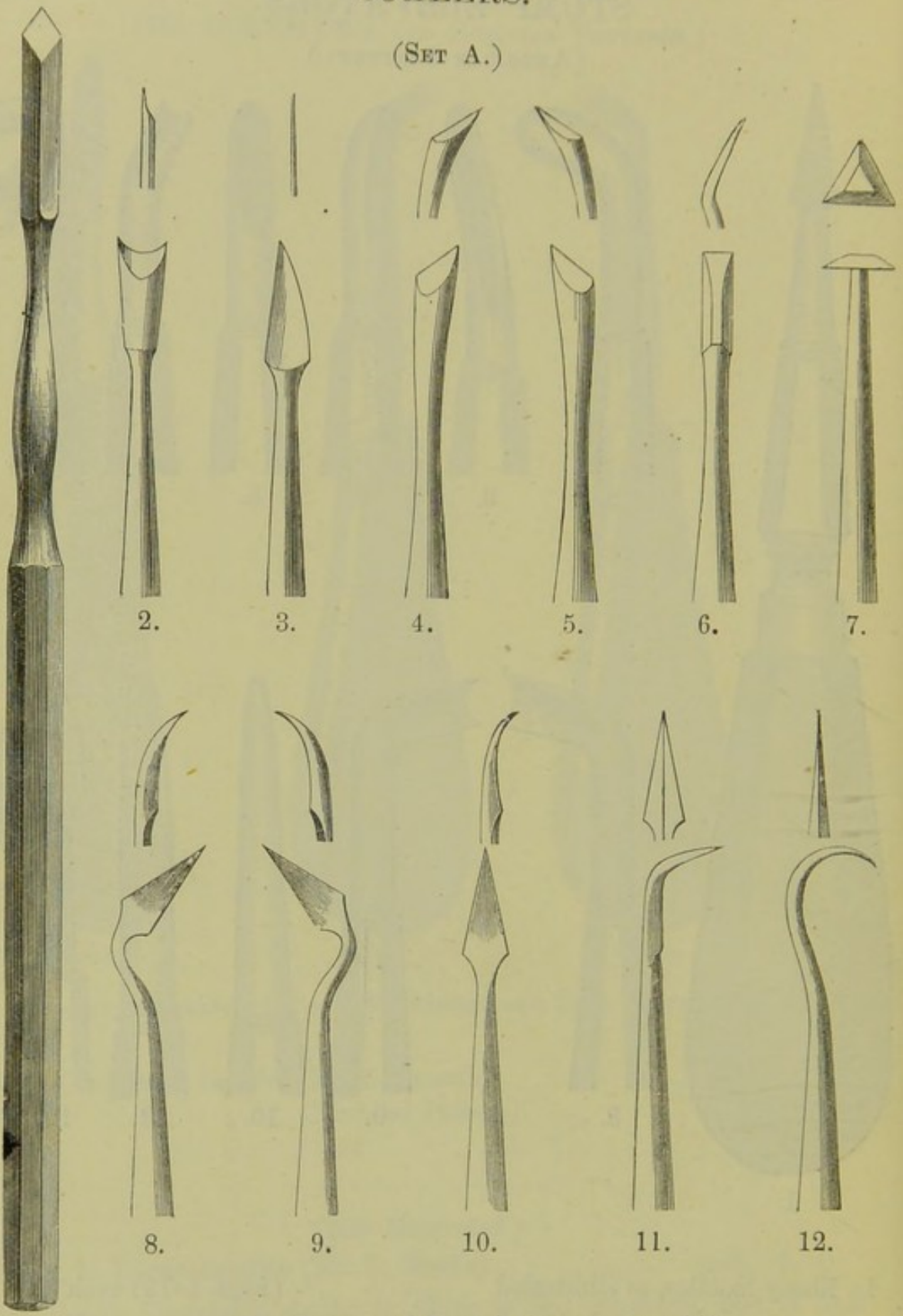
(American Patterns.)



			s.	d.
In Ebony handles, as illustrated	..	.. (Figs. 1–12) each	6	0
„ Ivory „	made to order.			

SCALERS.

(SET A.)

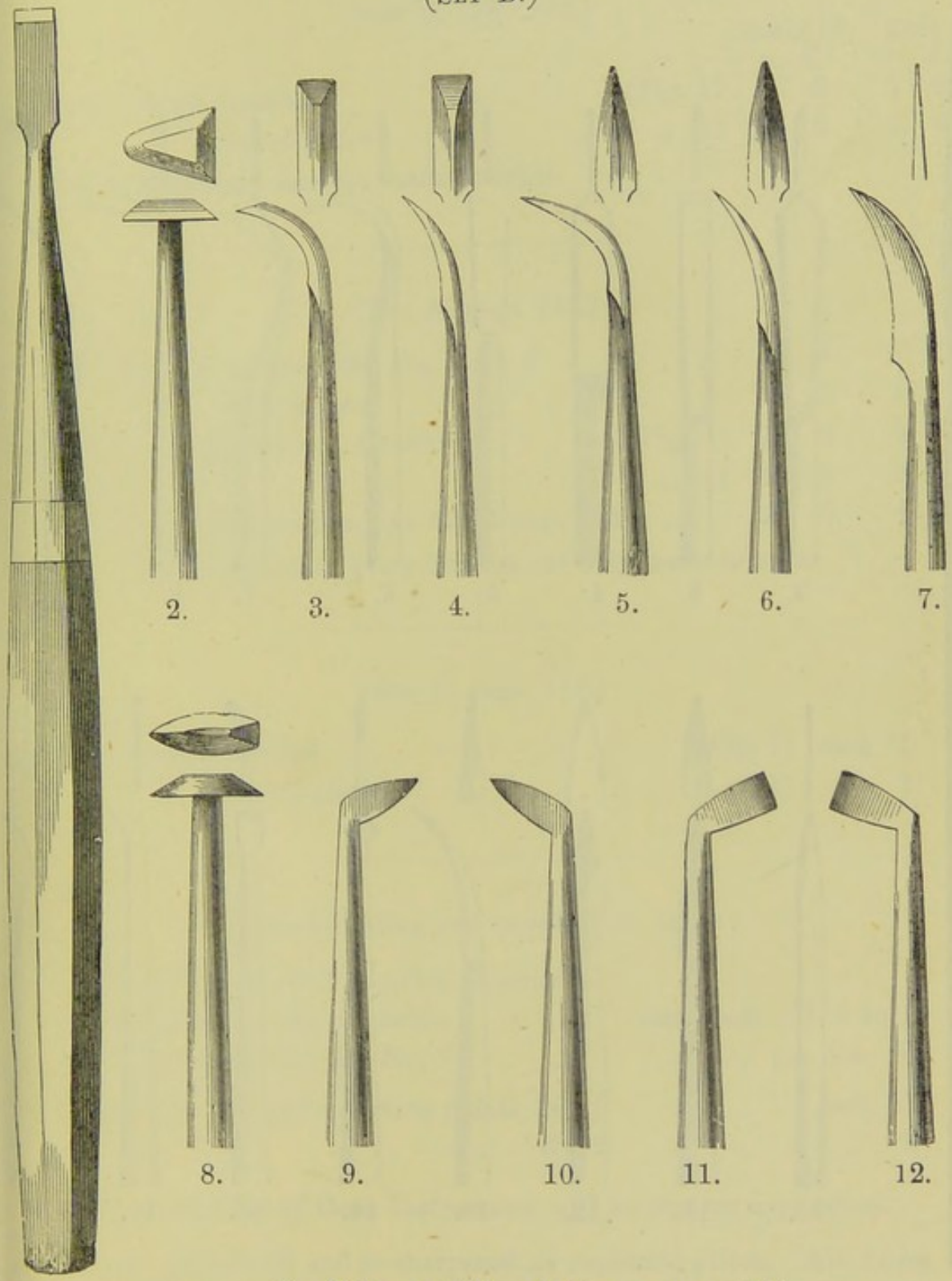


1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

For Prices and Description see page 115.

SCALERS.

(Set B.)



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

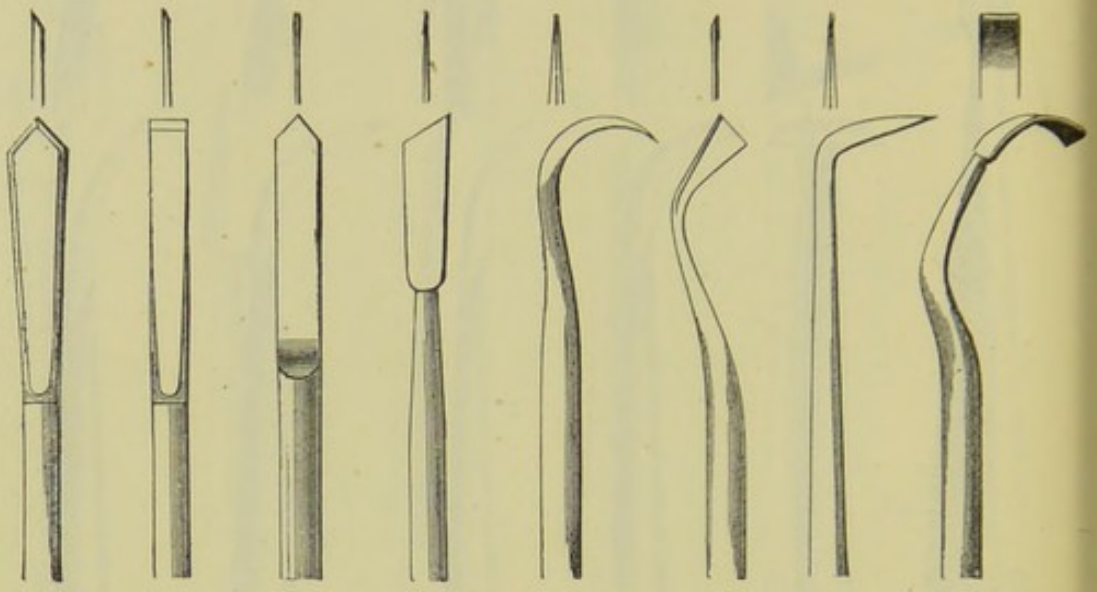
For Prices and Description see page 115.

SCALERS.

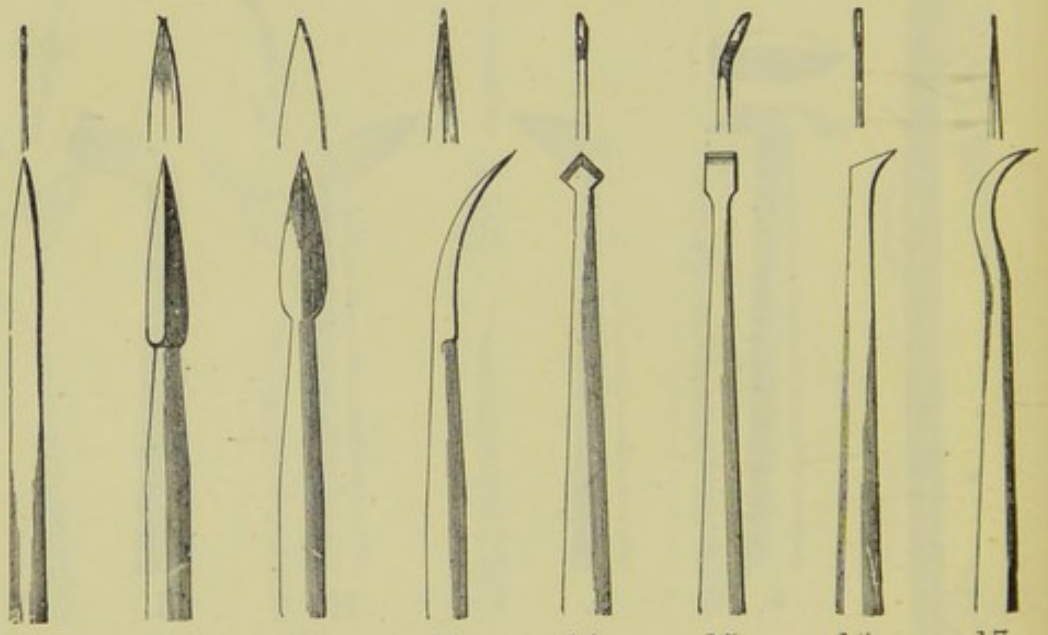
(Set C.)



1.



2. 3. 4. 5. 6. 7. 8. 9.



10. 11. 12. 13. 14. 15. 16. 17.

For Prices and Description see page 115.

SCALERS.

(Set A. page 112.)

		Set of 12. s.	d.	Each. s.	d.
In Steel octagon handles	(Fig. 1)	14	0	1	2
„ „ Nickel-plated	(„ 1)	18	0	1	6

In **Ivory** or **Ebony** handles, made to order.

(Set B. page 113.)

In Steel octagon handles, like Fig. 1 set A. ..		14	0	1	2
„ „ Nickel-plated		18	0	1	6
In Ebony octagon handles, tapered ..	(Fig. 1)	29	0	2	6
In Ivory „ „ „ ..	(„ 1)	44	0	3	9
„ ½ in. octagon handles, like Fig. 1 page 174 ..		55	0	4	9

The Stoppers in Ivory handles are only made to order.

(Set C. page 114.)

In Steel octagon handles	(Fig. 1) each	1	0
„ „ Nickel-plated	(„ 1) „	1	4

The following are supplied to order:

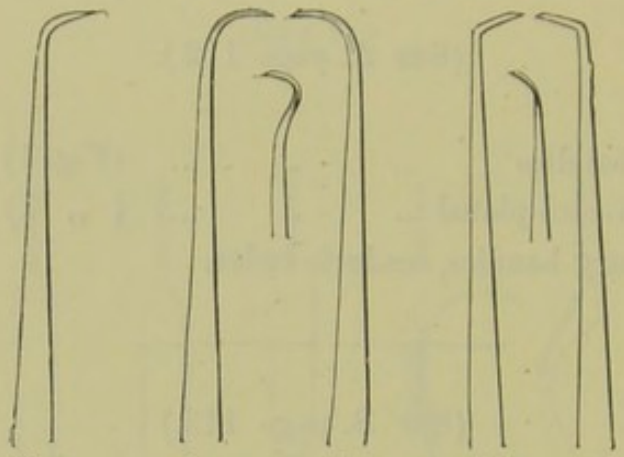
Scalers for Cone-socket handles, American, **with screw ends**, all forms	each from 1/6 to	2	6
Cone-socket handles for do., No. 3	per doz.	10	0
Pliers for inserting and removing points, No. 1	each	7	0
„ „ „ „ No. 2	„	3	0

Illustrated list of these Instruments will be sent on application.

Scalers re-pointed and re-sharpened at moderate prices. All forms of Scalers made or obtained to order.

FINE SCALERS.

(Dr. HOWE'S.)



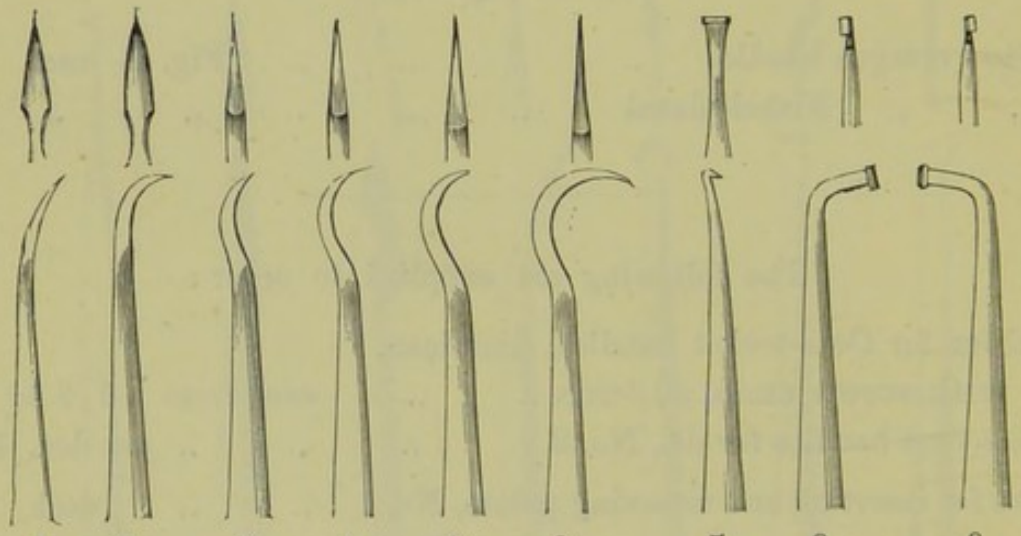
1. 2. 3. 4. 5.

A set of five very fine Scalers, consisting of two pairs curved Right and Left and one Straight, for getting into very narrow spaces and between irregular teeth.

		s.	d.		s.	d.
With small Steel plain octagon handles	set of 5	4	6	each	1	0
„ Nickel-plated	„	6	0	„	1	4

SMALL SCALERS.

(Dr. ABBOTT'S.)



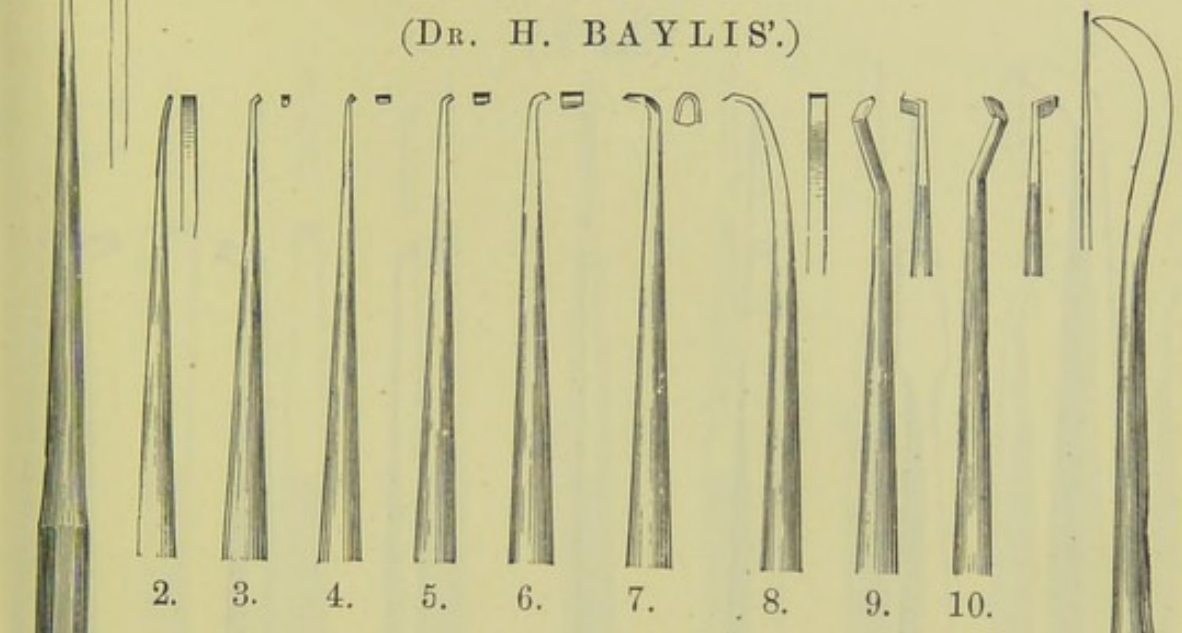
1. 2. 3. 4. 5. 6. 7. 8. 9.

		s.	d.
Set of 9 in Steel octagon handles	each	1	2
„ „ Nickel-plated	„	1	6

S. S. White's and other forms of Scalers kept in stock.

SCALERS.

(Dr. H. BAYLIS'.)

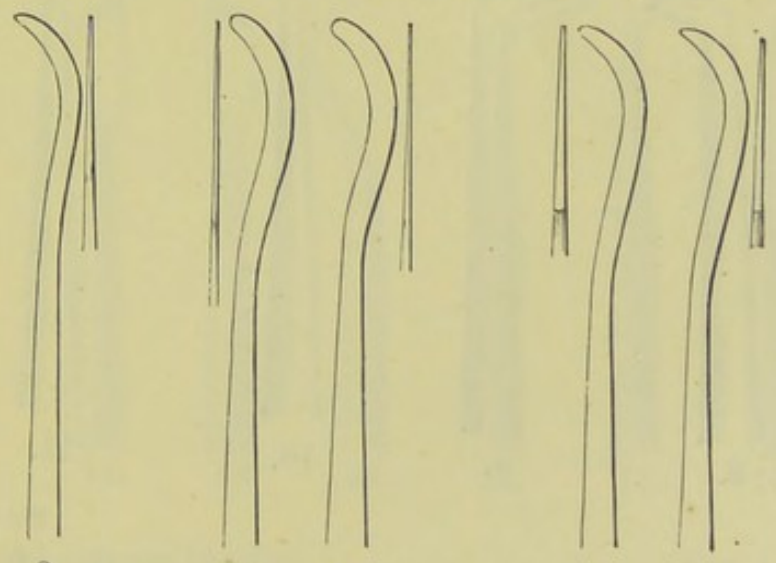


2. 3. 4. 5. 6. 7. 8. 9. 10.

		s.	d.
Set of 10 in Steel octagon handles	each	1	2
„ „ Nickel-plated	„	1	6

SICKLE SCALERS.

(Dr. LORD'S.)



2. 3. 4. 5. 6.

		s.	d.
Set of 6 in Steel octagon handles	each	1	2
„ „ Nickel-plated	„	1	6



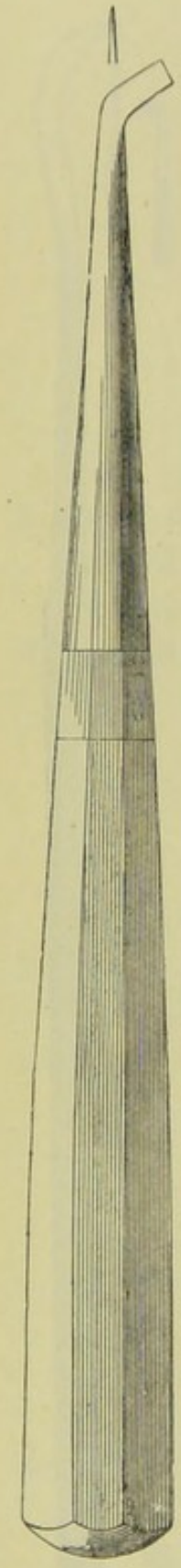
1.



1.

ENAMEL CUTTERS.

(Set A.)



1.



2.



3.



4.



5.



6.



7.



8.



9.



10.



11.

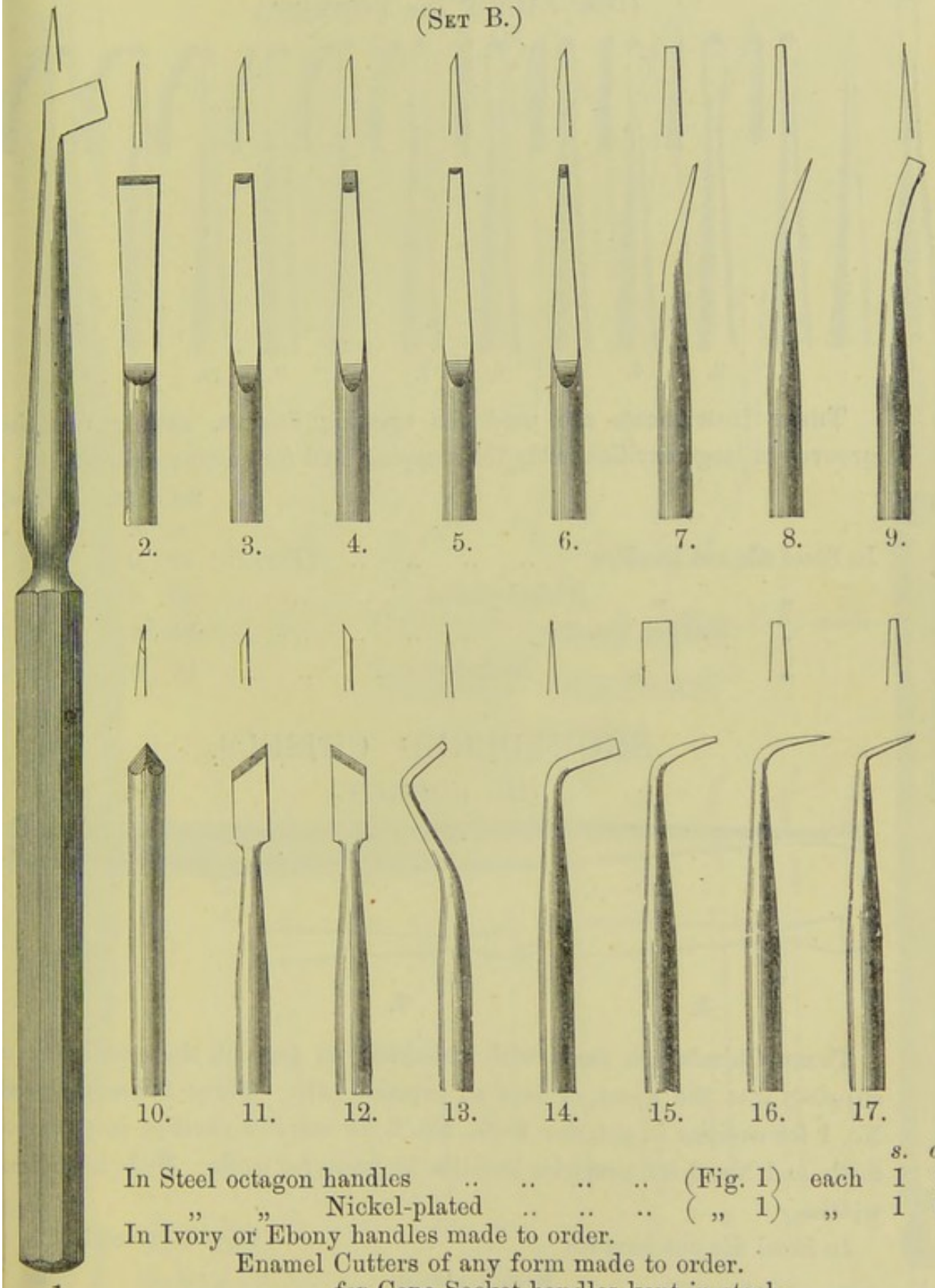


12.

	Set of 12.		Each.	
	s.	*d.*	*s.*	*d.*
In Steel octagon handles, like Fig. 1 set B. ..	14	0	1	2
„ „ Nickel-plated	18	0	1	6
In Ivory octagon handles to order (Fig. 1)	55	0	4	9
In Ebony „ „ .. („ 1)	35	0	3	0

ENAMEL CUTTERS.

(Set B.)



			s.	d.
In Steel octagon handles	(Fig. 1)	each	1	2
„ „ Nickel-plated	(„ 1)	„	1	6

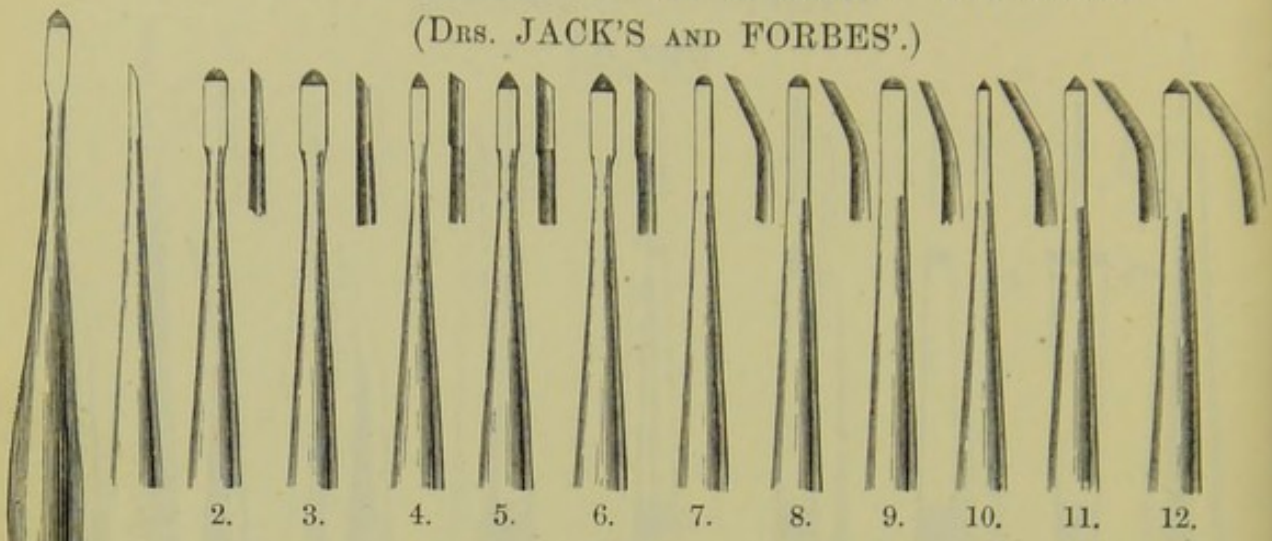
In Ivory or Ebony handles made to order.

Enamel Cutters of any form made to order.

„ for Cone-Socket handles kept in stock.

PARABOLOID AND GOUGE CHISELS.

(Drs. JACK'S and FORBES'.)



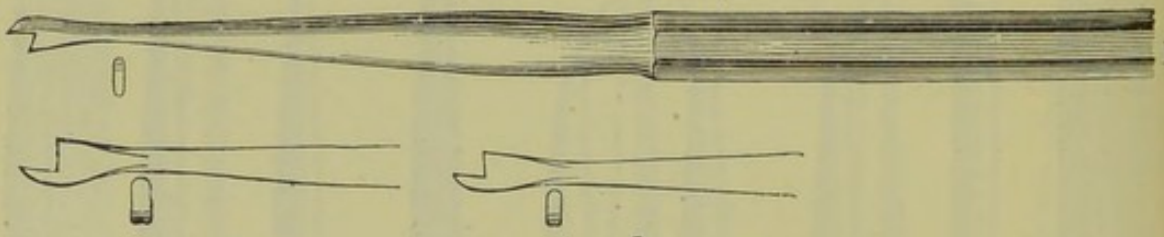
2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

These Instruments are used for opening fissures, cutting retaining grooves in large cavities ready for stopping, and for cutting enamel.

	Set of 12.		Each.	
	s.	*d.*	*s.*	*d.*
In Steel file cut handles .. .. (Fig. 1)	19	0	1	9
„ „ Nickel-plated	23	0	2	0
„ octagon handles	14	0	1	2
„ „ Nickel-plated	18	0	1	6

SHOULDERED CHISELS.

(Dr. HOLMES'.)



1.

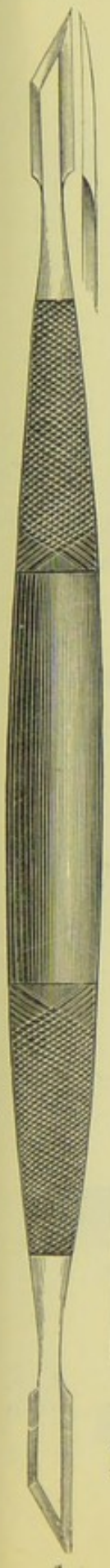
3. 2.

These Chisels are made with shoulders to prevent the possibility of slipping into the gums, or into an exposed pulp. Three forms are used, No. 1 for cavities in anterior teeth, No. 2 for anterior cavities in posterior teeth, and No. 3 for posterior cavities in posterior teeth. Made in various widths.

	s.	*d.*
In Steel file cut handles .. .. (Figs. 1–3) each	2	0
„ „ Nickel-plated .. .. („ 1–3) „	2	4



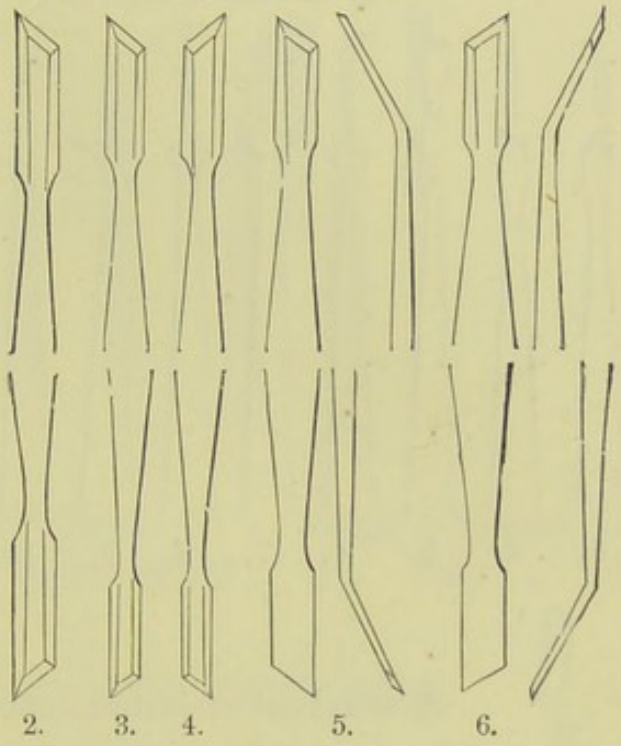
1.



1.

ENAMEL CUTTERS.

(Dr. JACK'S.)

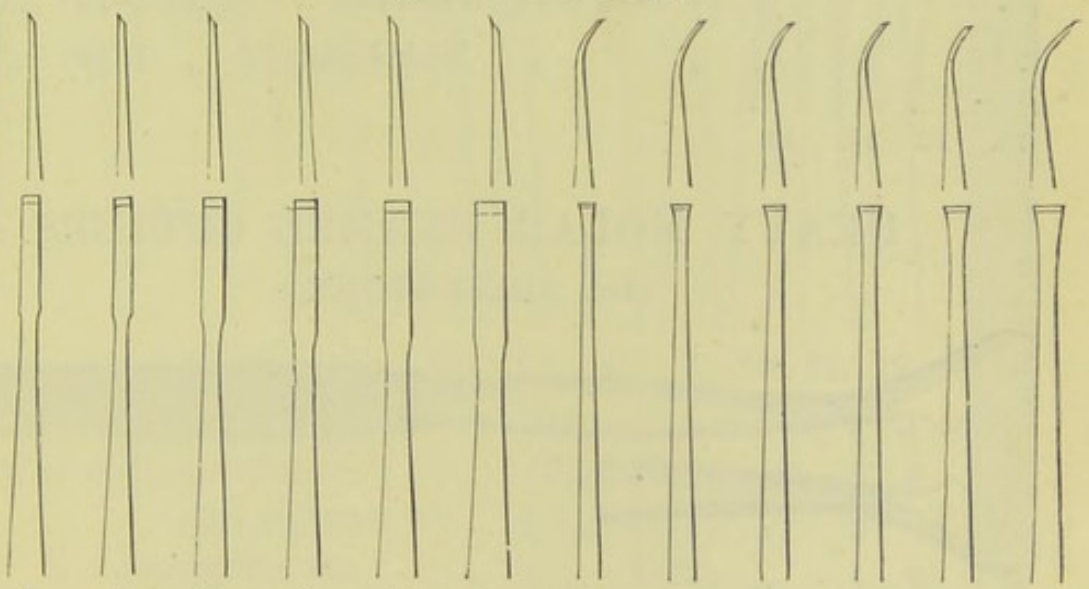


2. 3. 4. 5. 6.

			s.	d.
In rights and lefts, double-ended	(Figs. 1–6)	each	6	0

ENAMEL CUTTERS.

(Dr. ABBOTT'S.)

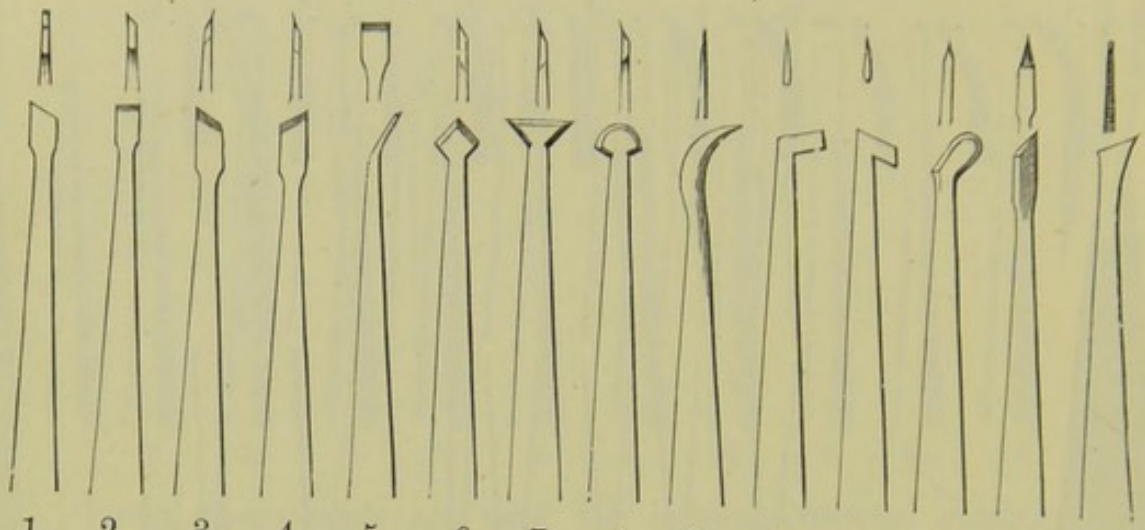


1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

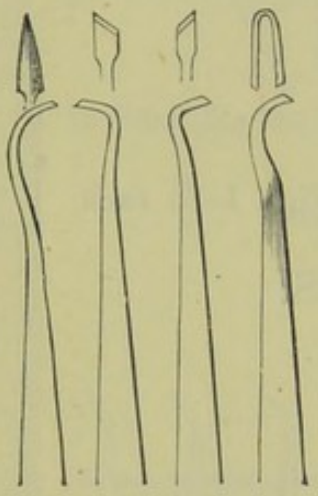
			s.	d.
In Steel octagon handles	(Figs. 1–12)	each	1	2
„ „ Nickel-plated ..	(„ 1–12)	„	1	6
„ File-cut „	(„ 1–12)	„	1	9

ENAMEL CUTTERS.

(Dr. ARRINGTON'S.)



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.



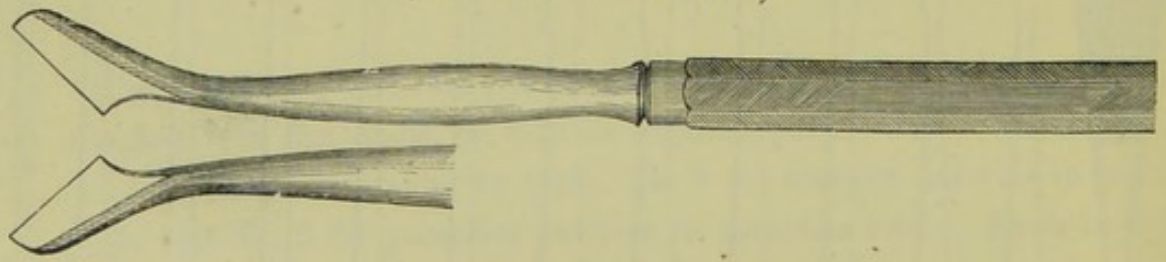
15. 16. 17. 18.

A useful set of instruments, designed to give every form and angle required. They are also very useful as small scalers.

			s.	d.
In Steel octagon handles ..	(Figs. 1–18)	each	1	2
„ „ Nickel-plated	(„ 1–18)	„	1	6

HEAVY MOLAR ENAMEL CUTTERS.

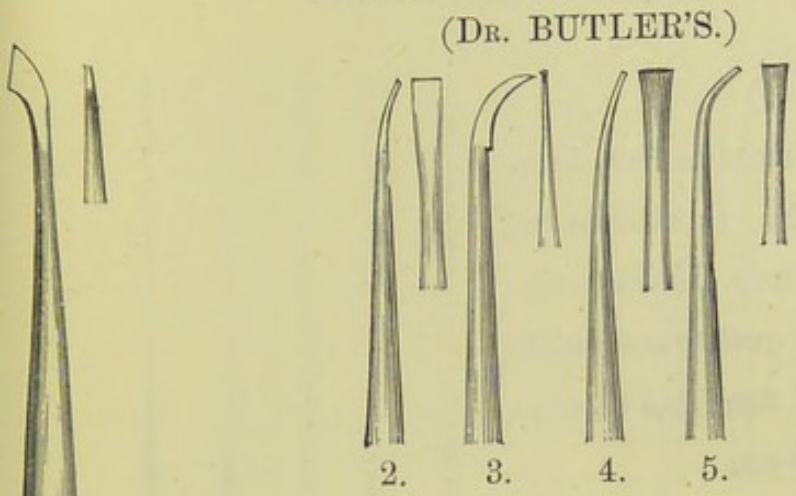
(Dr. ARRINGTON'S.)



		s.	d.
In Steel octagon handles, right and left	each	2	0
„ „ Nickel-plated	„	2	4

ENAMEL CUTTERS.

(Dr. BUTLER'S.)

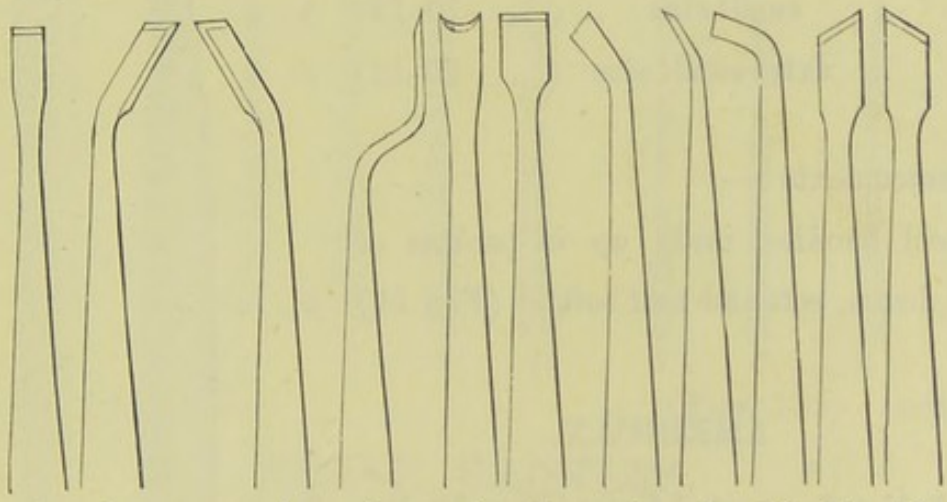


2. 3. 4. 5.

			s.	d.
In Steel octagon handles	..	(Figs. 1–5) each	1	2
„ Nickel-plated	..	(„ 1–5) „	1	6

ENAMEL CUTTERS.

(Dr. DARBY'S.)



2. 3. 4. 5. 6. 7. 8. 9. 10 11. 12.

			s.	d.
In Steel file cut handles	..	(Figs. 1–12) each	2	0
„ Nickel-plated	..	(„ 1–12) „	2	4
„ octagon handles	..	(„ 1–12) „	1	2
„ „ Nickel-plated	..	(„ 1–12) „	1	6
1. Enamel Cutters re-pointed	..	.. .. per doz.	6	0



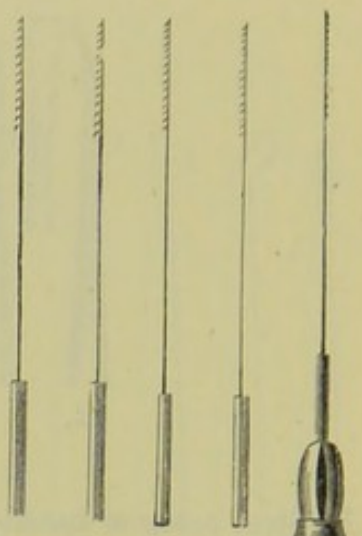
1.



1.

NERVE INSTRUMENTS.

Many unsolicited testimonials have been received concerning the excellence of C. Ash and Sons' Nerve Instruments. They are unsurpassed for quality and finish, and for many years past there has been an increasing demand for them.



10. 11. 12. 13.

Made up in packets containing one dozen as under:—

	Per pkt. s.	d.
Soft and half soft, assorted forms (Figs. 10–13)	3	0
,, ,, small size .. (,, 10–13)	3	0
,, ,, extra small size (,, 10–13)	3	0

Nerve Instruments:—

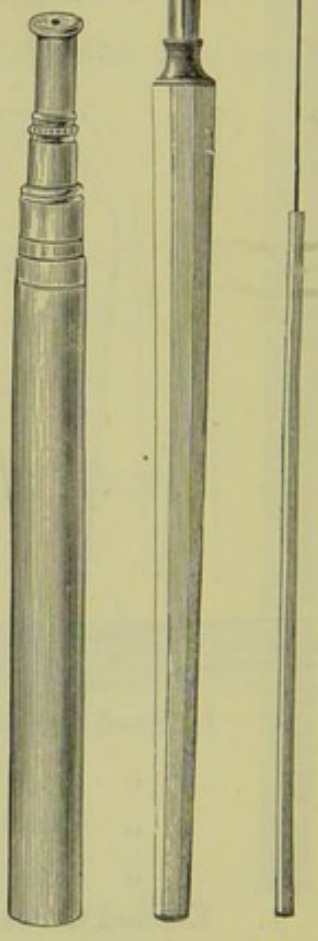
In Steel handles, made up in packets of one dozen, soft and half soft (Fig. 14) 3 6

AMERICAN.

Soft and half soft, assorted forms (Figs. 10–13)	3	0
,, ,, small size .. (,, 10–13)	3	0
,, ,, extra small size (,, 10–13)	3	0

Nerve Instrument Holders:—

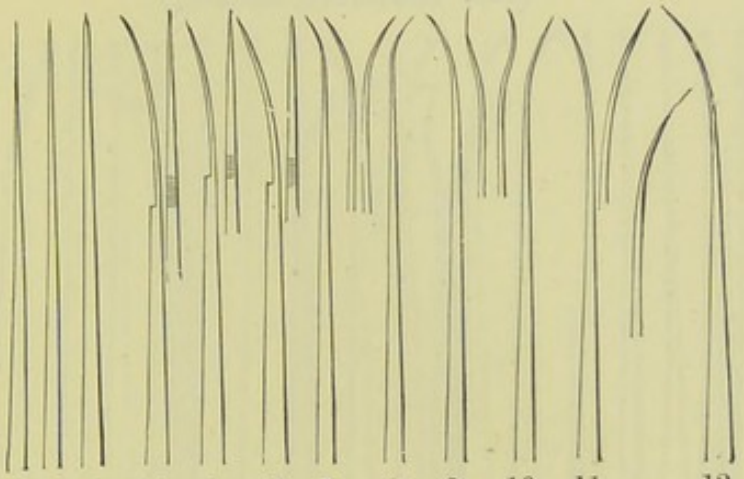
In Ivory handle .. .. (Fig. 15) each	3	0
,, Bone ,, ... (,, 16) ,,	0	4



16. 15. 14.

NERVE CANAL STOPPERS.

(Dr. HUNTER'S.)

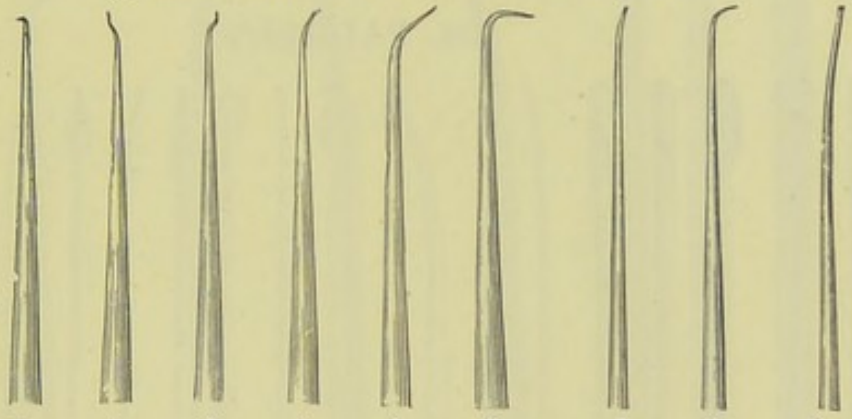


1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

		s.	d.
In Steel octagon handles, bronzed	(Figs. 1–12) each	1	0
„ „ „	(„ 1–12) per set	11	0

EXPLORING INSTRUMENTS.

(Drs. PERRY'S and BROCKWAY'S.)



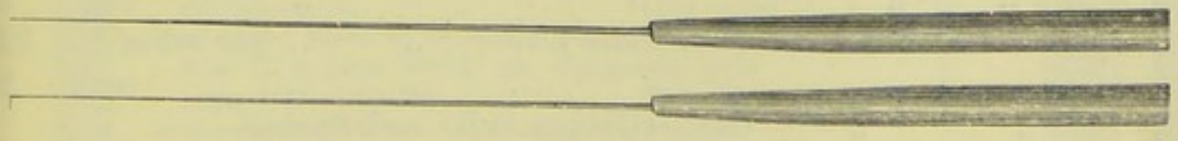
1. 2. 3. 4. 5. 6. 7. 8. 9.

		s.	d.
In plain octagon handles	(Figs. 1–9) each	0	9

NERVE BRISTLES.

(Dr. DONALDSON'S.)

For removing the nerve, cleaning the nerve cavity, and for introducing medicaments in the treatment of abscesses, &c.



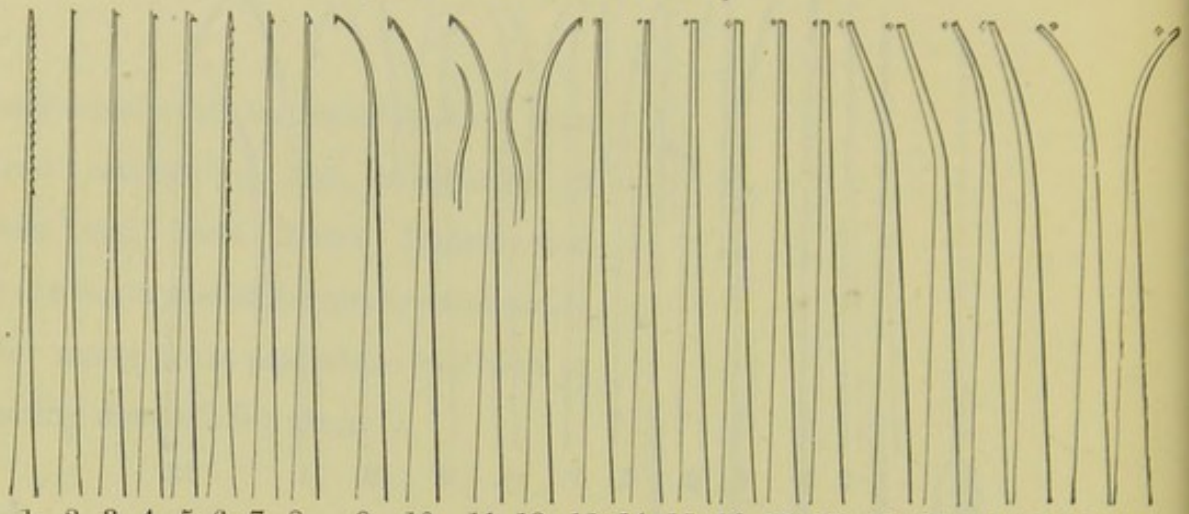
		s.	d.
In hard rubber handles, spring tempered	each	0	10
„ „ „ „	per doz.	9	6
„ „ American manufacture ..	per box of 10 assorted	12	0



1.

NERVE INSTRUMENTS.

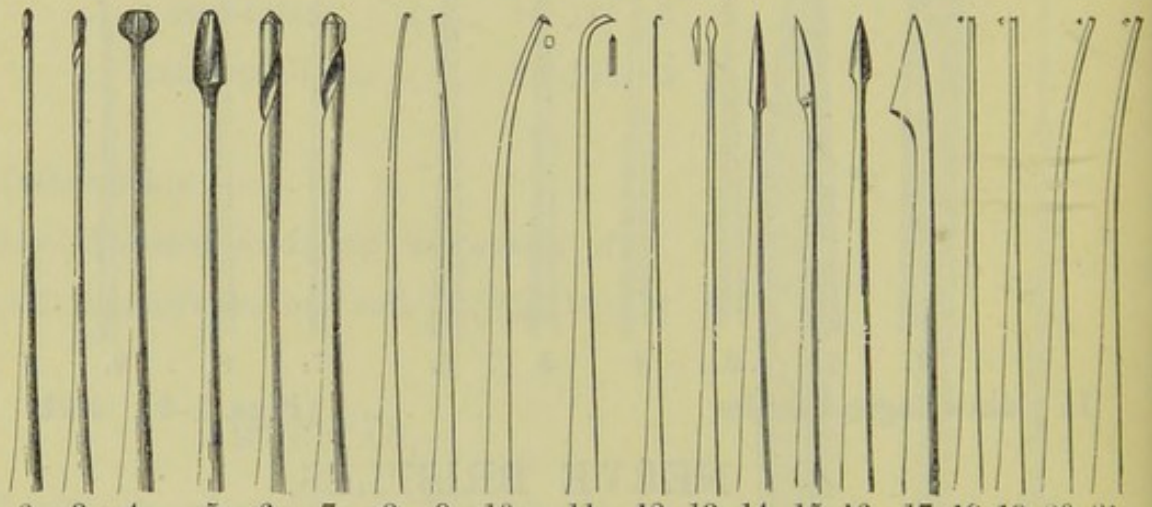
(Dr. ARRINGTON'S.)



1. 2 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24.

		s.	d.
In Steel handles, bronzed	per set of 24	17	6
„ „	each	0	10
„ small square Steel handles	per doz. 8/6 ; each	0	9

(Dr. PALMER'S.)



2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21.

		s.	d.
In Steel handles, bronzed	per set of 21	19	0
„ „ „	each	1	0
Nerve and Bur Drills (Dr. Gates')	per set of 42	32	0
„ „ „	each	1	0
„ „ Gates-Glidden Soft- and Spring-tempered, large, medium, and small sizes	„	1	3
Nerve Broaches (Stubs')	per doz. 2/4 ; „	0	2½

PROBES AND NERVE INSTRUMENTS.





2.



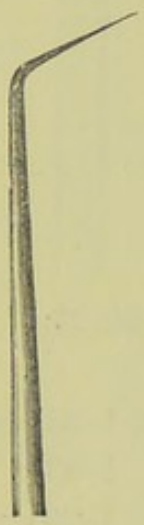
3.



4.



5.



6.



7.



8.



9.



10.

11.



12.



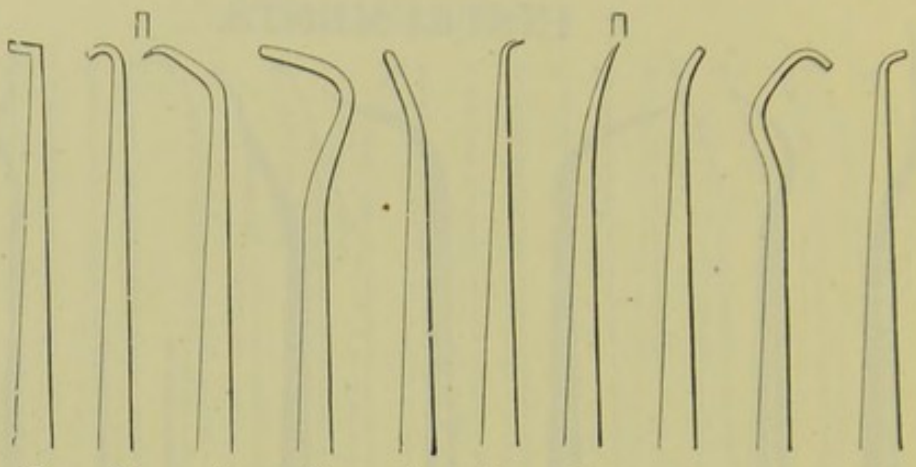
13.

			s.	d.
In Steel octagon handles	..	(Figs. 1–9) each	0	8
„ „ Nickel-plated	(„	1–9) „	1	0
„ „ various, double-ended	..	„	1	2
„ „ Nickel-plated	.. ..	„	1	6
Probe (Dr. Weston's) and Plugging Assistant, double-ended	.. ..	(Fig 12) „	1	6
Probe (Mr. Moon's), for ascertaining the position of stumps which are overgrown with gum, Nickel-plated	.. ..	(Fig. 13) „	2	0
Nerve Instruments—American, Platinum and Iridium, in ¼ doz. and ½ doz. packets	.. ..	(Figs. 10–11) per doz.	12	0

Other Probes made or obtained to order.

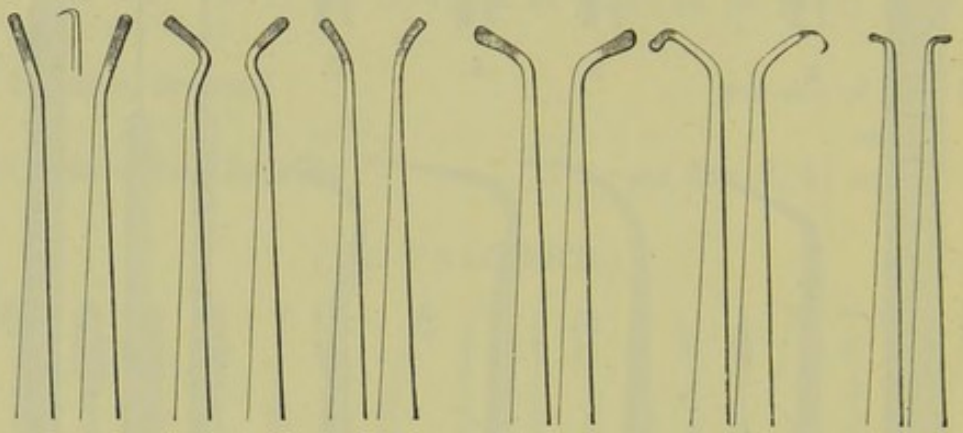
EXCAVATORS.





2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

Flat and cut either way.



12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23.

Curved right and left.

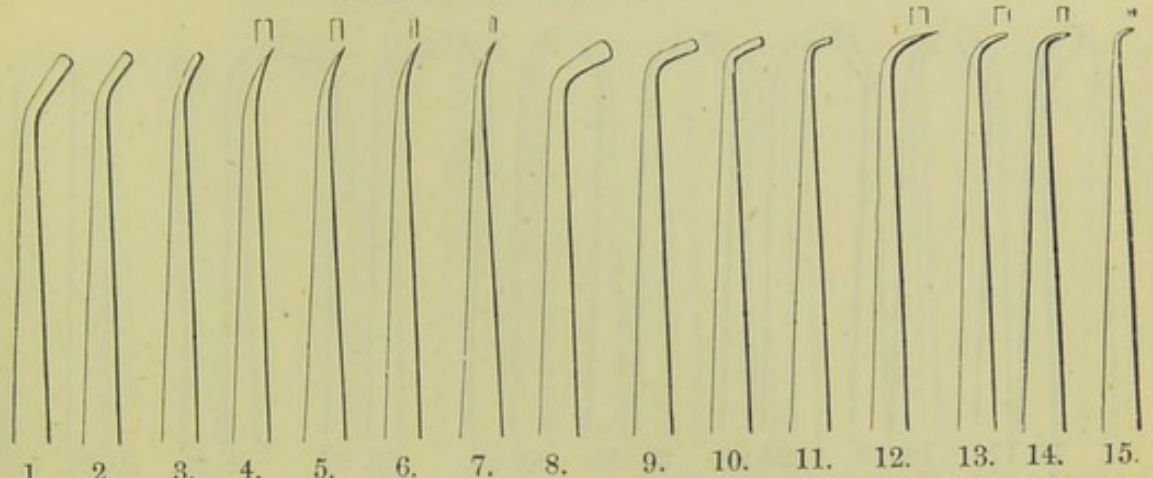
			s.	d.
In Ivory handles, like Fig. 1	..	(Figs. 1–23) each	2	3
„ Ebony „ „	..	(„ 1–23) „	1	9
„ Plain octagon handles	..	(„ 1–23) „	0	8
„ „ Nickel-plated	..	(„ 1–23) „	1	0

The following are supplied to order :—

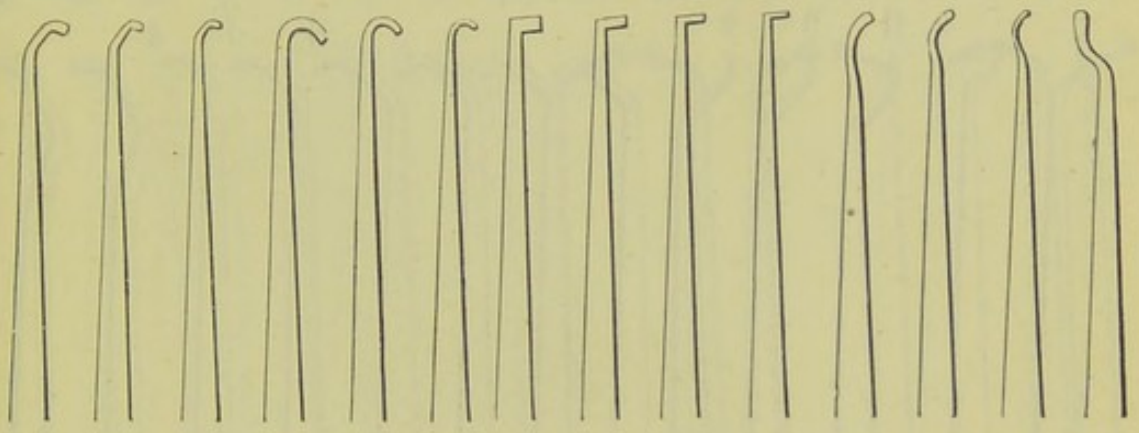
			s.	d.
Excavators for Cone-socket handles, with screw ends, all forms	..	each 6*d.*, 7½*d.* and	1	0
Cone-socket handles, knurled, Nos. 1 and 2	..	per doz.	6	0
Pliers for inserting and removing points, No. 1		each	7	0
„ „ „ „ 2		„	3	0
Excavators re-pointed	.. .. ..	per doz.	4	0

1. All other forms of Excavators made or obtained to order.

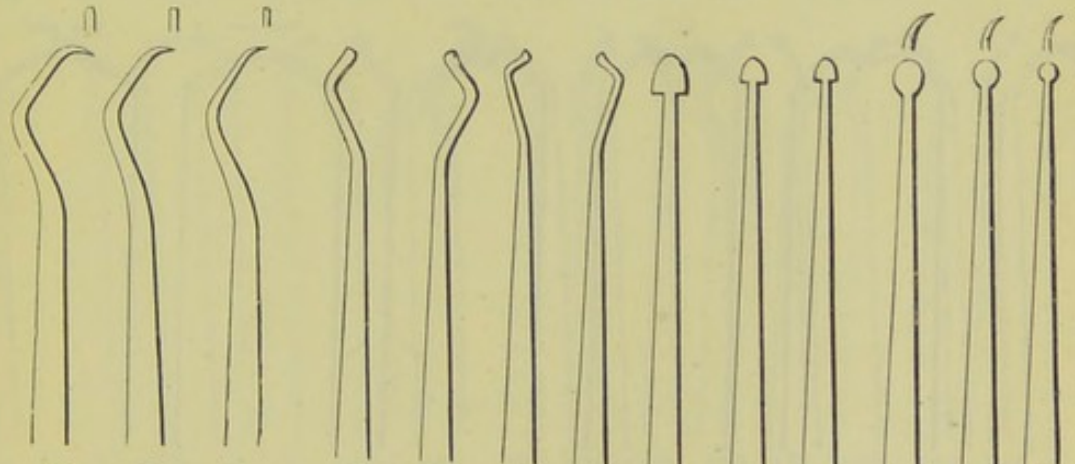
EXCAVATORS.



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.



34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47.

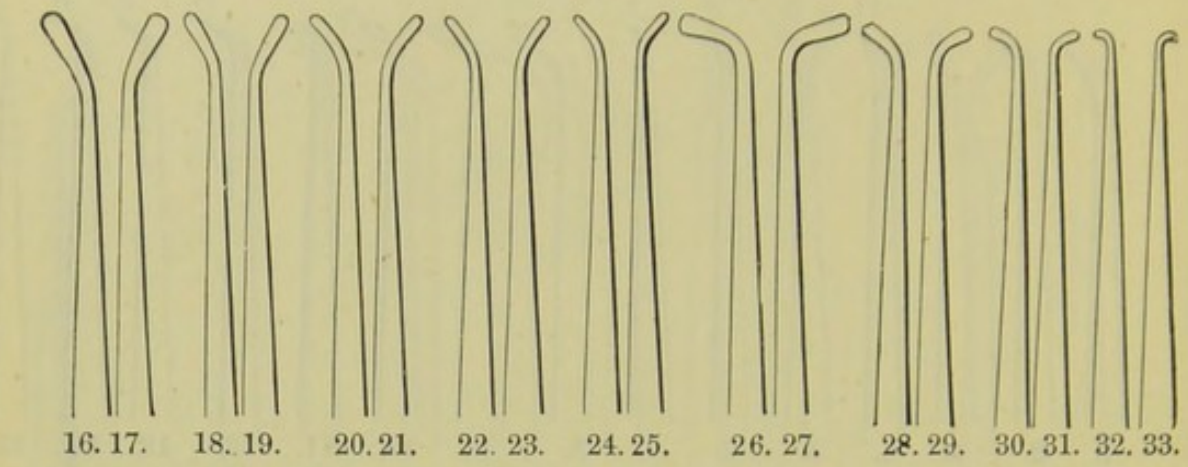


62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74.

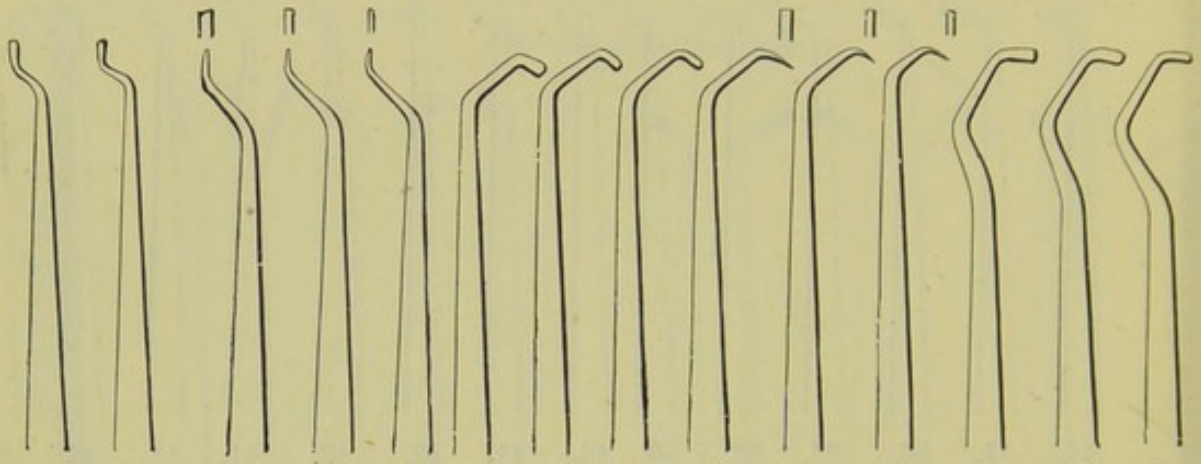
Nos. 65 to 68 are curved right and left.
All others on this page are flat, and cut either way.

				s.	d.
In plain octagon handles	(Figs. 1–74)	each		0	8
„ „ Nickel-plated	(„ 1–74)	„		1	0
In blued Steel handles, tapered, like Fig. 87		„		1	0

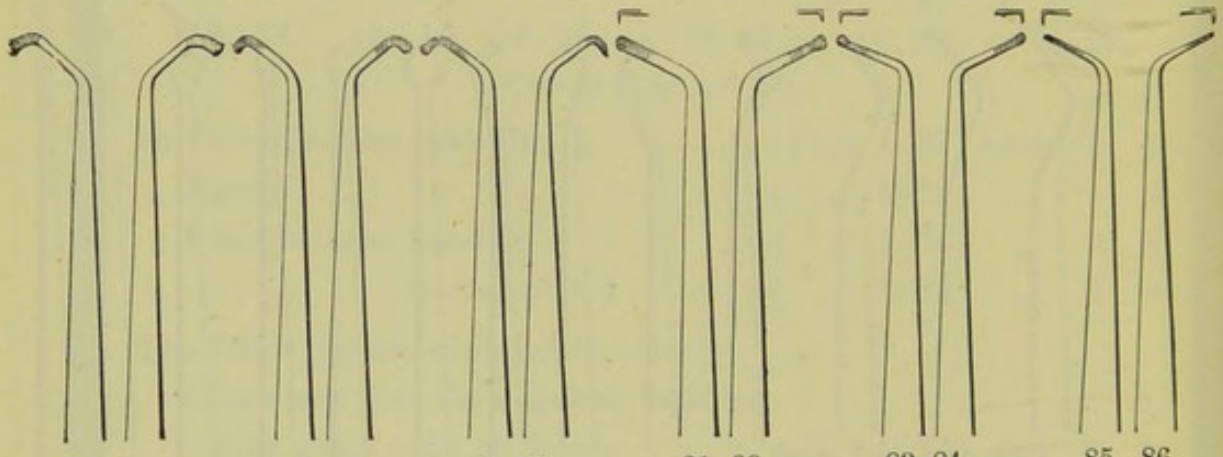
EXCAVATORS.



16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33.



48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61.

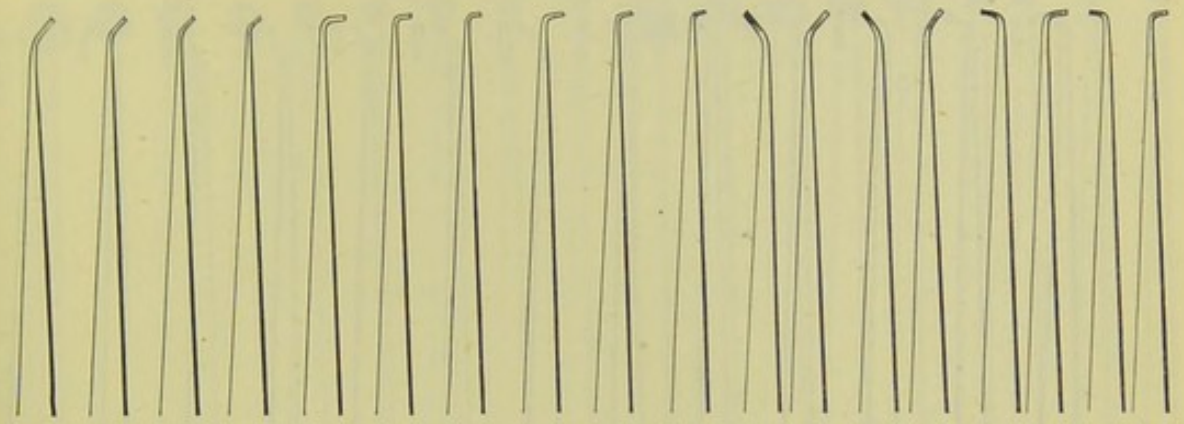


75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86.

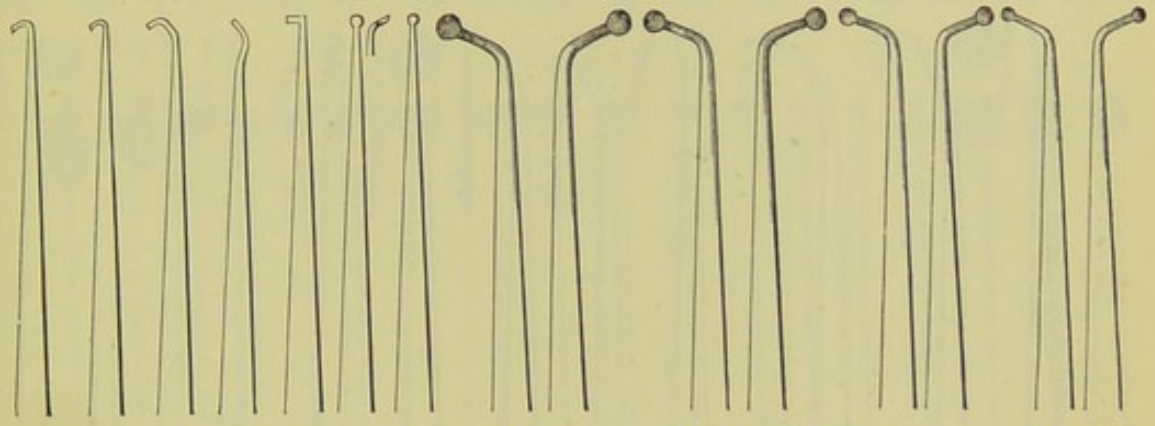
Nos. 16 to 33 are curved right and left.
„ 75 to 86 are double curved right and left.
„ 48 to 61 are flat, and cut either way.

			s.	d.
In plain octagon handles	(Figs. 16–86)	each	0	8
„ „ Nickel-plated	(„ 16–86)	„	1	0
In blued Steel handles, tapered like Fig. 87		„	1	1

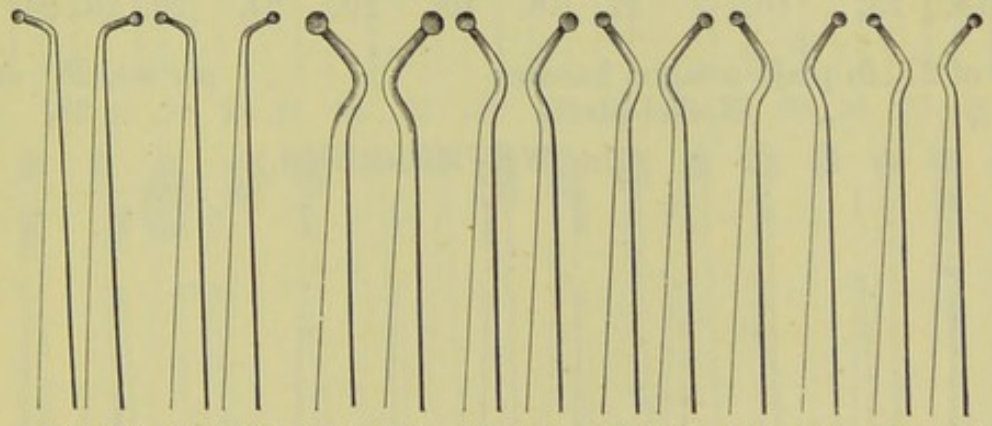
EXCAVATORS.



88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105.



106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120.



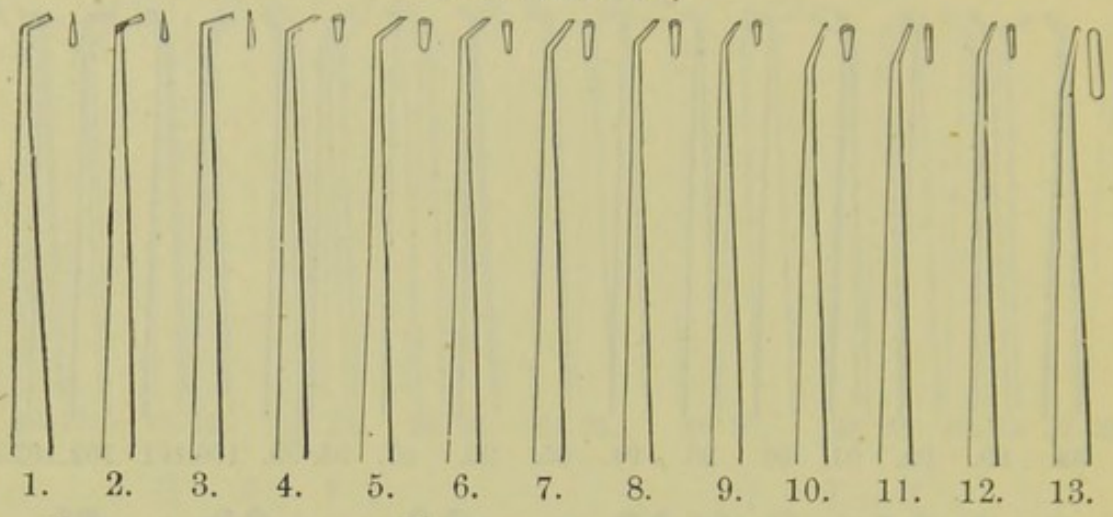
121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132 133. 134.

Nos. 87 to 97 are straight, and cut either way.
„ 98 to 105 are curved right and left.
„ 106 to 112 are straight, and cut either way.
„ 113 to 134 spoon-shape, curved right and left.

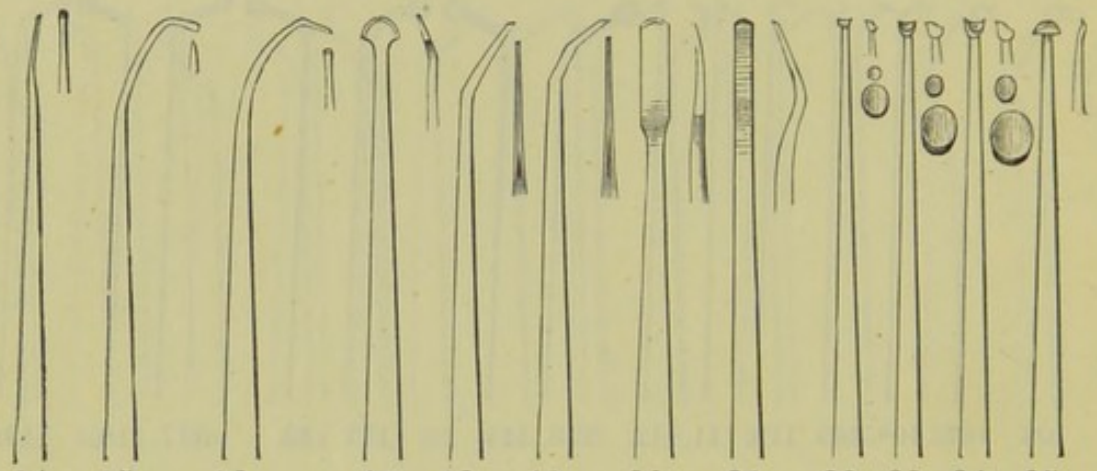
			s.	d.
In blued Steel handles, tapered	(Fig. 87)	each	1	0
In plain octagon handles, like Fig. 1 on page 129		„	0	8
„ „ Nickel-plated „ „		„	1	0

EXCAVATORS.

(Dr. HEAD'S.)



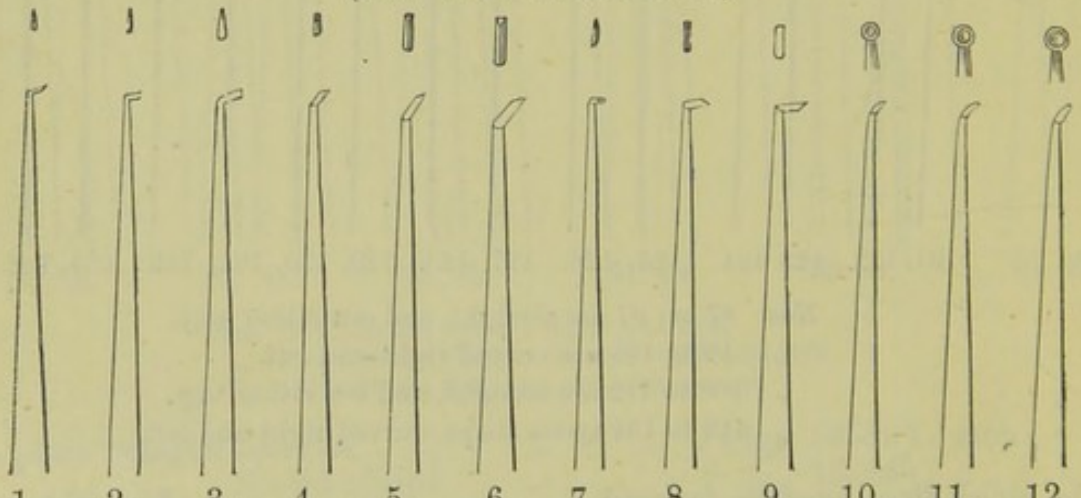
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.



14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25.

		s.	d.
Set of 25, in plain octagon handles	per set, 20/ each	1	0
„ „ Nickel-plated	„ 28/ „	1	4

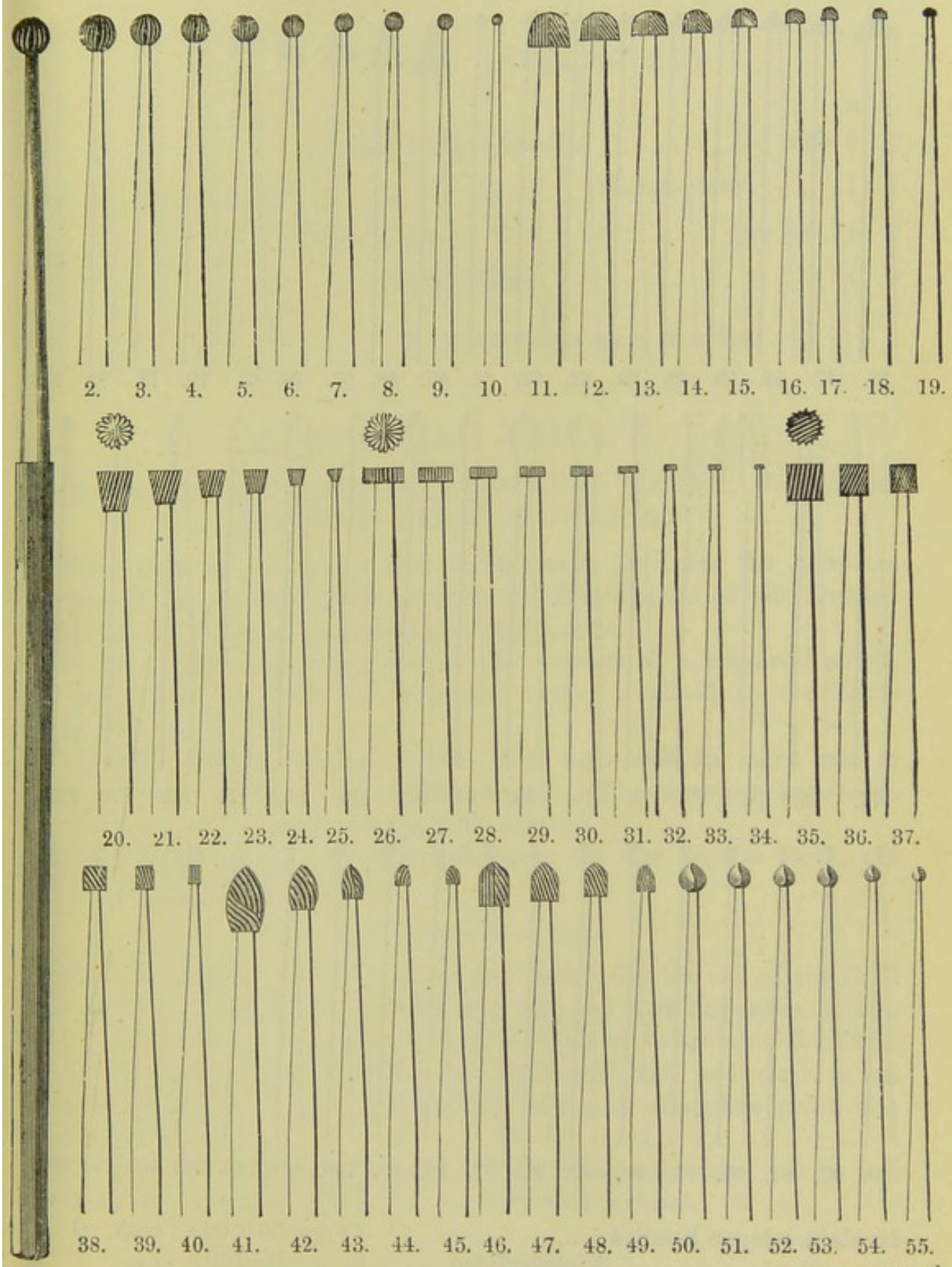
(Dr. WETHERBEE'S.)



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

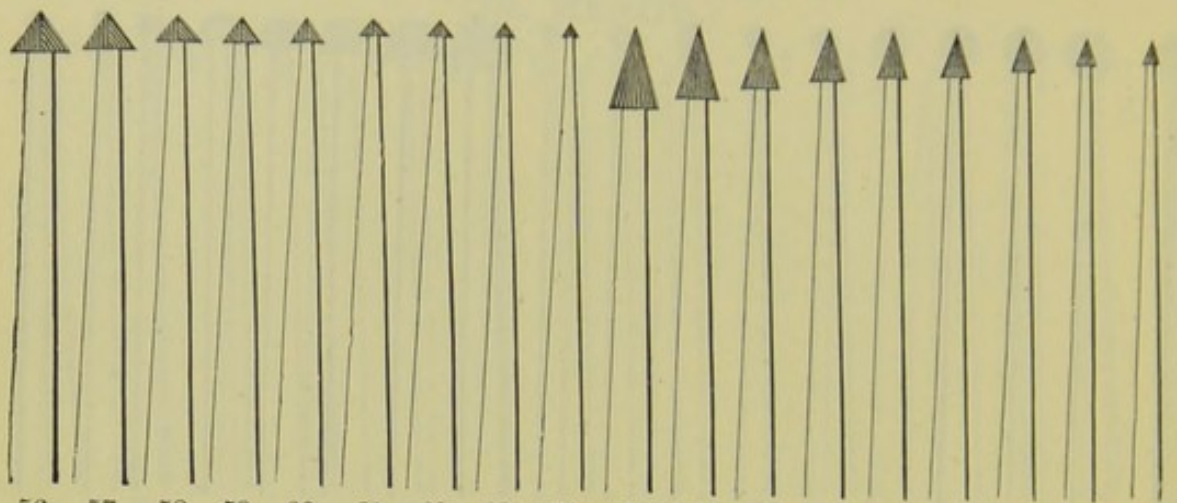
	s.	d.
Set of 12, Chisel and Spoon, plain octagon	each	1	0
„ „ „ Nickel-plated	„	1	4

BURS AND DRILLS.

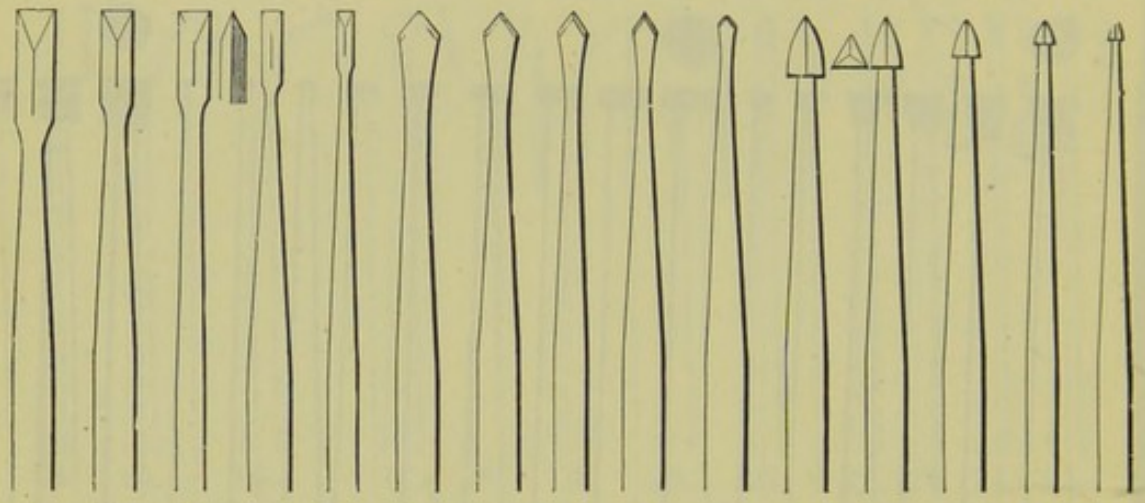


					s.	d.
1.	In plain octagon handles	(Figs. 1–55)	each		0	9
	„ „ Nickel-plated	(„ 1–55)	„		1	1

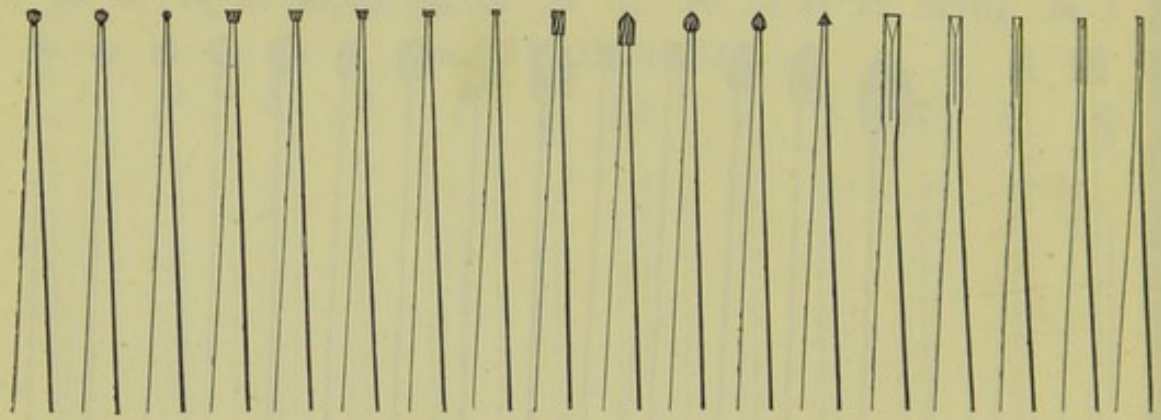
BURS AND DRILLS.



56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73.



74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88.

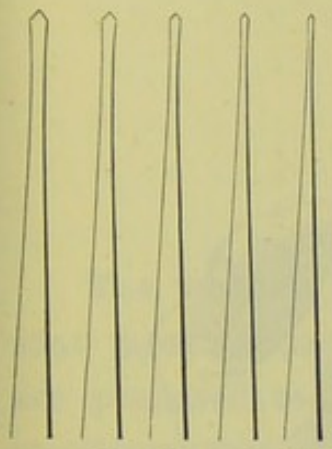


89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106.

				s.	*d.*
In plain octagon handles	(Figs. 56–106)	each		0	9
„ „ Nickel-plated ..	(„ 56–106)	„		1	1
Burs and Drills re-cut and re-pointed		per doz.		4	0

Other forms of Burs made to order.

DRILLS.



107. 108. 109. 110. 111.

(Figs. 107–111.)

		s.	d.
In Steel octagon handles	each	0	9
„ „ Nickel-plated	„	1	1
Burs re-cut	per doz.	4	0
„ Nickel-plated	„	4	0

Other forms made to order.

TUBULAR DRILL.

FOR MAKING CAVITIES IN ARTIFICIAL TEETH, DRILLING HOLES IN PIVOT CROWNS, &c.

This Drill is far better than a Diamond Drill for the purposes mentioned, **but it cannot be used in the Handpiece of the Dental Engine; it must be employed on the Lathe.**

It has a plain round tang and can be attached to a universal chuck, or any skilled mechanic can make and "true" a chuck to the Lathe Head that will take it.

To avoid breaking the tube of the Drill care must be taken not to apply too much pressure when drilling a tooth. The necessary knowledge on this point will be gained after a little practice.

Fig. 77, Fissure Bur, on page 157, shows the size kept in stock, but larger sizes may be had to order.

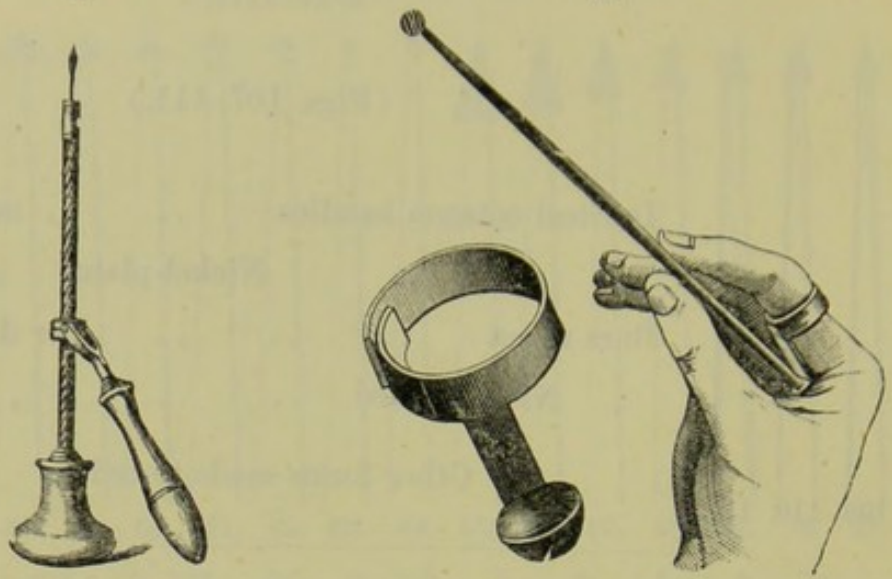
DIRECTIONS FOR USE.

Break up Diamond Powder as fine as possible, dip the end of the Drill in a mixture of turpentine and cocoanut oil—one part turpentine to two parts of cocoanut oil—take up a little of the dust on the point of the Drill, press the tooth against it, keep the Drill well fed, and clear it out occasionally by passing a very thin knife blade, or other fine point, into the slot of the tube.

The Drill being hollow, a portion of the tooth substance will be left standing, which can readily be broken down with a chisel.

	s.	d.
Price	5	0

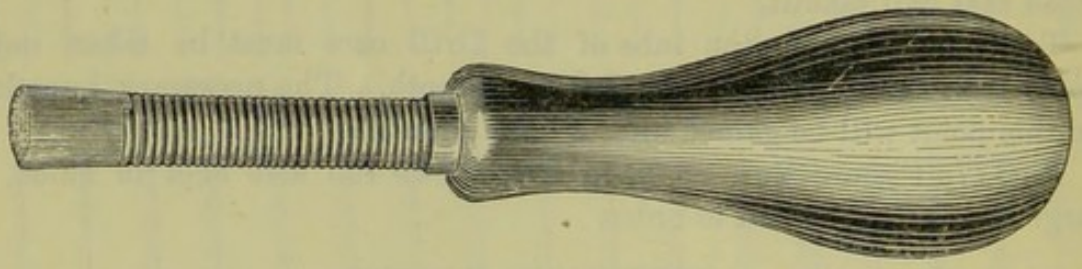
1. 2.



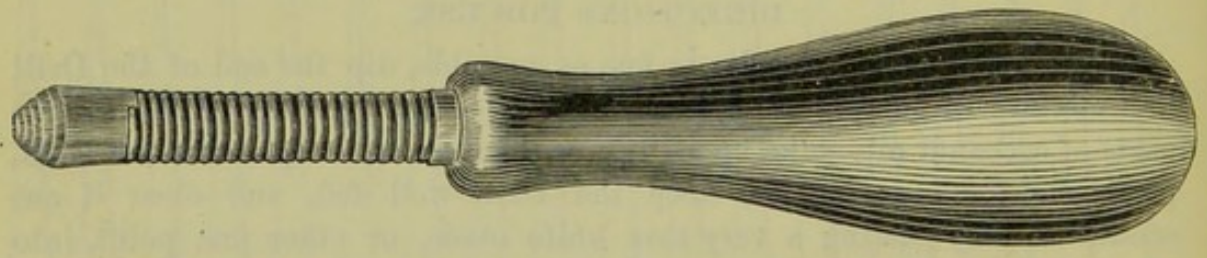
5 inches long.

		s.	d.
Archimedian Drilling Instrument, with tapered Steel Socket, improved form, in Ebony handle and three Drills	(Fig. 1) each	9	0
Burs and Drills, with tapered ends for ditto	per doz.	9	0
Bur Thimble, for placing on the first or second finger, to receive the ends of Drills, &c., to which a rotary motion is to be given, in German Silver Nickel-plated	(Fig. 2) each	1	9
„ „ „ „ with hinge	(„ 2) „	2	0

1.



2.



AMERICAN BRUSHES FOR CLEANING BURS, STOPPERS, FILES, &c.

		s.	d.
In Brass wire	(Fig. 1.) each	2	0
„ Steel wire	(„ 2.) „	2	9
„ „ smaller than Fig. 2	No. 2 S „	2	9
„ „ finer „	No. 3. „	3	0

NOTICES.

The various Instruments shown in this Catalogue represent most of the kinds in demand, but C. ASH & SONS are prepared to make any other forms to special order, on condition that proper Working Sketches or Models are sent.

Besides these, C. ASH & SONS keep a large variety of American instruments, to meet the requirements of those Operators who use American Instruments.

It is their aim to supply the wants of all the members of the Profession, who may entrust them with their commands, and orders given from S. S. White's Catalogue, the Dental Cosmos, or any of the American Lists or Journals can be executed with facility. Those articles which are not in stock, when an order is received, will be obtained with the least possible delay.

When ordering goods always quote the figure or state the page of the Catalogue or List on which each article is to be found. This will ensure prompt and accurate execution of orders, and has become necessary now that there are various editions of the English and American Catalogues in existence.

Do not mutilate this or any other Catalogue by cutting out the illustrations. A reference to the page and figure, or article, will be quite sufficient, provided the name and date of the Catalogue are given.

DENTAL ENGINES, INSTRUMENTS AND APPLIANCES.

1. In ordering extra Handpieces, please say for which Engine they are required.

2. Always state which Handpiece is used when ordering Engine Instruments. If there is any doubt on this point, send an old Bur as a pattern.

3. When ordering Right-, Acute-, or Obtuse-Angle Attachments, be careful to state for which Handpiece they are wanted.

4. The Instruments for these Attachments are shown on page 156. Do not omit to mention which style is required—Fig. 1 or Fig. 2.

5. For the convenience of those Operators who use American Instruments, C. Ash and Sons keep a large and varied assortment of the most useful shapes and sizes for use with the Dental Engine. They are prepared to execute orders from S. S. White's Catalogue, The Dental Cosmos, or any of the numerous American lists. Any article not in stock, when an order is received, will be obtained with the least possible delay.

6. A discount of 10 per cent. is allowed off Engine Instruments and Appliances, when quantities of 3 doz. are ordered at one time.

7. Herbst's Gold-Filling Instruments, shown on page 154, are supplied to fit any Handpiece or Attachment at the uniform price of 1s. each. When ordering please say for which they are wanted.

AMENDED DISCOUNTS: 10 °/₀ off 2 doz. 15 °/₀ off 4 doz.

PATENT IMPROVED DENTAL ENGINE.

(Dr. PARSONS SHAW'S.)

This Engine has all the motions of the **human elbow and wrist**, and is admitted by the first Operators to be the best at present made. For freedom of movement it is unequalled, and will bear the strictest comparison with any other for workmanship and finish. It is in general use at the Dental Hospital of London.

DESCRIPTION.

The movable arm, which works at a right angle to the upright rod B, has a flexible joint forming an elbow; this elbow is connected to the rod A by a spiral spring, which gives motion to the mandrels.

A second spring connects the **handpiece** with the rod A; this gives complete freedom to the Operator, and enables him to apply the instrument to any part of the mouth.

The position of the mandrel A to which the handpiece is attached must, when in use, be about at a right angle with the other portion of the flexible joint or elbow. If this rule be observed the whole arm is so flexible, and the handpiece so light in the hand, that the Operator can execute his work with the greatest ease to himself and comfort to the patient.

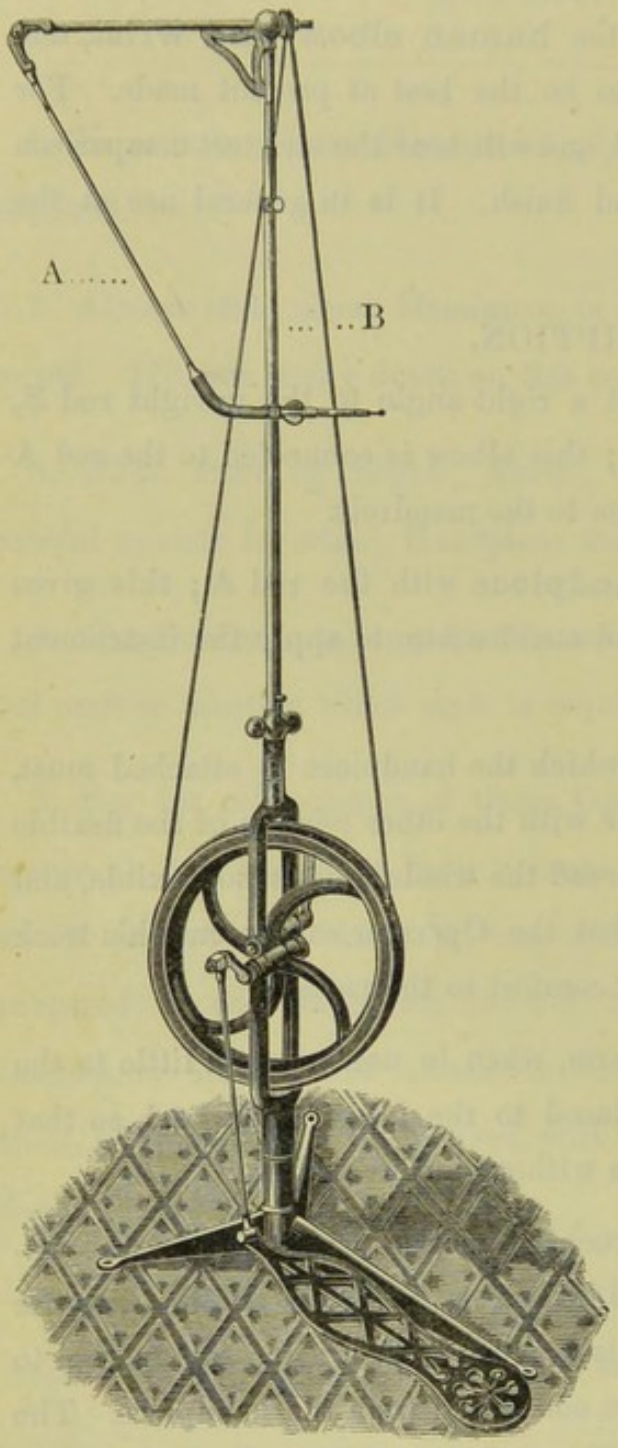
As the first joint of the flexible arm, when in use, points a little to the left of the patient, the treadle is placed to the left of the wheel, so that the Operator can reach the handpiece without inconvenience.

The Engine is now made with a rocking motion, which allows the upright rod B to be drawn forward 15 inches, or pushed a similar distance away from the vertical position. It is necessary when using this motion to take hold of the upright; it cannot be controlled from the handpiece. The upright is made tension tight, and will remain where it is placed.

See page 141 for Instructions relating to Elbow and Driving Springs.

SHAW'S DENTAL ENGINE.

(MANUFACTURED BY C. ASH AND SONS.)



Prices:

Engine complete (all bright parts nickel-plated), with Improved Cone-regulating Handpiece and 14 points .. .. .. 175*s.*

Ditto ditto, with Right-, Acute-, or Obtuse-Angle Attachment 195*s.*

Upper part of Engine to fit any stand .. .. 105*s.*

Parts separately:

Improved Cone-regulating Handpiece with Flexible Leather-covered Spring .. .. 39*s.*

Right-, Acute-, or Obtuse-Angle Attachment .. .. .. 20*s.*

Elbow Springs, Inside each 1*s.*

„ „ , Outside „ 6*d.*

Driving „ .. .. „ 7*d.*

Leather Covers for Springs „ 9*d.*

Engine Bands .. .. „ 5*d.*

Lubricating Oil .. .. per bot. 3*d.*

Holland Cover for Engine 1*s.* 6*d.*

The Burs, Drills, Finishing Burs, Burnishers and Mandrels for this Engine are the same as for S. S. White's.

For Illustrations and Prices, see pages 156 to 160.

For Illustration and Description of the Improved Cone-regulating Handpiece, see pages 144 and 145.

GROOVED PLIERS,

For holding Mandrels of Shaw's Engine Arm and Handpiece when fitting new **Driving** and **Elbow** Springs.

Fig. 1.

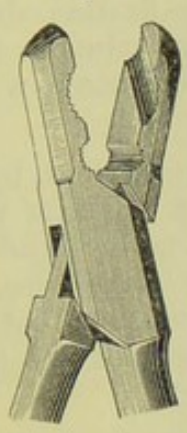


Fig. 2.

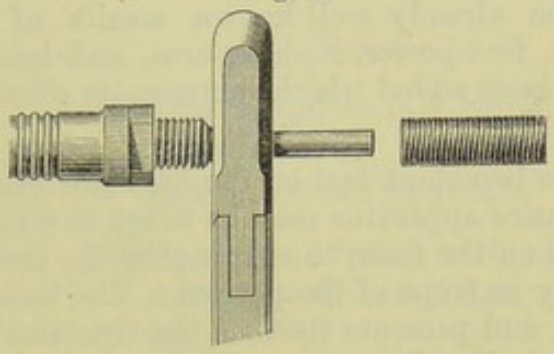
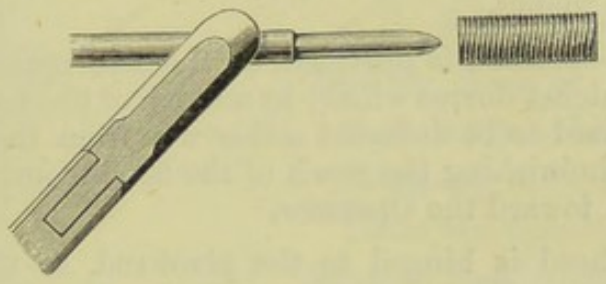


Fig. 3.



DESCRIPTION.

Fig. 1. Head of Pliers, showing **angular** and **horizontal** grooves.
„ 2. Mandrel on end of Handpiece, held in the **horizontal** groove of the Pliers while the spring is pressed on.
„ 3. Portion of Engine Mandrel, held in the **angular** groove of the Pliers while the spring is pressed on.

DIRECTIONS.

In the event of a new **inside elbow** spring being required, unscrew the pulley and draw the elbow joint away from the headpiece, fold the mandrels over each other, remove the plated sleeve spring, and then draw the rods through the bearings of the elbow. After removing the old pieces, grasp the mandrel with the pliers (see Fig. 3) press on the new spring, and while doing so turn it to the left. It is applied to both mandrels in the same way.

To renew the **driving** spring of the handpiece, unscrew the leather-covered sleeve spring, grasp the mandrel with the pliers (see Fig. 2), turn the spring which is being removed to the left, and pull slightly at the same time. Press on the new spring, and in doing so screw it to the left. Be very careful to hold the mandrel perfectly tight in the pliers close to the end where the new spring is being fitted, or there is a danger of bending it.

Note.—The action of screwing the spring to the left opens it sufficiently for it to slip on the mandrel.

Pliers 5 inches long .. .. each 3*s.* 6*d.*

THE S. S. WHITE IMPROVED DENTAL ENGINE.

(Patented in England and the United States.)

To the already well-known merits of this Engine—flexible shaft and sleeve, foot-power, rocking-arm, and handpiece—further valuable features have been added which increase its efficiency and convenience to a marked degree.

The two short feet of the base are provided with hinged toes, by which the entire apparatus may be tilted to either side and yet hold its position firmly on the floor, thus bringing the flexible arm and pulley-head immediately in front of the patient. The treadle being fixed to the base, is also tilted, and presents itself to the Operator's foot in such manner that it may be worked with great ease and convenience. The diameter of the driving-wheel is eleven inches.

The rocking-standard is provided, on the side opposite the treadle, with a spring and ratchet device which, by a touch of the foot on the spring, will allow the standard to be deflected either way from the perpendicular, thus increasing or diminishing the reach of the flexible arm, while preserving its rocking motion toward the Operator.

The pulley-head is hinged to the pivot-rod, so that it may be moved vertically and laterally at pleasure. It is also provided with a slotted ratchet and spring-pawl, by which the flexible arm may be fixed automatically at any angle.

The tension of the cord is regulated with one hand, by raising or lowering the pulley-head in the tubular upright, and securing it by a jam-nut.

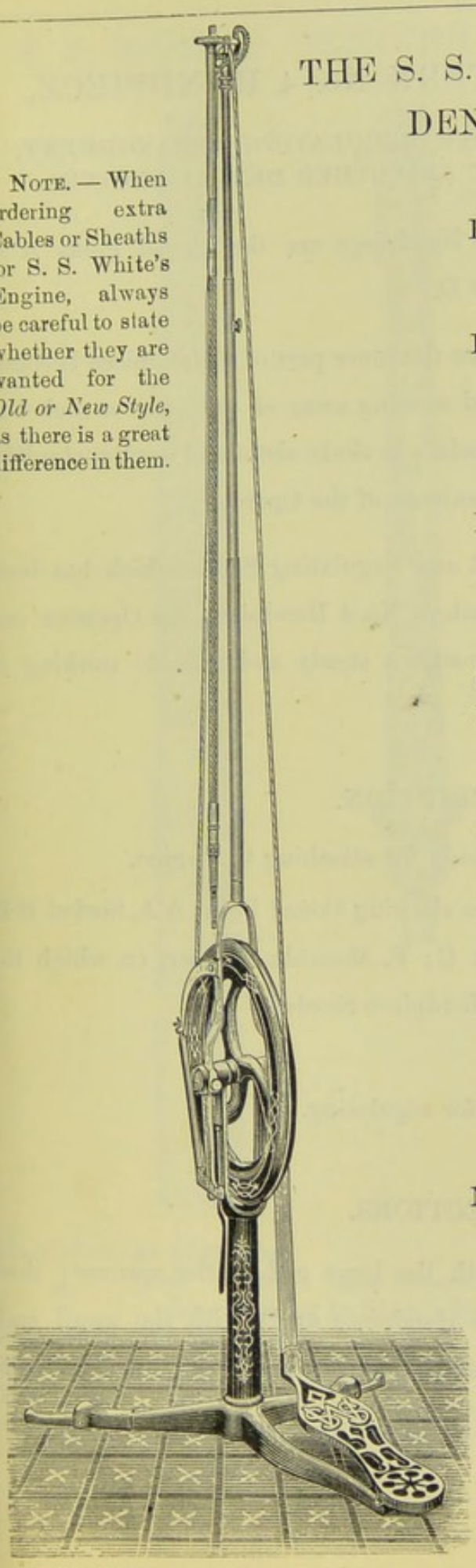
The flexible arm, when not in use, may be dropped vertically beside the upright, instead of projecting as heretofore. This preserves the straightness of the shaft and sleeve, and prevents them from becoming set in a curve.

The greater adjustability of the parts above described enables the manufacturers to make the rigid metal portion of the sleeve and shaft of the working-arm much longer than formerly, which increases the power of the shaft, while the length of the flexible portion is amply sufficient for the freedom of movement required of it.

The object of all these improvements is to enlarge the reach of the flexible arm and increase the Engine's efficiency and convenience, without sacrificing that simplicity and durability of the whole apparatus which have always characterized the S. S. White Dental Engine.

The illustration shows the Engine in its normal position, with the flexible shaft hanging vertically by the side of the rocking-arm. The Engine should always be kept in this position when not in use, thus avoiding any liability to kink the flexible arm.

When ordering, please state whether this Engine is required with No. 4, No. 6, or No. 7 Handpiece.



THE S. S. WHITE IMPROVED DENTAL ENGINE.

NOTE. — When ordering extra Cables or Sheaths for S. S. White's Engine, always be careful to state whether they are wanted for the *Old or New Style*, as there is a great difference in them.

Prices:

Engine complete (all bright parts nickel-plated), with Straight Handpiece and 14 points 203*s.*

Ditto ditto ditto, with Right-, Acute-, or Obtuse-Angle Attachment .. .. 223*s.*

Parts separately:

Flexible Arm or Upper Part of S. S. White's Improved Engine, consisting of Straight Handpiece, Cable and Sheath .. .. 110*s.*

Straight Handpieces .. each 40*s.*

Right-, Acute-, or Obtuse-Angle Attachment .. .. each 20*s.*

Cables .. .. „ 8*s.*

Sheaths for Cables .. „ 10*s.*

Steel Noses for Straight Handpieces .. .. „ 4*s.*

Hoods for Right-Angle Attachment .. .. „ 4*s.*

Engine Bands .. .. „ 5*d.*

Engine Lubricant per bot. 1*s.*

Holland Covers for Engine each 1*s.* 6*d.*

NOTE.—Extra Cables or Sheaths for S. S. White's **old style** Engine same prices as above.

Upper part of **old style**, consisting of Straight Handpiece, Cable and Sheath .. .. 90*s.*

Engine Arm Support for old style 4*s.* 6*d.*

S. S. WHITE'S PATTERN No. 4 HANDPIECE,

WITH ASH'S IMPROVED CONE-REGULATING ARRANGEMENT, FOR SHAW'S, S. S. WHITE'S, AND OTHER DENTAL ENGINES.

The principal features in this Handpiece are the Coned Point A A, Socket B B, and Regulating Screw D.

It is well known that after a time the inner part of a Handpiece becomes loose, through constant friction and wearing away of the nose or socket in which it is fixed. This causes the points to shake about and work unsteadily, to the great annoyance and inconvenience of the Operator.

By means of the Coned Socket and Regulating Screw which has been introduced in the S. S. White's Pattern No. 4 Handpiece, the Operator can adjust the inner part and thus ensure a steady and reliable working of the point.

DESCRIPTION.

Fig. 1.—Handpiece complete, ready for attaching to Engine.

Fig. 2.—Inner part of Handpiece showing Coned Point A A, Socket B B, and Blued Jam Nut C; E, Movable Washer, on which the central tube of the Handpiece revolves.

Fig. 3.—Engine Bur.

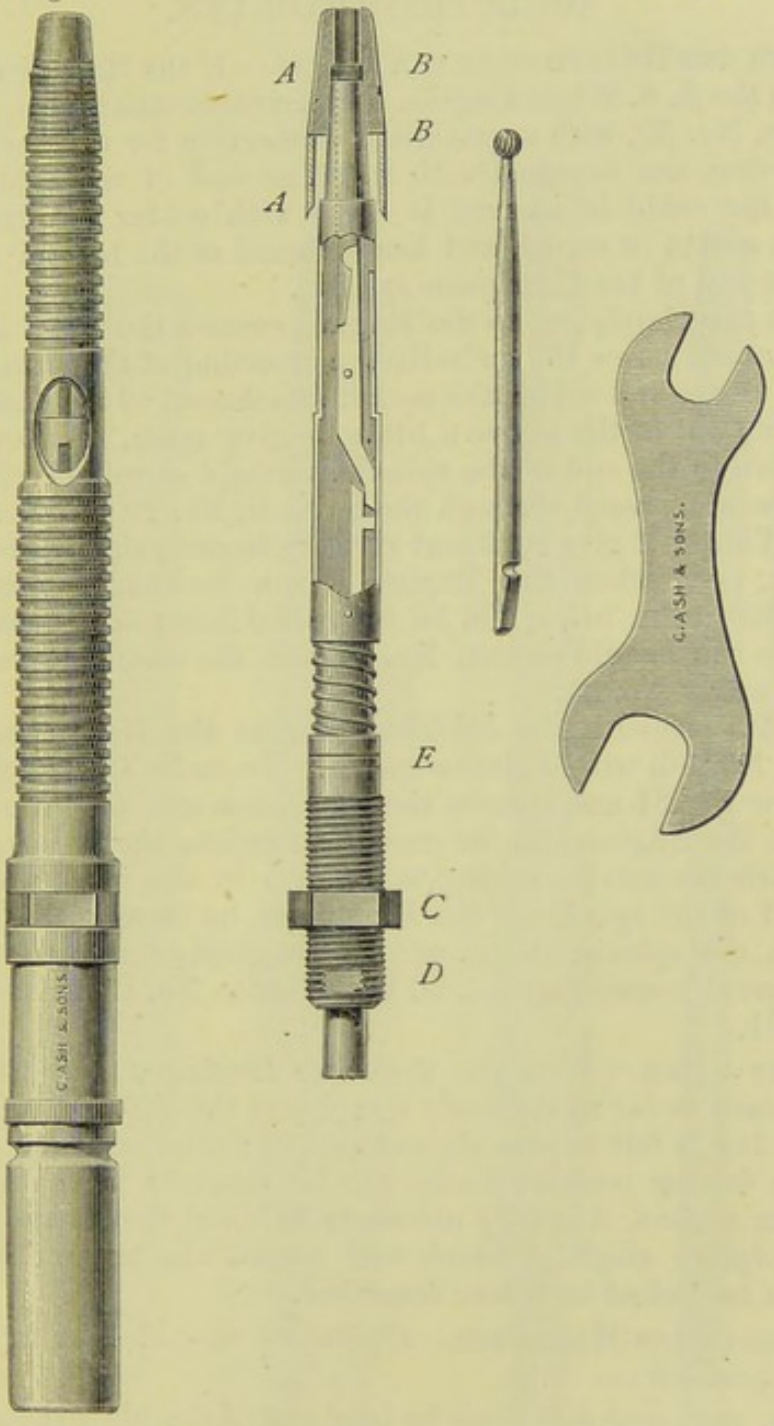
Fig. 4.—Double-ended Spanner for regulating.

DIRECTIONS.

Release the blued jam nut C with the large end of the spanner; then screw up the inner portion of the Handpiece at D, with the small end, sufficiently to allow it to work easily—but not too freely—and fix it in position by tightening the jam nut.

S. S. WHITE'S PATTERN No. 4 HANDPIECE.

Fig. 1. Fig. 2. Fig. 3. Fig. 4.



		s.	d.
Handpiece, as illustrated	(Fig. 1)	35	0
„ with Flexible Leather-covered Spring for attaching to Shaw's Engine		39	0
Steel Noses for Handpiece	each	4	0
Right-, Acute-, or Obtuse-Angle Attachments	„	20	0
Hoods for „ „ „	„	4	0

When ordering, please state for which Engine the Handpiece is required.

S. S. WHITE'S CONE-JOURNAL HANDPIECE, No. 6.

DIRECTIONS FOR USE.

To Attach the Handpiece to the Engine.—If the Handpiece is intended for use with the S. S. White Engine, a socket cable attachment, No. 29, and a metal sleeve, No. 30, with a swivelling connection for the flexible sheath of the Engine-arm, are supplied with it. The end of the cable attachment into which the cable is secured is filled with solder for fixing it permanently; the socket is coned, and has a thread at the bottom which fits the screw on the end of the Handpiece spindle.

To attach the Handpiece to the Engine, remove the metal sleeve and the cable connection, screw the swivelling connection of the metal sleeve on to the flexible sleeve and solder the socket attachment to the end of the cable; pull the cable out of the sleeve a little to give room, and screw the cable attachment on to the end of the spindle, using a couple of old excavators, or similar points, passed through the holes in No. 29 and No. 16, to set it up tight. This will give sufficient rigidity to carry the heaviest tool or the largest disc, even when the Engine is run backward. Screw the metal sleeve No. 30 on the union No. 13 (so called because it forms the connection between the handle section No. 20 and the metal sleeve No. 30), and tighten the screw No. 31.

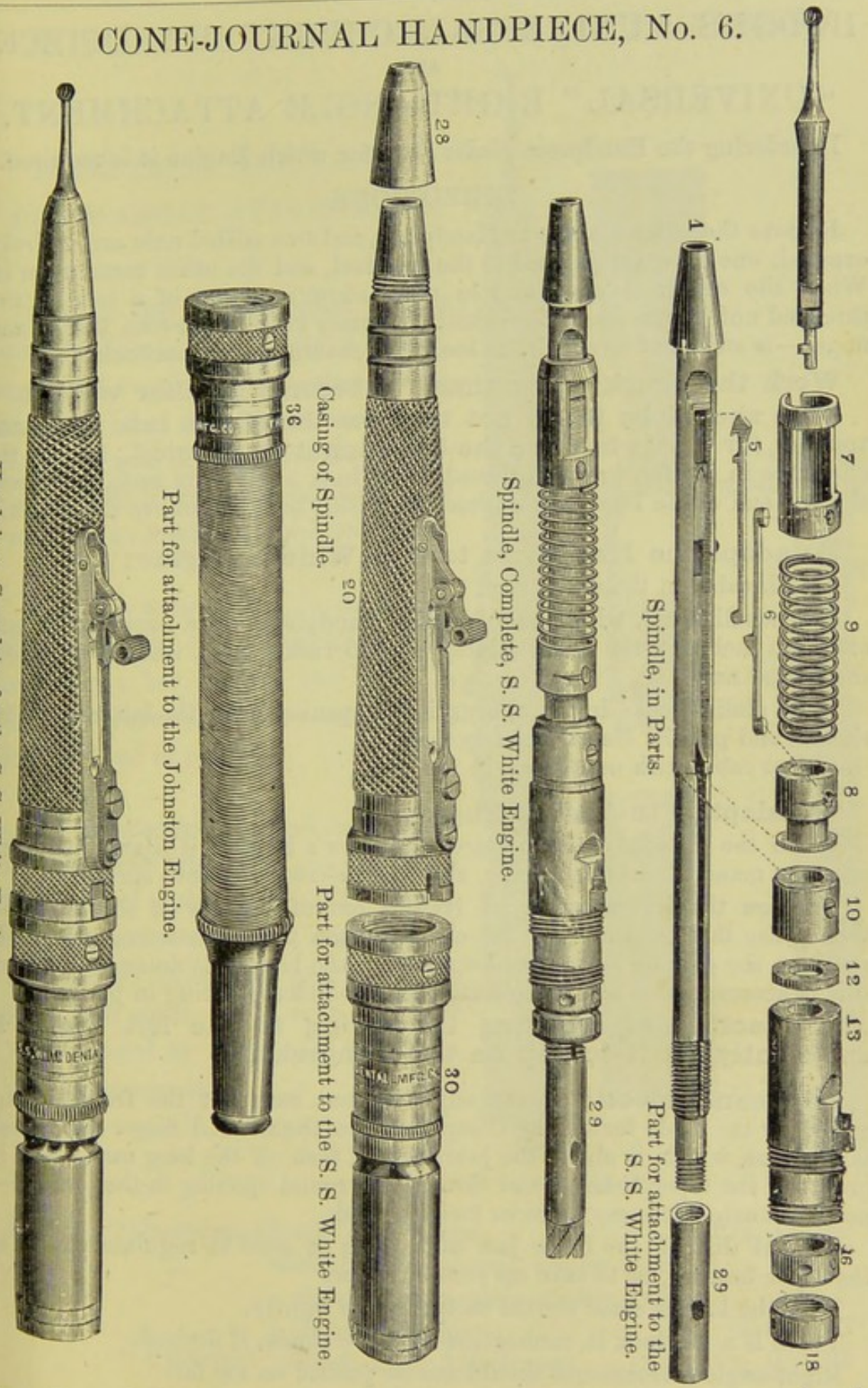
As sold for use with the Johnston Engine the Handpiece has a metal connection, No. 36, with a sleeve-spring. To make the attachment, loosen the set-screw No. 31 and remove the connection and slide it and the sleeve-spring upon the Engine-arm far enough to expose the reduced end of the arm. Attach the driving-spring to the arm in the usual way, and to the screwed end of the spindle of the Handpiece, by turning the spring to the left to open the spirals, at the same time gently forcing it on the shaft. Screw the metal connection No. 36 to the union No. 13 and tighten the set-screw No. 31.

To Insert a Bur.—With the thumb or forefinger push the small lever No. 24 forward as far as it should go; insert the shank of the bur, turning it until the lug is felt to pass the carrier-pin; after which pulling the lever back to its former position locks the bit securely in the socket. If the Engine is in motion, it is only necessary to insert the bit and raise the nose of the Handpiece slightly, which will permit the bit to drop to its place, when it can be locked as before described.

To Preserve the Handpiece.—Operators should bear in mind the following suggestions:—

1. Saliva, rust, and dirt must be kept out of the bit-socket.
2. A bit with a wet, dirty, or rusty shank should never be put into the Handpiece.
3. The Handpiece should never be laid aside, after completing an operation, without first taking out the operating-tool that has been used.
4. Oil the Handpiece every day, not omitting to put a drop of oil into the bit-socket, unless the engine-bit oiler or some similar device is used.
5. Occasionally, say once a week, clean the Handpiece.

CONE-JOURNAL HANDPIECE, No. 6.



	s.	d.
Cone-Journal Handpiece, No. 6, for S. S. White's Engine	40	0
" " for Shaw's " ..	extra 7	6

NOTE.—When ordering, please state for which Engine it is required.

HODGE'S "UNIVERSAL CHUCK" HANDPIECE AND "UNIVERSAL" RIGHT-ANGLE ATTACHMENT.

In ordering the Handpiece please state for which Engine it is required.

DIRECTIONS.

Remove the outer casings to Handpiece, and two milled nuts are entirely exposed, one of which is fixed to the mandrel, and the other turns upon it. When the chuck is open and in place, about a quarter of a turn of the threaded nut from its mate—which is firmly clasped between thumb and finger—is sufficient to chuck the tool; the reverse action unchucks it.

Work the chuck a few times to become familiar with it.

Care should be taken not to draw the chuck into the case too far, for if this be done the bur cannot be inserted. Should the chuck be in too far, turn the threaded nut back towards its mate, and press the bur end of the long case against the milled nuts, to relieve the chuck.

To adapt the Handpiece to S. S. White's Engine:

Attach cable in the usual way.

Slip small band, which accompanies Handpiece, down over the sheath about an inch, for the short sliding case to rest against, when it uncovers the milled nut.

With sliding case in place, over its companion, turn the latter on to its sheath, and put the Handpiece together.

Adjust cable with usual margin for play.

To adapt it to Shaw's Engine:

When the Handpiece is required for Shaw's Engine, it is supplied with an extra mandrel, driving spring, and leather-covered sleeve spring.

Unscrew the latter and push it well out of the way on the mandrel, then grasp the mandrel near the end with the pliers, shown on page 141, press on the driving spring, and screw it to the left while doing so. When this is accomplished screw the leather-covered sleeve spring in position.

The action of screwing the spring to the left opens it sufficiently for it to slip on the mandrel.

To clean and oil: Loosen adjusting nut, turn out the front casing, and draw the cable forward. Clasp between thumb and finger the black milled nut, which is about the journal, and turn off the long case. Oil in groove of the taper bearing, and through the round opening in the journal—not too much—and, say, once or twice a week.

Do not disturb the brass jam nut, which is used to regulate the fit of the taper bearing, or to take up possible wear.

Both the longer cases should be turned up tightly.

There is a pin lock in connection with the chuck, if desired.

Right-angle attachments should not be pushed on too far.

HODGE'S HANDPIECE AND ATTACHMENT.

DIRECTIONS FOR USING RIGHT-ANGLE ATTACHMENT.

Adjust the attachment to the straight Handpiece, chucking firmly, same as for ordinary bur; then throwing back the cap which covers the chucking nut, turn the nut away from you a trifle to unchuck the point, and towards you firmly to chuck the same.

There is a small pin in the socket of the chuck. Be particular, when inserting a bur, to put the niche in the shank over it, before attempting to lock the bur in position.

To oil, unscrew the head from sleeve at the blued steel-ring and draw out the mandrel with pinion head. Oil on the gear and mandrel and put together, taking care that the pinion wheels lock. Oil about once a week. **Never** leave a point in the chuck after completing an operation.



Fig. 1.

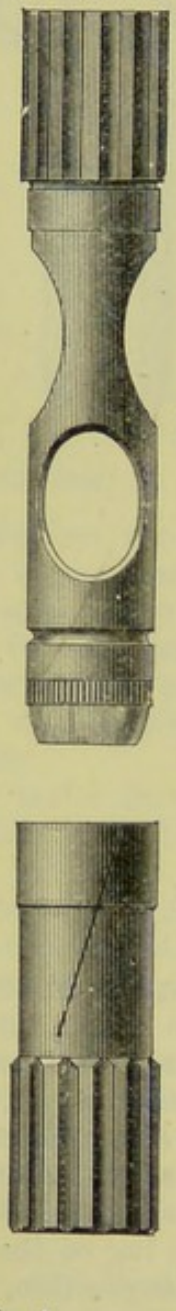


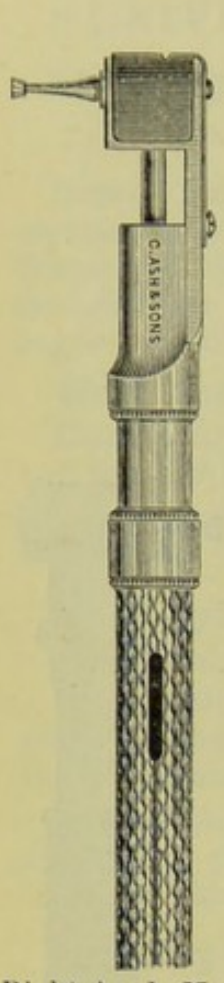


Fig. 2.

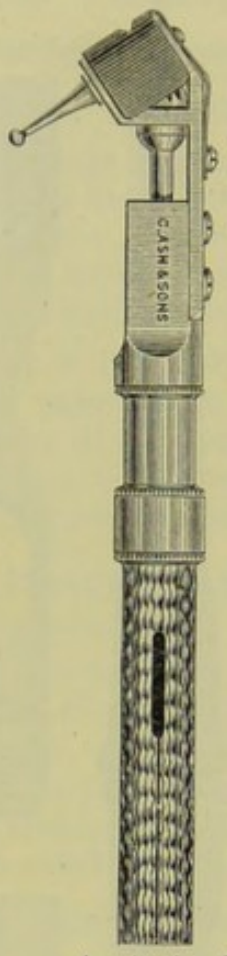
			s.	d.
Hodge's "Universal Chuck" Handpiece	(Fig. 1)		40	0
" " with leather-covered sleeve and driving springs for attaching to Shaw's Engine	extra		7	6
" "Universal" Right-Angle Attachment ..	(Fig. 2)		24	0

LOCK-BIT ATTACHMENTS

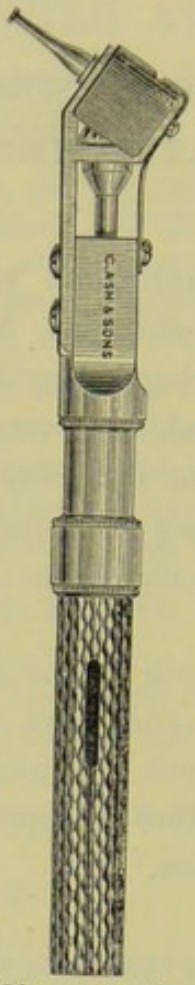
FOR S. S. WHITE'S HANDPIECES, Nos. 2, 3, 4.



Right Angle No. 1.



Acute Angle.



Obtuse Angle.



Right Angle No. 2.

DIRECTIONS.

To Secure a Bit in the Right Angle No. 1.—Push the shank of the bit gently into the socket, turning it at the same time, until it is felt to engage with the carrier-pin. To remove a bit, lift the spring slightly with the finger-nail and pull the bit out, turning it to free it from the carrier-pin. These directions are also applicable to the Acute- and Obtuse-angle Attachments.

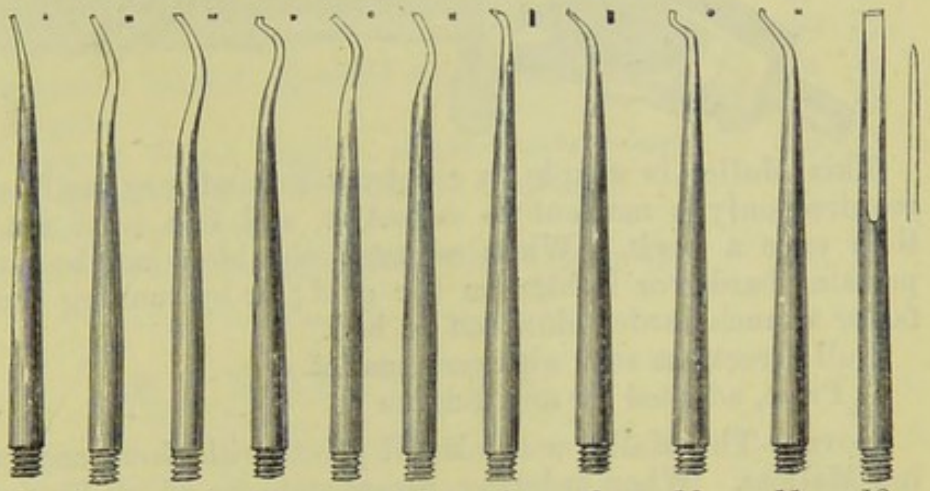
To Secure a Bit in the Right Angle No. 2.—Push the slide A forward, and press the shank of the bit gently into the socket, turning it at the same time, until the lug on the end is felt to pass the carrier-pin; then pull the slide back to its position, when the bit will be held firmly. To remove, push the slide forward, which will allow the bit to be pulled out.

		s.	*d.*
Attachments as illustrated	each	20	0
,, adapted for Cone-Journal Handpieces ..	,,	20	0
Hoods for ditto	extra ,,	4	0

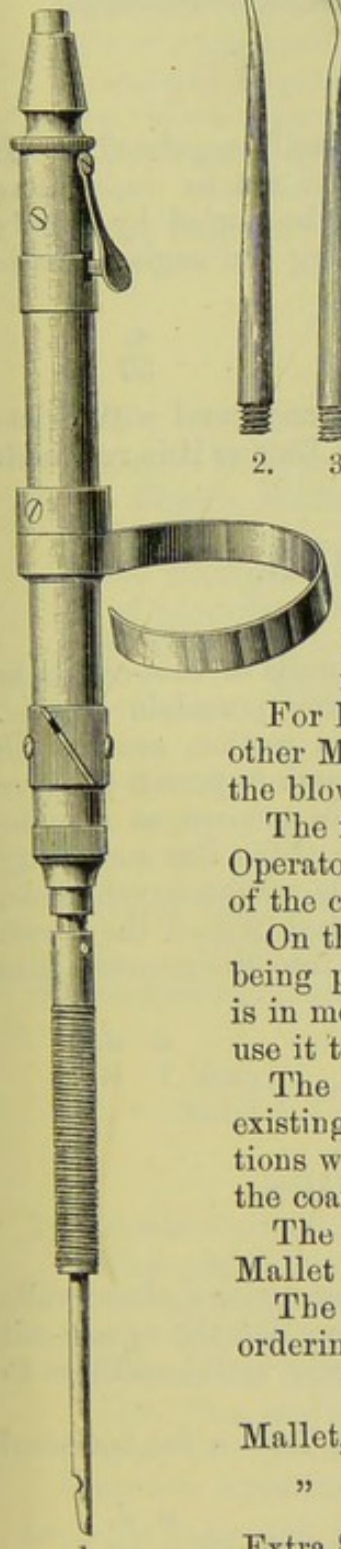
NOTE.—In response to numerous enquiries, C. ASH and SONS now fit all Lock-bit Attachments of their manufacture with a Hood as shown in the illustrations on this page. When ordering, please state for which Handpiece they are required.

POWER'S ENGINE MALLET.

FOR USE WITH ANY DENTAL ENGINE.



Mallet and Points full size.



1.

The accompanying illustration shows the latest form of this Mallet. Since it was first introduced it has been greatly improved, and C. Ash and Sons can now recommend it with the fullest confidence.

For lightness and rapidity of blow it is far superior to any other Mallet used with the Engine, approaching very nearly the blow given by the Electric-Mallet.

The force of the blow is entirely under the control of the Operator, being regulated by the split ring on the SPRING end of the case.

On the POINT end of the case there is a spring which upon being pressed by the finger stops the blow while the Engine is in motion, and enables the Operator to pick up gold, or to use it temporarily as a Hand-Plugger.

The Mallet is made to carry most of the points used with existing Automatic Mallets, but very fine and shallow serrations will be found best adapted for producing solid fillings, the coarser kinds being liable to chop up the gold.

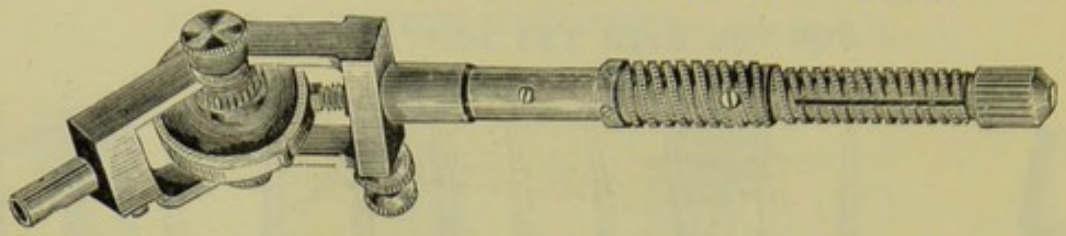
The Points illustrated are taken from Dr. Webb's Electric-Mallet Pluggers.

The Mallet can be adapted for any Handpiece; when ordering, please state for which it is required.

Prices:		*s.*	*d.*
Mallet, fitted with Finger Ring	(Fig. 1)	59	0
„ Points with Screw ends (Drs. Varney's, Webb's, and Thompson's)	(Figs. 2–11) each	1	6
Extra Springs with Tang	„	2	6

All other forms of Mallet Points supplied to order.

BONWILL'S MECHANICAL MALLET.



This Mallet is simple in construction, and very easily regulated. "It requires only a moment to adjust it, and this need not be done more than once a week. When adjusted the blow can be varied by simply pressing harder or lighter on the gold; or by running the engine a little faster a much harder blow can be had."

Full directions sent with each mallet.

	s.	d.
Price, adapted for any Engine	50	0

NOTE.—The Mallet will take all points with *Screw* ends used with existing Mallets. When ordering, please state for which Engine it is required.

GROOVING ENGINE BUR.

(*American.*)

This bur is intended for cutting grooves in the walls of root-canals to provide retaining-points for plastic materials in setting porcelain crowns. The grooves are made by sweeping the Bur, while in motion, around the walls of the canal, which should be made large enough to permit the Bur end to reach the bottom of the cavity. Two or three grooves, as may be desired, can be cut in thin roots with safety, one size of the Bur answering for all cavities. The canal is then filled with the gutta-percha, oxychloride, amalgam, or other plastic, and, before it sets, the barbed pin of the crown is inserted, with the effect of forcing the material into the grooves, thus adding greatly to the strength of the operation.

		s.	d.
Price	each	1	8

SAFE-SIDE CAVITY BURS.

(*American.*)

These Burs are designed for deepening and shaping cavities whose walls are thin and liable to fracture by a side-cutting bur like the square-end fissure or the inverted cone. They will prove a very useful addition to the list of cavity burs.

The small safe-side bur will also cut in excellent form a flat-bottomed retaining-pit for starting a gold filling.

		s.	d.
Made in five sizes	each	0	10
„ „	per doz.	9	0

DENTAL ENGINES.

(Not illustrated.)

	s.	d.
Bonwill's Engine	160	0
Elliott's Suspension Engine, *obtained only to order* ..	224	0
Johnston's Engine	163	0
S. S. White's Large Wheel Engine, *obtained only to order*	223	0
S. S. White's Hand Engine and Lathe combined, *obtained only to order*	124	0
Above Engines with Right-Angle Attachment, extra each	20	0

HANDPIECES.

(Not illustrated.)

	s.	d.
Bonwill's Handpiece, with universal Socket adapted for Shaw's, White's, or Johnston's Engine	31	6
"Register Chuck," with universal Socket	40	0
These Handpieces will take any Engine Instrument made of plain straight wire.		
S. S. White's Cone-Journal Handpiece No. 2	40	0
„ Chuck „ No. 7	40	0

ENGINE MALLETS.

(Not illustrated.)

	s.	d.
Holmes' Engine Plugger for any Handpiece, with one point	24	0
„ Right-Angle „ „ with six points	32	0

When ordering, please state for which Handpiece they are required.

ELECTRIC MOTOR FOR ENGINE.

(Not illustrated.)

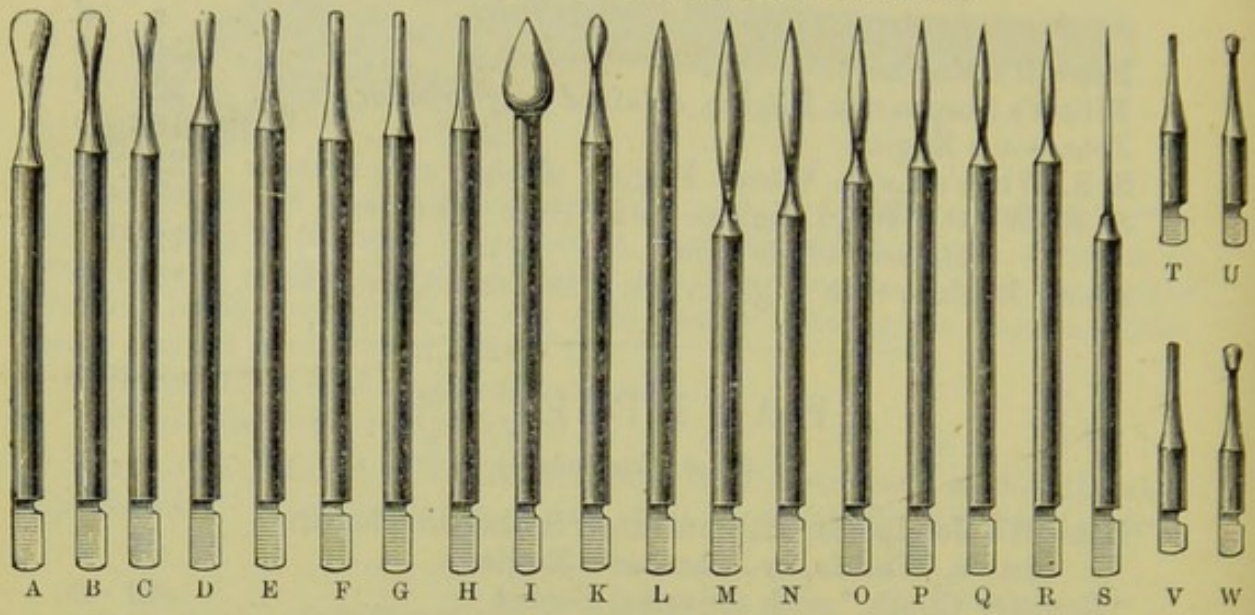
The Double-induction Motor, consisting of:	s.	d.
Nickel-plated Dental Apparatus (including Motor, Crane, Spring-Balance, two 15-ft. lengths Cotton-covered Copper Conducting Wire, and 9 ft. Silk Double Cord, Battery in Imitation Walnut Case, with Plain Pedal, Lead Pan, and 5 lbs. Bichromate of Potash	200	0
Engine Cable, Sleeve, and Handpiece (S. S. White's) ..	56	0
Complete Apparatus	256	0

Separate parts and accessories at prices advertised. *Obtained only to order.*

Description sent on application.

HERBST'S GOLD-FILLING INSTRUMENTS.

FOR USE WITH THE DENTAL ENGINE.



These instruments are made from the patterns submitted to C. Ash and Sons by Dr. Herbst, and have his entire approval.

In a demonstration before the Zahnärztlicher Verein zu Frankfurt am Main (Dental Society, Frankfort-on-Maine) Dr. Herbst thus described their use :—

"I will now undertake a pretty large crown filling. In large fillings like this I may use instruments B, C, or D, but especially G, the first in beginning and in finishing, the last for building the filling. I take now two, three, four, or more gold cylinders, Nos. 0,* 1, 2, or 3, according to the size of the cavity, press these in beside each other, on the bottom of the cavity, with the foil pliers. Then with the instrument B, C, or D, with a rather slow rotation, I condense the gold as solidly as possible. If the gold does not keep its place perfectly, I press in a few more cylinders with the pliers or a plugger, and repeat the pressure with the rotating instrument as before. Now for the building of the filling I will use G alone. The point is *not polished* but ground on an oil or Arkansas stone. The surface of the foundation of my filling is polished, and seems to be solid. You will see, however, when I bring this instrument (G) to bear upon it that it is compressed enormously. It must not be supposed that I use much force. This instrument is worked with very rapid rotation. It works either with the point by direct pressure, or with the side by lateral pressure. It is ground, as we said, to a blunt (dachformig, *i.e.*, roof-form) point, and in large fillings should not be too small, otherwise you will only press holes in your gold. The machine goes rapidly, and the point must not be kept too steadily against the gold. If it be held too long on one point the tooth will become very hot. It should be a heavy tapping (Betapfen) over the whole surface of the gold.

"Now, if you will examine the foundation of the filling closely, you will see that it is very much condensed, and the surface, which before was brilliant from the polished instruments, has become dull, and the point of this instrument is gilded. The entire

* No. 0 is the largest of cylinders, the German maker numbering his sizes differently from English and American makers.

surface of the gold is now splendidly cohesive. You can build upon it rapidly. I take now three, four, or more gold cylinders as before. These are pressed fast and then worked down with instrument G, as before. The building of the filling now goes forward rapidly and safely. When the cavity is full you may, with plugger, excavator, &c., convince yourself of its solidity, and especially of the perfect adaptation of the gold to the borders of the cavity. If all is found perfect we may go over the whole surface with instrument B, D, or L, as may be most convenient, the instrument rotating. Finally the filling is to be ground down and polished. And now I will split the tooth in order that you may carefully examine the filling. It should now show the inner walls and margins of the cavity, and every slight unevenness perfectly sharp; also you may destroy the filling itself, in order to see if it be solid. You see that no one layer can be divided from another; the gold is as solid as if cast."

(Those present convinced themselves of the perfection of the filling.)

"Now I will undertake two fillings between the central incisors. Such cavities as these we have to handle every day. I never drill retaining pits, neither do I make deep undercuts, but form my cavity so that the inside is larger than the entrance. In this plan of filling it is especially necessary that the parts most difficult of access be filled first. This is the posterior part or wall of the cavity, especially that part toward the gum. In incisors, if we fail to reach this part perfectly, we must make the filling from the inner side. As I need but very little room in my method, I never use rubber between the teeth for the purpose of separating; at most I use only a little cotton. If the teeth are very close against each other, I usually press them apart with very thin spatula-like instruments, and then hold them with little pieces of wood placed near the gum; or, when I see that the approximal surfaces are so decayed as to break with the pressure, I separate with the diamond disc. I need only enough room to use my thin celluloid disc, or to draw through a strip of sand-paper.

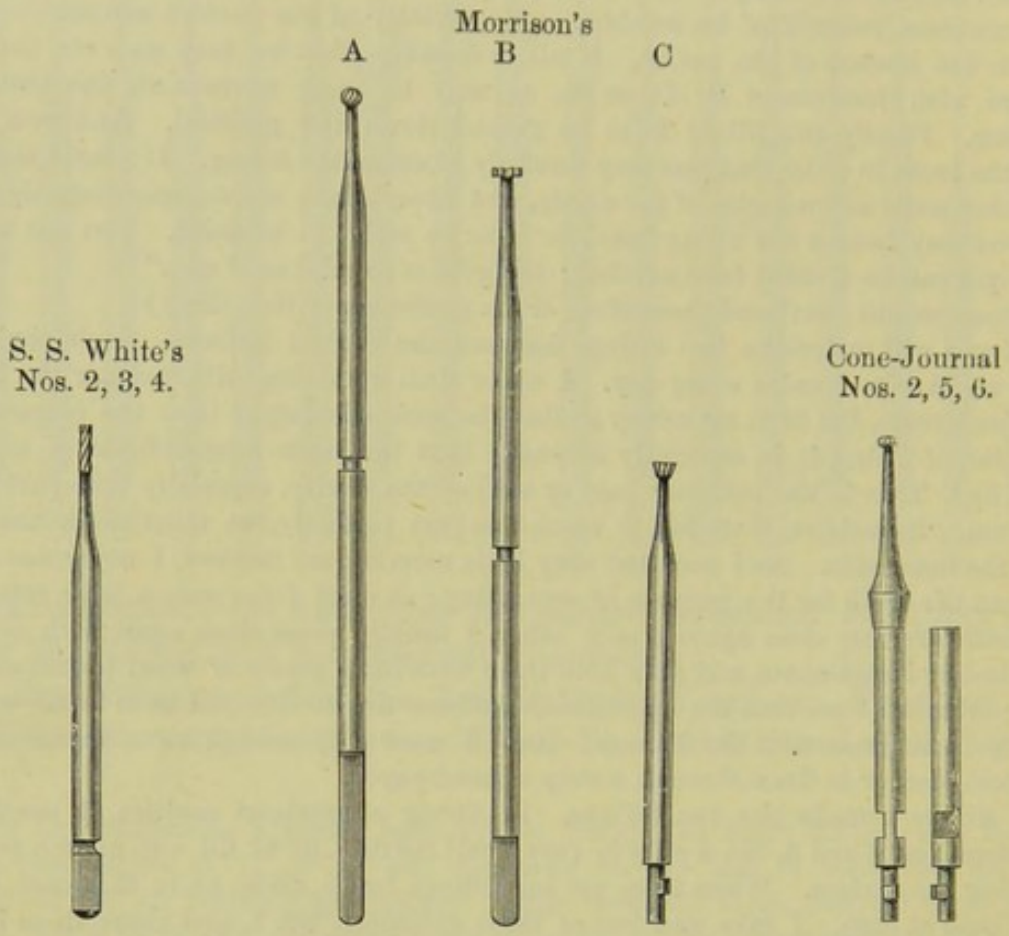
"I will now make the two fillings. In filling approximal cavities, I usually use cylinders Nos. 2 and 3, No. 4 only in very small cavities, or to fill out uneven points in finishing the surface. When there are two fillings to be made, as in this case, I make them both at once. I take now two or three cylinders, No. 2, and press them into the first tooth, and again two or three cylinders, No. 2, in the second tooth; in each case pressing them in above and below and toward the lingual surface—press them firmly into place and use instrument G to condense the gold and render its surface cohesive to receive the next layer. These two cavities we now build up as we did the crown filling. The instrument (G) is rotated rapidly with intermittent pressure, and is by this means gilded. The surface of the gold handled in this way is adhesive. Now I take again two or three cylinders for each cavity and repeat the manipulation with instrument C. This is repeated until the cavities are overful, so that the two fillings are apparently joined together. Now I will use instrument S; it is a smooth clean sewing needle. I set the point on where the two fillings join each other, and with a slow rotation and steady pressure the needle is passed through between the fillings, first near the gum, then near the cutting edge, and then in the middle. Now you see three round holes passing through from front to rear. The remaining space is to be opened in the same way. In case the fillings cannot be separated completely in this way, they may be filed apart with a fine separating file."

Prices:

			s.	*d.*
For Straight Handpieces	(A — S)	each	1	0
„ Right-Angle Attachments ..	(T—W)	„	1	0
Blood-Stone Points, Forms D, F, H, K, L		„	2	6

INSTRUMENTS

FOR THE VARIOUS STYLES OF HANDPIECES AT PRESENT IN USE.



N.B.—When ordering Engine Instruments, please state which Handpiece is used.

INSTRUMENTS FOR LOCK-BIT ATTACHMENTS.

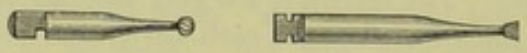


Fig. 1. Fig. 2.

Fig. 1 is for the Right-Angle No. 1 and the Acute- and Obtuse-Angle Attachments shown on page 150.

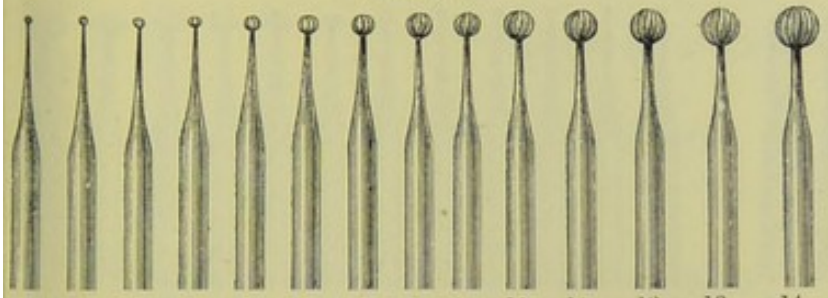
Fig. 2 is for the Right-Angle Attachment No. 2.

			Prices:			s.	d.
Cavity Burs, all styles, forms and sizes,			plain	..	each	0	9
,,	,,	,,	stoned	..	,,	1	0
Finishing Burs	,,	,,	plain	..	,,	1	3
,,	,,	,,	stoned	..	,,	1	6
Burnishers	,,	,,	plain or corrugated		,,	1	2

For Illustrations, see pages 157–160.

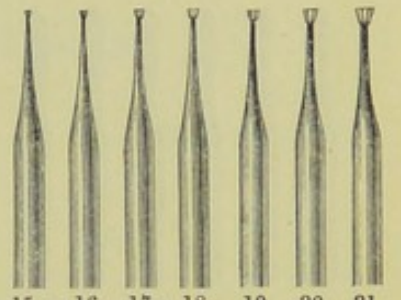
CAVITY BURS.

Round.



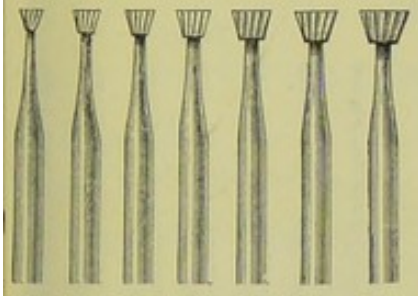
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12, 13. 14,

Inverted Cone.



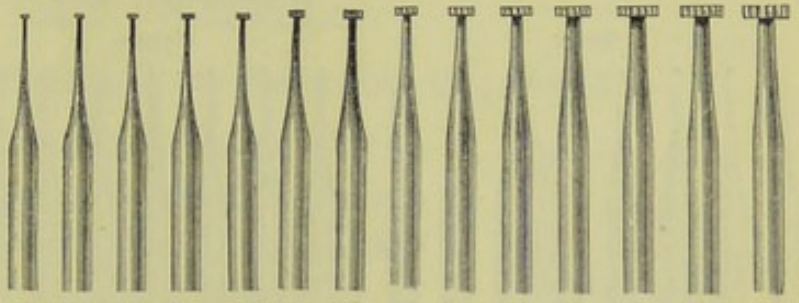
15. 16. 17. 18. 19. 20. 21.

Inverted Cone.



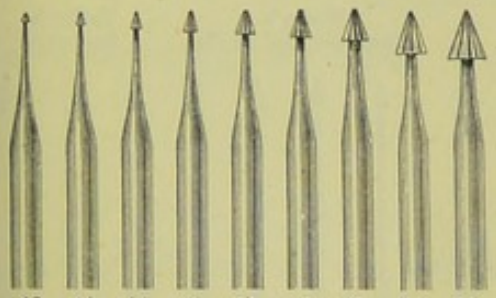
22. 23. 24. 25. 26. 27. 28.

Wheel.



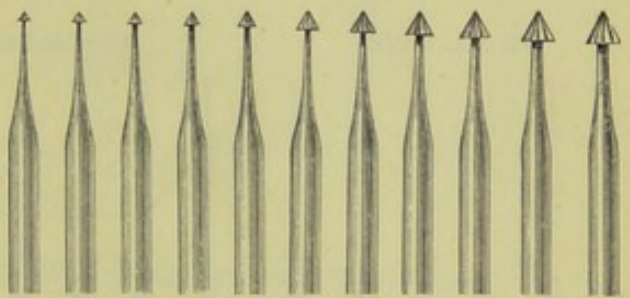
29. 30. 31, 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42.

Cone.



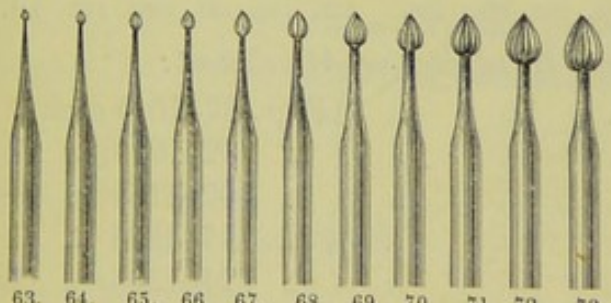
43. 44. 45. 46. 47. 48. 49. 50. 51.

Triangular.



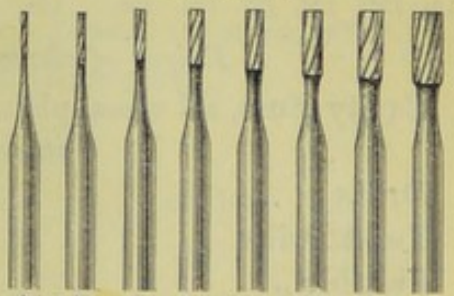
52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62.

Bud.



63. 64. 65. 66 67. 68. 69. 70. 71. 72. 73.

Flat Fissure.



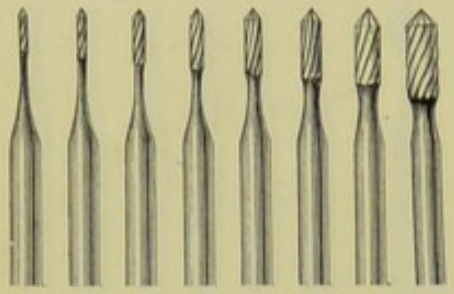
74. 75. 76 77. 78. 79. 80. 81.

Prices of Burs for any Handpiece or Attachment:

		s.	d.
Cavity Burs, all sizes, plain	(Figs. 1–81) each	0	9
,, ,, stoned	(,, 1–81) ,,	1	0

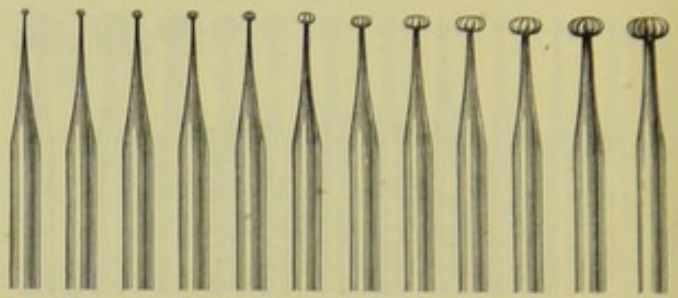
CAVITY BURS—*continued.*

Pointed Fissure.



82. 83. 84. 85. 86. 87. 88. 89.

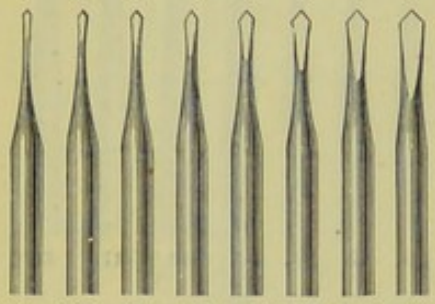
Oval.



90. 91. 92. 93. 94. 95, 96. 97. 98. 99. 100. 101.

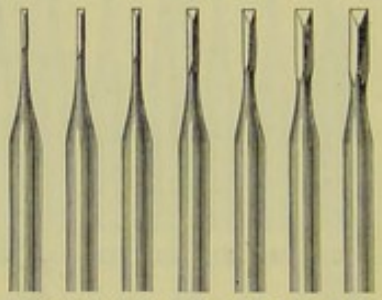
DRILLS, &c.

Spear.



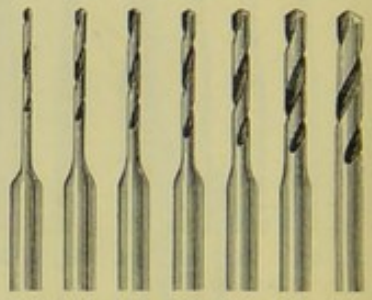
102. 103. 104. 105. 106. 107. 108. 109.

Square.



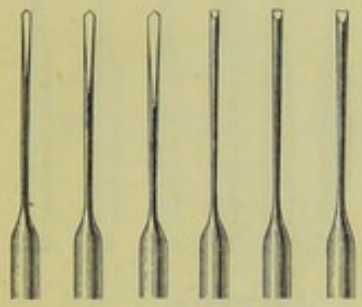
110. 111. 112. 113. 114. 115. 116.

Twist.



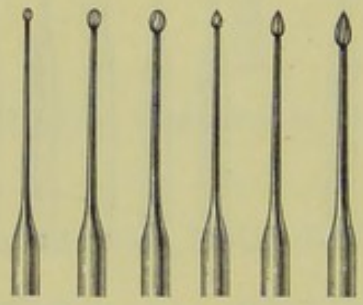
117. 118. 119. 120. 121. 122. 123.

Flexible Drills.



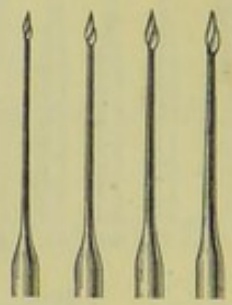
124. 125. 126. 127. 128. 129.

Flexible Burs.



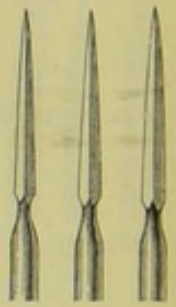
130. 131. 132. 133. 134. 135.

Morey's Nerve-Canal Drills.



136. 137. 138. 139.

Talbot's Reamers.

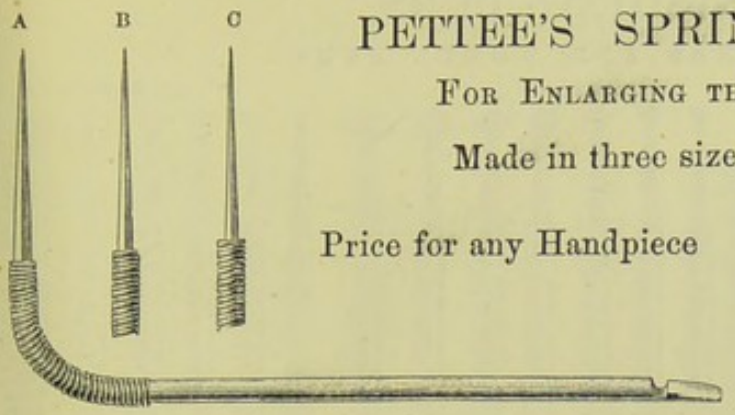


140. 141. 142.

Prices of above for any Handpiece or Attachment:

			s.	d.
Cavity Burs, all sizes, plain	(Figs. 82–101)	each	0	9
„ „ stoned	(„ 82–101)	„	1	0
Drills	(„ 102–116)	„	0	9
Twist Drills	(„ 117–123)	„	1	0
Flexible „	(„ 124–129)	„	1	0
„ Burs	(„ 130–135)	„	1	0
Morey's Drills	(„ 136–139)	„	1	6
Talbot's Reamers	(„ 140–142)	„	1	0

All other forms of Drills for Engine kept in stock, or made to order.



PETTEE'S SPRING REAMERS

For Enlarging the Nerve Canal.

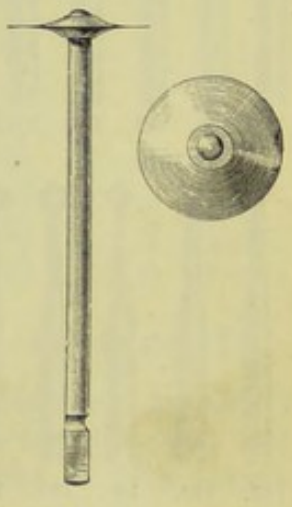
Made in three sizes, as illustrated.

		s.	d.
Price for any Handpiece	each	3	0

KNIFE WHEELS

For Cutting Gum, Trimming and Smoothing Fillings, &c.

Suggested by Dr. W. H. Rollins. Made in three sizes, with lancet cutting edges. The illustration shows a wheel for S. S. White's No. 4 Handpiece, but they may be had, to order, for any other Handpiece or Attachment.



Prices:		s.	d.
Large size, diameter $\frac{3}{4}$ inch	each	3	0
Medium „ „ $\frac{1}{2}$ „	„	2	3
Small „ „ $\frac{1}{4}$ „	„	1	9

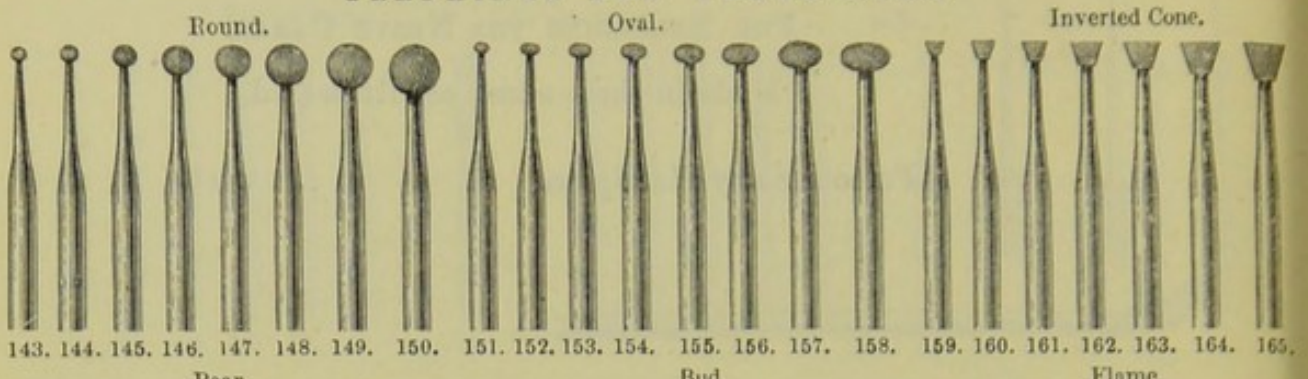
Stoned Burs.—C. Ash and Sons' Stoned Burs are much esteemed for their excellent temper and finish, every tooth on each one being brought to a keen cutting edge by means of Arkansas stone. They have had a large sale, and the demand for them increases every year. Numerous unsolicited testimonials have been received in commendation of their worth.

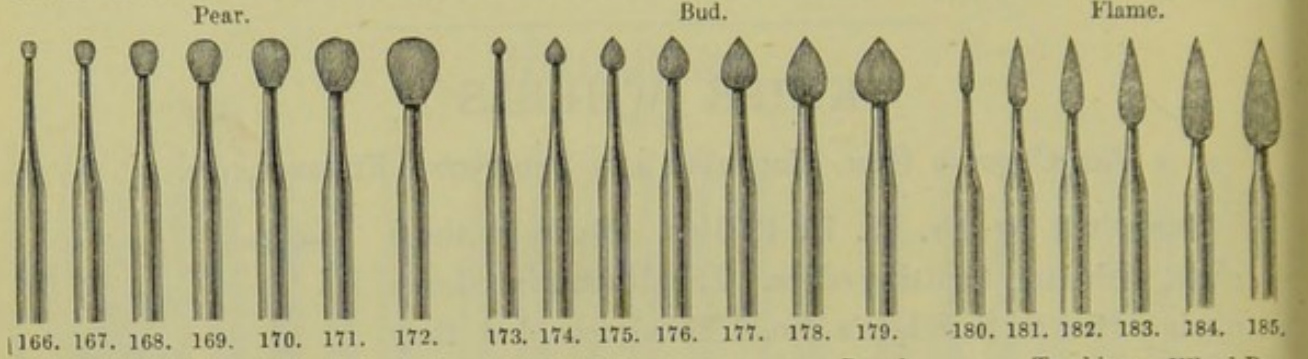
		s.	d.
Cavity Burs, re-cut	per doz.	4	0
„ „ and stoned	„	6	0
Finishing Burs re-cut	„	6	0
„ „ and stoned	per doz. from 8/- to	9	0

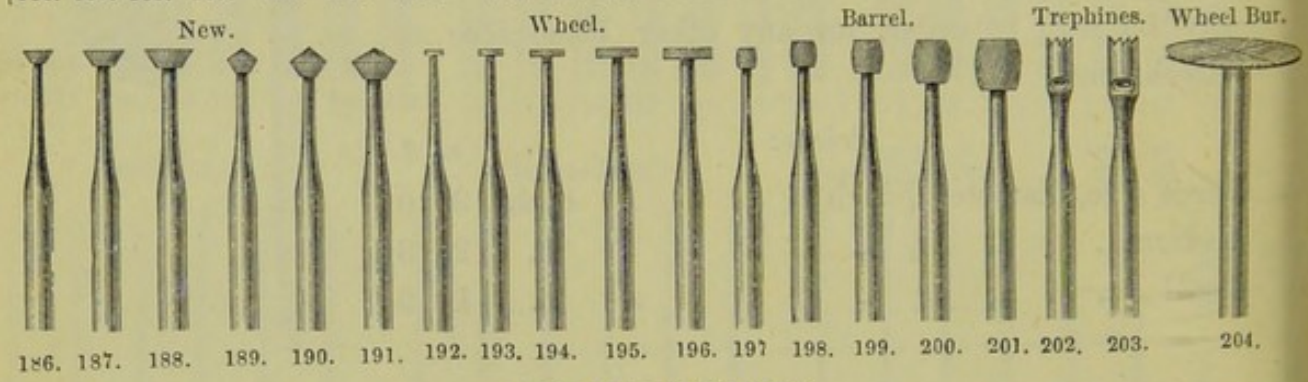
When Burs are sent to be re-cut, it is usually found necessary to reduce them somewhat in size.

FINISHING BURS,

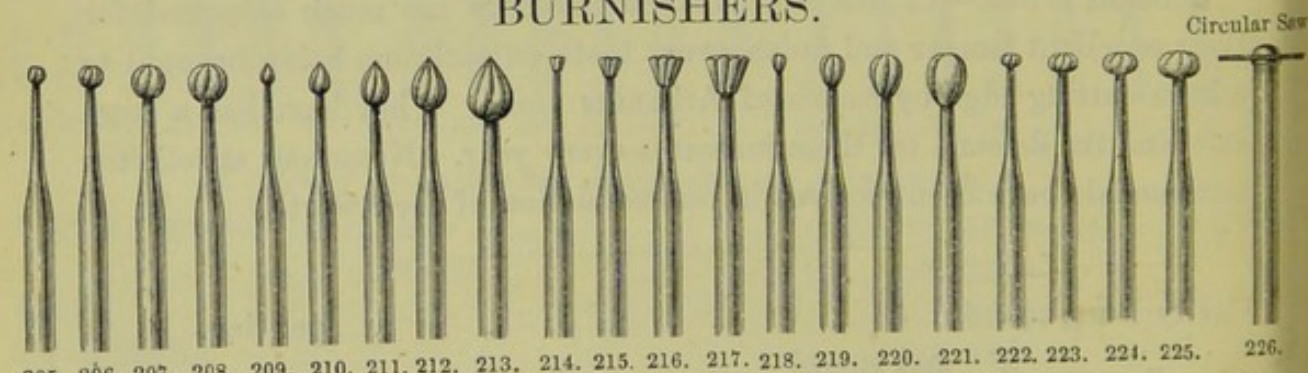
TREPHINES AND WHEEL BURS.







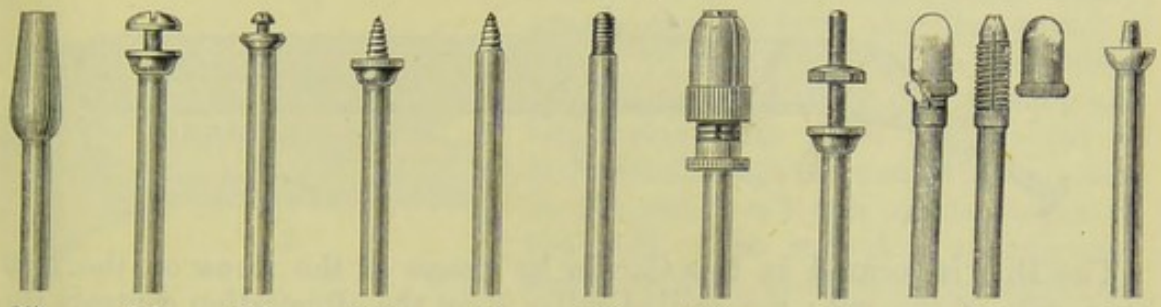
BURNISHERS.



		s.	d.
Prices of above for any Handpiece or Attachment:			
Finishing Burs, all sizes, plain	(Figs. 143–201) each	1	3
,, ,, ,, stoned	(,, 143–201) ,,	1	6
	(,, 202–203) ,,	1	6
Trephines, large and small		2	3
Wheel Burs	(Fig. 204) large, 3*s.*; medium, 2*s.* 9*d.*; small	1	9
Circular Saws	(,, 226) ,, 2*s.* 6*d.*; ,, 2*s.* 3*d.*; ,,	1	2
Burnishers, all sizes	(Figs. 205–225) each	1	2

NOTE.—Burnishers with smooth heads (Figs. 205–225) same prices as those illustrated.

MANDRELS, PORTE-POLISHERS AND NEEDLE CHUCK.



227. 228. 229. 230. 231. 232. 233. 234. 235. 236.

Prices of above for any Handpiece or Attachment:

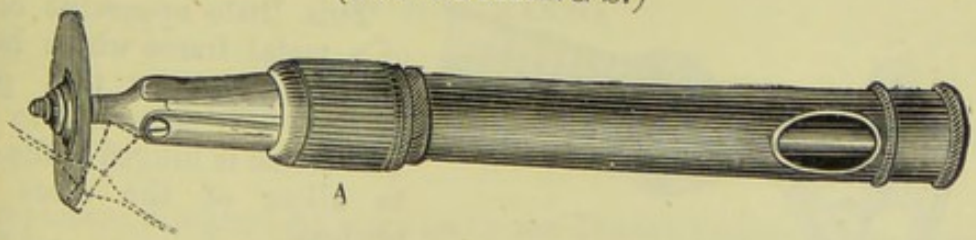
			s.	*d.*
Plain Porte-Polisher	(Fig. 227)	each	1	0
Huey's Mandrel	(„ 228)	„	1	0
Disc-carrier Mandrel	(„ 229)	„	1	3
Screw Mandrel with Shoulder	(„ 230)	„	0	9
„ „ without „	(„ 231)	„	0	4
Stem with Screw end	(„ 232)	„	0	3
Screw Porte-Polisher	(„ 233)	„	1	6
Parting-nut Mandrel	(„ 234)	„	1	0
Needle Chuck	(„ 235)	„	3	0
Shouldered Mandrel with Plain end ..	(„ 236)	„	0	9

For Mandrels to hold Paper and other Discs, see page 170.

The Needle Chuck is designed to carry very fine retaining pit drills made from sewing needles. It will grasp and hold firmly any size not larger than No. 8 English and No. 5 American. Chucks to take larger sizes made to order.

DISC-CARRIER, CHANGEABLE-ANGLE.

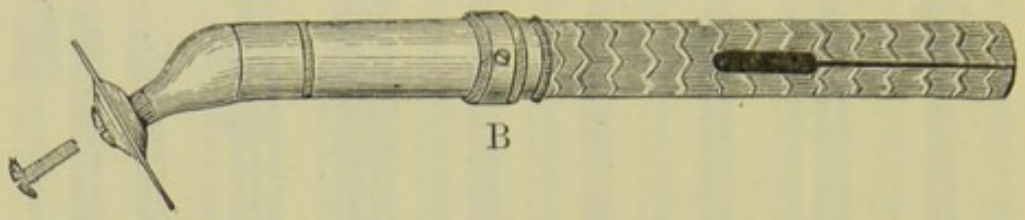
(Dr. CUSHING'S.)



The full range of this Carrier is indicated by the dotted lines shown in the illustration. A slight turn of the collar A will lock the disc at any desired angle.

Price .. .. 40*s.*

DISC-CARRIER, FIXED-ANGLE, WITH STOP-MOTION.



B

The Disc is secured in this Carrier by means of the screw on the left-hand side of the cut; the milled collar B on the illustration controls the stop-motion.

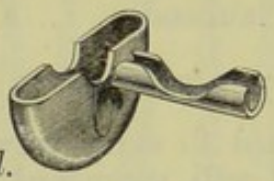
Price .. .. 24*s.*

TONGUE AND CHEEK PROTECTORS.

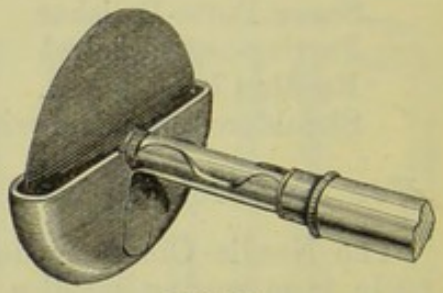
(Mr. IVES'.)

Tongue and Cheek Protectors, German Silver Nickel-plated, made in two sizes, suitable for the various discs used.

Large or small, each 3*s.* 3*d.*



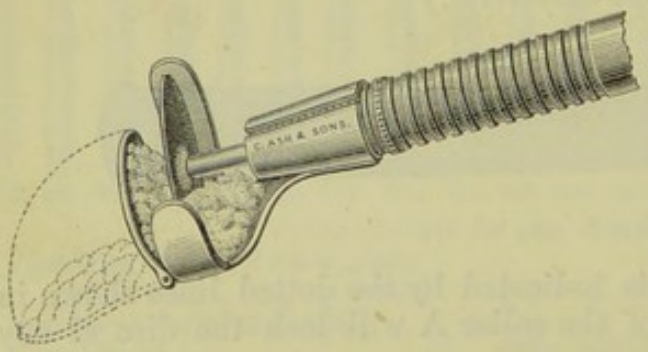
SMALL.



LARGE.

SPONGE HOLDER AND DISC MOISTENER.

(Dr. STOKES'.)

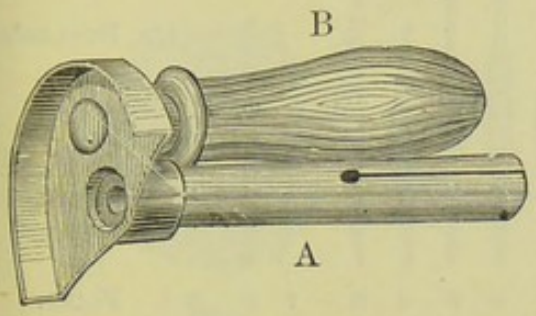


This little apparatus consists of a metal frame which holds a piece of sponge that presses against both sides of the discs. The frame is hinged in the centre to allow of the discs being changed.

Price .. .. 5*s.* 6*d.*

Note.—All the above appliances can be adapted for any Handpiece, therefore when ordering, please state for which they are required.

FOUNTAIN MOUTH PROTECTOR.

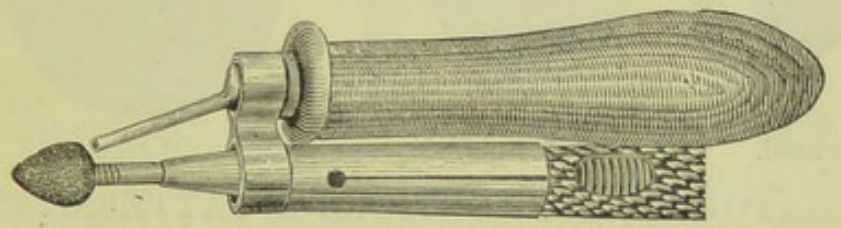


This admirable device, while protecting the tongue and cheek from injury, serves also to keep the disc wet. A supply of water is stored in the rubber bulb or reservoir B by compressing and immersing it in water, and is fed as required through the small aperture seen in the cut by a touch of the finger on the bulb. The tube A is sprung over the Handpiece, and may be turned for use in any part of the mouth.

Price .. .. .. 3*s*.

FOUNTAIN DRIP-POINT.

(Dr. F. HERRICK'S.)



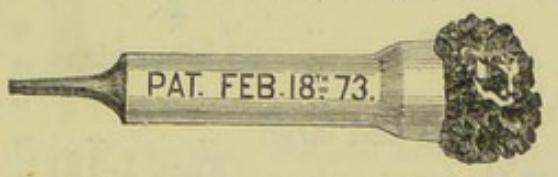
This device is intended for use with corundum points. The rubber bulb on being compressed and immersed in water will fill in a little while, and carry water enough to keep the point wet for a considerable time, the supply being fed as required by a touch of the Operator's finger on the bulb.

Price .. .. 3*s*.

Note.—The above appliances can be adapted for any Handpiece, therefore when ordering please state for which they are required.

DROP-TUBE AND SPONGE-HOLDER.

(Dr. HICKMAN'S.)



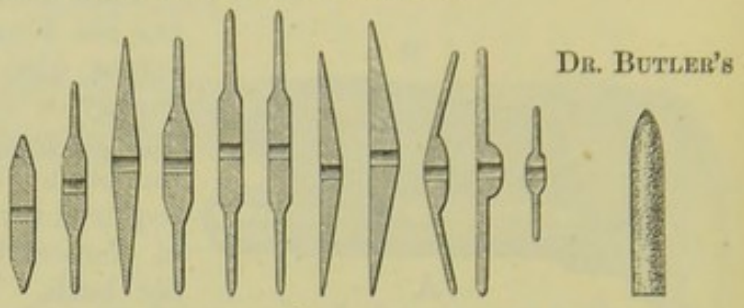
An appliance designed to accompany the Dental Engine when discs are used. The nozzle is of metal, nickel-plated, and the whole length, including the sponge, is about 4¼ inches. It is simple, neat, cleanly, and indestructible. The sponge attachment makes it useful either to wet or clean the disc.

Price .. .. 1*s*. 6*d*.

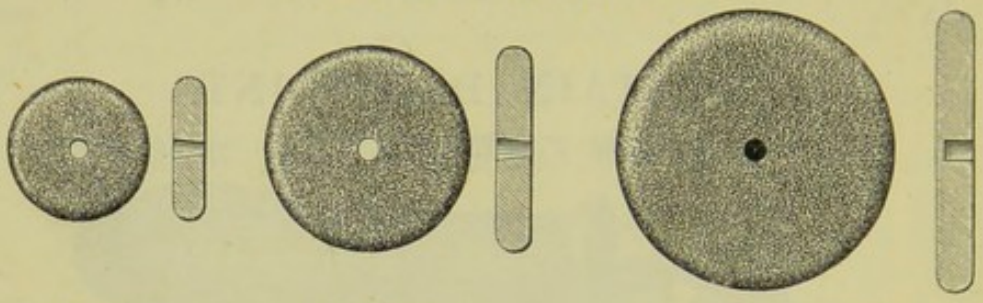
CORUNDUM DISCS AND POINTS.

DISCS, Dr. ARTHUR'S PATTERNS.

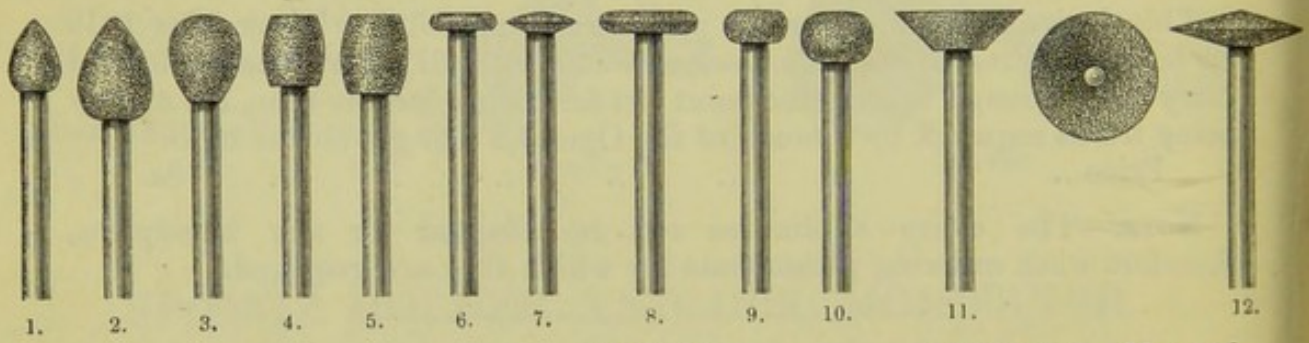
These Corundum Discs are greatly appreciated for their splendid cutting properties. They are now made extremely thin, and are suitable for the most delicate separations. Supplied in two grits, known as fine and coarse.



WHEELS FOR STUMPS.



POINTS, Dr. NORTHROP'S PATTERNS.



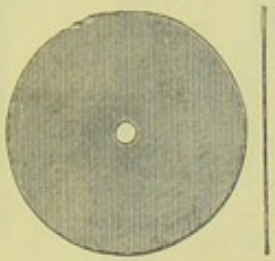
Prices:			Unmounted.		Mounted.	
			s.	*d.*	*s.*	*d.*
Discs (Dr. Arthur's)	Size A	each	0	2	0	6
,, ,, ...	,, K	,,	0	4	0	8
,, ,, ...	all other sizes	,,	0	6	0	10
Wheels for Stumps, small		,,	0	4	0	8
,, ,, medium and large		,,	0	6	0	10
Points (Dr. Northrop's)	(Figs. 1–12)	,,	0	2	0	6
,, (Dr. Butler's), for Porte-Polisher ..		per doz.	2	0		

In ordering Mounted Corundum Discs and Points, please state for which Handpiece they are required.

To Mount the above Discs and Points.—Take mandrel Fig. 231 or 232, shown on page 161, hold the point in the flame of a spirit lamp, and, when it is hot, dip it in powdered shellac, then screw on the Disc or Point and "true" the same in the Handpiece.

SEPARATING DISCS, &c.

DIAMOND DISCS, WHEELS, AND FINISHING POINTS.



Disc.



Wheel.



Point.

These Discs, Wheels, and Points are made by an entirely different process from that usually employed. The Diamond is thoroughly incorporated in the metal, and practical use will prove their great value.

All these can be mounted on Huey's Screw-head Mandrel, illustrated on page 161.

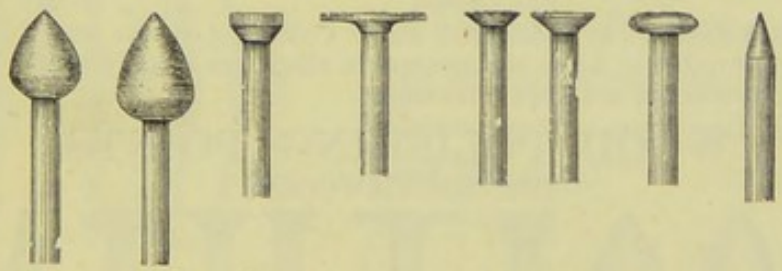
				s.	d.
Diamond	Discs, for Separating	.. ..	each	8	0
,,	Wheels, for Stumps	.. ..	,,	12	0
,,	,, ,,	Bevelled edge	,,	8	0
,,	Points, for Polishing	.. ..	,,	8	0

RUBBER AND CORUNDUM DISCS.

These Discs will be found excellent for separating teeth, because of their extreme thinness. They have all the strength necessary for the purpose. Made of vulcanized rubber and the sharpest selected disc corundum, the latter being thoroughly incorporated with the former. Various sizes. These Discs should be mounted on Huey's Mandrel.

		s.	d.
Price, all sizes	each	1	0

RUBBER AND CORUNDUM POINTS.



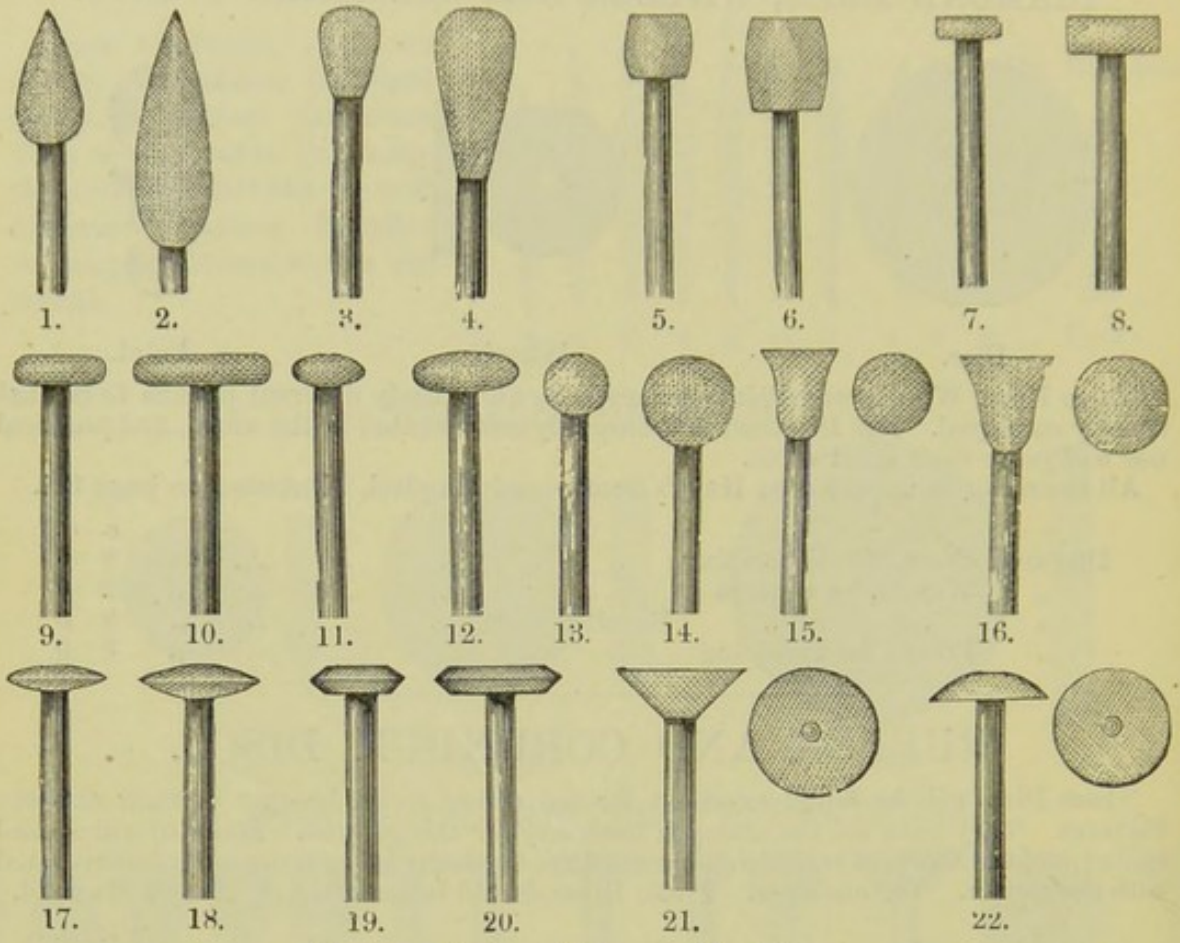
1. 2. 3. 4. 5. 6. 7. 8.

These points are made of the same material as the Rubber and Corundum Discs, and will be found effective in cutting tooth-material or dressing off fillings. They are solid throughout and can be used as long as enough of the material remains to be grasped by the porte-polishers, shown on page 161.

Prices:

										s.	d.
Per set of 8										5	0
Separately:—	Figs.	1.	2.	3.	4.	5.	6.	7.	8.		
	Each	10*d.*	1*s.*	6*d.*	1*s.*	6*d.*	6*d.*	8*d.*	3*d.*		

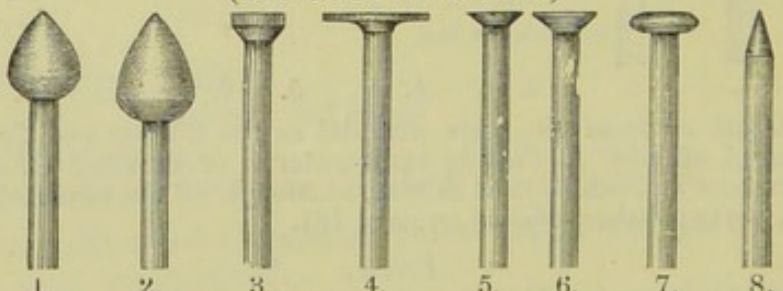
POLISHING STONES,
ARKANSAS, HINDOSTAN, AND WATER OF AYR.



Prices of above for any Handpiece :				s.	d.
English Arkansas Stones, mounted	.. .. ..	(Figs. 1–22)	each	2	6
American	„ „	(„ 1–22)	„	4	0
Hindostan	„ „	(„ 1–22)	„	1	6
Water of Ayr	„ „	(„ 1–22)	„	0	9
„	„ unmounted	(„ 1–22)	„	0	4

It is sometimes difficult to obtain the above Polishing Stones exactly like the illustrations. When unable to do so the nearest in stock are usually sent. The Arkansas and Hindostan Stones are not kept unmounted.

WOOD POLISHING POINTS.
(Dr. SOUTHWOOD'S.)



Porte-Polishers (227 and 233, on page 161) will carry these.

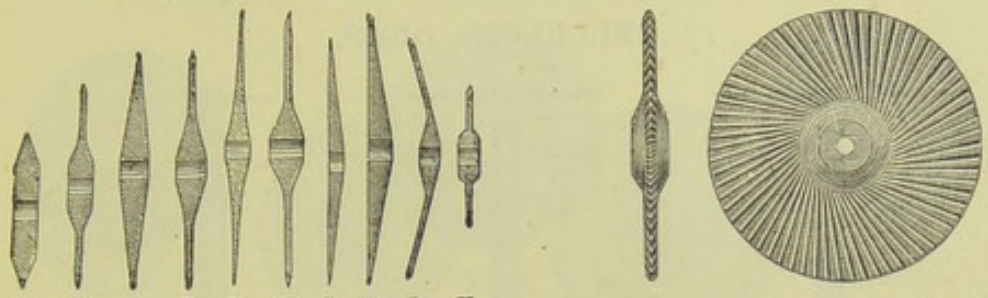
		s.	d.
Wood Polishing Points, assorted	.. .. (Figs. 1–8) per box of 100	4	0

Separately :—

Nos.	1.	2.	3.	4.	5.	6.	7.	8.
Per 100	6/-	6/6	3/4	9/8	3/4	3/4	5/-	2/-

POLISHING DISCS AND POINTS.

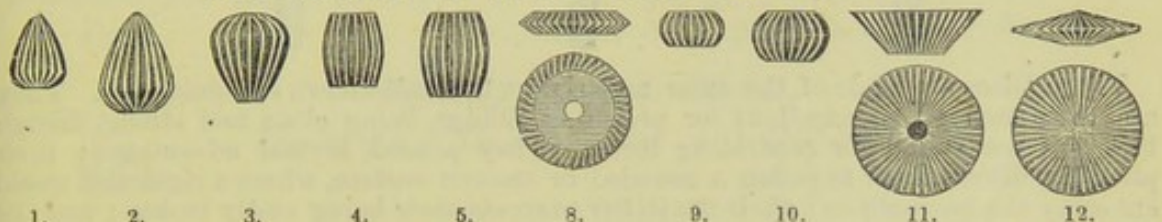
CORRUGATED SOFT RUBBER DISCS.



A B C D E F G H I K

		s.	d.
Price, all sizes	per doz.	5	0

CORRUGATED SOFT RUBBER POINTS.

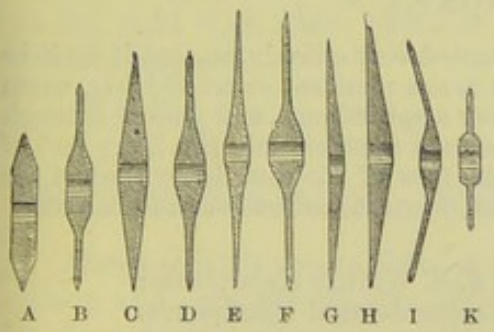


1. 2. 3. 4. 5. 8. 9. 10. 11. 12.

		s.	d.
Price, all sizes	per doz.	3	0

These Discs and Points of Soft Rubber, with CORRUGATED surfaces, suggested by Dr. C. E. Francis, are pronounced much superior to those with plain surfaces. They are used for carrying powders, either for polishing the natural teeth or for finishing fillings. They are generally used with Huey's Screw-head Mandrel.

HARD RUBBER DISCS.



A B C D E F G H I K

For carrying powders for polishing the natural teeth and finishing fillings. The cuts illustrate the forms and sizes. These are also used with Huey's Screw-head Mandrel.

		s.	d.
Price, all sizes	per doz.	5	0

LEATHER AND FELT POINTS.

ASSORTED FORMS, NICELY FINISHED.

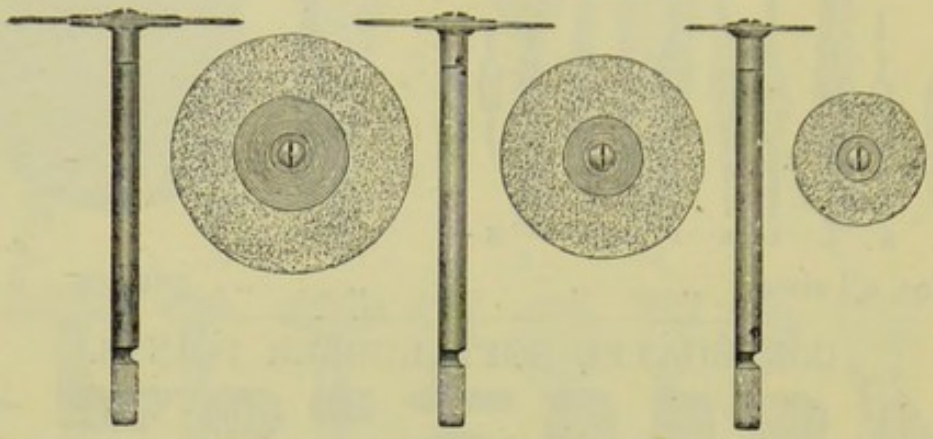
These can be mounted on the Pointed Screw or Shouldered Screw Mandrels, shown on page 161.

Prices:

		s.	d.
Leather, all forms	per doz.	3	0
Felt „	„	2	0

POLISHING DISCS.

CELLULOID DISCS.



These Discs are made of the same material as the well-known celluloid tape. They are recommended as excellent for polishing fillings, being clean and strong, though they are not suited for seperating teeth. They possess several advantages; their pliability allows them to polish a rounded or uneven surface, where a rigid disc would cut away the inequalities; their flexibility prevents their being easily broken; and the abrasive material (corundum) is forced into the substance of the discs, instead of being carried merely on the surface.

They should be kept wet while in use, as otherwise the heat engendered by friction will injure them; also, because their abrasive power is increased by moisture.

		s.	*d.*
Price, all sizes, unmounted	per doz.	2	0

DISC MOUNTER.

(Dr. W. T. SHANNON'S.)

With this appliance a corundum disc can be mounted very quickly, so that it shall be perfectly true on its mandrel. To do this, take a screw mandrel or an old bur, warm the end which is to be bedded in the corundum over a spirit-lamp, and pass it through the centre of the disc; then, while still warm, pass the mandrel into the large end of the mounter, and press the disc on to it, holding the face of the disc firmly against the face of the mounter until it cools, and so is fastened, when it will be found to be true.

It is made in the two following forms:

No. 1, which takes Mandrels used with S. S. White's Handpieces;
No. 2, which takes those used with the Cone Journal Handpieces.

		s.	*d.*
Price of either	each	4	0

SHELLAC

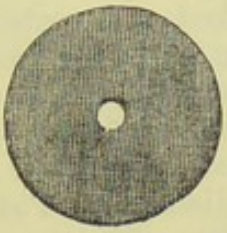
For Mounting Discs and Points, Prepared in Powder and in Sticks.

		s.	*d.*
Price in Powder	per box	0	6
„ Sticks, *obtained to order*	per doz.	1	0

POLISHING DISCS.



Emery.



Sand.



Cuttle-fish.

EMERY AND SAND-PAPER DISCS.

The backs of these Discs are shellacked by a process which thoroughly permeates the paper, giving it increased strength and toughness.

Price .. .. per box of 100 1*s.* 0*d.*

EMERY CLOTH DISCS.

The backs of these are also well shellacked.

Price .. .. per box of 100 2*s.* 0*d.*

FELT DISCS.

These Discs are made of a thin, stiff felt, which is a superior vehicle for carrying polishing powders. Their pliability prevents their breaking easily. They are more pleasant to the patient than rigid discs, and polish a tooth better and in less time. They are seven-eighths of an inch in diameter.

Price .. .. per doz. 5*s.* 0*d.*

CUTTLE-FISH PAPER DISCS.

Shellacked in the same manner as the emery discs. These Discs are possessed of keen cutting qualities, but are of a fine grit, leaving the surface of the gold with that peculiar dull finish so desirable in filling upon the labial surfaces.

Price .. .. per box of 100 1*s.* 0*d.*

BRIGHT-METAL SHIELDS FOR PAPER DISCS.

These shields are as thin as letter-paper and made convex to contain the discs, and conform them to the contoured fillings. When a mesial surface is to be polished, Huey's mandrel screw is put through the rough face of the paper disc, and then through the **concave** face of the Shield into the mandrel; but if a distal surface is to be polished, the screw is first put through the **convex** face of the Shield, and then through the smooth face of the disc into the mandrel. In both instances the result is a safe-sided, thin, stiff, contouring polishing disc; and the shield will last for years.

Made in two sizes, viz.: No. 1, $\frac{7}{8}$-in. diameter; No. 2, $\frac{3}{4}$-in. diameter.

		s.	*d.*
Price	per doz.	2	6

THICKENED-RIM SAND-PAPER DISCS.

These Discs are intended for use upon the No. 312 Mandrel. The centre is of stiff paper, well shellacked and coated on the back with an anti-friction preparation, while upon the face is cemented a ring of sand-paper. They will be found very convenient for removing superficial decay and finishing fillings near the gum margin, or for contour work. Numerous testimonials have been received as to their efficiency. Supplied in two sizes, $\frac{5}{8}$ and $\frac{7}{8}$ of an inch in diameter. Put up in boxes containing 400 discs of either size, assorted grits.

		s.	d.
Price, either size	per box	4	0

MANDREL WITH ADJUSTING HANDLE.

(American No. 310.)

This convenient appliance is for mounting and carrying sand-paper and other flexible discs. When the disc is adjusted, it is held by barbed spurs sufficiently firm to be curved or used upon posterior approximal surfaces with but little danger of becoming detached.

	s.	d.
Price, for any Handpiece	3	3
Separately :		
Mandrel only	2	0
Adjusting Handle	1	3

PAPER-DISC MANDREL.

(American No. 311.)

This Mandrel has a feathered pin that passes through the paper disc, enters the split head of the Mandrel, and is firmly clamped therein by a milled slide-ring.

The disc is pierced by a feather, and truly centred by a pin, so that no time is lost in adjustment; and the worn-out disc may be quickly removed by sliding back the milled ring and pulling out the pin with the disc, or with the thumb-nail inserted in the pin-head groove. The device is very simple and effective.

	s.	d.
Price, for any Handpiece	2	0

PAPER-DISC MANDREL.

(American No. 312.)

This Mandrel,—invented by Dr. J. W. Smith,—has on the face of its split head four spurs, which penetrate the disc when the recessed cap-pin is pushed against it, which is then firmly clamped in the Mandrel by the slide-ring.

The reverse movement of the slide-ring permits the ready release of the cap-pin with the used-up disc.

Paper, Rubber, or Felt Discs may be quickly attached to or detached from this excellent device.

	s.	d.
Price, for any Handpiece	2	0

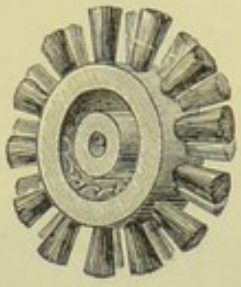
POLISHING BRUSHES, &c.



Cup-shape.



Straight.



Steel Wire.

The cup-shape and straight are for polishing teeth, the steel wire brush for cleaning burs.

The straight brush without stem and the steel wire brush are mounted on the Parting-Nut Mandrel, and the cup-shape and straight, with ivory centres, as illustrated, are used with the Screw-Porte Polisher. See page 161.

Prices :			s.	d.
Cup-shape Polishing Brushes, Ivory centre, with Stem	each		1	0
Straight „ „ Boxwood „ without „	„		0	6
„ „ „ Ivory „ with „	„		1	0
Steel Wire Brushes for cleaning Burs	„		1	3
Metal Hubs for mounting Wire Brushes on the Cable end of White's Engine	„		1	0

POLISHING POWDERS.

		s.	d.
Corundum Flour	per box	0	6
Pumice, superfine	per lb.	0	6
Rouge	per box	0	7
The following are obtained to order :			
Arkansas Stone Powder	per box	1	0
Buck-Horn „	small „	0	6
„ „	large „	1	6
Emery „	per box	0	5
„ „	per lb.	1	0
Hindostan Stone „	per box	0	6

ENGINE OIL.

This is the finest English oil, and is especially suitable for the delicate mechanism of the Dental Engine. Having purchased a large quantity, C. Ash and Sons are enabled to offer it at a very moderate price. They have used it for several years past, and can confidently recommend it.

		s.	d.
Price	per bottle	0	3



1.

THE KÆBER
ENGINE-BIT HOLDER.

A convenient appliance when it is desirable to use an engine-bit as a hand instrument. A slit coned clamp, which grasps the shank of the instrument firmly, working in a coned socket, is controlled by a screw-collar, as shown in the cut. The coned bearing and the substantial quality of the workmanship make this a valuable addition to the operating-room. It is handsomely finished.

		s.	*d.*
In Knurled handle, Nickel-plated ..	(Fig. 1)	5	0
Revolving-Head Socket Handle for holding Engine Burs, &c.		3	0

SCREW-DRIVER.

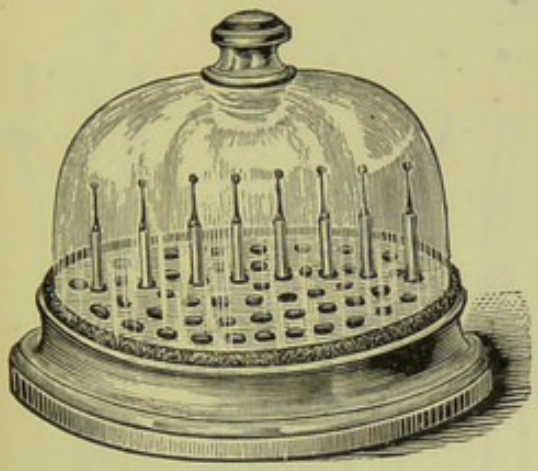
A convenient tool for taking out and putting in the small screws on Handpieces, Right-angle attachments, etc.

	s.	*d.*
Price	2	0

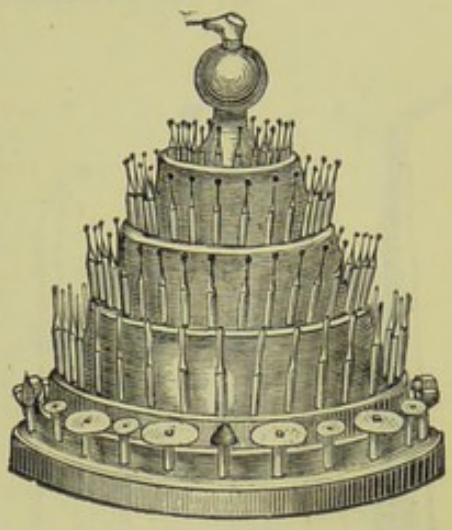
OIL CANS.

		s.	*d.*
Oil Cans, plain	each	0	4

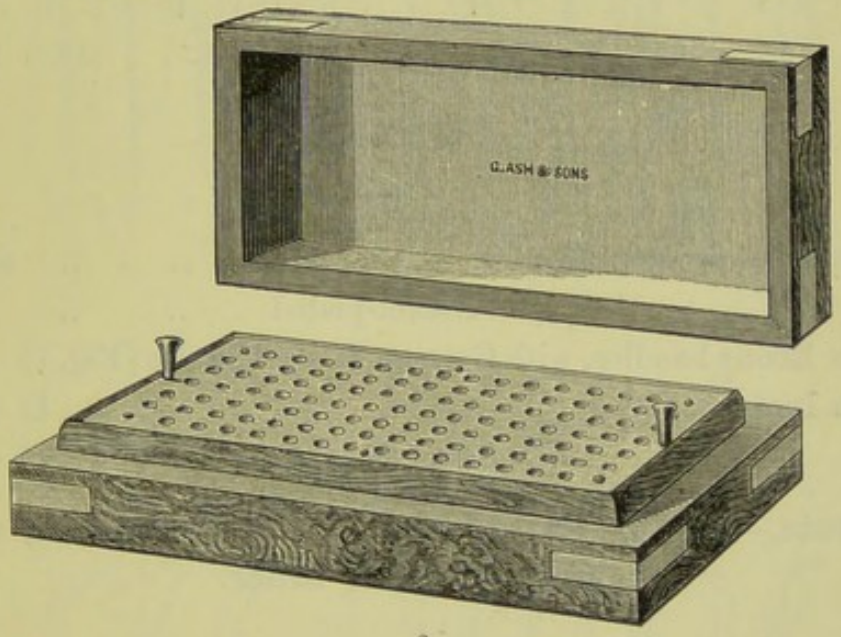
STANDS FOR ENGINE-BITS.



2.



5.



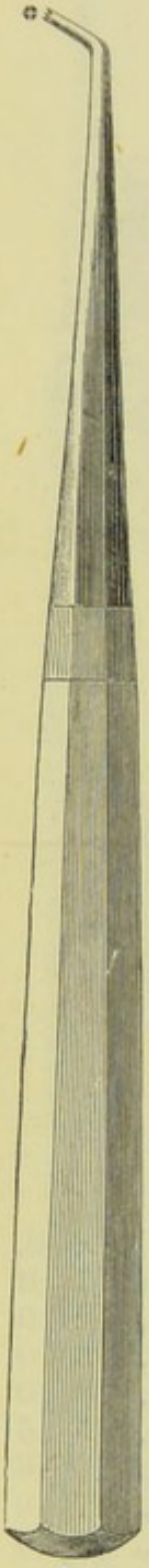
6.

Prices:

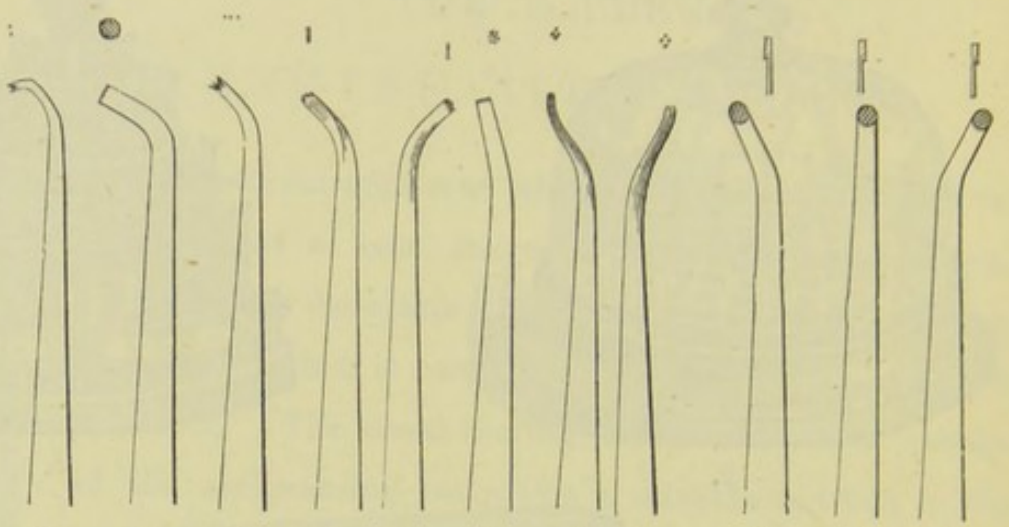
							s.	d.
In polished maple or ebonized wood, containing			60	holes	(Fig. 2)	each	5	0
„	„	with revolving stand	„	120	„	(„ 5)	„	12	0
„	„	not illustrated	„	72	„	(No. 1)	„	3	0
„	„	„	„	48	„	(„ 3)	„	3	0
„	„	„	„	78	„	(„ 4)	„	5	6
Stands in ebonized wood, with glass cover			„	73	„	..	„	10	6
„	„	without	„	„	73	„	..	„	7	0
Bur Boxes in walnut wood, to hold 108 points					..	(Fig. 6)	„	9	6
„	„	for. Straight and Lock-bit Instruments, with nickel-plated metal plate and layer of leather for keeping the bits oiled			.. ..	(„ 6)	„	17	6

HAND STOPPERS.

(Set B.)



1.



2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

STOPPERS.

(Set B.)

		s.	d.
In Steel octagon handles	each	1	2
,, ,, ,, Nickel-plated	,,	1	6
In Ebony handles, with German Silver ferrules (Fig. 1)	,,	2	6
In Ivory ,, ,, ,, ,, (,, 1)	,,	4	2
,, ,, with Silver ferrules (,, 1)	,,	4	10

Note.—Set B Stoppers, with Ivory handles, are only made to order.

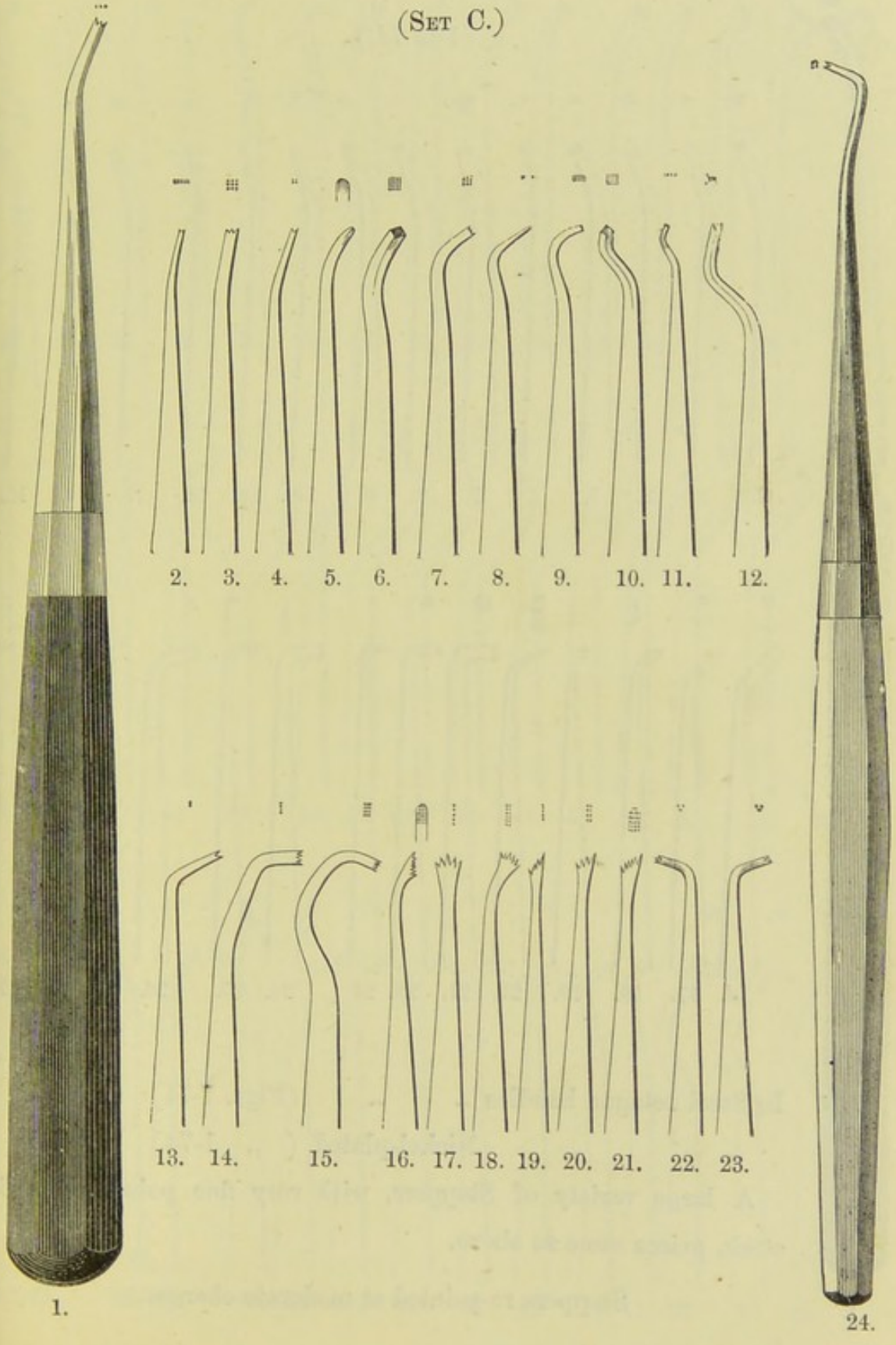
(Set C.)

		s.	d.
In Steel octagon handles	each	1	2
,, ,, Nickel-plated	,,	1	6
In Ebony handles, with German silver ferrules (Fig. 1)	,,	3	0
,, ,, ,, (,, 24)	,,	2	6
In Ivory handles ,, ,, (,, 1)	,,	4	9
,, ,, ,, (,, 24)	,,	3	9

Note.—Set C Stoppers, with Ivory handles, are only made to order.

HAND STOPPERS—*continued.*

(Set C.)

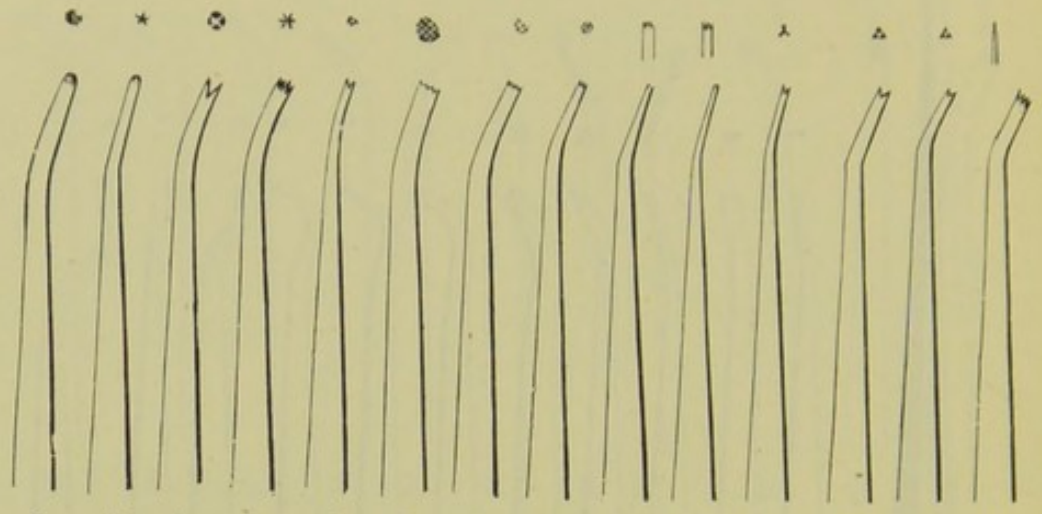


HAND STOPPERS—*continued.*

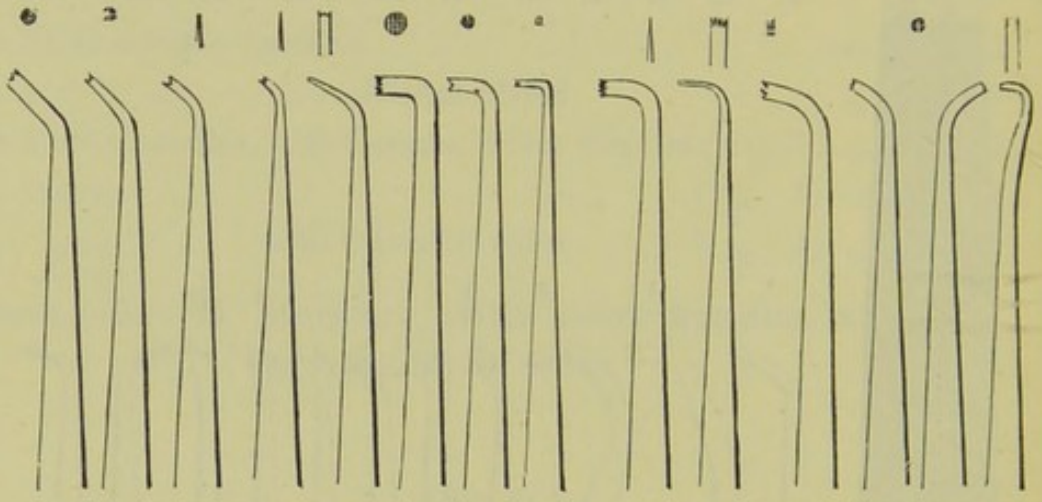
(1 to 74.)



1.



2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15.

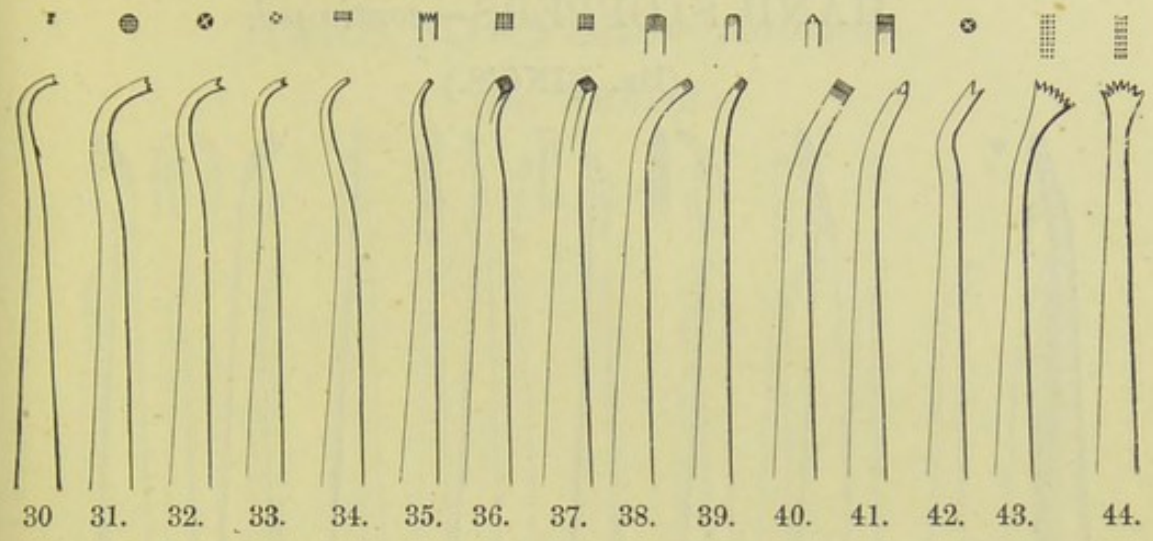


16. 17. 18. 19. 20. 21. 22. 23 24. 25. 26. 27. 28. 29.

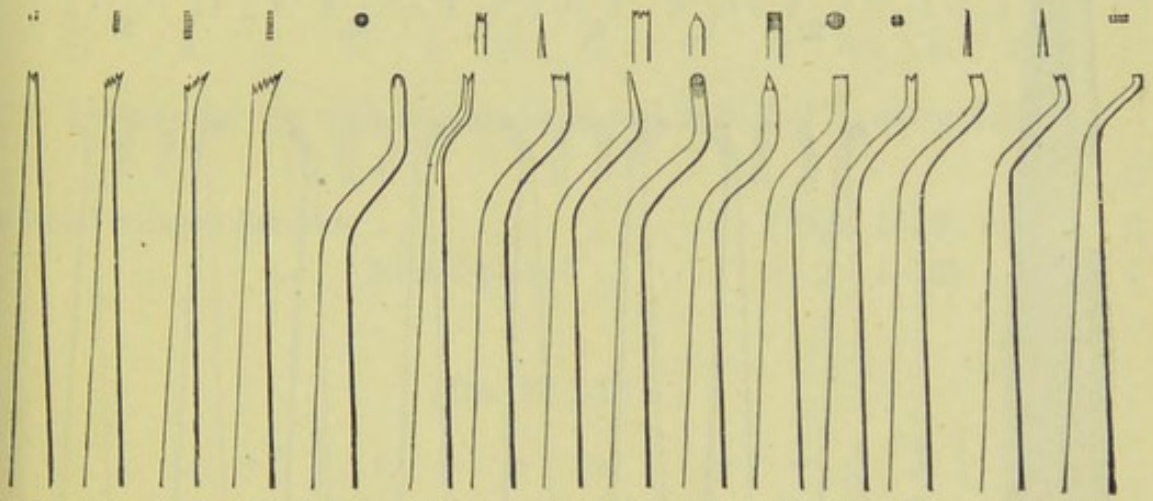
			s.	*d.*
In Steel octagon handles	(Figs. 1-74)	each	1	2
„ „ Nickel-plated	(„ 1-74)	„	1	6

A large variety of Stoppers, with very fine points, kept in stock, prices same as above.

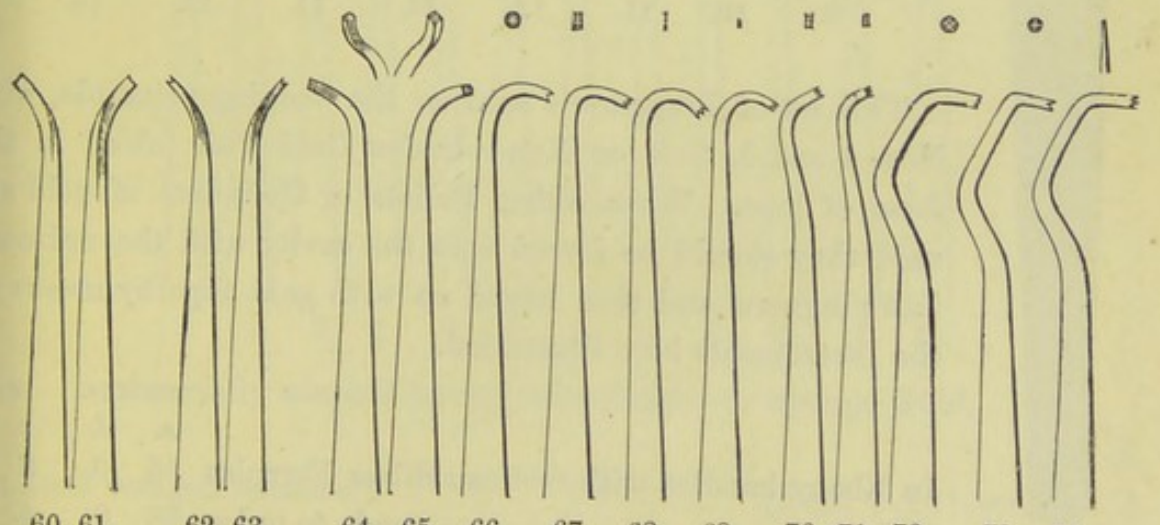
Stoppers re-pointed at moderate charges.



30 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44.



45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59.



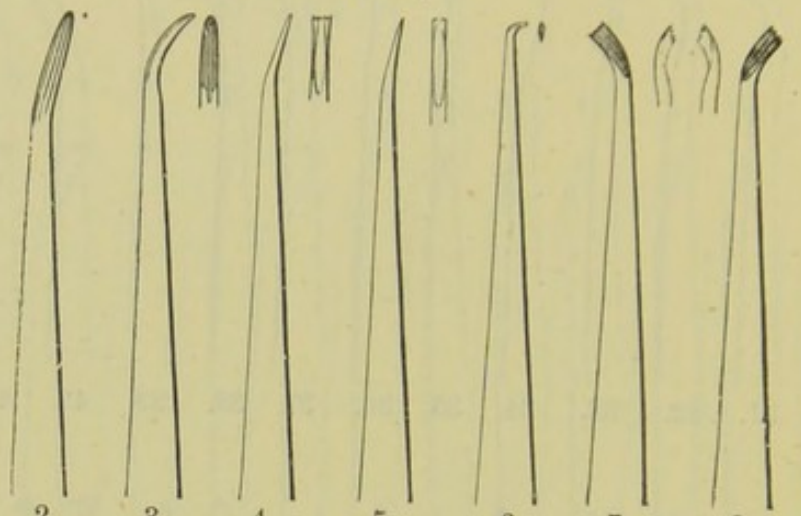
60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74.

HAND STOPPERS—*continued.*

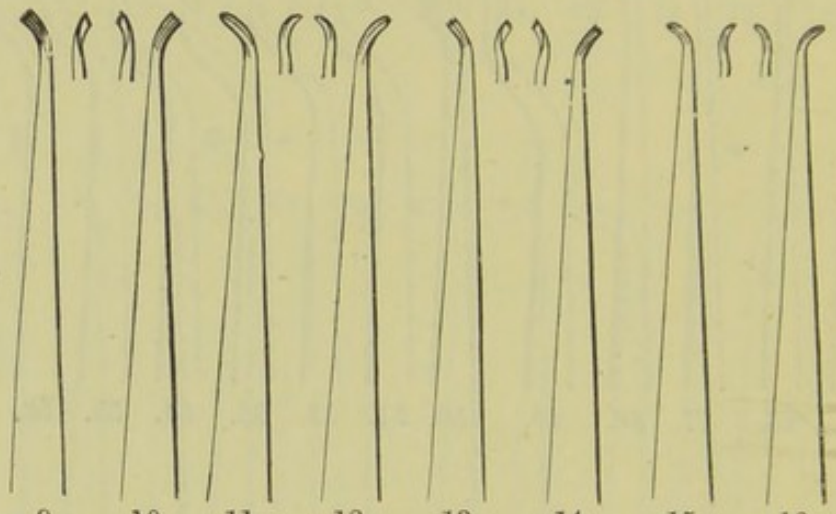
(Dr. BING'S.)



1.



2. 3. 4. 5. 6. 7. 8.



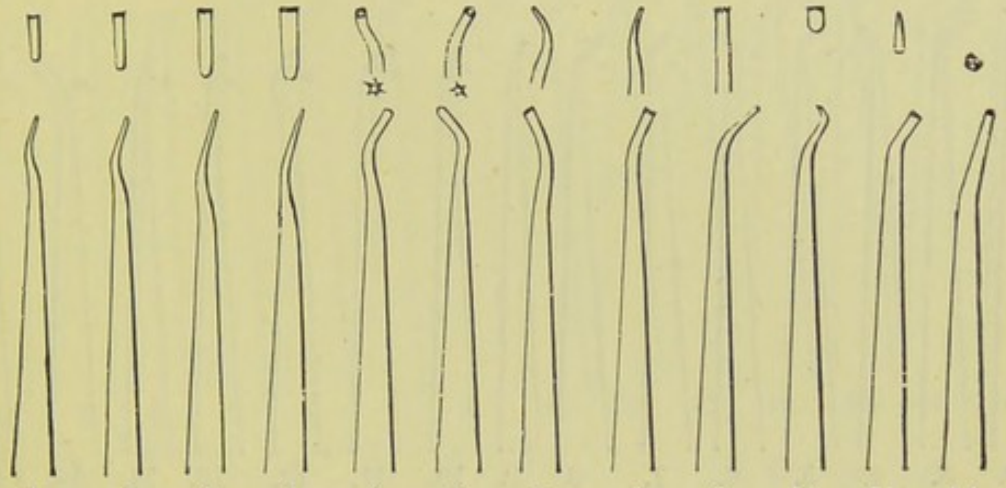
9. 10. 11. 12. 13. 14. 15. 16.

This set of Pluggers is used on the wedging principle, with Nos. 4 and 5, Soft or Non-cohesive Gold Foil folded in the form of tape. When either Pellets or Cylinders of gold are used they should be forced into the cavity with the ordinary foot pluggers, and then keyed up with gold tape by means of the Instruments here illustrated.

	Set of 16.		Each.	
	s.	*d.*	*s.*	*d.*
In Ebony handles with German Silver Ferrules	45	0	3	0
In Ivory „ „ made to order	58	0	4	0

HAND STOPPERS—*continued.*

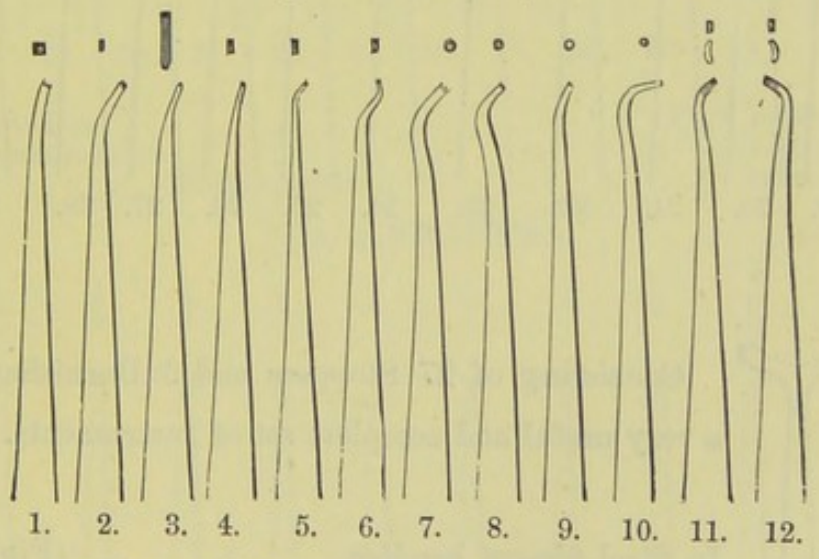
(Dr. HEAD'S.)



Suitable for use with Sponge Gold and Soft Foil in every form.

		s.	d.
In Steel octagon handles	(Figs. 1–12) each	1	2
,, ,, ,, Nickel-plated	(,, 1–12) ,,	1	6

(Dr. ELLIS'S.)

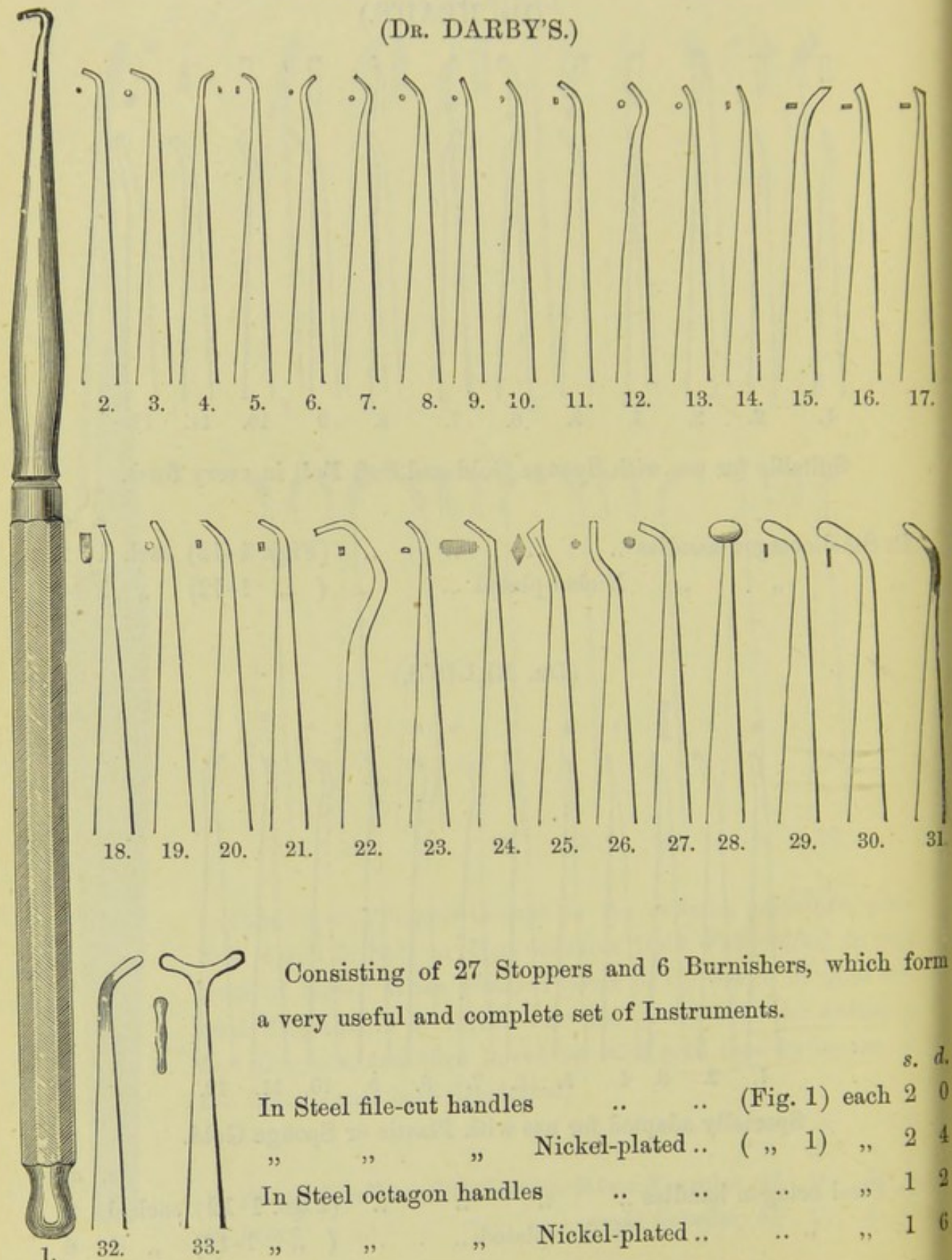


Specially adapted for use with Plastic or Sponge Gold.

		s.	d.
In Steel octagon handles	(Figs. 1–12) each	1	2
,, ,, ,, Nickel-plated	(,, 1–12) ,,	1	6

HAND STOPPERS, &c.—*continued.*

(Dr. DARBY'S.)

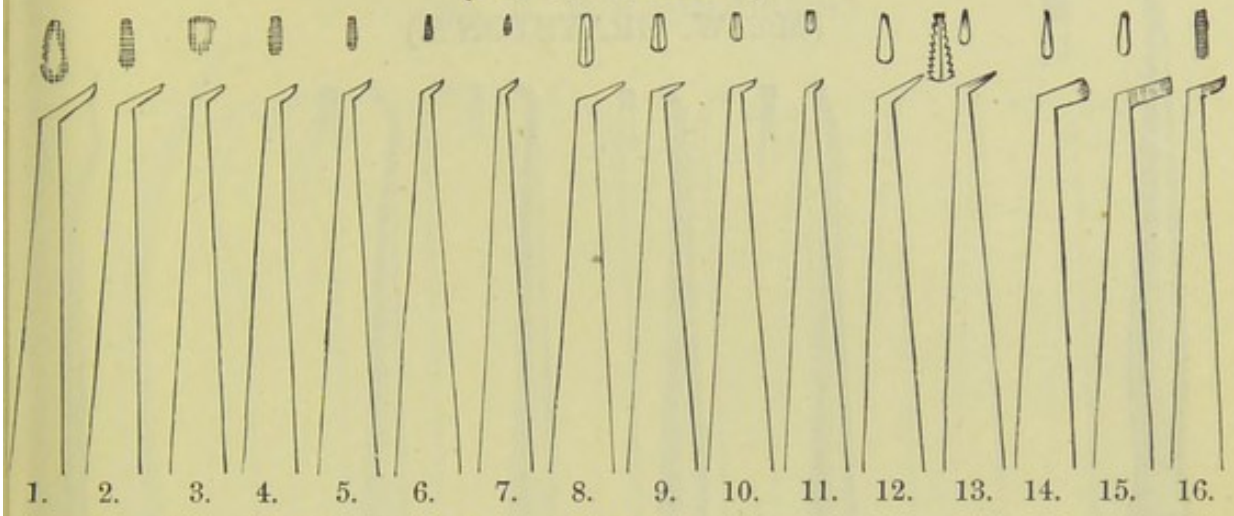


Consisting of 27 Stoppers and 6 Burnishers, which form a very useful and complete set of Instruments.

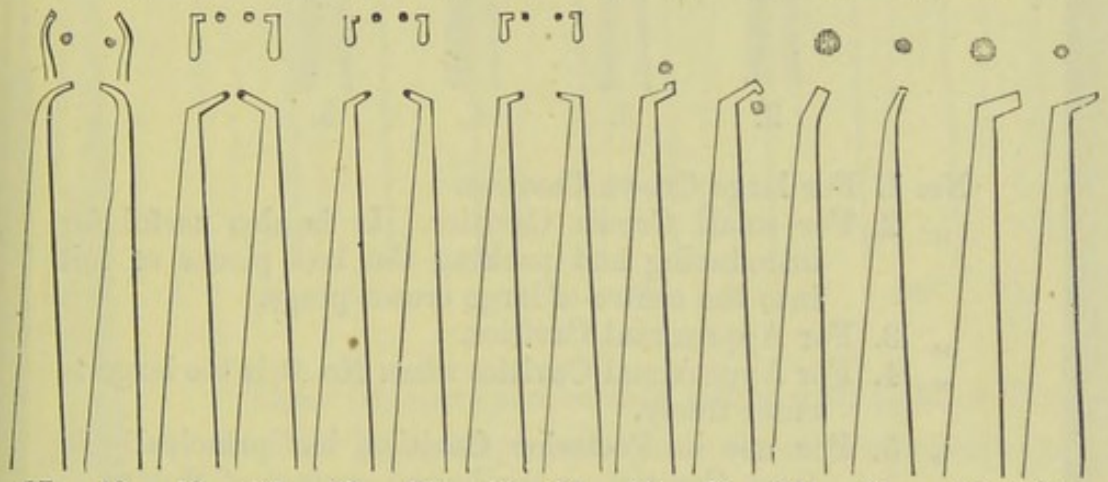
			s.	*d.*
In Steel file-cut handles	(Fig. 1)	each	2	0
„ „ „ Nickel-plated ..	(„ 1)	„	2	4
In Steel octagon handles		„	1	2
„ „ „ Nickel-plated		„	1	6

HAND STOPPERS—*continued.*

(Dr. REDMAN'S.)



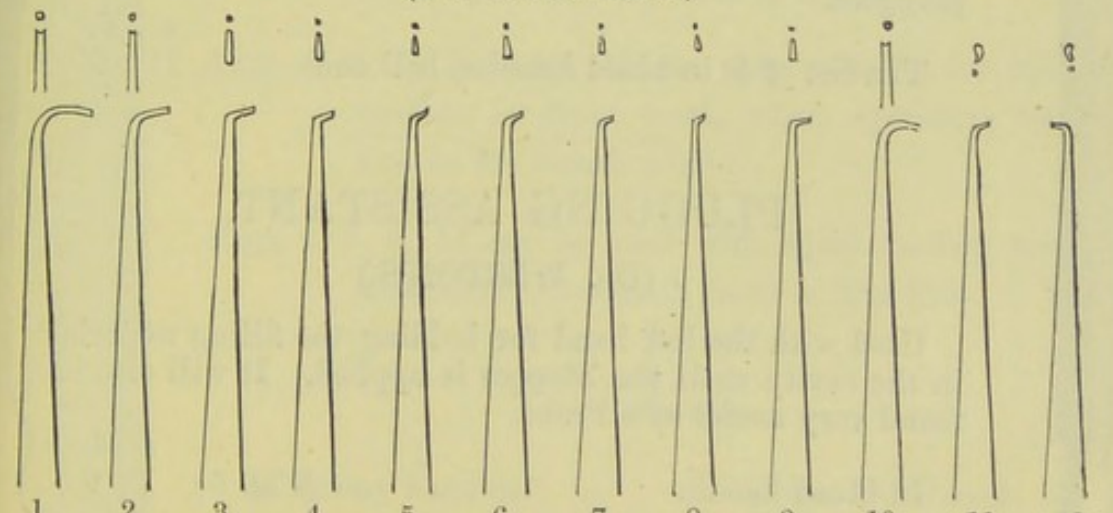
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16.



17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30.

			s.	d.
In File-cut handles	(Figs. 1–30)	each	2	0
In Steel octagon handles	(„ 1–30)	„	1	2
„ „ „ Nickel-plated	extra	„	0	4

(Dr. ABBOTT'S.)



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

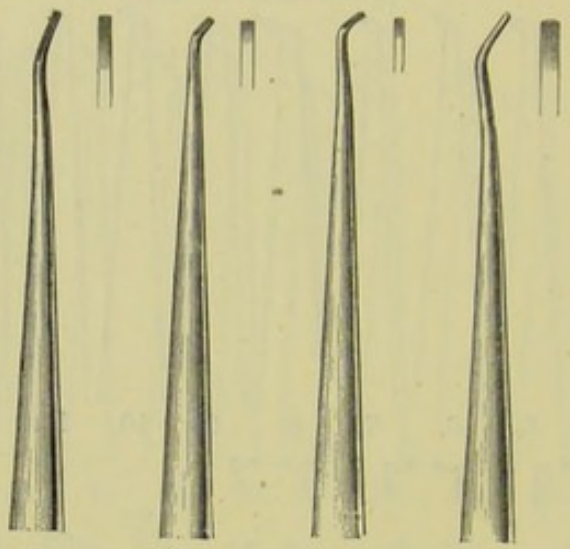
			s.	d.
In Steel octagon handles	(Figs. 1–12)	each	1	2
„ „ „ Nickel-plated	(„ 1–12)	„	1	6



1.

HAND STOPPERS—*continued.*

(Mr. W. GRAYSTON'S.)



2. 3. 4. 5.

No. 1. For large Crown Cavities.
„ 2. For small Crown Cavities. It is also useful for introducing and packing the last pieces of foil into the centre of large crown plugs.
„ 3. For Approximal Cavities.
„ 4. For Approximal Cavities when No. 3 is too large to enter freely.
„ 5. For use in Posterior Cavities, but principally in large Cavities on the buccal surface of Molars.

After the gold has been introduced and packed laterally with these Stoppers, they can be used to a certain extent as surface condensors, but the plug should always be further consolidated by the use of the ordinary heavy pluggers.

	s.	*d.*
The Set of 5, in blued handles, ball ends ..	11	6

PLUGGING ASSISTANT.

(Dr. WESTON'S.)

Used with the left hand for holding the filling material in the cavity until the Stopper is applied. It will also be found very useful as a Probe.

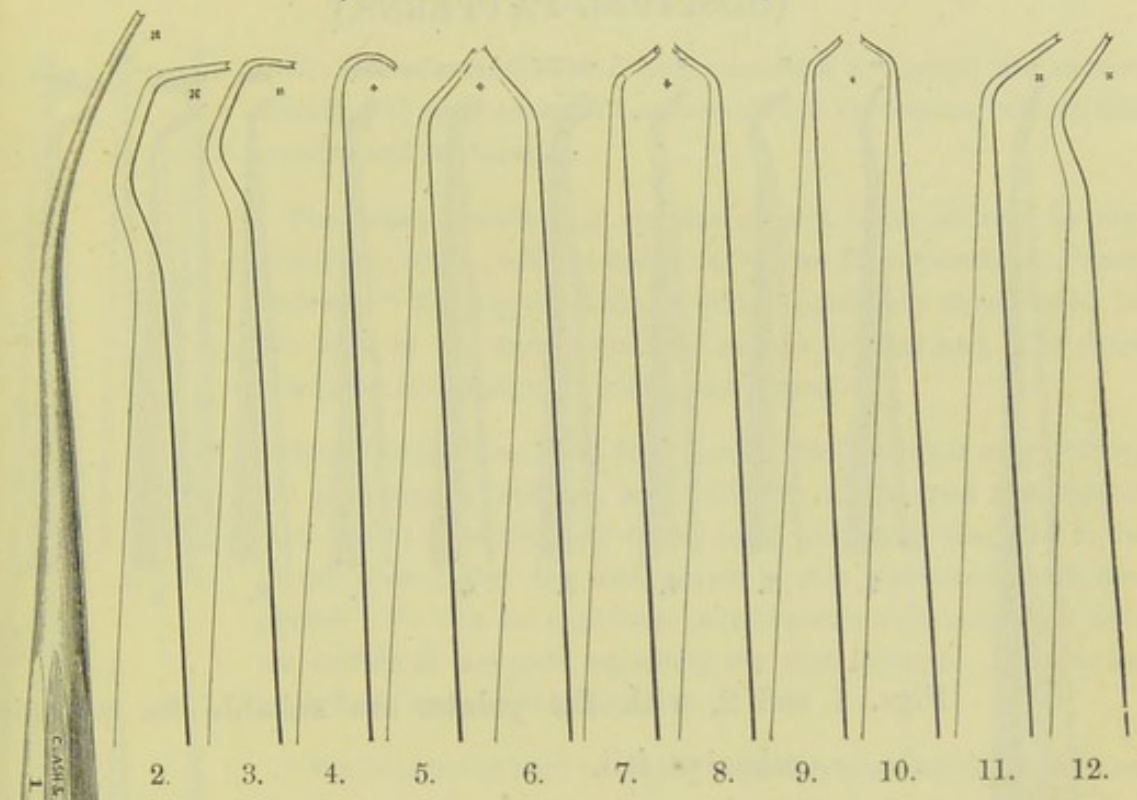
	s.	*d.*
In blued handle .. .. (Fig. 6)	1	6



6

HAND STOPPERS—*continued.*

(Mr. R. WOODHOUSE'S.)





1.

These Stoppers can be used either with Gold or Tin Foils; the Gold being employed cohesively or non-cohesively.

They are also especially useful for making fillings partly of Tin and partly of Gold.

Fig. 1 will be found most useful in reaching the distal walls of cavities far back in the mouth.

Figs. 3, 4, 5, 6, 9, 10, 12 are very suitable for indestetial cavities in front teeth, when operating by reflection in the mouth mirror.

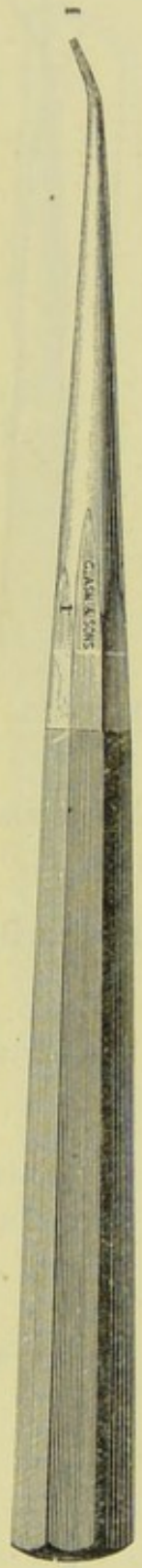
Figs. 2, 7, 8, 11 can be used with equal facility for filling undercuts either with Gold or Tin Foil.

Prices:

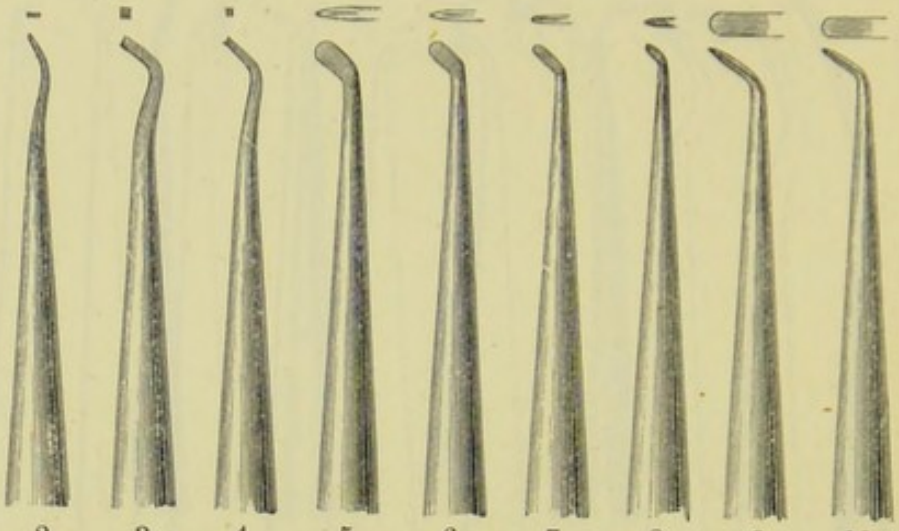
		s.	d.
In Ebony handles	(Figs. 1–12) each	3	0

HAND STOPPERS—*continued.*

(HOSPITAL PATTERNS.)



1.



2. 3. 4. 5. 6. 7. 8. 9. 10.

Figs. 1 and 2, with flat points, are suitable for use with cohesive foil.

Figs. 3 and 4, with square points, are used as condensors in crown cavities.

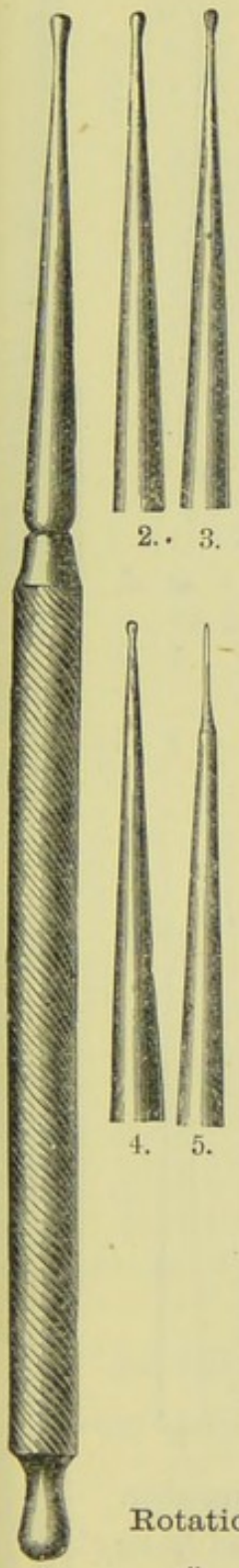
Figs. 5, 6, 7, 8, serrated both sides, and wedge shape, are useful in all fairly superficial cavities with non-cohesive foil.

Figs. 9 and 10, serrated top and bottom, are designed for introducing non-cohesive foil in interstitial cavities of Bicuspids and Molars; also in large crown cavities.

			s.	*d.*
In Ebony handles ..	..	(Figs. 1–10) each	3	0

ROTATION HAND STOPPERS.

(Dr. HERBST'S.)



Dr. Herbst's method of filling continues to engage the earnest attention of many eminent members of the Profession, both in this country and in America.

The latest contribution on the subject is an address by Dr. Bödecker, which will be found in **"The Independent Practitioner"** for August, 1885, in which he clearly states what he has done in the matter and the success he has had. To those interested the paper will well repay perusal.

Speaking of these Hand Instruments, Dr. Bödecker says: "Four are pear-shaped, and one is a very fine roof-shaped instrument. Nos. 1, 2, 3, 4 are intended to condense and bring the gold to its proper place before the roof-shaped Engine instruments are employed. No. 5 is an exploring instrument which is pressed over the surface of the gold, especially the first layer, to discover the imperfectly condensed places."

"While pressing hard upon the gold they are rotated in the hand about one-half or three-quarters of a turn. By a rotary motion the gold is much better condensed than by simple pressure. Before they are used upon a newly added layer of gold they should be rubbed on a piece of No. 1 sand-paper. **After the gold has been thus condensed the perfect adaption is obtained by the roof-shaped or conical point in the engine."**

The operation of filling, with either Gold or Tin Foil or Amalgam, is usually commenced with one of these hand instruments, and continued with a roof-shaped point in the engine, with which the material is condensed thoroughly into every depression and corner of the cavity.

Dr. Herbst claims that greater power is obtained by the rotary method than by simple pressure. He says that if simple pressure be applied to a silver coin with an ordinary Hand Stopper, and a like amount be applied with a smooth-headed Hand Instrument rotated half a turn, the latter will show a superior result.

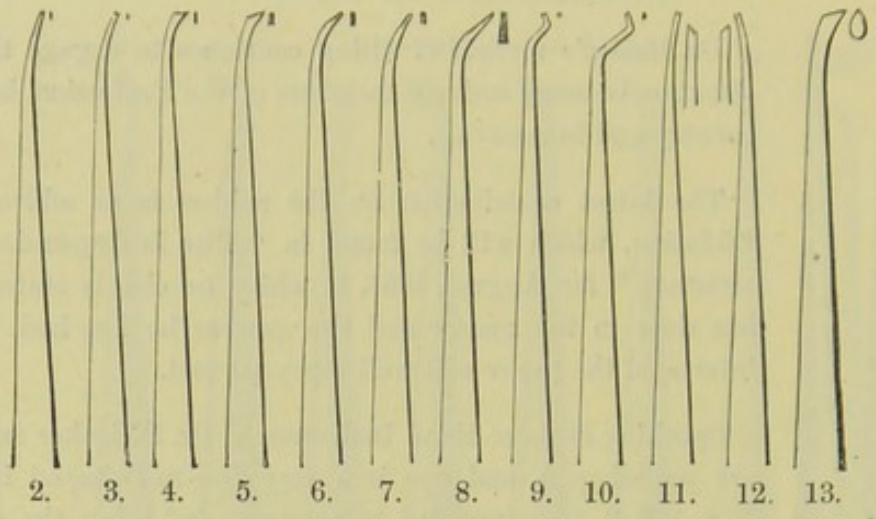
		s.	d
Rotation Hand Stoppers, Nickel-plated ..	(per set of 5)	8	6
" " " " ..	.. (each)	1	9

For Herbst's Engine Instruments, see pages 154 and 155.



MALLET PLUGGERS.

(Dr. VARNEY'S.)

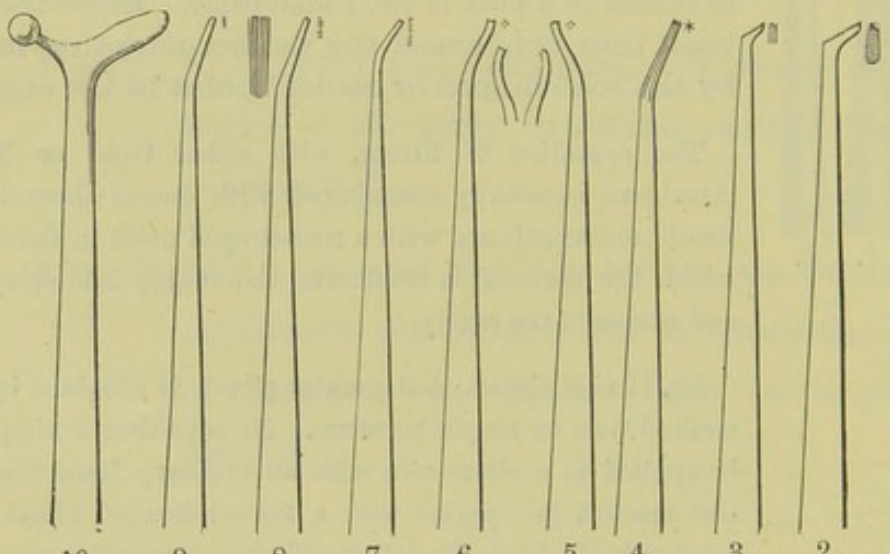


2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.

Consisting of 12 Pluggers and 1 Burnisher.

		s.	d.
In Steel handles, polished ends (Figs. 1–13)	per set	48	0
,, ,, ,, (,, 1–13)	each	4	0
The above Points, with screw ends, adapted for use with Automatic Mallet	,,	1	6

(Mr. STEVENS'.)



10. 9. 8. 7. 6. 5. 4. 3. 2.

Consisting of 9 Pluggers and 1 double-headed Burnisher.

		s.	d.
In Steel handles, polished ends (Figs. 1–10)	per set	22	0
,, ,, ,, (,, 1–10)	each	2	3
,, ,, Nickel-plated	extra ,,	0	4



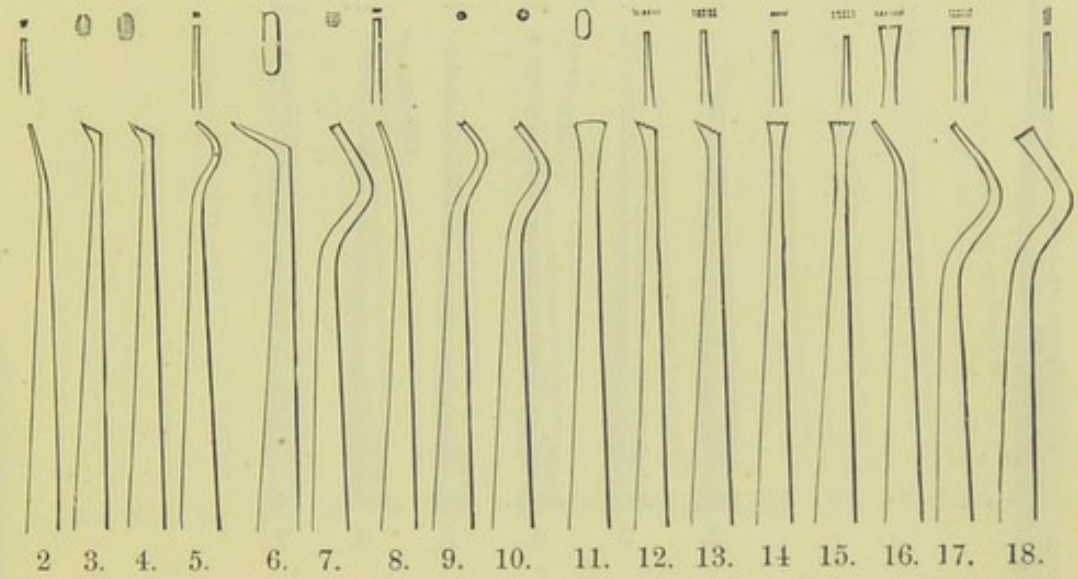
1.



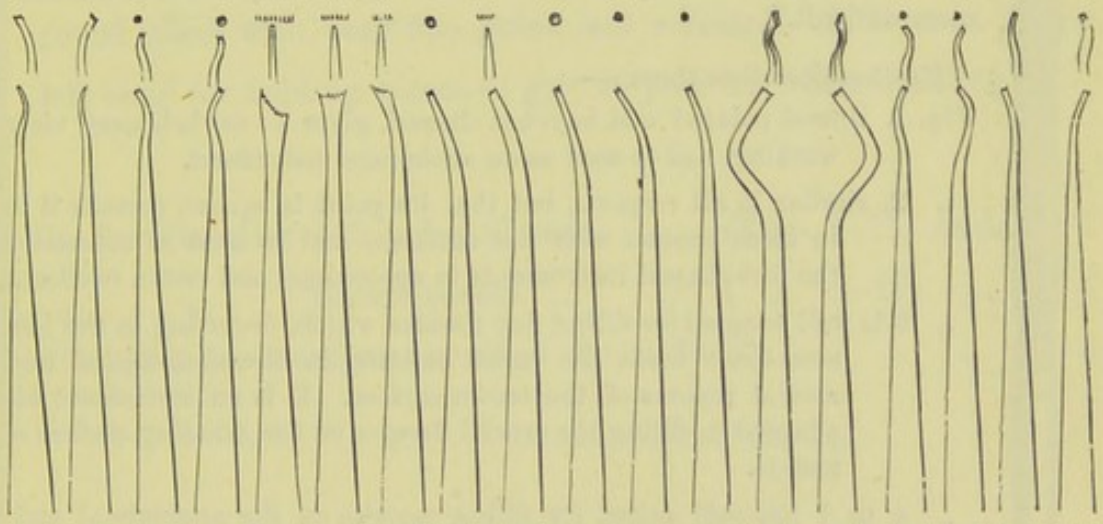
1.

MALLET PLUGGERS—*continued.*

(Dr. ABBOTT'S.)



2 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14 15. 16. 17. 18.



19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36.

As will be seen from the illustrations, these instruments form a very useful and complete set of Mallet Pluggers.

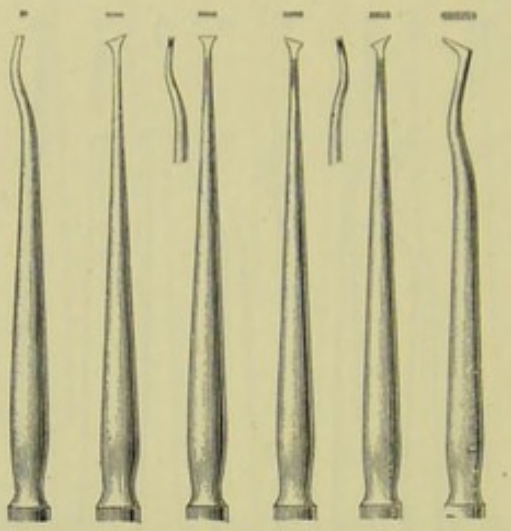
			s.	*d.*
In Steel handles with polished ends	..	(Figs. 1–36) each	2	0
,, ,, Nickel-plated	.. ..	(,, 1–36) ,,	2	4



1.

MALLET PLUGGERS—*continued.*

(Dr. W. FINLEY THOMPSON'S.)



2. 3. 4. 5. 6. 7.

In his third lecture on "Operative Dental Surgery and Therapeutics," delivered at the National Dental Hospital, 1879, Dr. Thompson said: "These instruments fulfil the requirements of all my ordinary work, and much that is more difficult."

He thus describes them :—

Fig. 1, Round pointed and bayonet shaped, gives an unobstructed view while working, and is used as an anchorage instrument.

„ 2, similar in all respects, but that its point is square, permits it to come in close contact with flat surfaces, and is used in connection with the foot-shaped instruments in approximal and crown cavities.

„ 3 is well adapted for filling fine fissures which, occurring in the bicuspids, sometimes unite the caries existing in the ante-medial and post-medial regions of the crown surface. It is an instrument also well adapted to filling the crucial fissures on the grinding surface of lower molars.

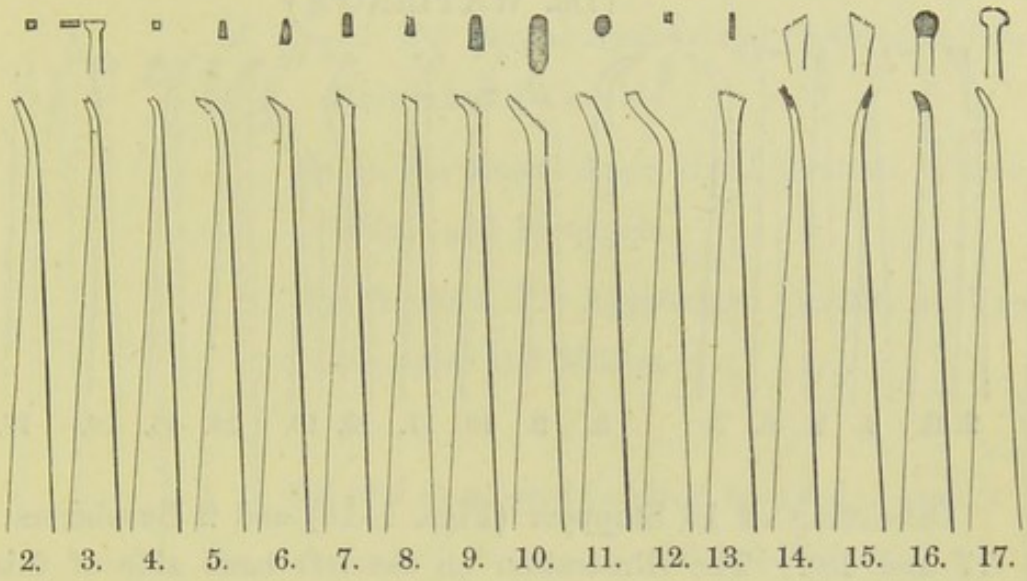
„ 4 to 7 are well suited for filling cavities on the approximal and labial surfaces. The angle of the foot-shaped instruments, Figs. 5, 6, 7, keeps the serrated portion in a horizontal position, and at the same time throws the handle quite out of the line of sight."—See *The Monthly Review of Dental Surgery*, January 15, 1880.

		s.	d.
In tapered Steel handles	(Figs. 1–7) each	4	0
„ „ „ like Fig. 1. page 195, for use with the Electric Mallet ..	(„ 1–7) „	4	0
Mallet Points with screw ends	(„ 1–7) „	1	6


1.

MALLET PLUGGERS—*continued.*

(Dr. BUTLER'S.)


2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17.

Consisting of 16 Pluggers, 1 Burnisher, and a Plugging Assistant, not illustrated. The latter, which is stamped 0, is made of $\frac{3}{16}$th-inch round Steel with very fine point, not serrated. It is used in the left hand for holding pieces of gold in position while building up.

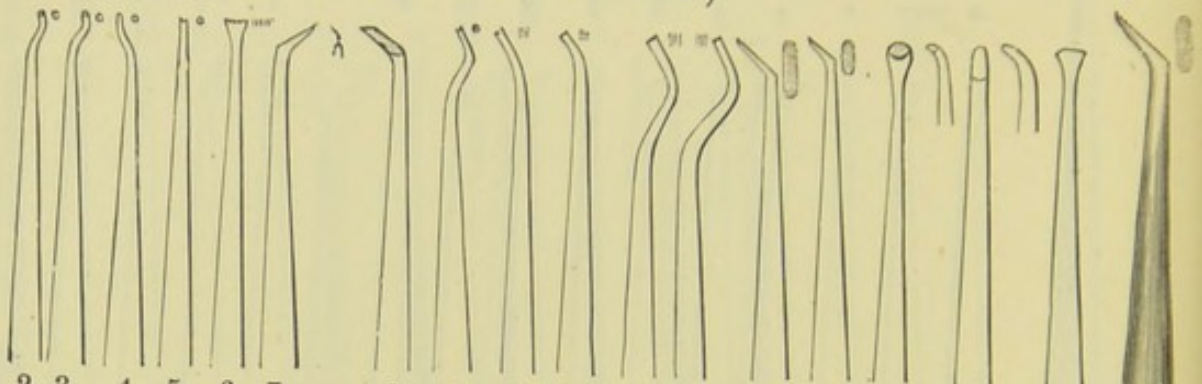
			s.	d.
In Steel handles with polished ends	..	(Figs. 1–17) each	3	0
„ „ Nickel-plated ..	..	(„ 1–17) „	3	4
Plugging Assistant, as described above, No. 0 ..	..	„	1	6

Stoppers for Cone-socket handles—			s.	d.
American, with screw ends ..	..	each, from 1/6 to	7	6
Handles for Points	..	per doz.	10	0
„ for Mallet Points	..	„	16	0
Pliers for inserting and removing Points	..	No. 1, each	7	0
„ „ „ „	..	„ 2 „	3	0

Illustrated Pamphlet of Cone-socket Instruments sent on application.

MALLET PLUGGERS—*continued.*

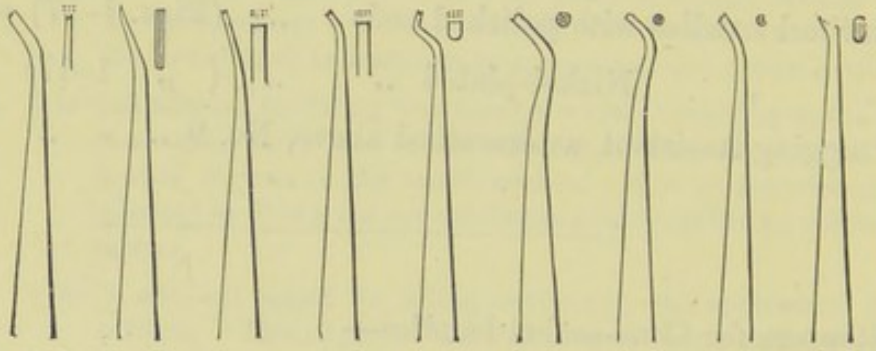
(Dr. WATLING'S.)



Consisting of 16 Stoppers (Figs. 1–16) and 2 Burnishers (Figs. 17 and 18). The illustration on the left hand side of this page shows the form of handle.

			s.	d.
In Steel handles with polished ends	..	(Figs. 1–18) each	3	0
„ „ Nickel-plated	.. ..	(„ 1–18) „	3	4

(Dr. STELLWAGEN'S.)



The illustration on the right hand side of this page shows the form of handle. Both these sets will be found very useful. They are finely serrated and carefully made and tempered.

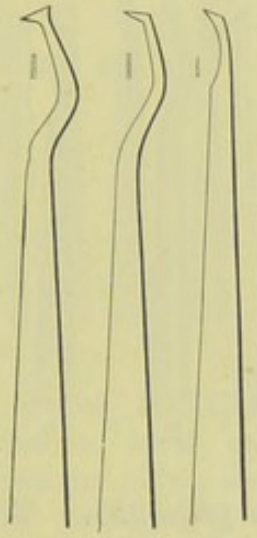
			s.	d.
In Steel handles with polished ends	..	(Figs. 1–10) each	1	9
„ „ Nickel-plated	.. ..	(„ 1–10) „	2	1



1.

MALLET PLUGGERS—*continued.*

(Dr. J. H. REDMAN'S.)



2. 3. 4.

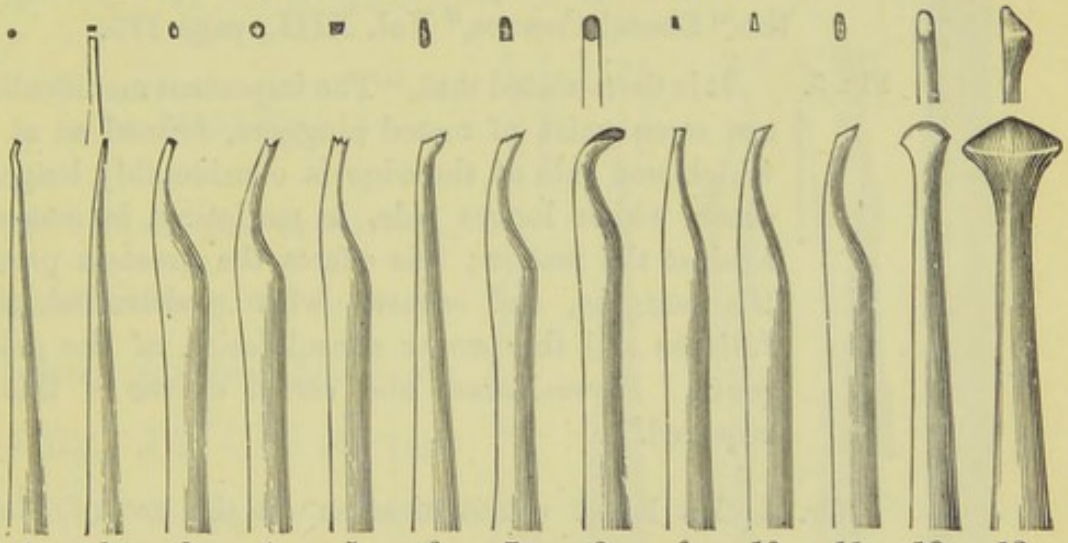
No. 1. For Mesial Approximal Cavities in Lower Molars and Bicuspids.

No. 2. For Distal Approximal Cavities in Lower Molars and Bicuspids.

Nos. 3 and 4. For Approximal Cavities in Upper Bicuspids and Molars.

			s.	d.
Set of 4 in tapered handles, bronzed	each	4	0
,, ,, ,, Nickel-plated	,,	4	4

(Dr. ATKINSON'S "OMEGA.")



1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.

With extremely fine serrations. Dr. Atkinson's reputation as an Operator, is a sufficient guarantee of their usefulness. What he claims for them may be gathered from the name which he has given them.

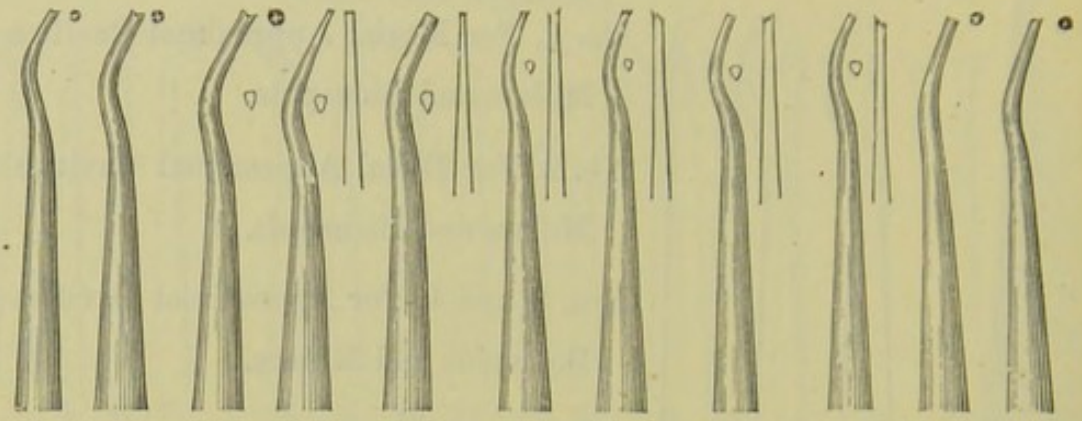
			s.	d.
In Steel octagon handles	(Figs. 1–13)	each	2	9
,, ,, ,, Nickel-plated	(,, 1–13)	,,	3	1



1.

MATRIX PLUGGERS.

(Dr. JACK'S.)



2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

For use with the Matrices shown on page 218. They can be used either as Mallet or Hand Pluggers. Dr. Jack says:—

Figs. 1–5 are intended for fixing the mats of gold in the cavity in the positions they are to occupy.

Figs. 7–10 are for consolidation of the gold—to be used with the mallet, as specially directed in the April (1871) number of the "Dental Cosmos," Vol. XIII., page 175.

Fig. 5.



It is there stated that, "The important modifications needed are some pairs of mated pluggers, formed as at Fig. 5, in which one side of the edge is considerably longer than the other, which longer side, in malleting, is constantly kept against the matrix; this effects the greatest pressure upon the margins, and secures with positiveness the perfect fullness and the proper consolidation of the gold at these parts. Several sizes and varied curves of this point are required."

[Dr. Jack's latest communication on the use of Matrices and Matrix Pluggers, will be found in the same Journal for April 1885.]

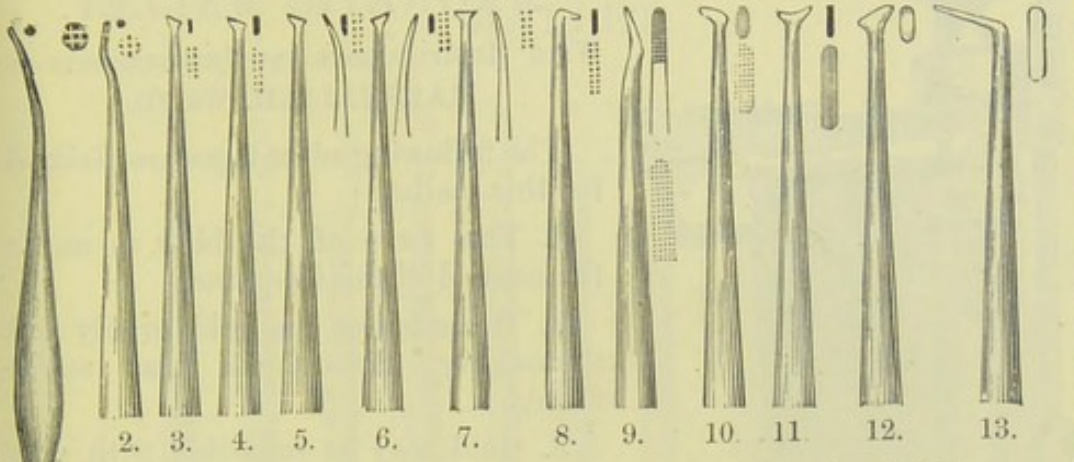
Fig. 6, for consolidation of first layers along cervical wall of very large distal cavities of superior molars.

Fig. 11, for consolidation of very large distal molar; and Fig. 12, of large mesial superior molar cavities.

	s.	d.
In checkered Steel handles with blued centres and polished ends .. .. each	5	0

MALLET PLUGGERS—*continued.*

(Dr. CHAPPELL'S.)



2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.

Known as Dr. Chappell's "Gold Builders." With very fine points, most carefully and uniformly serrated. The illustrations show the size and shape of each instrument, with an enlarged view of the serrations. These instruments are much esteemed, and form a most useful and convenient set of Mallet Pluggers.

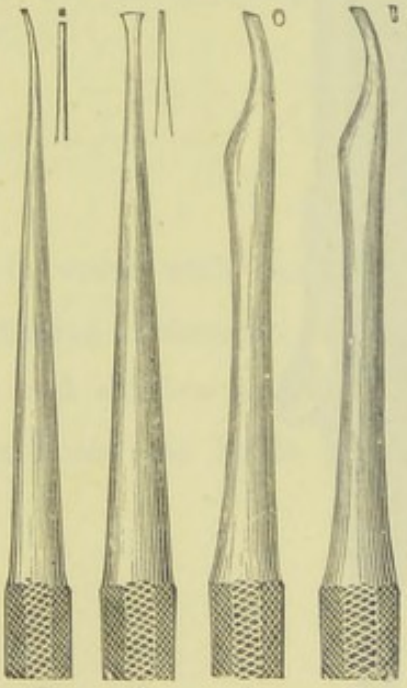
			s.	d.
In Steel handles, blued	(Figs. 1–13)	each	5	0
„ „ „	(„ 1–13)	per set	60	0



1.

(Dr. MILLS'S.)

With smooth convex surfaces. Useful for Gold in any form, but particularly suitable for heavy foil filling. Fig. 1, on the right hand side of the page, shows the full size of each instrument.



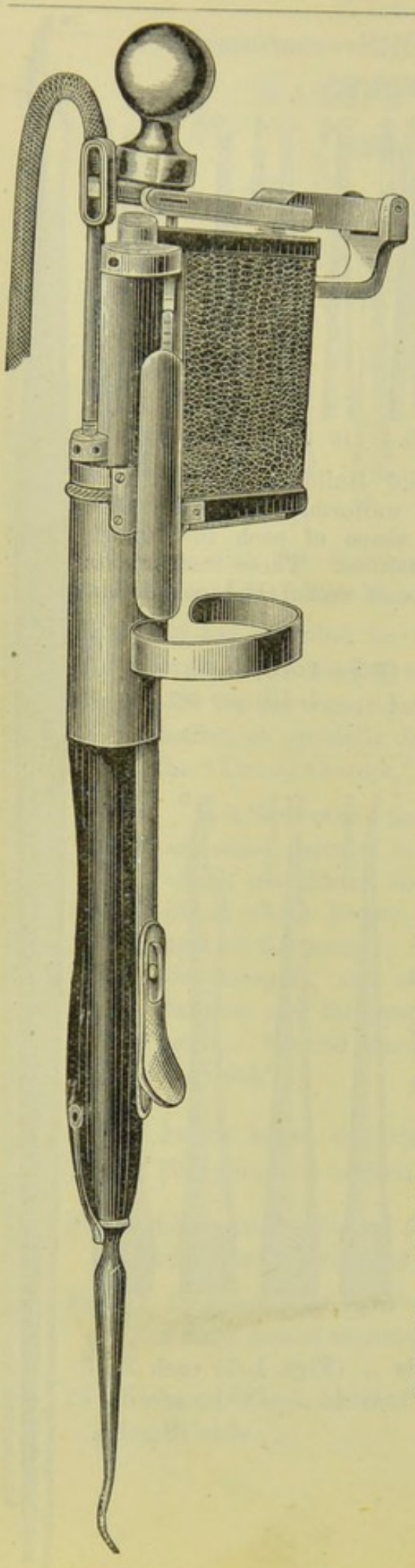
2. 3. 4. 5.

			s.	d.
In Steel handles with polished ends ..	(Figs. 1–5)	each	3	3
„ „ Nickel-plated ..	(„ 1–5)	„	3	7

o



1.



THE BONWILL ELECTRO-MAGNETIC MALLET.

With Modifications and Improvements by MARSHALL H. WEBB.

The following advantages are claimed for this mallet:

1. The force of the blow is under the control of the Operator.

2. It condenses the gold evenly and thoroughly throughout the entire filling.

3. Gold may be impacted with ease against thin frail walls without risk of fracturing them.

4. It saves the Operator much time and labour.

5. When properly understood it is easily kept in order.

Prices:

	s.	*d.*
Mallet, with connecting-posts and seven feet of silk cord, ready for attaching to the Battery	140	0
Ash's No. 2 Battery (see page 196)	70	0
Mallet and Ash's No. 2 Battery complete	210	0
Mallet and S. S. White's Bunsen Battery complete	188	0

Illustrated Pamphlet of Instructions sent with each Mallet.

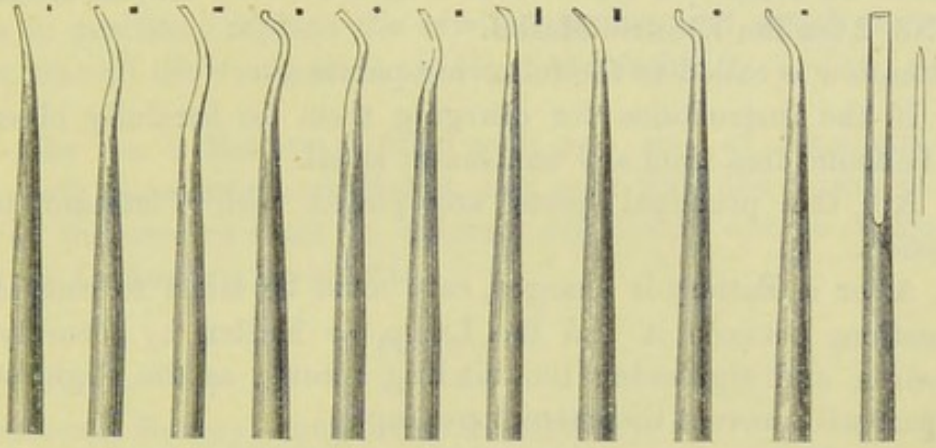
NOTES ON OPERATIVE DENTISTRY. By Marshall H. Webb, D.D.S. In 8vo. cloth, 175 pages. Second Edition. Net 9*s.*

This work, the profits on which are devoted to the benefit of the late Dr. Webb's family, also contains a full description of the Mallet, and the manner of using the instruments.

Dr. WEBB'S INSTRUMENTS FOR THE ELECTRIC MALLET.



1.



2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

		s.	d.
Set of 12 as illustrated	each	4	0

Other forms of Stoppers for the Electro-Magnetic Mallet made to order.

The Mallet is also supplied to order with Socket to hold Points such as are used with existing Automatic Mallets, but only those Points with very fine and shallow serrations should be employed, because the coarser kinds are liable to chop up the gold.

			s.	d.
Mallet Points with screw ends, to fit socket of Electric Mallet ..	(Figs. 1–12)	each	1	6
Socket Handle to hold screw points		„	3	0

o 2

C. ASH AND SONS'

ADJUSTABLE BICHROMATE BATTERIES.

These Batteries are made in two sizes: No. 1 for the Electric Lamp, and No. 2 for the Electric Mallet.

Attention is called to the following points :—

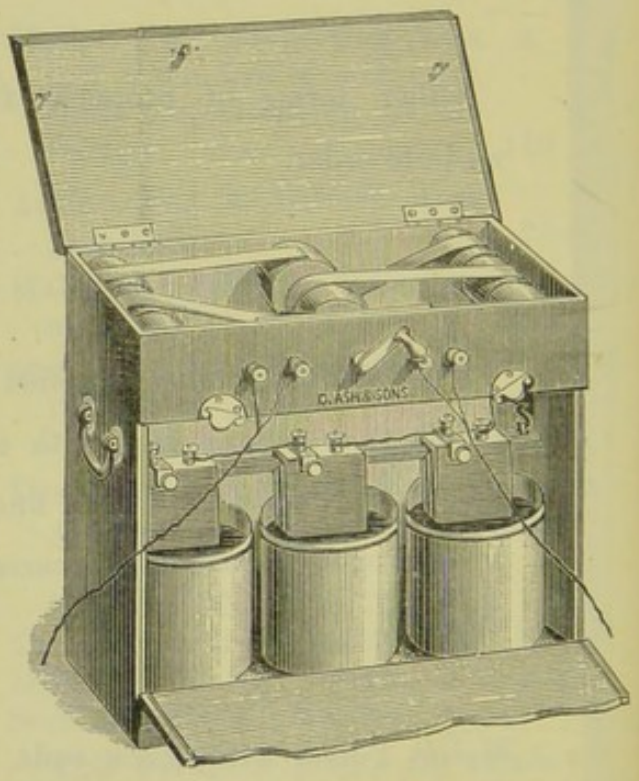
1. If the instructions for charging them be carefully observed, they will be found free from any unpleasant smell.

2. All the principal parts are plated with Platinum to prevent corrosion.

3. After a Battery is charged, care must be taken to complete all the connections between it and the Lamp, or Mallet, by securely fastening the wires, and tightening the binding screws, as the slightest space in any part will prevent the current passing.

Particulars of the No. 1 will be found in the Mouth Mirror section of this Catalogue.

No. 2.—FOR WORKING THE ELECTRIC MALLET.



This battery is much larger and more powerful than the No. 1 and is fitted with a regulating handle which serves as an index to show the strength of the current that is being used. A small stud is fixed on the top of the box, and when this is pressed the Carbons and Zincs are lifted out of the solution by a balance weight. This is a very simple and effective way of economising the lasting power of the Battery, as no action can go on when it is not in actual use.

To charge the Battery.—Raise the Carbons to their full height by pressing the small stud; take out the Jars; fill them with warm water to within three inches of the top; put half-a-pound of Bichromate

of Potash into each; stir well with a piece of wood, and while doing so—when the solution is cool—add to each half-a-pound of Sulphuric Acid.

To renew the Zincs.—Disconnect the wires from the plates; remove the binding screws of the Carbons, and lift out the old Zincs. Put the new Zincs in position; replace the binding screws and attach the wires, taking care that all the connections are clean and secure.

Note.—The No. 2 Battery is fitted with two sets of terminals, and will work both the Lamp and Mallet, but each time the Lamp is used the force of the current must be reduced sufficiently not to destroy it, by raising the Carbons in the solution.

Prices:

		s.	d.
No. 2. Three-cell Battery, complete as illustrated		70	0
Parts separately:			
Carbons, extra	each	1	0
Zincs „	„	2	3
Jars „	„	1	6
Bichromate of Potash, in crystals	per lb.	1	0
„ „ „ in fine powder	„	1	3
Battery Wire Distributor		4	0

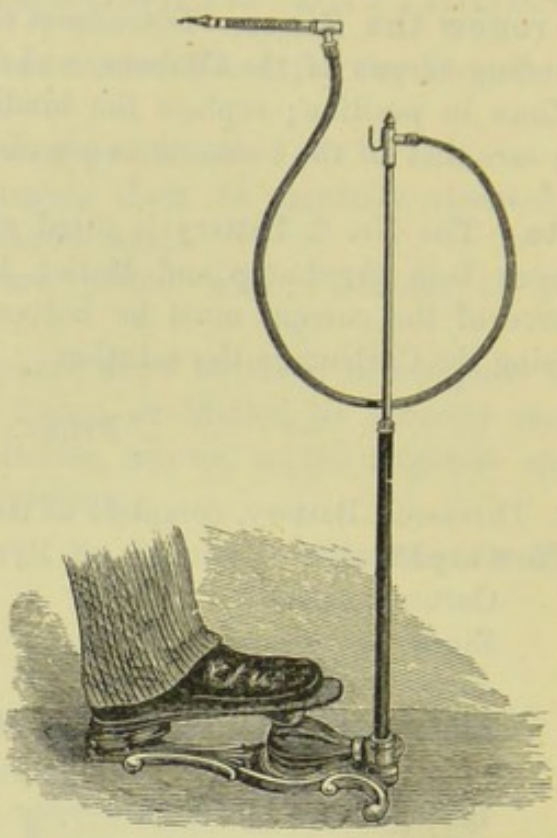
S. S. WHITE'S
FOUR-CELL BUNSEN BATTERY.

For working the Electric Mallet. Illustrated Pamphlet giving full description, with instructions for charging and using sent with each Battery.

Prices:

		s.	d.
Battery complete, with four cells and two nine-feet lengths of Gutta-Percha-covered Copper wire, in box		48	0
Parts separately:			
Glass Jars	each	1	6
Zincs—Best Spelter	„	3	0
Brass Posts for Zincs	„	1	0
Porous Cups	„	0	7½
Carbons	„	2	0
Clamps for Carbons	„	0	10
Connections for Carbons, Platina Face	„	1	3
„ for Battery Wires	„	0	10
Battery Wire, copper, covered with Gutta-percha	per foot	0	2½

Mr S. A. KIRBY'S IMPROVED PNEUMATIC MALLET.



This Instrument answers all the purposes of an ordinary Hand Mallet without the aid of an assistant.

Each blow is given with the exact force and at the precise moment desired by the Operator, and power enough may be obtained, if required, for welding unannealed non-cohesive gold with the smallest possible amount of concussion or jarring to the tooth. Several blows may be given in rapid succession, but the Instrument is intended to produce a decided effect on the exact spot required, rather than to afford a number of rapid blows.

The heel should be placed firmly, but not stiffly, on the back of the pedal, so that it carries the weight of the leg and foot. A very slight movement of the toe will then produce a light blow, which may be increased to any desired extent by using more force. No considerable motion of the foot is at any time necessary.

The force of the blow is also regulated by the collar on the improved Handpiece. To obtain a full blow the collar should be turned so as to open the holes to the fullest extent; the force is diminished by making the holes smaller.

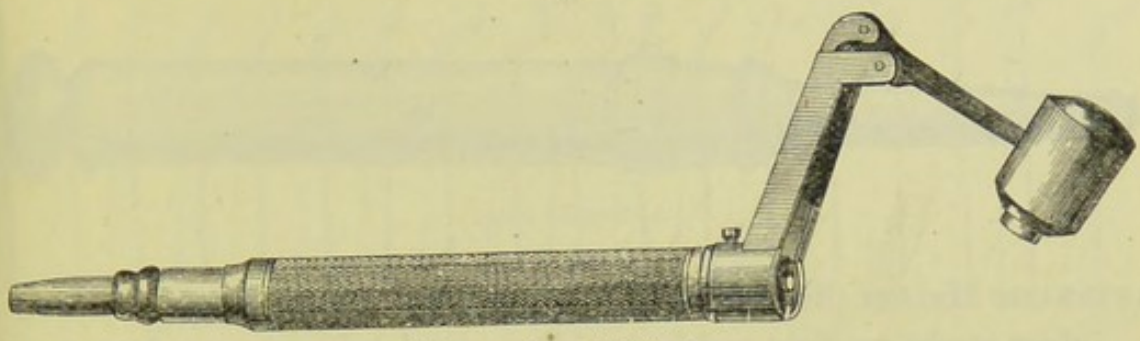
		s.	d.
Mallet, with Ornamented Iron Stand, Nickel-plated Tube and Improved Handpiece, complete		80	0
Points for ditto, with Screw Ends, all forms	each	1	6
Cover		1	6

Extra parts separately :

Improved Handpiece		30	0
India-rubber Bulb		3	6
,, Tubing	per foot	0	6

AUTOMATIC MALLETS.

1.



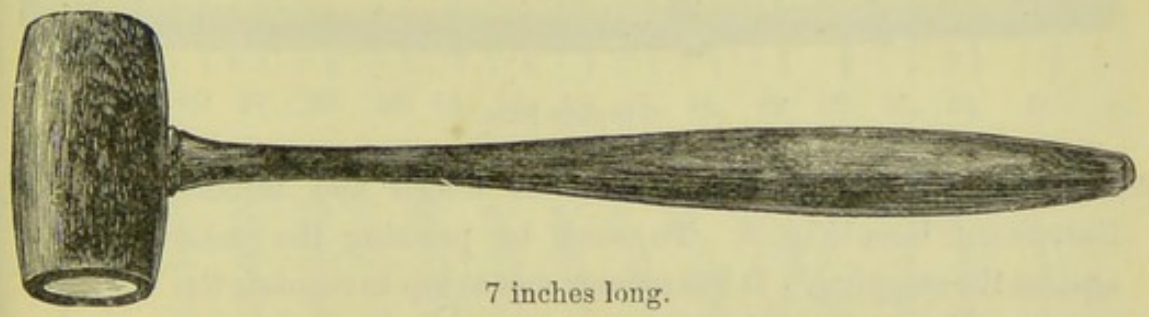
Extreme length 7 inches.

AUTOMATIC MALLET (Mr. S. A. Kirby's) constructed so that the blows may be regulated to any degree according to the pressure put upon the point, without having to take the instrument off the stopping during the operation. In German Silver, Nickel-plated, with Steel tapered socket, for Points as shown on page 201 .. .. .. (Fig. 1) each 30 0

Mallet Points (as illustrated on page 201) with conical ends .. „ 1 1

Leather Case to close with spring, 6½ in. by 4¼ in., and 1 in. deep, fitted up with metal rack, to hold Mallet and 24 Points, lined with blue Silk Velvet .. .. „ 10 6

HAND MALLETS FOR PLUGGING.



7 inches long.

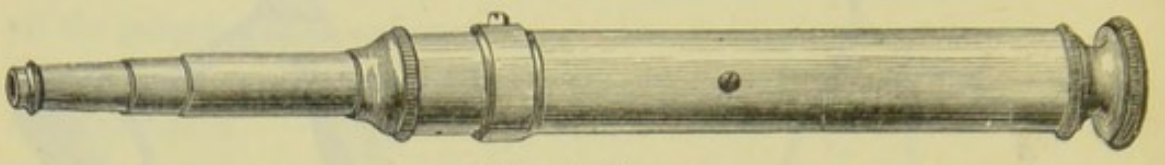
HAND MALLET used with Plugging Instruments, shown on pages 186–193. The head of this Mallet is made of tough wood filled with lead, 1¾ inches long and ⅞ inch in diameter.

		s.	d.
Price, as illustrated, with Wood handle	each	3	3
Hand Mallet, with Tin head, in wood handle	„	2	6

Hand Mallets of other descriptions made or obtained to order.

AUTOMATIC MALLETS.

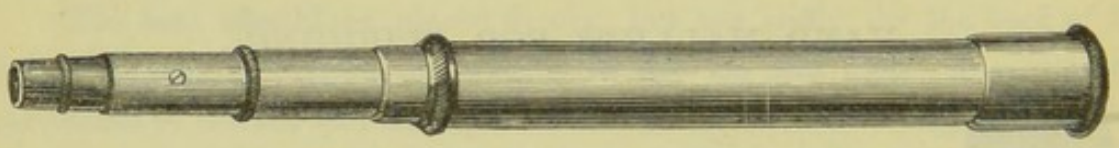
3.



5½ inches long.

		s.	d.
AUTOMATIC MALLET (Snow & Lewis') Improved, giving a long or short stroke, or light and heavy blows, regulated by means of the ring at the socket end of case. The socket can also be fixed by the same ring when the Mallet is required for hand-pressure, plugging, or for enamel cutting. In German Silver, Nickel-plated, with Steel tapered sockets (Fig. 3)	each	34	0
Mallet Points as illustrated on page 201, with screw ends ..	„	1	6
Leather Case, 6½ in. by 3 in., and 1 in. deep, to hold Mallet and 24 Points, lined with Silk Velvet	„	8	0
Automatic Mallet (American make) as above .. .. (Fig. 3)	„	36	0

4.

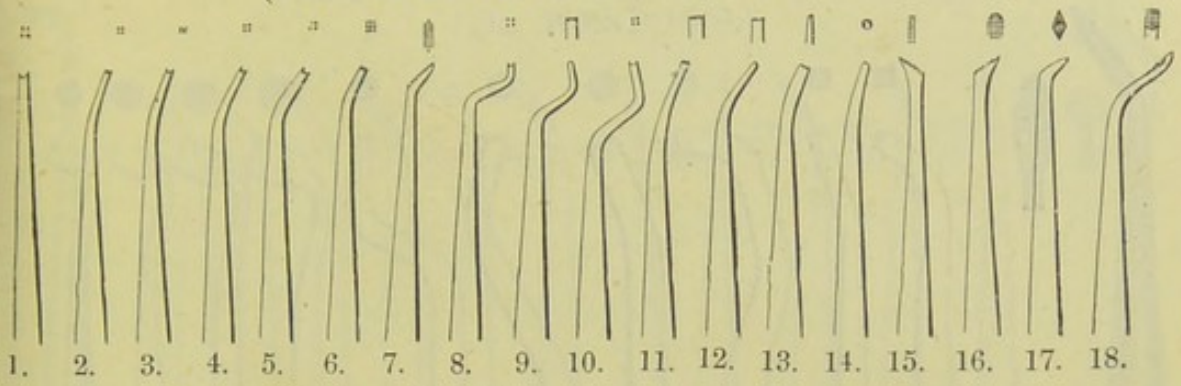


6 inches long.

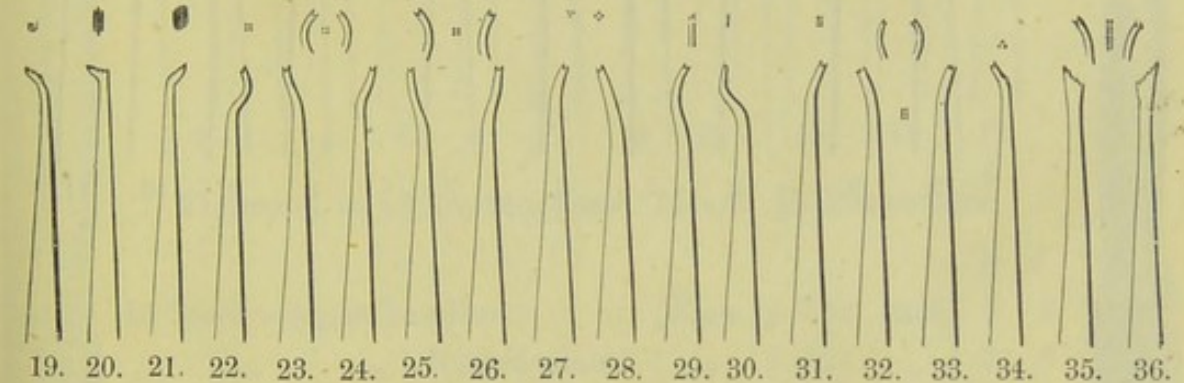
		s.	d.
AUTOMATIC MALLET (Dr. Salmon's). A longer and thinner instrument than Fig. 3. To work by pressing the point against the stopping. It has a screw cap at top to regulate the blows, and a tapering pin for fixing the socket when required to be used for enamel cutting or hand-pressure stopping. In German Silver, Nickel-plated, with Steel tapered socket .. (Fig. 4)	each	36	0
Mallet Points and Leather Cases, same as above.			
Automatic Mallet (American make) .. .. .. (Fig. 4)	„	40	0
Mallet Points with screw ends—see page 201	„	1	6

PLUGGING POINTS FOR AUTOMATIC MALLETS.

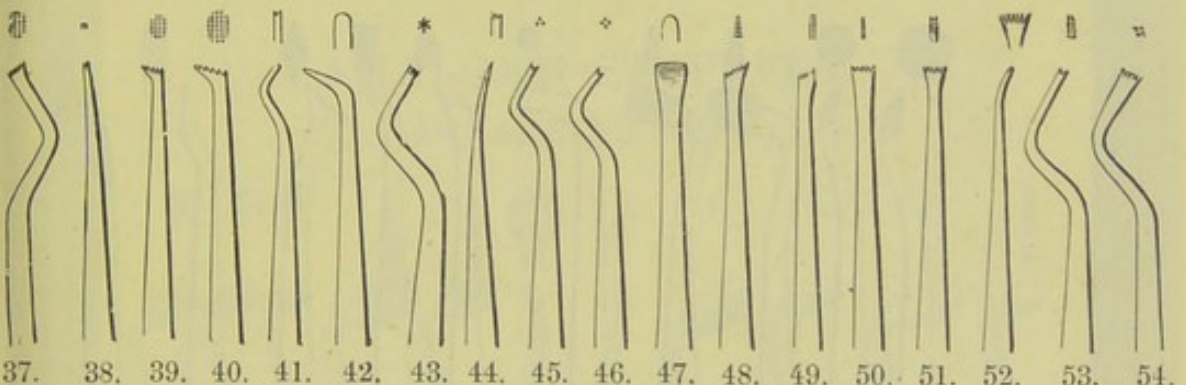
(SNOW & LEWIS' & ABBOTT'S FORMS.)



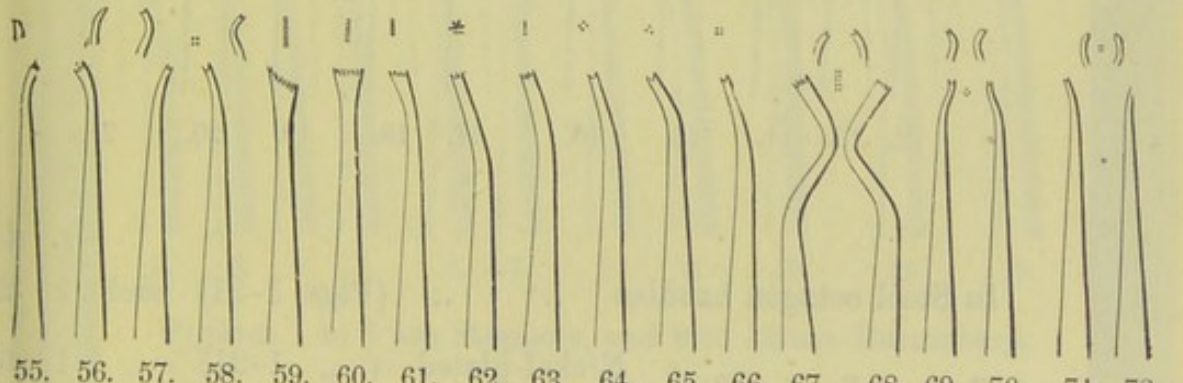
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18.



19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36.



37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54.



55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72.

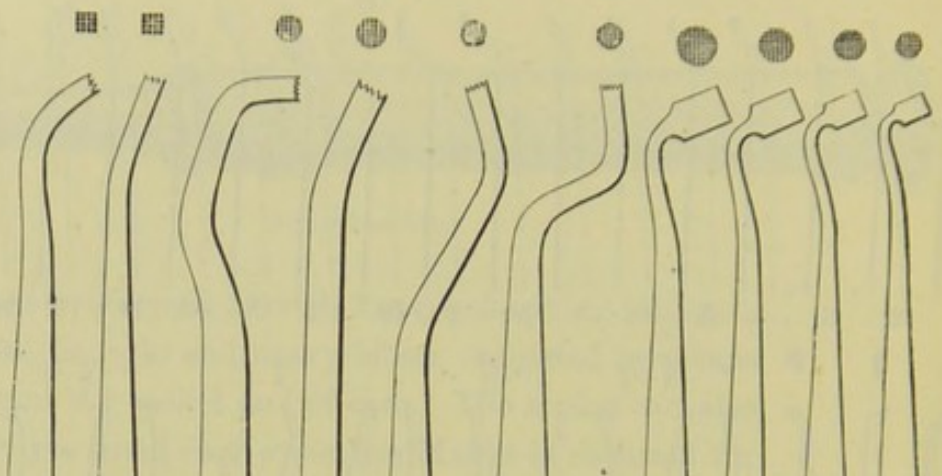
			s.	d.
Mallet Points with screw ends	(Figs. 1–72)	each	1	6
„ with conical ends . ..	(„ 1–72)	„	1	1

All other forms of Mallet Points made or obtained to order.

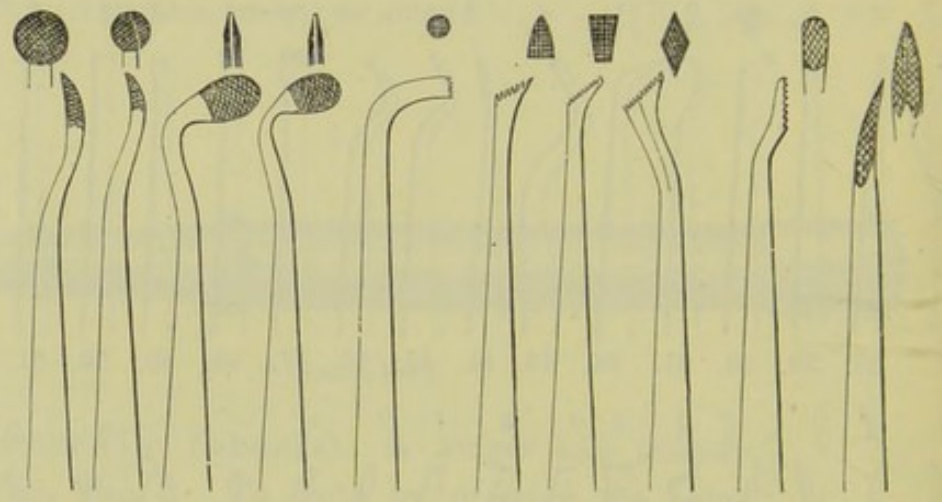
AMALGAM STOPPERS.



1.



2. 3. 4. 5. 6. 7. 8. 9. 10. 11.



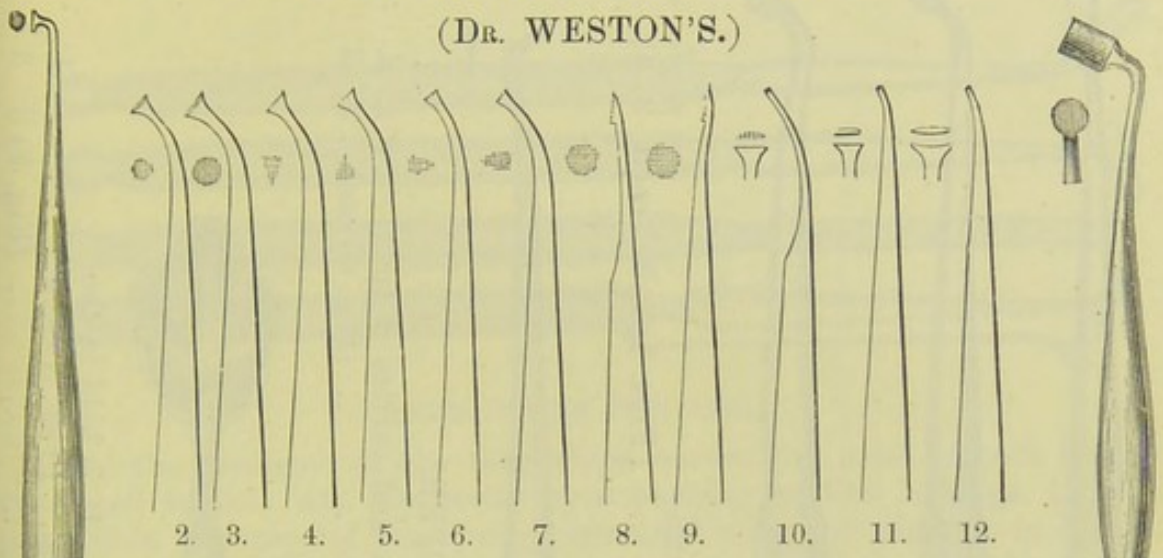
12. 13. 14. 15. 16. 17. 18. 19. 20. 21.

				s.	*d.*
In Steel octagon handles	(Figs. 1–21)	each		1	2
„ „ „	Nickel-plated	(„	1–21) „	1	6

Amalgam Stoppers of all forms made or obtained to order.

AMALGAM STOPPERS.

(Dr. WESTON'S.)

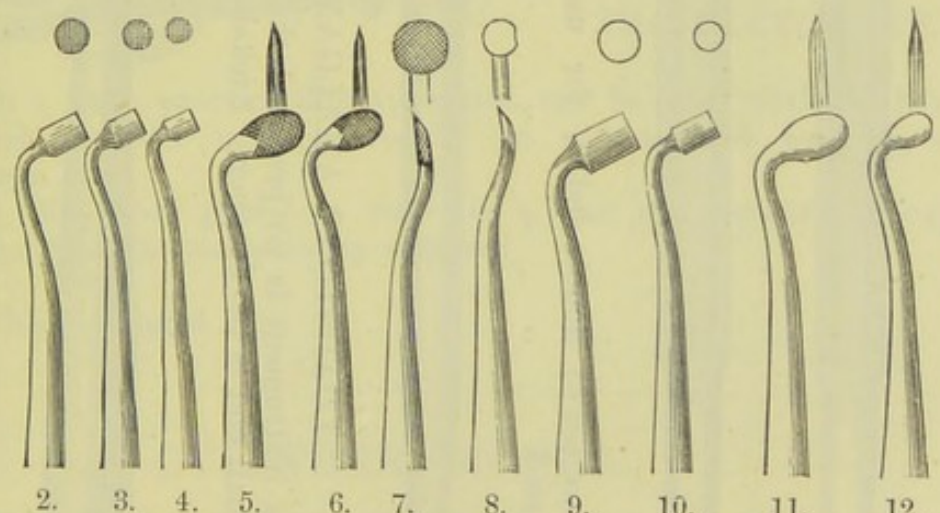


Figures 1 to 10 are Stoppers; 11 and 12 Burnishers.

			s.	d.
In Steel octagon handles	..	(Figs. 1–12) each	1	2
„ „ „ Nickel-plated	(„	1–12) „	1	6

AMALGAM STOPPERS.

(Dr. ARRINGTON'S.)



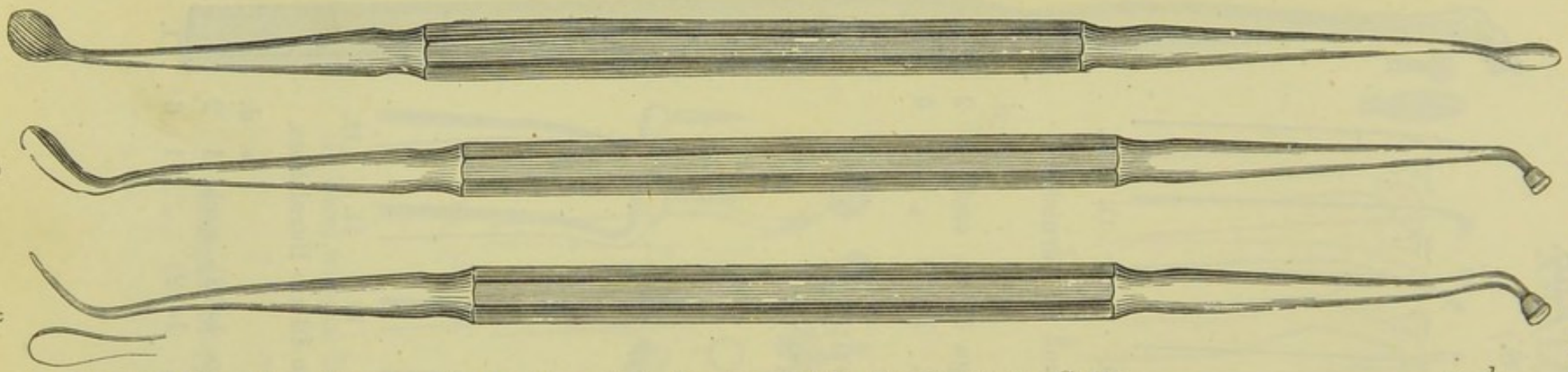
Figures 1 to 8 are Stoppers, and 9 to 12 are Burnishers.

			s.	d.
In Steel octagon handles	..	(Figs. 1–12) each	1	2
„ „ „ Nickel-plated	(„	1–12) „	1	6

1.

2.

3.



STOPPERS (Dr. Woodson's) double-ended, for use with Amalgam or Gutta-percha, Nickel-plated .. .. (Figs. 1, 2, 3) each s. 3 d. 0

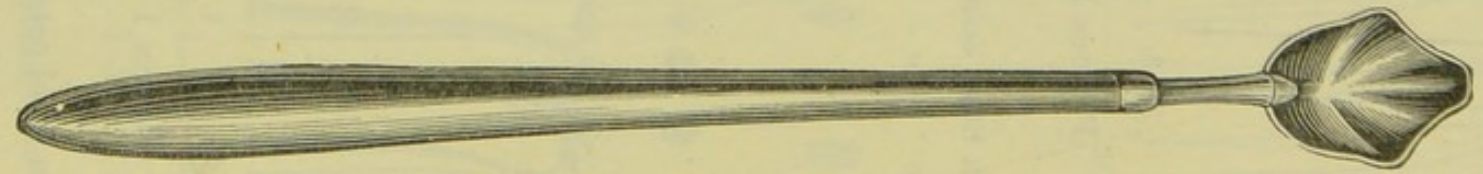
4.



LOADSTONE AMALGAM CARRIER AND STOPPER.

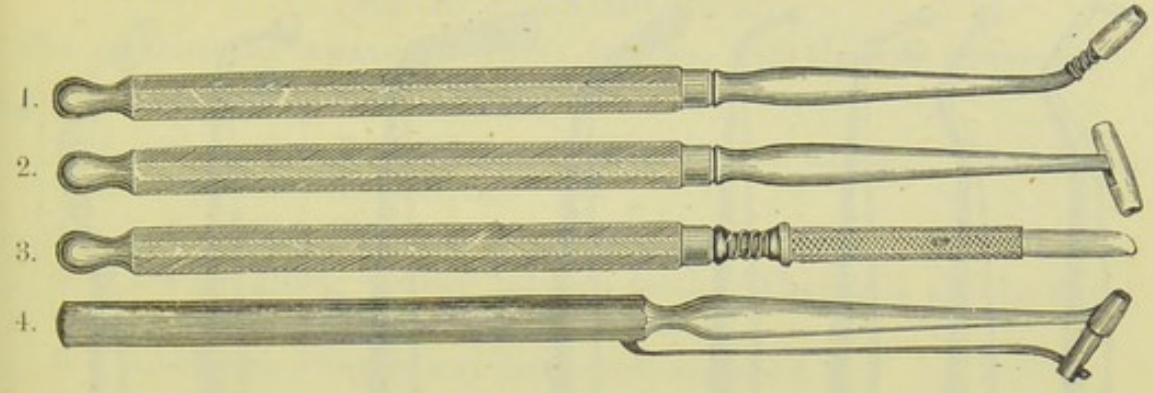
The large end of this instrument is so prepared that it attracts the Amalgam and carries it to the cavity; the small end is the Stopper. Nickel-plated .. .. (Fig. 4) each s. 3 d. 3

5.



AMALGAM SPOON (Dr. Mullett's), for conveying Amalgam to the cavity. It is held in the left hand, and enables the Operator to fill a tooth without handling the material. Price, Nickel-plated in Wood handle .. .. (Fig. 5) s. 3 d. 3

AMALGAM CARRIERS AND STOPPERS.



DIRECTIONS FOR USE.

Place the Amalgam in the tube which covers the point of each instrument, and force it into the cavity by a pushing motion in Figs. 1, 2, 3; press it in by means of the spring connected with the plunger in Fig. 4. The plunger in Fig. 2 is so arranged that the Amalgam can be put in either end. The illustrations show file-cut instruments, but they are only kept in steel octagon, Nickel-plated.

			s.	d.
In Steel octagon handles, Nickel-plated ..	(Figs. 1 and 2)	each	4	3
„ „ „ „ ..	(„ 3 and 4)	„	5	0



AMALGAM BALANCE.

(Mr. FLETCHER'S.)

With a little practice this apparatus can be used with facility. It is designed to yield uniform results in mixing and working amalgam stoppings.

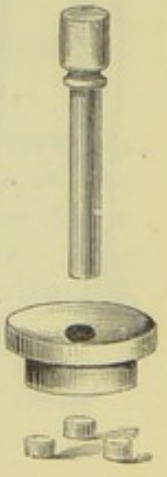
The filings are placed in cup No. 1, and the mercury in cup No. 2 or 3, according to the quantity required.

	s.	d.
Price, Nickel-plated	2	6

CYLINDER MOULD.

(Mr. FLETCHER'S.)

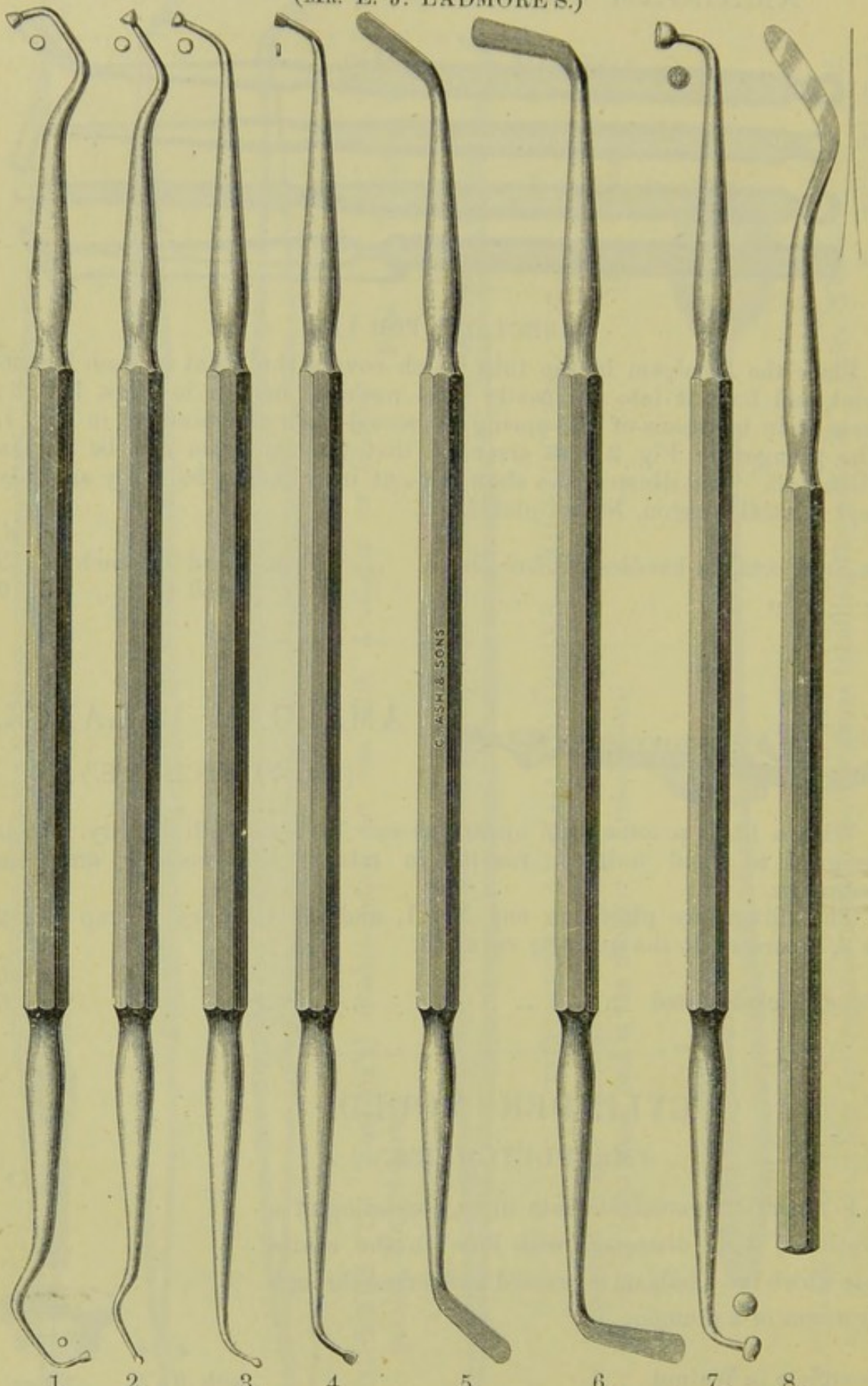
For moulding amalgam into discs, consisting of a Mortar $\frac{7}{8}$ inch diameter, with hole in the centre into which the amalgam is pressed and forced through by means of a plunger.



		s.	d.
Complete in Walnut	each	0	9

PLASTIC FILLING INSTRUMENTS.

(Mr. E. J. LADMORE'S.)



1. 2. 3. 4. 5. 6. 7. 8.

PLASTIC FILLING INSTRUMENTS—*continued.*

(Mr. E. J. LADMORE'S.)

For introducing Amalgam, Gutta-Percha, and Cement Stoppings.

Fig. 1 is for filling distal cavities.

„ 2, 3 will be found useful in all parts of the mouth. The shapes speak for themselves.

„ 4 is for filling fissures in any part of the mouth.

„ 5, 6 are for filling cavities between teeth. They will also be found useful as Spatulas and Trimmers.

„ 7 Loadstone Plugger and Burnisher combined.

„ 8 Spatula for mixing and smoothing fillings. It will also serve as a Trimmer.

Extract from the *Journal of the British Dental Association* for July 15, 1885 —

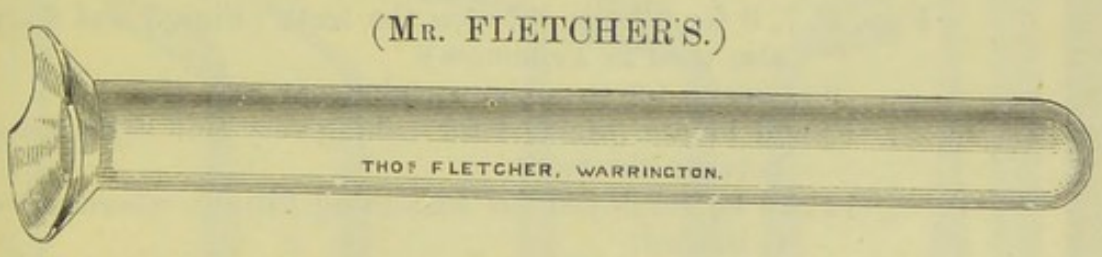
"We received some time since from Messrs. Ash a set of instruments for plastic filling, made from patterns designed by Mr. E. J. Ladmore, of Bradford, which will, we believe, be found to supply a want which must have been felt by many dental surgeons. The set consists of eight instruments, seven of these being double-ended. Nos. 1 to 4 are pluggers, differing in curve and in the diameter of the tuberosity; Nos. 5 and 6 are smooth spatulas or burnishers; No. 7 an amalgam carrier and burnisher, and No. 8 a bevelled spatula. Their distinguishing character consists in the curves given to each, by which the operator is enabled to carry the plastic material in any position without having his view obstructed, whilst the spatulas, passing between the walls of every tooth at right angles also facilitate the operation. Mr. Ladmore has evidently bestowed much thought and care on the preparation of the designs, and great credit is due to Messrs. Ash for the manner in which these have been carried out."

Prices:

			s.	d.
In Steel octagon handles, Nickel-plated ..	(Figs. 1–7)	each	2	3
„ „ „ ..	(Fig. 8)	„	1	6
„ „ „ ..	(per set of 8)		15	0

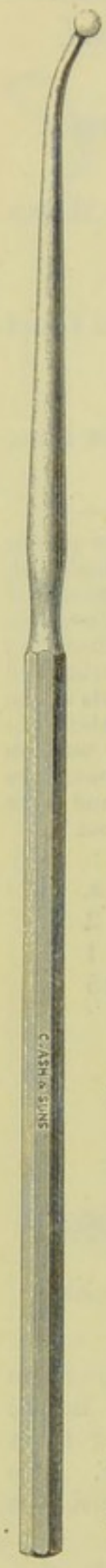
MIXING TUBE FOR AMALGAM.

(Mr. FLETCHER'S.)



After weighing the filings and mercury, in the balance shown on page 205, place the finger over the mercury and pour the filings in the mixing tube; then pour in the mercury and shake briskly together for a few seconds, covering the open end of the tube with the finger. The resulting mass is the best possible form for working into discs with the Cylinder Mould, also shown on page 205.

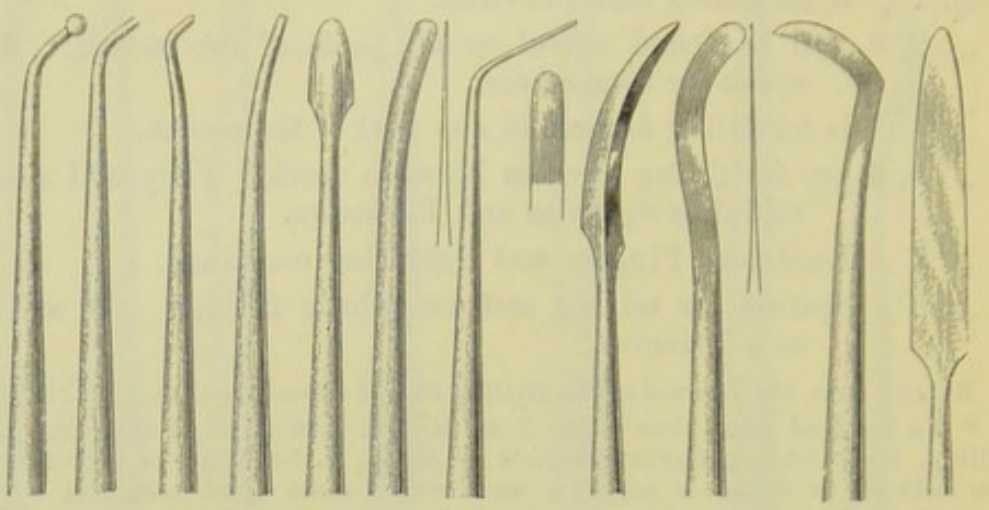
		s.	d.
Price, in glass	each	0	3



1.

PLASTIC FILLING INSTRUMENTS.

(Dr. FOSTER FLAGG'S.)



2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

In Article X. of his work on "Plastics and Plastic Filling," Dr. Flagg gives a full account of the shapes and uses of these instruments. He says that "numbers 1, 2, 3, 4, 5, 6, 7, 8, 10, and 11 are especially adapted to Amalgam work: and 2, 3, 5, 6, 7, 8, 9, 10 are subservient to incidental and special requirements in plastic filling." He divides and names them thus:

Figs. 1 to 5. Round ends.
„ 6, 7, 8. Flat „
„ 9, 10, 11. Trimmers or Separators.
„ 12. Spatula.

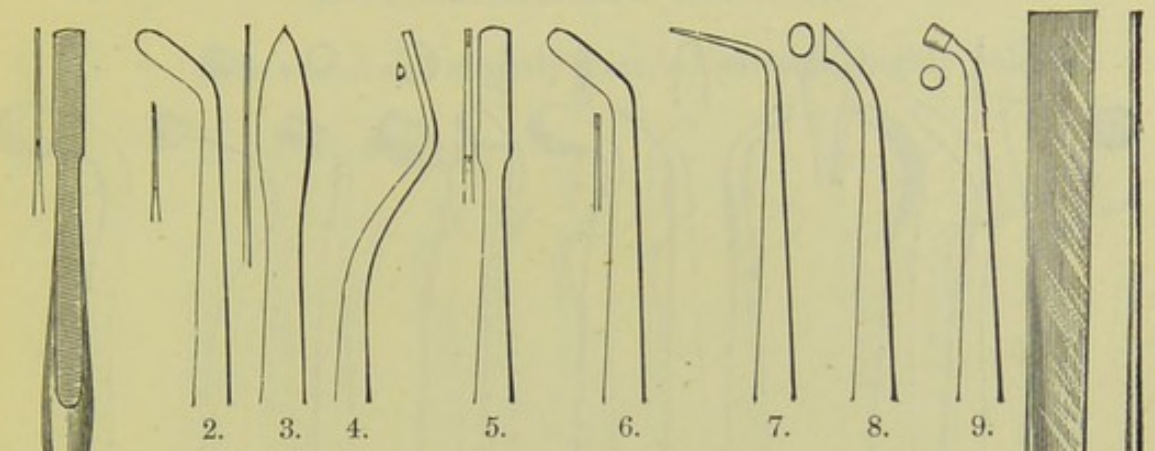
Figs. 1 to 5 are used for crushing and packing the Amalgam in cavities of nearly every description.

Figs. 6, 7, 8 for fillings between the teeth (Figs. 7 and 8 are also used as Trimmers).
„ 9 is useful for removing surplus material.
„ 10 and 11 are intended for making very thin separations between the teeth.
„ 12 can be employed for smoothing fillings where space is limited.

Prices:

		s.	d.
In Steel handles bronzed	(Figs. 1–12) per set	14	0
„ „ „	(„ 1–12) each	1	3
Flagg's work on "Plastics and Plastic Filling," in cloth, 8vo., 211 pages, illustrated		17	0

PLASTIC STOPPERS.

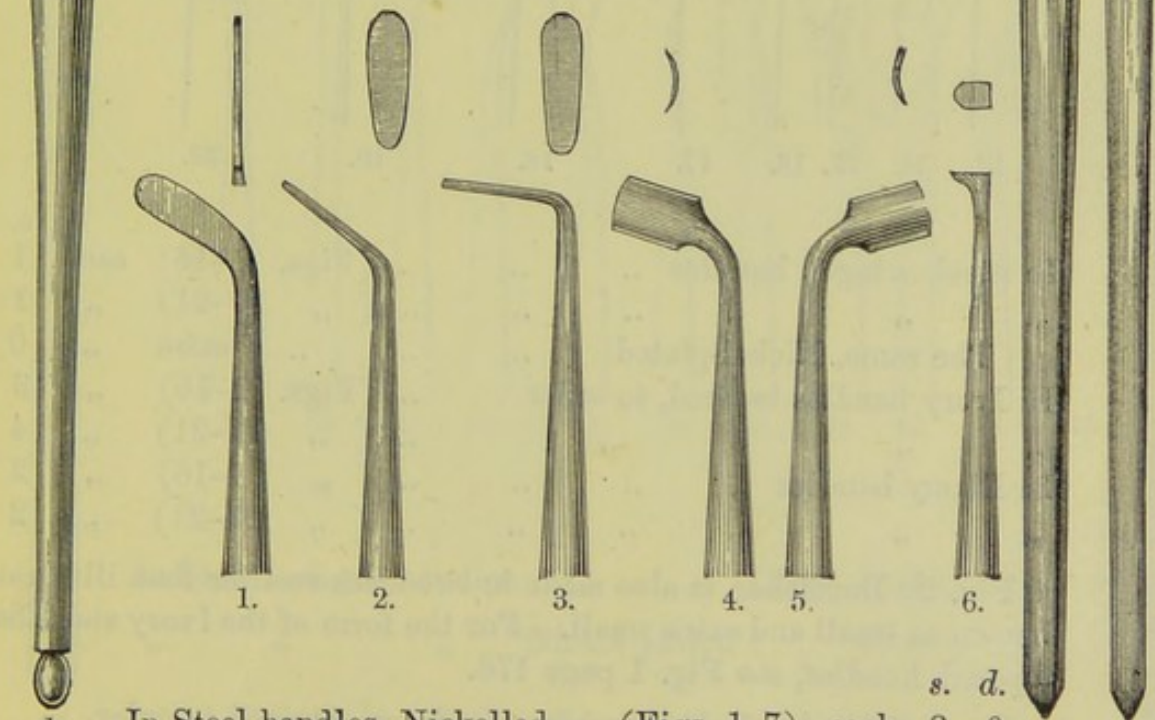


2. 3. 4. 5. 6. 7. 8. 9.

			s.	d.
In Ebony handles	(Fig. 1)	each	3	0
„ „	(„ 1)	per set	25	0
In Steel octagon handles, Nickel-plated ..		each	1	9
„ „ „ „ ..		per set	15	0

PLASTIC STOPPERS.

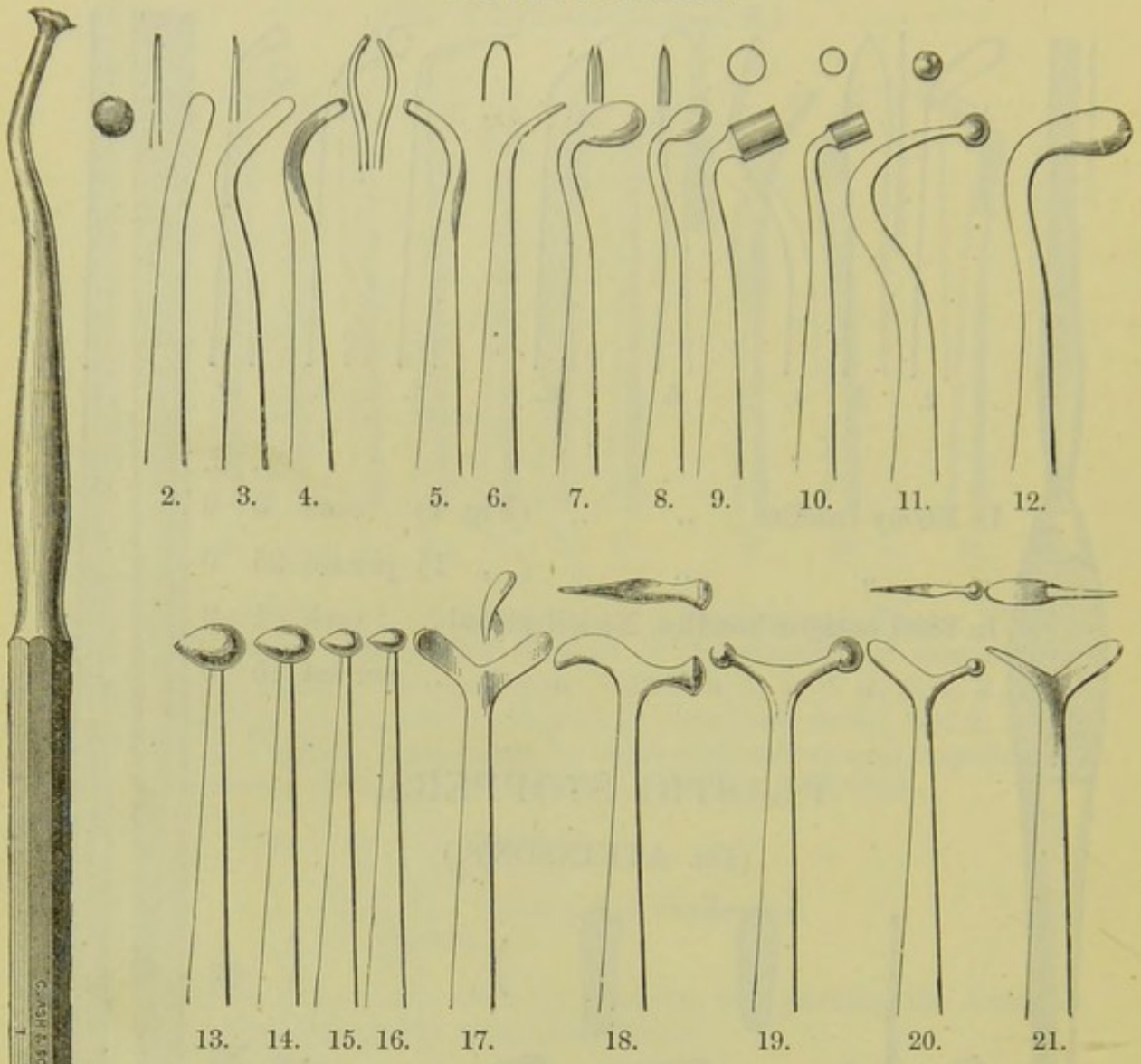
(Dr. ATKINSON'S.)



1. 2. 3. 4. 5. 6. 7.

			s.	d.
In Steel handles, Nickelled ..	(Figs. 1–7)	each	2	0

BURNISHERS.



1.

			s.	d.
In Steel octagon handles	(Figs. 1–16)	each	1	2
„ „ „	(„ 17–21)	„	1	5
The same, Nickel-plated	extra	„	0	4
In Ivory handles tapered, to order ..	(Figs. 1–16)	„	3	9
„ „ „ „ ..	(„ 17–21)	„	4	0
In Ebony handles „	(„ 1–16)	„	2	6
„ „ „	(„ 17–21)	„	2	9

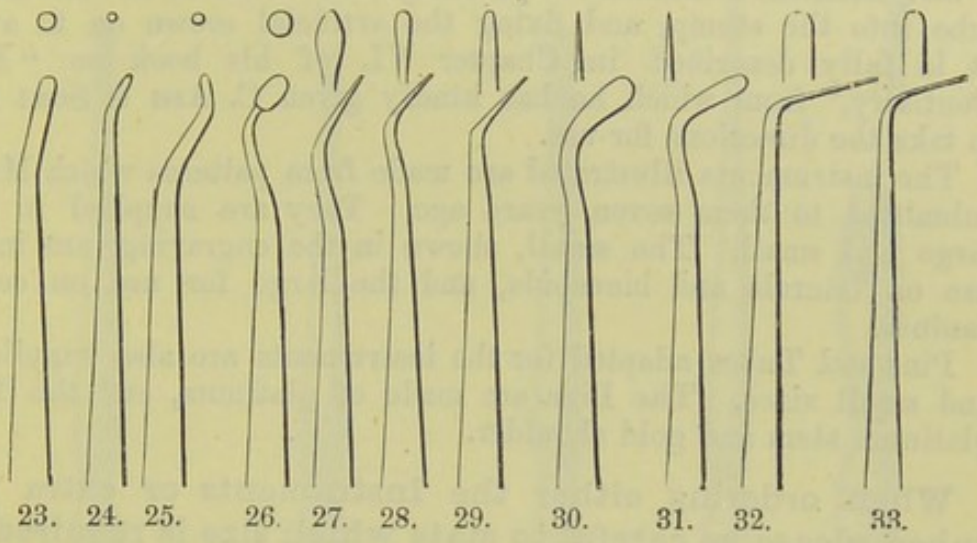
Fig. 20 Burnisher, is also made in two sizes smaller than illustrated, known as small and extra small. For the form of the Ivory and Ebony tapered handles, see Fig. 1 page 178.

Other kinds of Burnishers made or obtained to order.

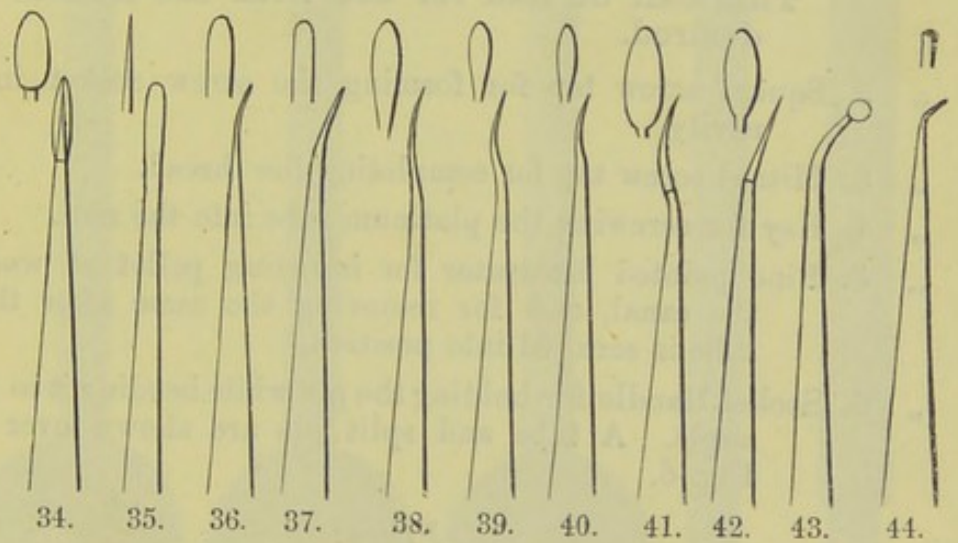
BURNISHERS—*continued.*

With round and slightly-rounded surfaces, highly polished.





23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33.



34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44.

				s.	*d.*
In Steel octagon handles	(Figs. 22–44)	each		1	0
„ „ „ Nickel-plated	(„ 22–44)	„		1	4

22. Burnishers of other forms made or obtained to order.

PIVOTING INSTRUMENTS.

(Mr. BALKWILL'S.)

Mr. Balkwill's method of pivoting teeth consists of screwing a metal tube into the stump, and fixing the artificial crown on to a split pin. It is fully described in Chapter VI. of his book on "Mechanical Dentistry," from which he has kindly given C. Ash & Sons permission to take the directions for use.

The instruments illustrated are made from patterns which Mr. Balkwill submitted to them seven years ago. They are supplied in two sizes, large and small. The small, shown in the engraving, are intended for use on laterals and bicuspids, and the large for use on centrals and canines.

Pins and Tubes adapted for the instruments are also supplied in large and small sizes. The Pins are made of platinum, and the Tubes with platinum stem and gold shoulder.

When ordering either the Instruments or extra pins and tubes, please be careful to state which size is required.

Description :

Fig. 1. Twist Drill for enlarging the nerve cavity.

This can be had for use with the Dental Engine if desired.

„ 2. Square screw tap for forming the screw socket in the nerve cavity.

„ 3. Mitred screw tap for completing the thread.

„ 4. Key for screwing the platinum tube into the root.

„ 5. Fine pointed Excavator for inserting pellet of wool to guard the canal, and for removing the same after the platinum tube is screwed into position.

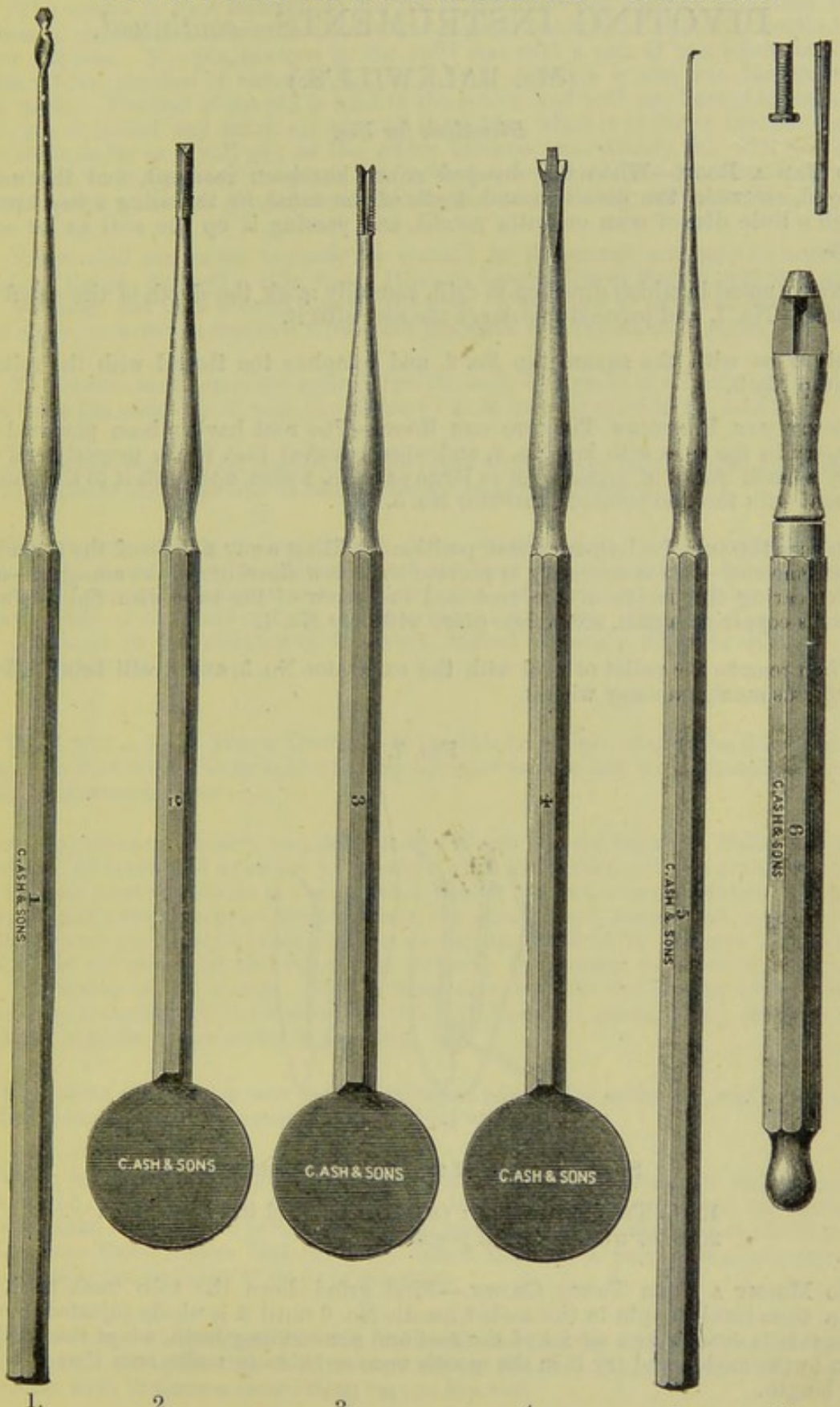
„ 6. Socket Handle for holding the pin while bending it to the required angle. A tube and split pin are shown over the top of Fig. 6.

Prices :

			s.	d.
Pivoting instruments, large or small size (Figs. 1–6),		per set	10	6
Pins and Tubes	„ „	each	3	6
Pins only	„ „	„	1	0
Tubes only	„ „	„	2	6
Balkwill's "Mechanical Dentistry"			10	0

Other Pivoting instruments kept in stock and obtained to order.

PIVOTING INSTRUMENTS—*continued.*



1. 2. 3. 4. 5. 6.

See directions for use on pages 214 and 215.

PIVOTING INSTRUMENTS—*continued.*

(Mr. BALKWILL'S.)

Directions for Use.

To Tap a Root.—When the decayed crown has been removed, and the nerve destroyed, ascertain the direction and depth of the canal by thrusting a fine broach through a little disc of cork or gutta percha, and passing it up the root as far as it will go.

Having noted in which direction to drill, carefully mark the depth of the canal on instrument No. 1. and proceed to enlarge the root with it.

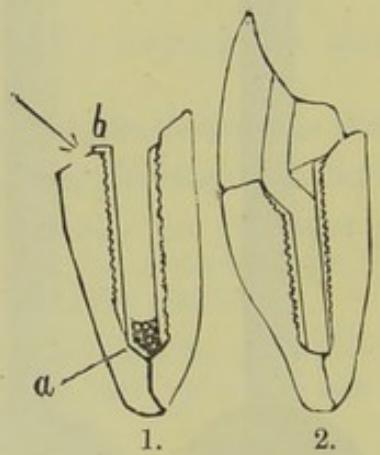
Follow on with the square tap No. 2, and complete the thread with the mitred screw tap No. 3.

To fit the Platinum Tube to the Root.—The root having been prepared as above, try in the tube with key No. 4, and when satisfied that it fits properly roll up tightly a small pellet of cotton wool as large as a No. 4 shot, and push it to the end of the canal with the fine pointed excavator No. 5.

Prepare the tube for its permanent position by filing away a little of the thread at the extreme end—this is necessary to prevent the screw clearing out the amalgam—and after smearing the inside of the root and the screw of the tube with Sullivan's or Stewart's copper amalgam, screw into place with key No. 4.

Then remove the pellet of wool with the excavator No. 5, and it will bring all the superfluous amalgam away with it.

Fig. 7.



Shows sections of roots with pivot tubes.

1. (*b*) Tube in position; (*a*) pellet of wool to guard canal.
2. Root with crown in position.

To Mount a Tube Tooth Crown.—First grind down the tube tooth to fit the stump, then bend the pin in the socket handle No. 6 until it is nicely adjusted to both. When this is done, take a model of the root and surrounding teeth, adapt the artificial crown to the model, and try it in the mouth once or twice to make sure that it is the right length.

The crown is then fastened to the pin in the following manner :—A thin strip of common tinned iron is used as a ladle, and a small quantity of solder is melted on it over the gas. The pin, grasped by the split end with a pair of pin pliers, is touched with a little solution of chloride of zinc, a little of which is also run into the tube of the tooth. The end of the pin is held in the solder, and both are heated together until the pin is coated and takes up some of the solder, when it is thrust into the crown of the tooth as far as it will go; as the solder hardens immediately this will not be far. The tooth on the point of the pin is now heated over a small gas flame until the solder melts again, when it is slipped down into its place by holding with a napkin.

When cold the crown is ready for placing in the mouth, and may be adjusted by pushing the pin through a thin disc of Hill's or Jacob's Gutta Percha, which is softened by warming, and then pressed against the root. If the disc be too thick take the crown out again, remove the overflow with a hot penknife, and repeat until right.

To fix the tooth, open the split in the pin with the point of a knife or instrument, and close the ends over it with the pliers, so as to leave it open in the middle.

The crown can now be pushed into its place without any trouble, and be sufficiently firm, whilst at the same time it can be readily removed if necessary.

Experience enables the operator to judge whether a tube tooth will let down to look well. Some range of position, however, may be obtained by bending the pin twice in opposite directions, and making room for the knee thus formed by drilling away a little of the front or back of the orifice of the tube. See Fig. 7, 2. This does no detriment to the stability of the work, indeed it rather helps to prevent lateral motion in the new crown.

To Mount a Flat Tooth Crown.—If the bite be a close one, or the direction of the fang such that a tube tooth is not readily adjusted to it, a flat back should be mounted in the following manner:—

A flat crown is chosen and fitted to the mouth but not backed. Take a split pin, bend the soldered end so as not to interfere with the position of the crown when both are in their proper positions in the mouth. Fasten pin and crown together with a little lump of Ash's model cement, then place in the mouth, and, the cement having been a little warmed previously, thrust the pin as far up the tube in the root as it will go, and adjust the crown, at the same time pressing the cement well down, so as to take the impression of the stump. Give a minute or two for the cement to harden, and remove by grasping the free end of the pin with a pair of pliers, being cautious not to shift the position of the crown in so doing.

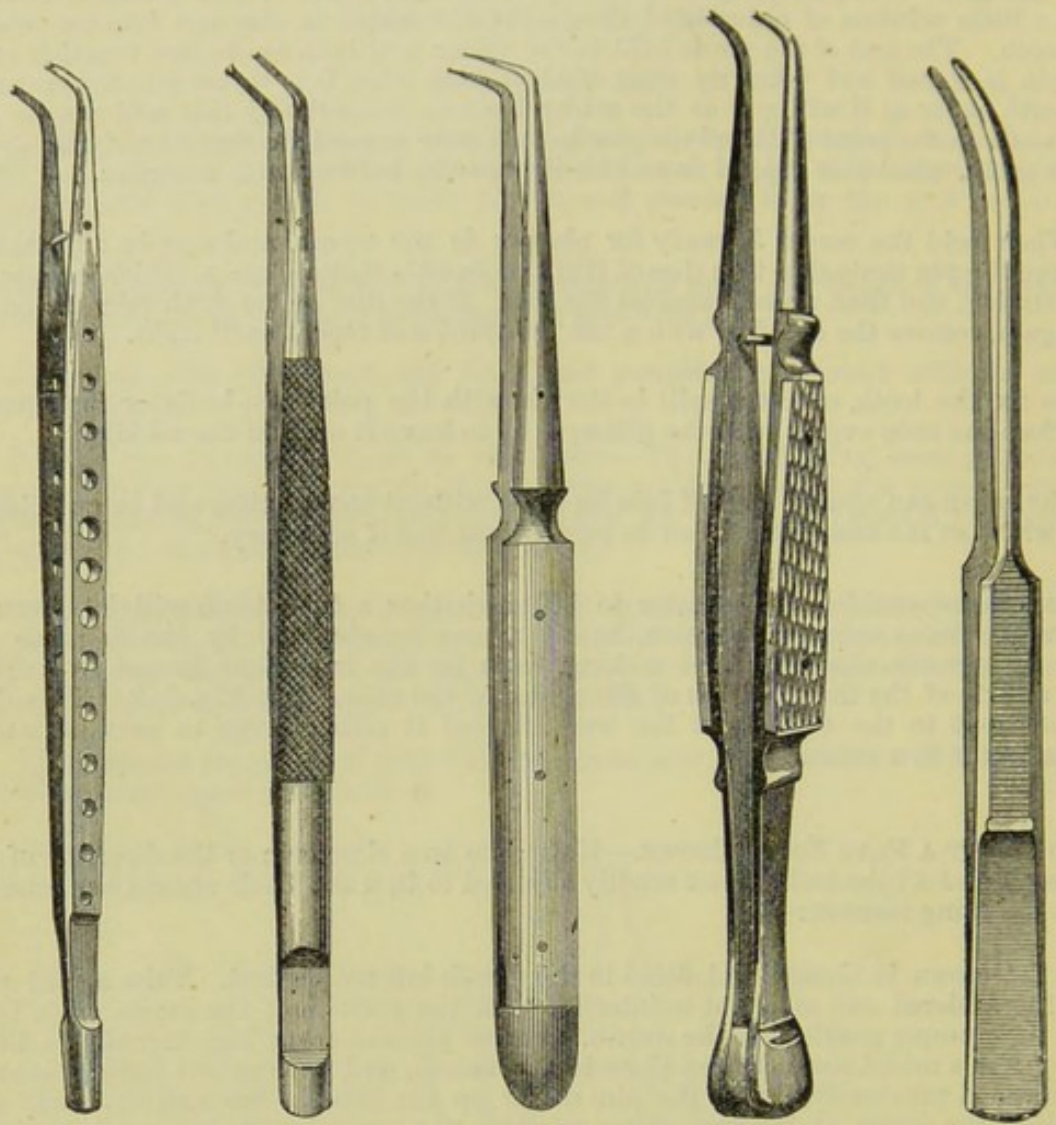
The crown and pin are now to be invested in plaster for soldering, and when this is set the cement should be removed with boiling water.

When the plaster is quite hard, pack some scraps of waste gold foil around the pins of the crown and over the stump, as a basis for gold in scraps to be melted on, so as to make a solid gold back to the tooth, and a plate to fit the root and hold the pin at the same time. When filed up and polished this has a very neat appearance, and no exception can be taken to its fit or strength.

Note.—Some operators modify Mr. Balkwill's method by striking up a thin plate to fit the root, leaving it rather full, and smoothing the free edges round with a suitable burnisher until it forms a close-fitting cap on the root.

TWEEZERS, VARIOUS.

10. 11. 12. 13. 14.

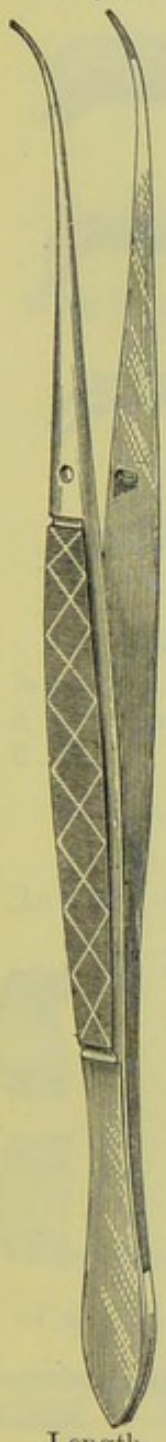


Length $7\frac{3}{4}$ ins. 6 ins. 6 ins. $5\frac{1}{2}$ ins. $5\frac{1}{2}$ ins.

			s.	d.
Plugging Tweezers (Dr. Rich's), various angles ..	(Fig. 10)	each	8	0
,, ,, Nickel-plated ..	(,, 10)	,,	9	3
Steel octagon handles, various angles	(,, 11)	,,	6	6
,, ,, Nickel-plated ..	(,, 11)	,,	7	9
Tweezers (Mr. Tomes'), in Ivory handles ..	(,, 12)	,,	6	6
,, ,, Ebony ,, ...	(,, 12)	,,	5	0
Plugging Tweezers (Dr. Connor's), made with large rounded Steel ends to prevent the pressure hurting the hand. In Steel handles with checkered Ivory centres	(,, 13)	,,	9	0
Tweezers, all Steel	(,, 14)	,,	2	3
,, ,, Nickel-plated	(,, 14)	,,	3	6

TWEEZERS, &c.

Perry's.



Length, 5¼ ins.

15.



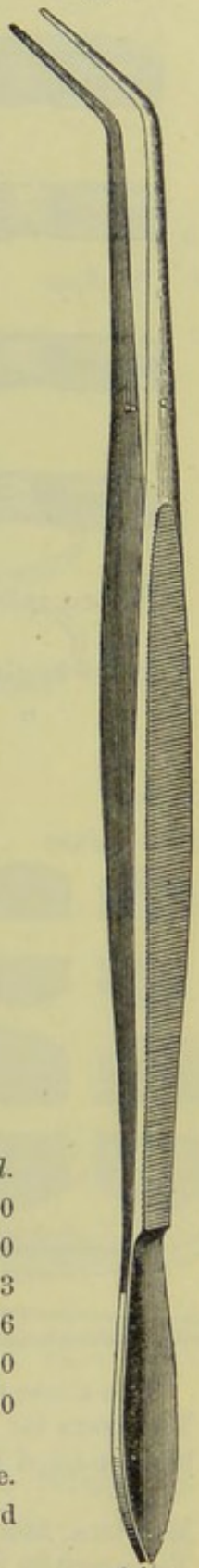
6 ins.

College.



6 ins.

Flagg's.



6 ins.

		s.	d.
Annealing Tweezers (Dr. Perry's), plain ..	each	3	0
„ „ „ Nickel-plated	„	4	0
Holder or Carriers, all Steel .. (Fig. 15)	„	3	3
„ Nickel-plated („ 15)	„	4	6
College Tweezers „	„	4	0
Dressing „ (Dr. Flagg's), Nickel-plated ..	„	5	0

Fig. 15 shows a Holder which is opened by pressure. It will be found very useful for carrying absorbents and dressings.

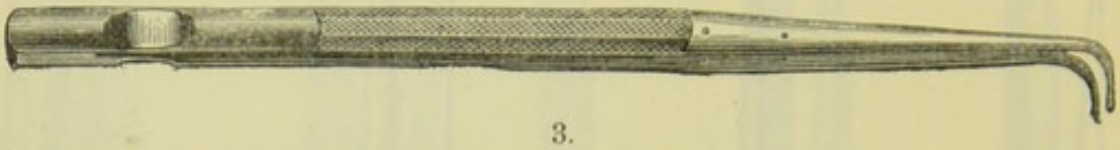
TWEEZERS.

(Dr. WITZEL'S.)

1.



2.



3.



4.



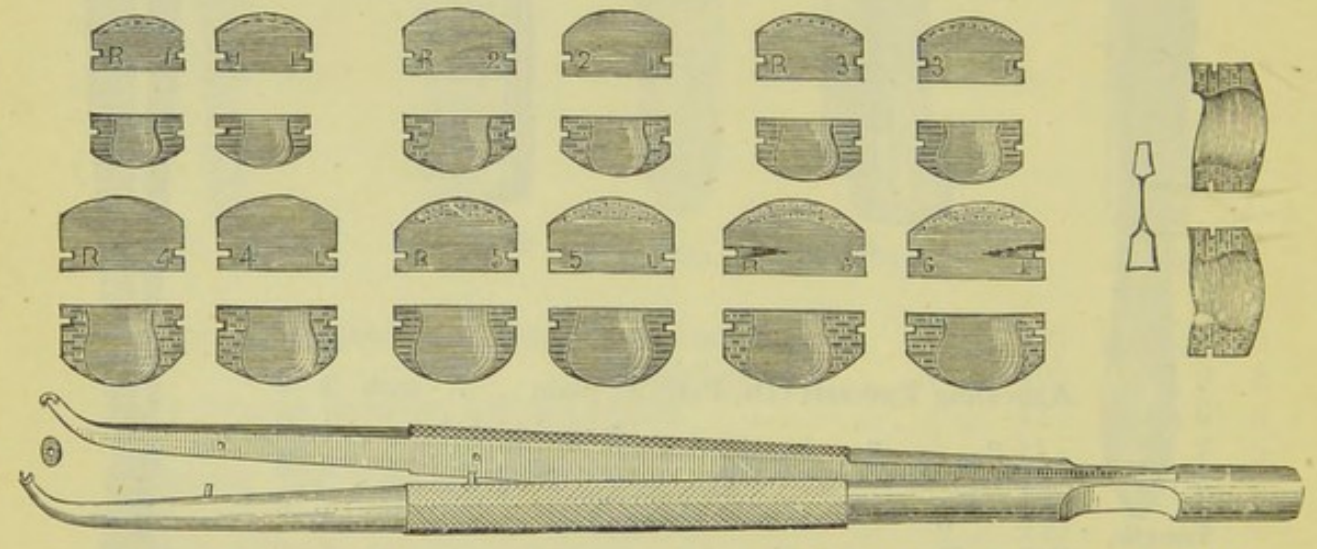
Length of each 6 inches.

For carrying and applying dressings, &c.

				s.	d.
Various angles, as illustrated	(Figs. 1–4)	each	6	6
„ „ Nickel-plated	(„ 1–4)	„	7	9

MATRICES AND TWEEZERS.

(Dr. JACK'S.)



The above figures show six pairs of right and left Matrices, and Dr. Jack's Tweezers for applying them. A double Matrix is represented on the right hand side of the illustration.

	s.	d.		s.	d.
Matrices, Steel, single	each 1	6	per set	18	0
Tweezers in Steel octagon handles			each	6	6
„ „ „ Nickel-plated			„	7	9

FOIL MANIPULATORS.

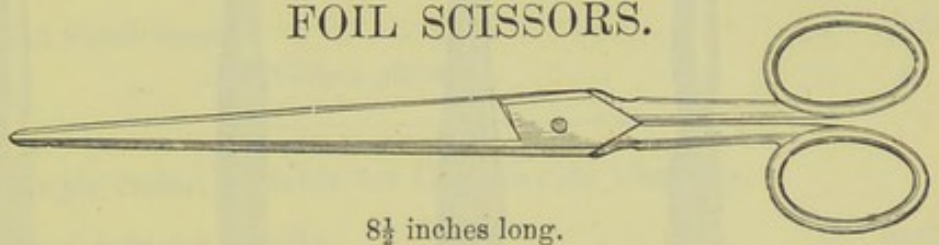


10½ inches long.

For folding and pressing Foils ready for Stoppings.

	s.	d.
With long Steel blade and checkered Ivory handle .. .. each	3	9
„ „ „ Ebony „ .. .. „	2	3

FOIL SCISSORS.



8½ inches long.

With long blades for dividing the leaf at one cut.

	s.	d.
In Steel, highly polished .. .. each	4	6
„ „ Nickel-plated .. .. „	6	0

FOIL CASE.

(Not illustrated.)

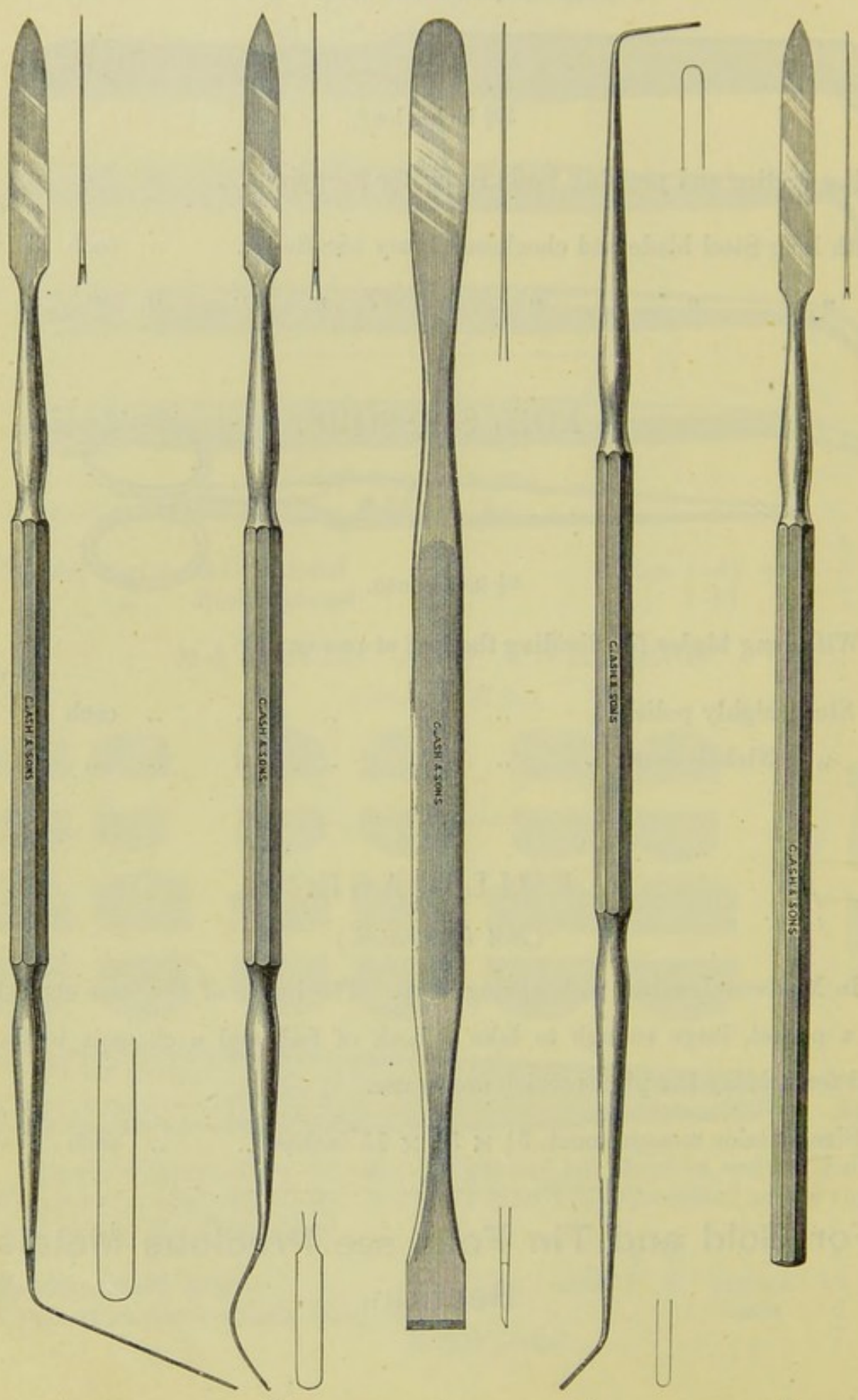
In Morocco Leather with spring snap. The inside of the case consists of a pocket, large enough to take a book of foil, and a chamois leather pad for holding the pieces which are in use.

	s.	d.
Size, outside measurement, $5\frac{1}{8} \times 5\frac{1}{8} \times 1\frac{1}{8}$ inches .. .. each	3	6

For Gold and Tin Foils see Precious Metals Section.

SPATULAS.

(FULL SIZE.)



1. 2. 3. 4. 5.

SPATULAS—*continued.*

Fig. 1. (Dr. Houghton's) suitable for mixing Oxychloride Cements.

		s.	d.
In Steel octagon handle	each	1	9
„ „ „ Nickel-plated	„	2	1

Figs. 2 and 4 (Mr. Rowney's) suitable for Oxychloride Cements.

		s.	d.
In Steel octagon handles	each	1	9
„ „ „ Nickel-plated	„	2	1

Fig. 3. (Dr. Weston's) designed for mixing Oxyphosphate Cements. The chisel end of this Spatula is intended for cleaning the mixing slab.

		s.	d.
In flat Steel handle	each	1	9
„ „ Nickel-plated	„	2	1

Fig. 5. Single-ended, suitable for Oxychloride Cements.

		s.	d.
In Steel octagon handle	each	1	0
„ „ „ Nickel-plated	„	1	4

SPATULAS NOT ILLUSTRATED.

	s.	d.
Dr. Weston's, $7\frac{3}{4}$ inches long, extra strong, with blades like Fig. 3, and Steel octagon centre. Nickel-plated	3	0

Mr. Poulson's, $6\frac{1}{2}$ inches long with Platinum Spoon one end for dissolving the crystals of his Mineral Plombe, and stiff blade the other end for mixing the cement and cleaning the slab.

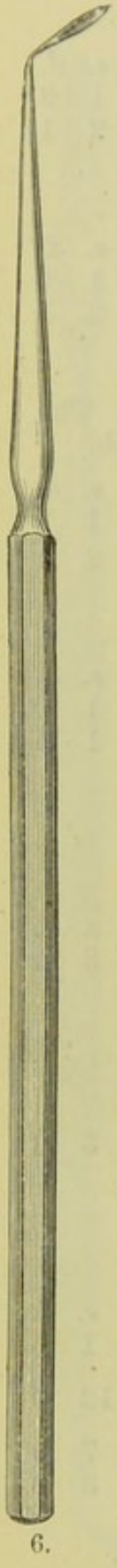
		s.	d.
In Steel octagon handle, Nickel-plated	each	5	0

The following are obtained to order :—

		s.	d.
Spatulas for Cone-socket handles, American, with screw ends, various forms	each	1	6
Socket Handles, Knurled, double-ended, for above ..	per doz.	12	0
Pliers for inserting and removing Points No. 1 ..	each	7	0
„ „ „ „ 2 ..	„	3	0

Other forms of Spatulas made or obtained to order.

SPATULAS, &c.



6.



7.



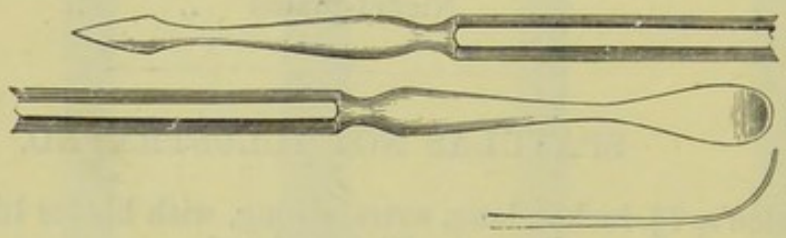
8.



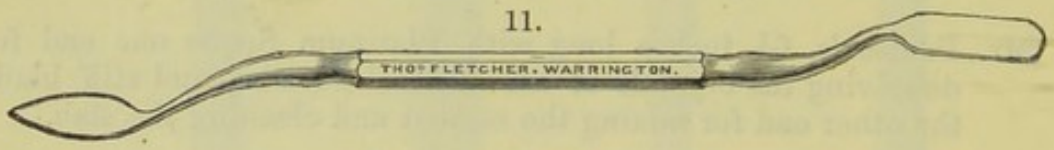
9.

Fig. 6. Full size.
„ 7. Same „
„ 8. 6 inches long.
„ 9. $6\frac{3}{4}$ „ „
„ 10. Full size.
„ 11. Half „
„ 12. $6\frac{3}{4}$ inches long.
„ 13. „ „ „
„ 14. „ „ „

10.



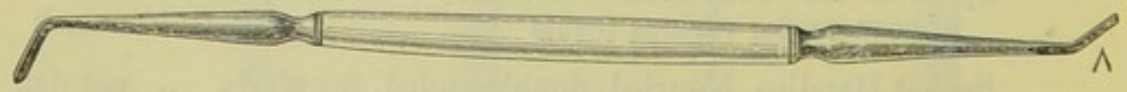
11.



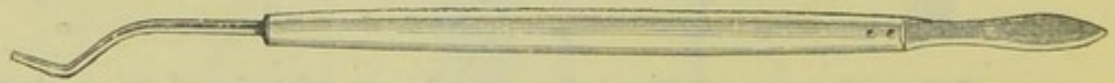
12.



13.



14.



SPATULAS—*continued.*

Figs. 6 and 7 (Dr. Witzel's) are suitable for cement filling. They form a useful pair for upper and lower cavities.

			s.	d.
In Steel octagon handles	(Figs. 6 & 7)	each	1	0
„ „ „ Nickel-plated ..	(„ 6 & 7)	„	1	4

Fig. 8. Double-ended, is suitable for mixing and working Poulson's Mineral Plombe, or any of the Amalgam Stoppings.

			s.	d.
In Steel with Ivory centres	(Fig. 8)	each	3	0
In plain Steel handle	(„ 8)	„	1	9
„ „ Nickel-plated	(„ 8)	„	2	1

Fig. 9 shows a Ladle specially designed for heating Stewart's and Sullivan's Copper Amalgams.

			s.	d.
In Ebony handle	(Fig. 9)	each	2	9

Fig. 10 (Dr. Taylor's) for mixing and working Oxychloride Cement fillings.

			s.	d.
In Steel octagon handle	(Fig. 10)	each	1	9
„ „ Nickel-plated	(„ 10)	„	2	1

Fig. 11 (Mr. T. Fletcher's) very stiff, intended for use with his Porcelain Cement and other Oxyphosphates. To ensure success with this class of Stoppings, it is very necessary to mix them thoroughly, and this can only be effectually done with a stiff Spatula.

			s.	d.
In Steel octagon handle, Nickel-plated ..	(Fig. 11)	each	3	0

Figs. 12 and 13 (Mr. Rowney's) for mixing and applying Oxychloride Cement fillings.

			s.	d.
In Ivory handles	(Figs. 12, 13)	each	3	3

Fig. 14 (Mr. McAdam's) Stopper and Spatula combined for working Oxychloride Cement fillings.

			s.	d.
In hard Platinum with Ivory handle ..	(Fig. 14)	each	8	0
„ „ „ without the Stopper	(„ 14)	„	4	3

Spatulas of other forms made or obtained to order.

CANE HOLDER.

(WITH SCREW RING.)



6 inches long.

This Holder is considered very useful for cleaning teeth at the back of the mouth, where straight Canes will not reach. It has a screw ring so that Cane points of various sizes may be secured.

		s.	d.
In Steel octagon handle	each	2	3
,, ,, Nickel-plated	,,	2	9
Cane points for ditto	per doz.	0	6

PORTE POLISHER.

(WITH SLIDING RING.)





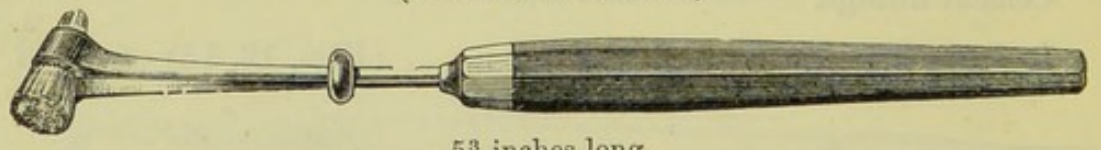
5½ inches long.

Designed to carry Corundum points, &c., for polishing stoppings.

		s.	d.
In Steel, highly polished	each	3	3
,, Nickel-plated	,,	4	6
Corundum points, oval, fine and coarse (Fig. 12)	per doz.	1	0
Water of Ayr Stone points, oval .. (,, 12)	,,	1	6

UNIVERSAL HOLDER.

(MR. LYDDON'S.)



5¾ inches long.

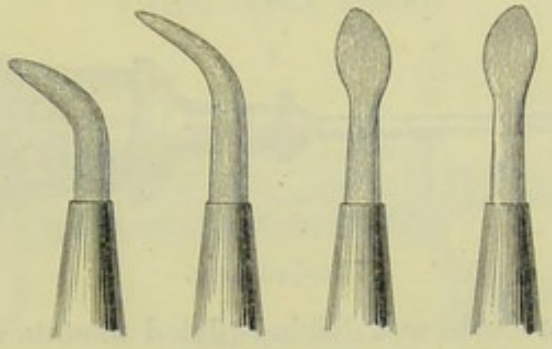
Universal Holder (with sliding ring) to carry Corundum points, Canes, Stones, &c.

		s.	d.
In Steel, with tapered Ivory handle	each	7	6
,, ,, Ebony ,, ...	,,	6	0

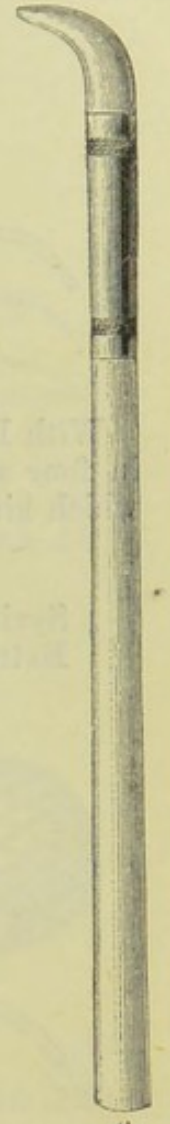
AGATE BURNISHERS.



1.



2. 3. 4. 5.



6.

For polishing stoppings. The set consists of five forms—Figs. 1–5, carefully selected, and designed to meet all requirements. They are made with handles like Figs. 1 and 6.

			s.	d.
In Bulbous handles	..	(Fig. 1) each	3	6
In Ebony „	..	(„ 6) „	2	9

Other shapes made or obtained to order.

RIBBON SAWS.

For separating and smoothing approximal fillings. They are sufficiently flexible to admit of being used at any angle.

		s.	d.
Price	per doz.	4	0

COMPOSITION SILVER STRIPS.

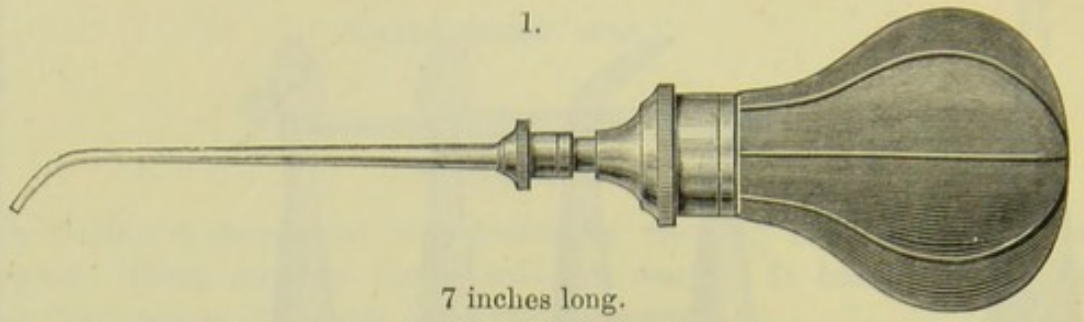
(Dr. PARMLY BROWN'S.)

For polishing between the teeth and dressing approximal fillings. To be used with pumice or other suitable powder. After having been used they can be made smooth again by drawing between a napkin or over the edge of a table.

		s.	d.
In packets containing one dozen, various sizes ..	per packet	2	0

SYRINGES.

1.



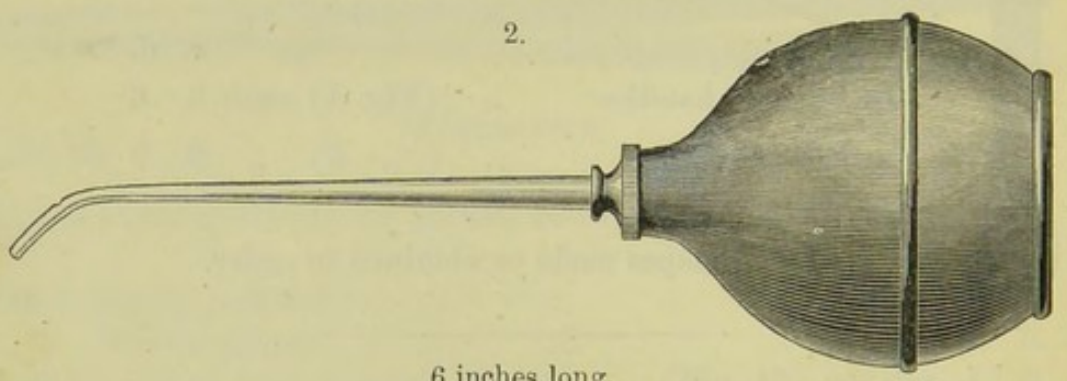
7 inches long.

With India-rubber bulbs and Nickel-plated mounts and nozzles. Made in four sizes with nozzles to **screw off** or **slip off**. In ordering state which kind is required.

Size of bulb ..	½ oz.		1 oz.		2 oz.		3 oz.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
Syringes (Fig. 1) each	5	6	7	0	8	0	9	0
Extra bulbs .. .. „	0	9	1	0	1	3	1	6

CHIP SYRINGE.

2.

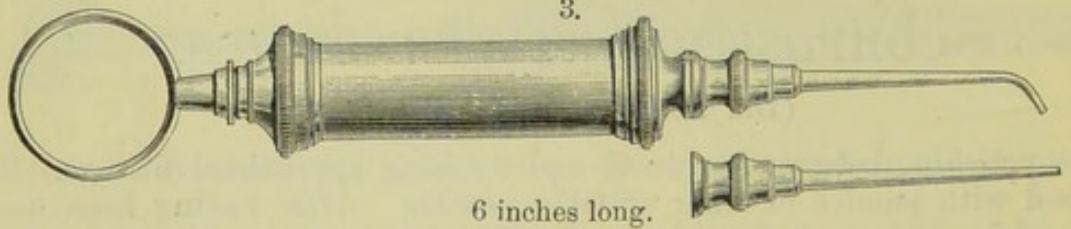


6 inches long.

For blowing cuttings and dust out of cavities.		*s.*	*d.*
With 1 oz. bulb and Nickel-plated nozzle	(Fig. 2) each	4	0
Extra bulbs	„	1	0

METAL SYRINGE.

3.



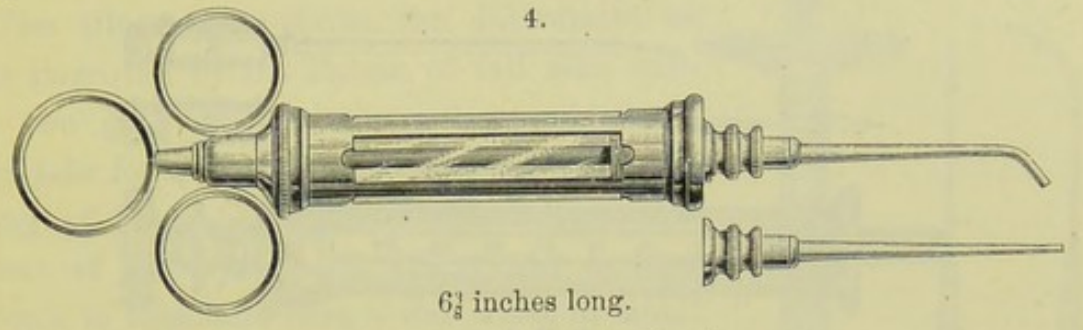
6 inches long.

With straight and curved nozzles, Nickel-plated throughout, and enclosed in leather case ..	(Fig. 3) each	*s.* 9	*d.* 0
Cheaper kind with one nozzle only, in card box	(„ 3) „	5	0

METAL SYRINGE.

(WITH THREE RINGS.)

4.



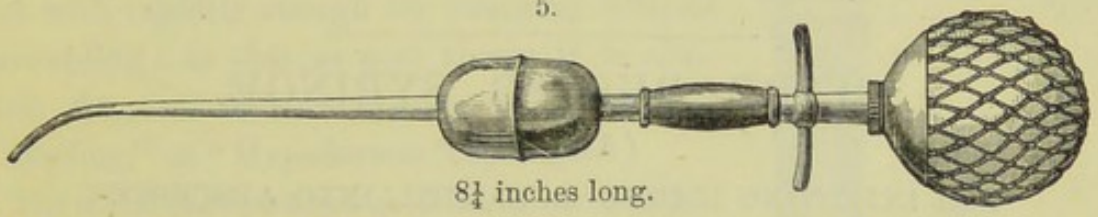
6⅞ inches long.

			s.	d.
With straight and curved nozzles, Nickel-plated throughout, and enclosed in leather case ..	(Fig. 4)	each	13	6

HOT AIR SYRINGE.

(DR. MOFFATT'S.)

5.



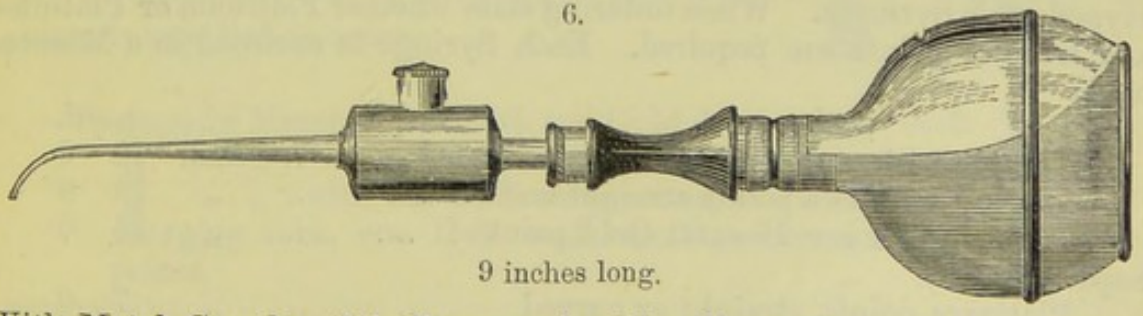
8¼ inches long.

			s.	d.
With Air Chamber, which is heated over a Spirit or Gas flame, for drying cavities previous to Stopping. Made of German Silver, Nickel-plated, with India-rubber Bulb and Wood Insulator	(Fig. 5)	each	12	6
Tooth Syringe (Dr. Moffatt's) minus Air Chamber and Insulator, with straight and curved nozzles		,,	10	6
Extra bulbs with net		,,	1	3

HOT AIR SYRINGE.

(AMERICAN PATTERN.)

6.

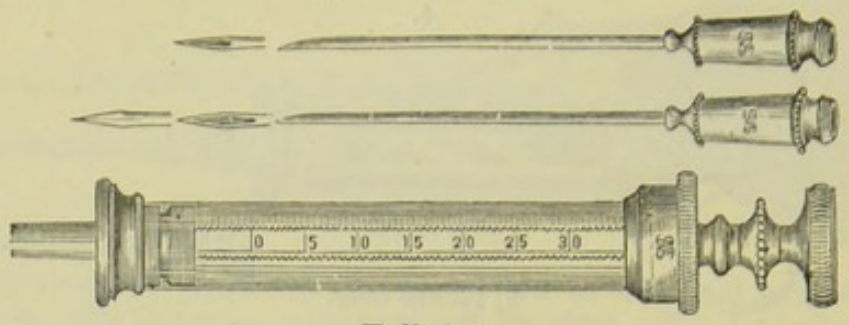


9 inches long.

			s.	d.
With Metal Guard and bulb covered with silk netting. All the metal parts are Nickel-plated	(Fig. 6)	each	14	0
Extra bulbs		,,	1	0

HYPODERMIC SYRINGE.

(American.)



Full size.

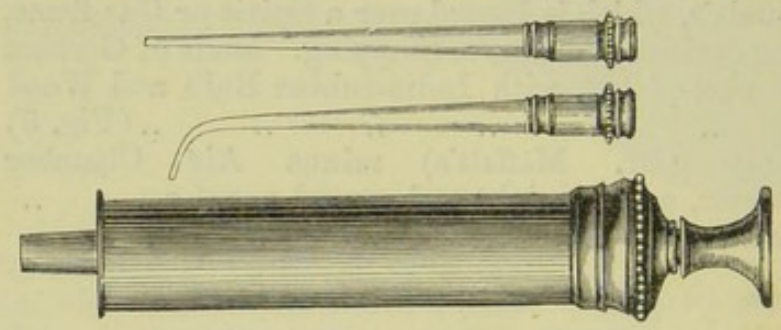
Made in German Silver, plated, well finished throughout. Each Syringe is furnished with two points, and enclosed in a neat Morocco case.

		s.	d.
In Metal case, graduated on the piston	each	18	0
Graduated on the piston	„	16	0
„ „ glass	„	12	0

HARD RUBBER SYRINGE.

(American.)

FOR INJECTING IODINE, ACID, ETC., INTO ABSCESSES.



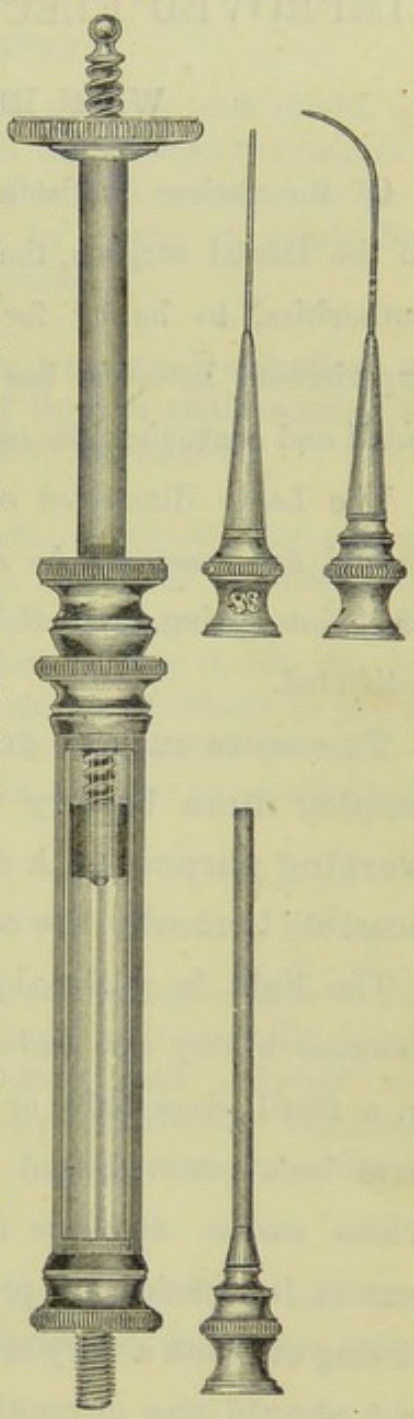
Full size.

The points shown with this Syringe will fit and can be used with the Hypodermic Syringes. When ordering state whether Platinum or Platinum and Iridium points are required. Each Syringe is enclosed in a Morocco case.

		s.	d.
Syringe with one point, straight or curved ..	each	12	0
„ with two points straight and curved ..	„	19	0
„ with one 18-carat Gold point	„	15	0
Separately :			
Platinum points, straight or curved	„	7	0
Platinum and Iridium „ „	„	7	0
18-carat Gold „ „	„	10	0
Hypodermic points, Steel	„	3	0

ALVEOLAR ABSCESS SYRINGE.

(Dr. FARRAR'S).



The illustration shows the instrument as last improved by Dr. Farrar, of full size, with the two gold drop-points, and an additional gold tube for charging the Syringe. This tube being of large bore, allows the full suction power of the Syringe in filling, and is long enough to take fluid from a vial when in small quantity. This improved Syringe, operated with thumb-wheel on the sleeve covering the piston-rod, sends the piston in a straight line up and down the barrel, with force enough to overcome the clogging effect of some fluids, and with rapidity enough for charging without uncoupling; so that as now shown it is complete for use, without change, as a "Drop," "Ejecting," or "Hypodermic" Syringe.

The metal parts, except gold tubes, are Nickel-plated. The case in which it is sold is long enough to hold the Syringe when charged full, with the piston stem backed out to its extreme length, so that it may be carried ready for instant use.

The gold-pipe charging tube will fit the old style Syringes.

A Hub with cone end to carry the Hypodermic points is supplied to order.

		s.	d.
Syringe in Morocco case with two Gold drop-points	each	30	0
„ „ „ and one Gold charging tube	„	38	0
„ „ with two Gold drop-points, one Gold charging tube, one Hub, and two Hypodermic points	„	46	0
Separately:			
Gold drop-points	„	5	0
Gold charging tubes	„	8	0
Hubs to carry Hypodermic points	„	2	0
Hypodermic points, Steel	„	3	0

IMPROVED ELECTRIC LAMP FOR THE MOUTH.

WITH REGULATING HANDPIECE.

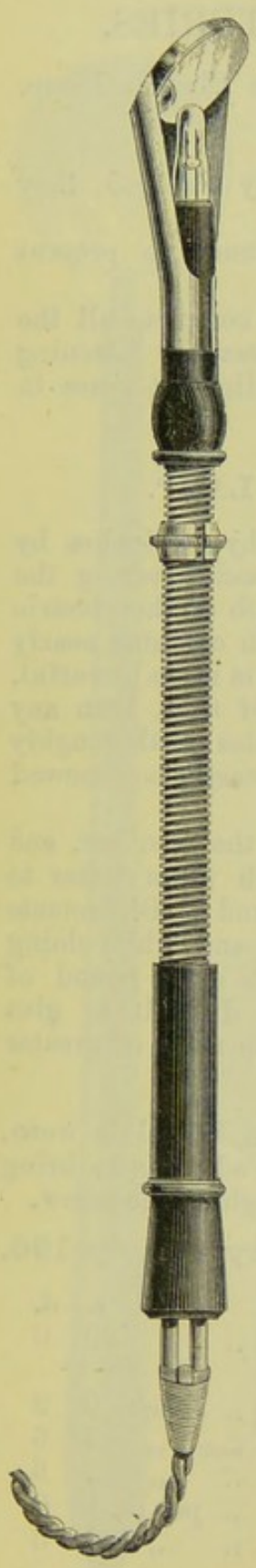
Of the various methods for examining the mouth, at present known to the Dental surgeon, the Electric Light is pronounced, by the highest authorities, to be by far the most suitable. The difficulty hitherto experienced, however, has been to invent a form of lamp sufficiently small and convenient for such a purpose.

The Lamp illustrated on the next page is the result of a series of careful experiments. As an addition to Dental Surgery it will prove most interesting, and if successfully used its value cannot be over estimated.

To ensure success great caution must be exercised never to employ more battery power than is absolutely required for working purposes. A desire to produce as brilliant a light as possible is mostly the cause of failure.

The light is produced by the Electric Current heating to incandescence a very fine carbon filament, fitted with Platinum connections, in a small glass bulb, or closed tube, from which all traces of oxygen have been removed, and as complete a vacuum as possible obtained. These carbon filaments are so prepared that a very weak electric current is sufficient to produce the desired degree of light. **With a strong current a very bright and beautiful light can be obtained, but should the current be too strong there is a danger of the carbon filament being consumed, and the Lamp thus rendered useless for further work. It is therefore necessary to exercise great care in regulating the force of the current. On no account must the Carbons be too deeply immersed when the solution is quite fresh.**

ELECTRIC LAMP—*continued.*



DESCRIPTION.

The Lamp is fitted with a mirror and shield, so that any part of the mouth can be readily examined, and the Handpiece to which it is attached is provided with a sliding ring by means of which the Light is controlled and regulated.

Should it be required for lengthened operations in the mouth, a low degree of light is recommended to economise the lasting power of the Battery.

For examining the mouth, a brighter light than for operations is necessary. When it is sufficiently intense the teeth will appear semi-transparent, and the slightest mark or defect on any tooth can be easily perceived. In some cases—especially in young persons, or where the teeth and gums are thin—the outline of the roots can be seen to nearly their whole length.

Directions :

To use the Light.—Push the brass slide on the Handpiece close to the Mirror, and gradually lower the Carbons into the solution until a bright red light appears. Its brilliancy can then be increased to any extent desired by moving the slide downwards.

When the Lamp is not in actual use the Carbons should be withdrawn from the solution.

	s.	*d.*
Electric Lamp, with Mirror, Guard, and Regulating Handle complete, ready for attaching to Battery	34	0
Lamp only, extra	10	6

For Batteries, see next page.

C. ASH AND SONS'

AJUSTABLE BICHROMATE BATTERIES.

These Batteries are made in two sizes: No. 1 for the Electric Lamp, and No. 2 for the Electric Mallet.

Attention is called to the following points:

1. If the instructions for charging them be carefully observed, they will be found free from any unpleasant smell.

2. All the principal parts are plated with Platinum to prevent corrosion.

3. After a Battery is charged, care must be taken to complete all the connections between it and the Lamp, or Mallet, by securely fastening the wires, and tightening the binding screws, as the slightest space in any part will prevent the current passing.

No. 1. FOR USE WITH THE ELECTRIC LAMP.

This is a small compact Battery; size 16 inches by 13 inches by 6 inches; fitted with pulleys and handle for raising and lowering the Carbons, and for regulating and economising the strength of the electric current. It is furnished with three cells, each of which contains nearly three pints of solution. C. ASH and SONS believe that it is more powerful, and that it will give a current for a greater length of time, than any Bichromate Battery in use of the same size. The zinc plates are thoroughly amalgamated and fitted in such a manner that they can easily be renewed when necessary.

To charge the Battery.—Lift the Carbons above the iron bar, and let them rest there; take out the jars; fill them with warm water to within three inches of the top; put one quarter of a pound of Bichromate of Potash into each; stir well with a piece of wood, and while doing so—when the solution is cool—add to each, one-sixth of a pound of sulphuric acid. As the Lamps vary in power, it is difficult to give exact instructions for making the solution, but it can be made of greater strength by adding a larger quantity of sulphuric acid.

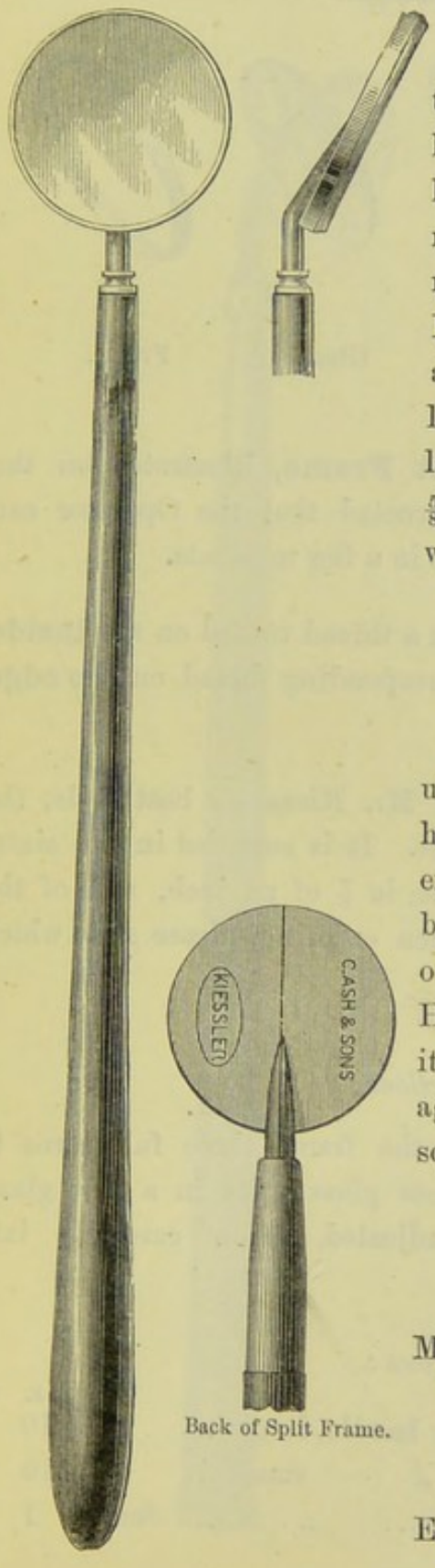
Note.—When the India-rubber Pad on the Friction Wheel is worn, release the screw by which it is secured and turn the Pad so as to bring a fresh part to bear on the wheel, and then thoroughly tighten the screw.

For illustration and description of No. 2 Battery see page 196.

			s.	d.
No. 1. Three-cell Battery, complete	..	..	30	0
Parts separately:				
Carbons, extra	..	each	0	9
Zincs ,,	..	,,	1	6
Jars ,,	..	,,	1	6
Bichromate of Potash, in crystals	..	per lb.	1	0
,, ,, in fine powder	..	,,	1	3

MOUTH MIRROR.

WITH SPLIT FRAME.



Back of Split Frame.

This Mirror is made with Split Frame to enable the Operator to fit a new glass himself. During the last few years it has had a considerable sale, and has given so much satisfaction that it is now brought more prominently to the notice of the Profession in the belief that it will meet a long-felt want. It is made in two sizes, large and small. The diameter of the large size is $\frac{7}{8}$ of an inch, and of the small $\frac{5}{8}$ of an inch. When ordering, please state which size is required.

Directions.

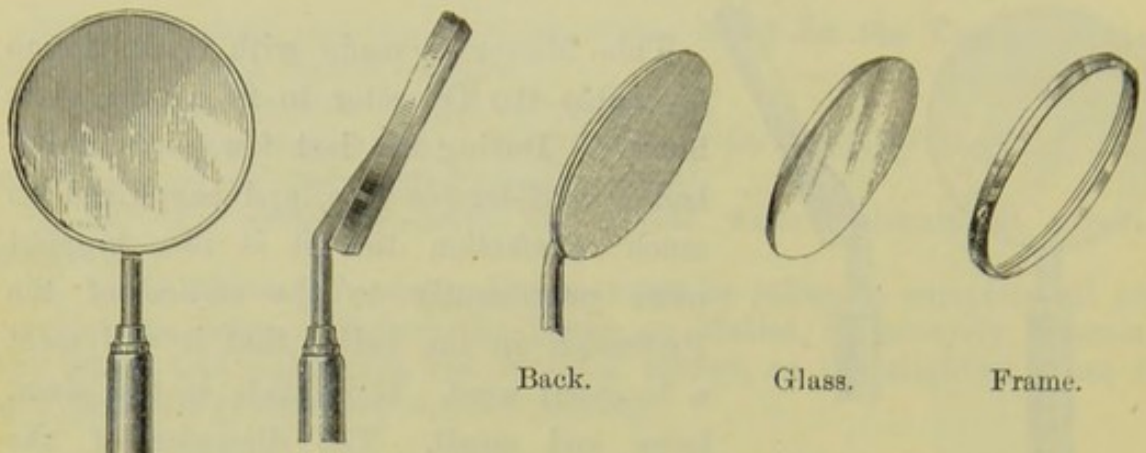
To remove a useless or broken glass unscrew the frame of the Mirror from the handle, and, by means of a fine pointed excavator or other instrument, open the back sufficiently for the glass to be pushed out with the point of the instrument. Having done this, take a new glass, lay it carefully in the frame, close the frame again by gently pressing the sides, and screw it in the handle.

Prices:

	s.	*d.*
Mirror, with Split Frame, round glass, and long Ebony handle, Large	10	6
,, ,, ,, Small	10	6
Extra glasses, large and small, each	1	9

MOUTH MIRROR.

WITH SCREW FRAME.



Back. Glass. Frame.

Like the Mirror with **Split Frame,** illustrated on the previous page, this is so constructed that the Operator can without difficulty fit a new glass in a few moments.

The **frame** of the mirror has a thread turned on the **inside** of the flange, and there is a corresponding thread on the **edge** of the **back.**

It is made and finished in Mr. Kiessler's best style, the joint being perfectly water-tight. It is supplied in two sizes. The diameter of the large size is $\frac{7}{8}$ of an inch, and of the small size $\frac{5}{8}$ of an inch. When ordering, please state which size is required.

Directions:

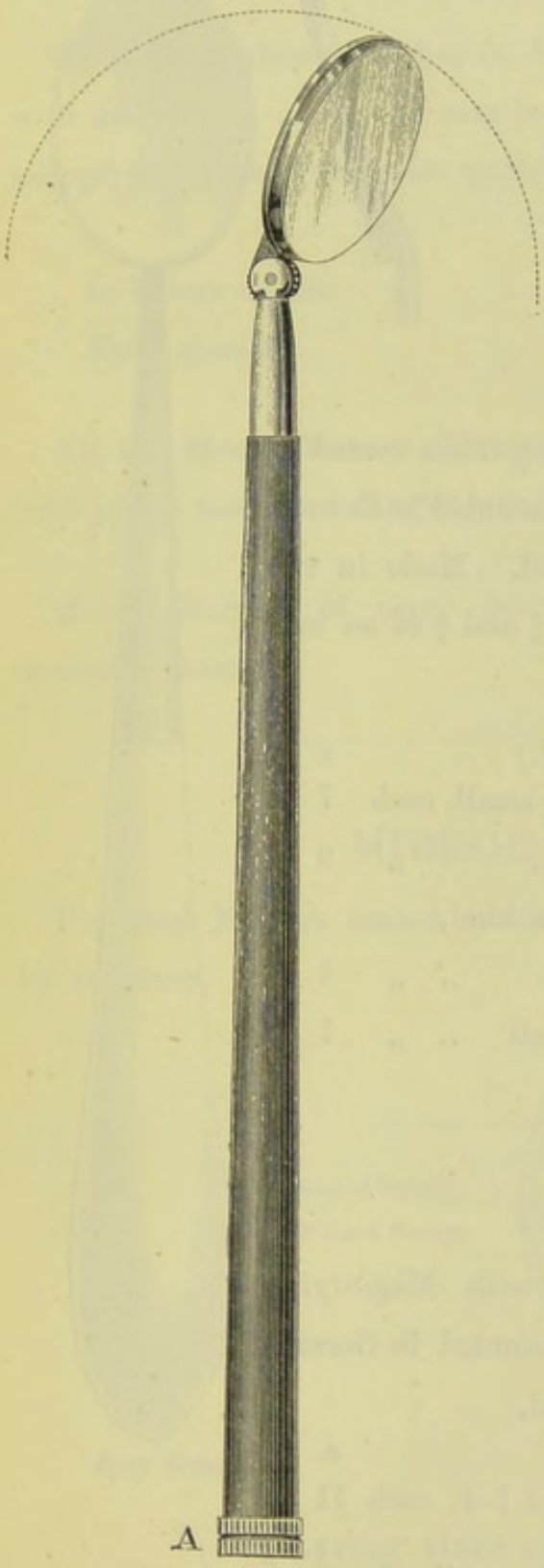
Unscrew the front part of the frame three full turns to the left and remove the useless glass: put in a new glass, and, when it is properly adjusted, screw carefully into position.

Prices:

		s.	*d.*
Screw Frame Mirror in Ebony handle, large		10	6
,, ,, ,, ,, small		10	6
Extra glasses, large or small	each	1	9

ADJUSTABLE MOUTH MIRROR.

WITH ROUND GLASS.



The dotted lines in the engraving show the full range of this Mirror. By means of the screw A at the end of the handle the frame can be fixed at any angle. Made in one size with glass $\frac{7}{8}$ of an inch in diameter.

		s.	d.
In Ebony handle ..	.. each	9	6

Adjustable Mirror with screw frame as shown and described on the previous page.

		s.	d.
In Ebony handle ..	.. each	14	0
Extra glasses ..	.. „	1	9

MIRROR GLASSES.

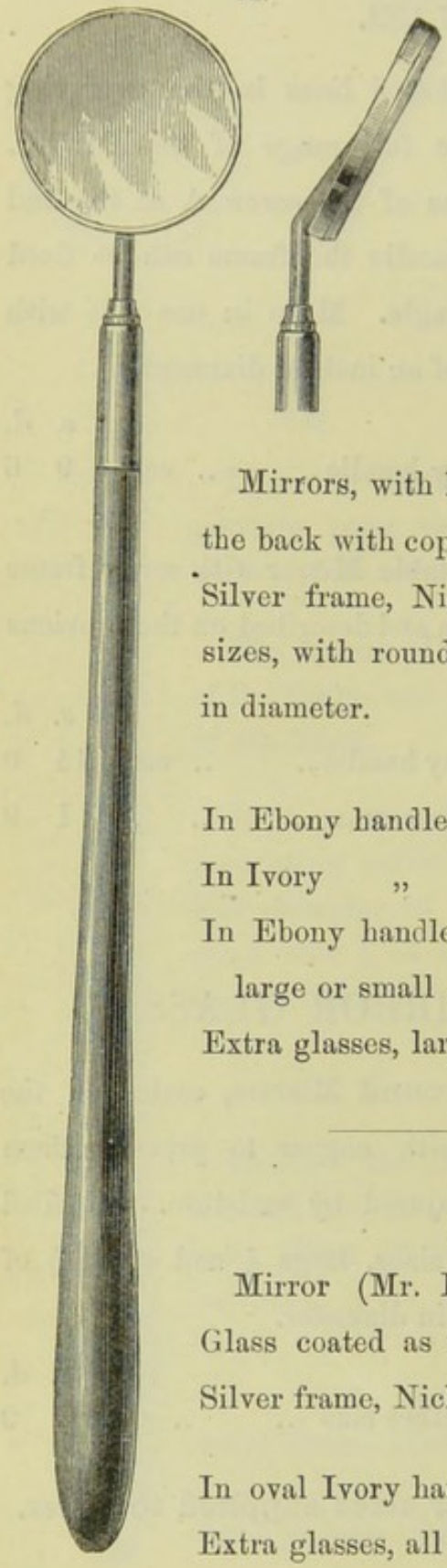
For **round** Mirrors, coated on the backs with copper to prevent them being injured by moisture. Supplied in two sizes, large $\frac{7}{8}$ and small $\frac{5}{8}$ of an inch in diameter.

		s.	d.
Price, either size ..	.. each	1	9

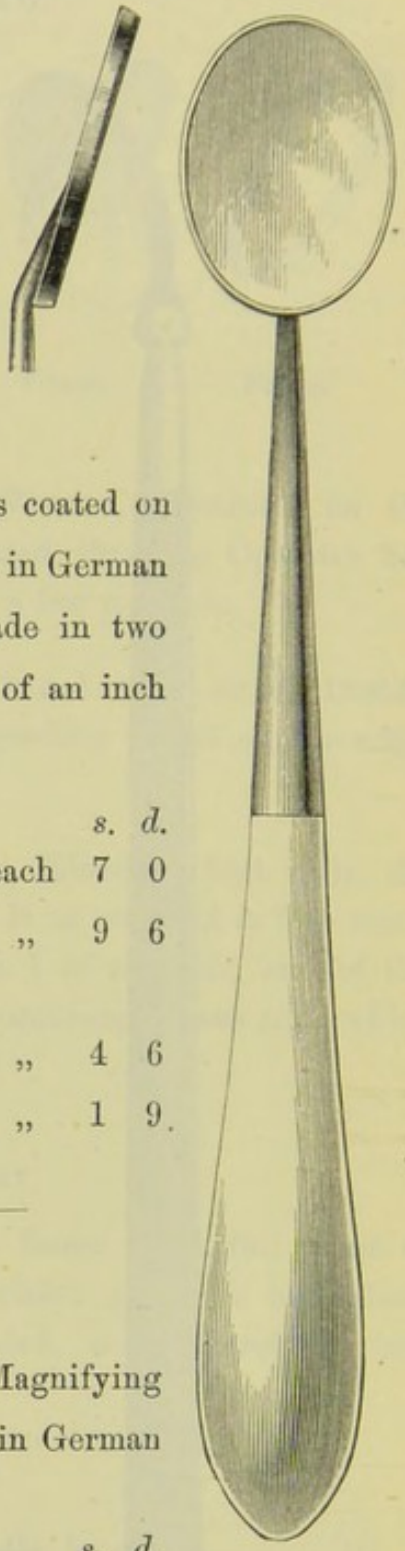
Larger sizes supplied to order.

MOUTH MIRRORS.

54.



55.



Mirrors, with Magnifying Glass coated on the back with copper and mounted in German Silver frame, Nickel-plated. Made in two sizes, with round glasses $\frac{7}{8}$ and $\frac{5}{8}$ of an inch in diameter.

(Fig. 54.)	*s.*	*d.*
In Ebony handle, large or small, each	7	0
In Ivory „ „ „ „	9	6
In Ebony handle, cheaper kind, large or small .. .. .. „	4	6
Extra glasses, large or small .. „	1	9

(Fig. 55.)

Mirror (Mr. Roger's) with Magnifying Glass coated as above, mounted in German Silver frame, Nickel-plated.

	s.	*d.*
In oval Ivory handle, sizes 1–4, each	11	0
Extra glasses, all sizes .. .. „	1	9

MOUTH MIRRORS.

(EXTRA LARGE.)

With round glass 1½ inches in diameter, suitable for examining, made with magnifying glass. It may be had to order with **plain**, instead of magnifying, glass at the price quoted.

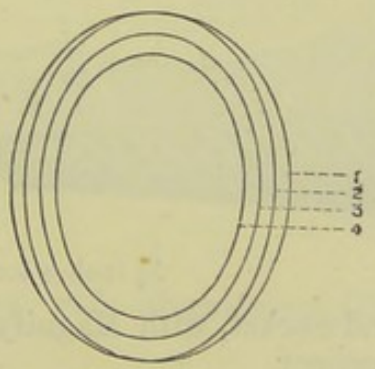
		s.	d.
In Ebony handle	each	10	0
Extra glasses	„	4	0

All the Mouth Mirrors illustrated on pages 233 to 239 may be had with **plain** instead of **magnifying** glasses at the prices quoted.

Mouth Mirrors of every description repaired and Nickel-plated at moderate charges.

MIRROR GLASSES.

For **oval** Mirrors coated on the backs with copper to prevent injury by moisture.

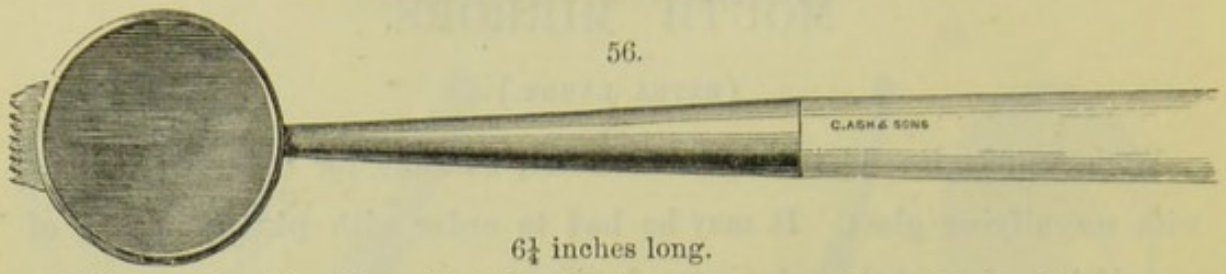


		s.	d.
Any size	each	1	9

Larger sizes supplied to order.

MOUTH MIRRORS—*continued.*

56.



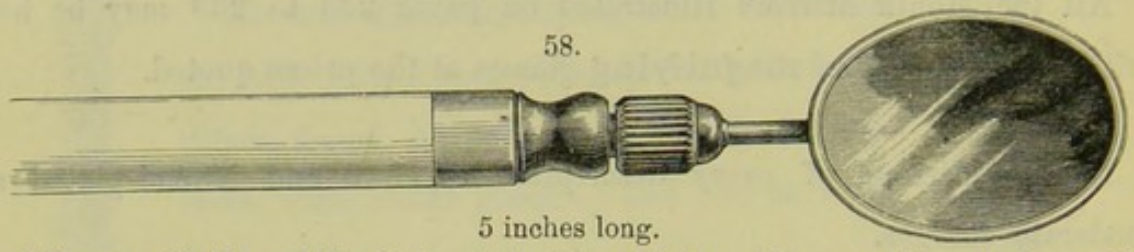
6¼ inches long.

Mirror (Dr. Bing's), with Magnifying Glass coated on back with copper, mounted in German Silver frame, Nickel-plated.

		s.	*d.*
In round Ivory handle	(Fig. 56) each	12	6
Extra glasses	„	1	9

This Mirror is bent at the same angle as Fig 55, page 236, and has a metal comb at the end for holding the Gold Tape during the operation of Stopping.

58.



5 inches long.

Mirrors, Ball and Socket, with Magnifying Glass, and coated on the back with copper, Mounted in Ivory handles.

		s.	*d.*
In German Silver, Nickel-plated, sizes 1, 2, 3, 4	(Fig, 58) each	11	0
Mirrors without Ball and Socket action :—			
In German Silver, Nickel-plated, sizes 2 and 3 ..	„	8	6
„ „ plain, size 3	„	6	6
Extra Cups for Ball and Socket Mirrors	„	0	4
Extra glasses, all sizes	„	1	9

59.



5¼ inches long.

Mirrors, Ball and Socket, with Magnifying Glass, size No. 3, and coated on the back with copper.

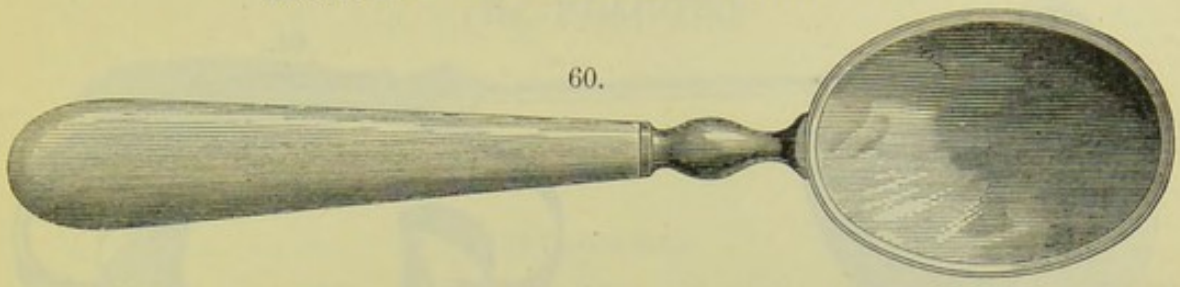
		s.	*d.*
In German Silver, Nickel-plated, with Pearl handle	(Fig. 59) each	14	0
„ „ with Ivory „	(Fig. 59) „	13	0
Extra glasses	„	1	9

Other Mirrors made to order.

For sizes of Mirror Glasses see page 237. Mirrors repaired at moderate charges.

MOUTH MIRRORS—*continued.*

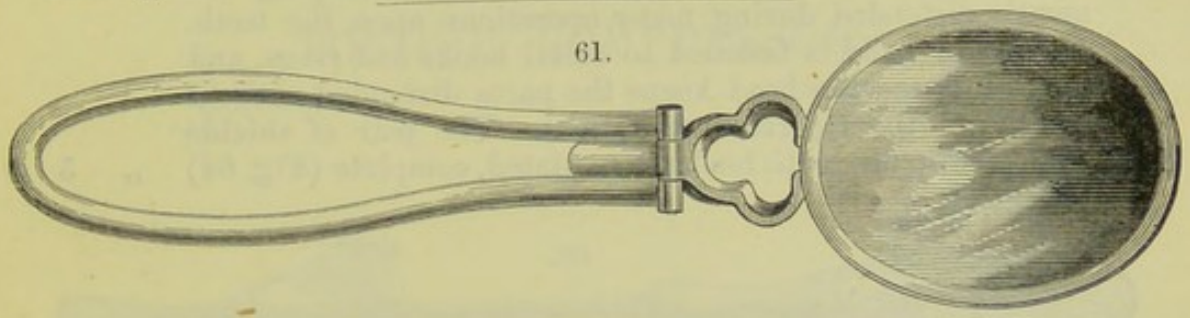
60.



Mirrors, with Magnifying Glass, size No. 2, coated on the back with copper.

			s.	d.
In plain German Silver, with Ivory handle	(Fig. 60)	each	5	6
Extra glasses		„	1	9

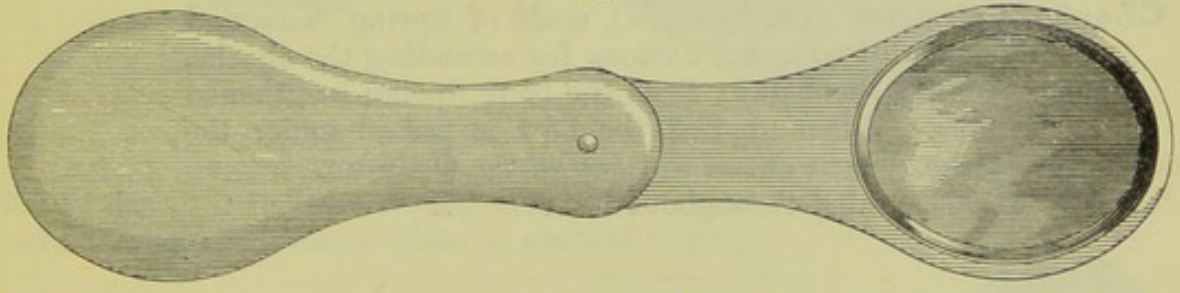
61.



Folding Mirrors for the pocket, with Magnifying Glass, size No. 3, coated on the back with copper.

			s.	d.
In German Silver, with Wire handle, Nickel-plated	(Fig. 61)	each	8	6
„ „ „ „ Gilt	(„ 61)	„	9	6
Extra glasses		„	1	9

62.



Folding Mirror for the pocket, with Magnifying Glass, size No. 3, coated on the back with copper.

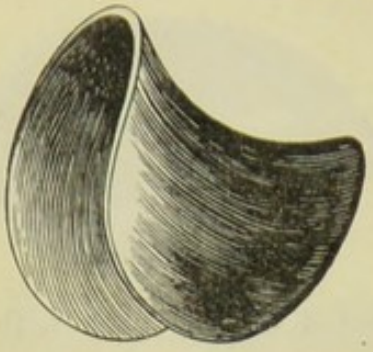
			s.	d.
In Ivory frame	(Fig. 62)	each	6	0
Extra glasses		„	1	9

Other Mirrors obtained to order.

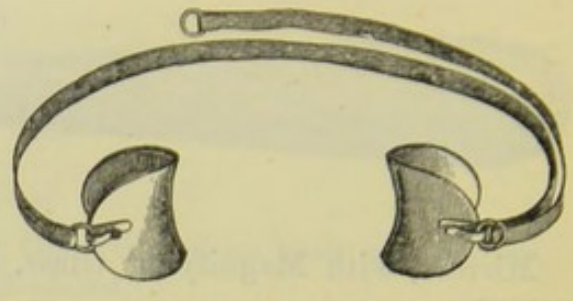
For sizes of Mirror Glasses see page 237. Mirrors repaired at moderate charges.

LIP PROTECTORS, &c.

63.



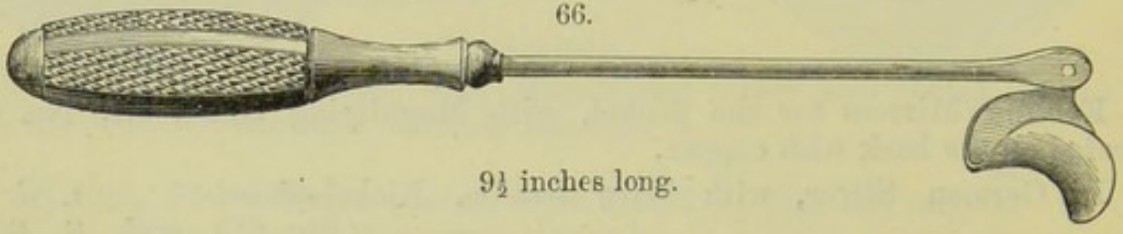
64.



Lip Protector, plated. This contrivance is useful in protecting the lips, when using files, drills, or other cutting instruments .. .. (Fig. 63) — *s.* *d.* each 1 6

Lip Protector and Mouth Distender, for keeping the mouth distended during many operations upon the teeth. An elastic band is fastened to metal hooks and rings, and passing round the head keeps the parts distended without trouble to the Operator or patient. The pair of shields (size of Fig. 63), with hooks, &c., plated, complete (Fig. 64) — „ 5 0

66.



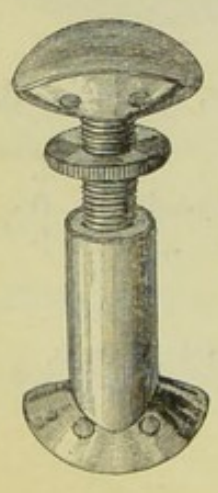
9½ inches long.

Lip Protector and Mouth Distender, plated; the shield the size of Fig. 63, with Ebony handle. This instrument is held by the patient during operations in the mouth (Fig. 66) — *s.* *d.* each 6 0

(Not illustrated.)

Cheek Distender (Dr. Elliott's), made of Spring Wire, and provided with two metal buttons for extending the cheeks, and keeping them away from the teeth during lengthened operations. When applied the bow is passed under the chin of the patient out of the way of the Operator.

Nickel-plated throughout .. .. each 4 0



MOUTH PROP.

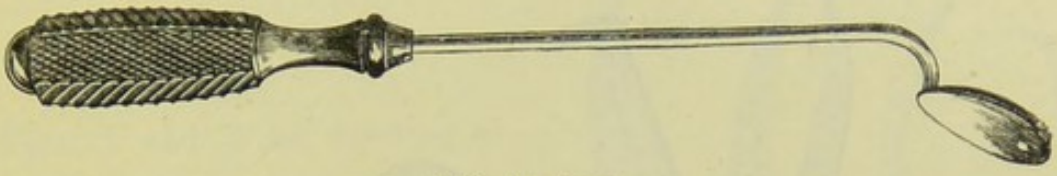
Mouth Prop or Gag, for keeping the mouth open during protracted operations, with adjustable spring and Gutta-percha pads for the patient to bite into to prevent slipping. — *s.* *d.*

In two sizes, long and short, Nickel-plated, each 5 6

For other Mouth Props see pages 304, 305.

TONGUE HOLDER.

(Dr. FLAGG'S.)



10 inches long.

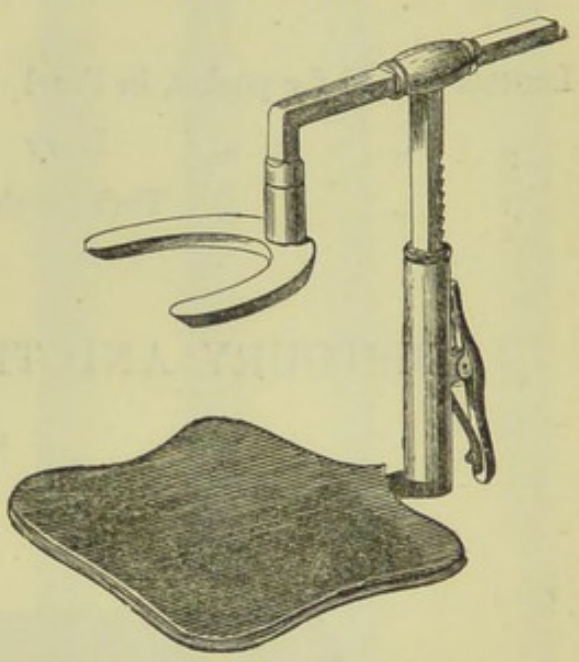
Tongue Holder (Dr. Flagg's), held by the patient, to keep the tongue down during the operation of Plugging, &c.

		s.	*d.*
In German Silver, Nickel-plated, with Ebony handle	each	4	0

TONGUE COMPRESSORS.

(Fig. 30.) (Dr. Smith's.)





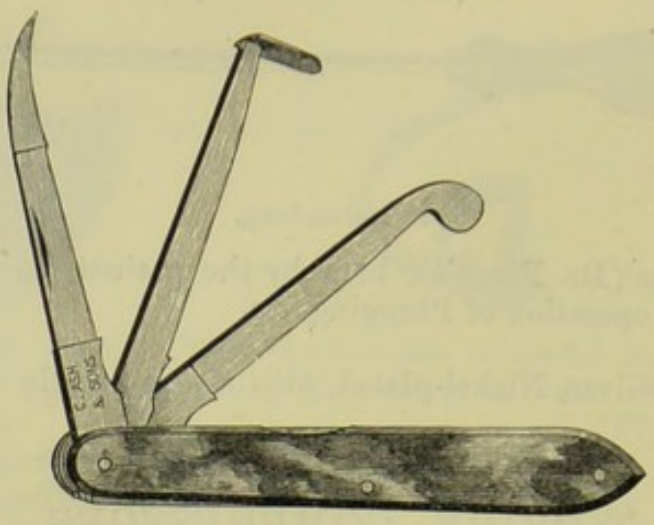
Tongue Compressor, for holding the tongue down during the operation of Plugging It has a Spring Ratchet for regulating the height required, and a roughened tongue-plate to prevent slipping.

			s.	*d.*
In German Silver, Nickel-plated	..	.. (Fig. 30)	9	0

Tongue Compressor (Dr. Smith's), Improved, with Spring Ratchet, Sliding Bar, and Revolving Tongue Plate so that it may be used in a lateral position. It has also a Revolving Chin Plate covered with Silk Velvet.

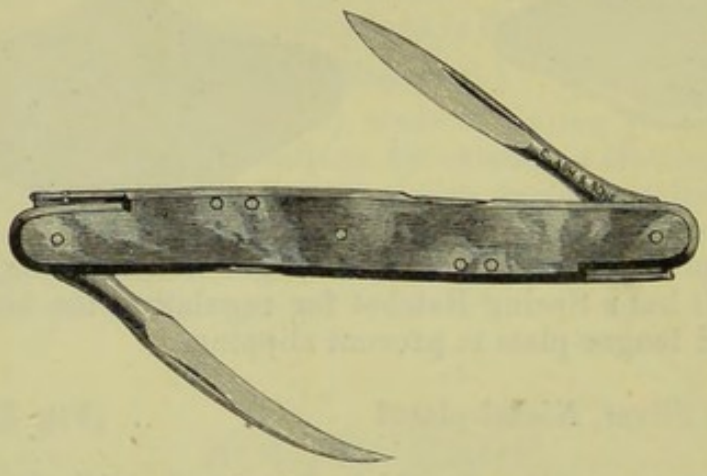
	s.	*d.*
In Brass, Nickel-plated	15	0

LANCETS.



		Blades.					
		1.		2.		3.	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*
Lancets to fold for pocket, in Pearl handles .. each		3	0	4	6	6	6
,, ,, ,, Ivory ,, .. ,,		2	6	4	0	5	6
,, ,, ,, Tortoise-shell ,, .. ,,		2	6	4	0	5	6

BISTOURY AND TENOTOME LANCET.



	s.	*d.*
With two Blades and Spring Stops, best make.		
In Tortoise-shell handle .. .. each	7	0

Other Lancets made or obtained to order.

LANCETS FOR ABSCESSES, &c.

Figs. 1 and 2 for opening abscesses, trimming and smoothing fillings, &c.

	s.	*d.*
In steel octagon handles each	1	0

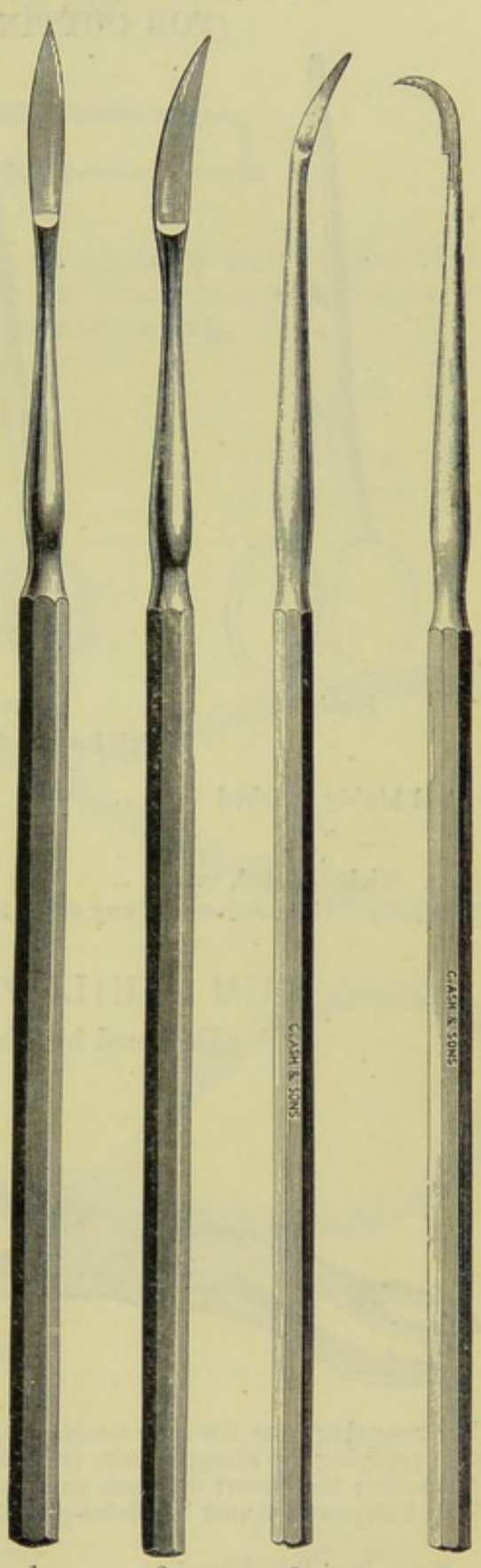
Fig. 3, Dr. Dally's, for abscesses and for general use in the operating room.

	s.	*d.*
In blued steel handle each	1	3

Fig. 4, Dr. Witzel's, ligature knife. Useful for cutting silk or thread and for other purposes.

	s.	*d.*
In steel octagon handle each	1	2

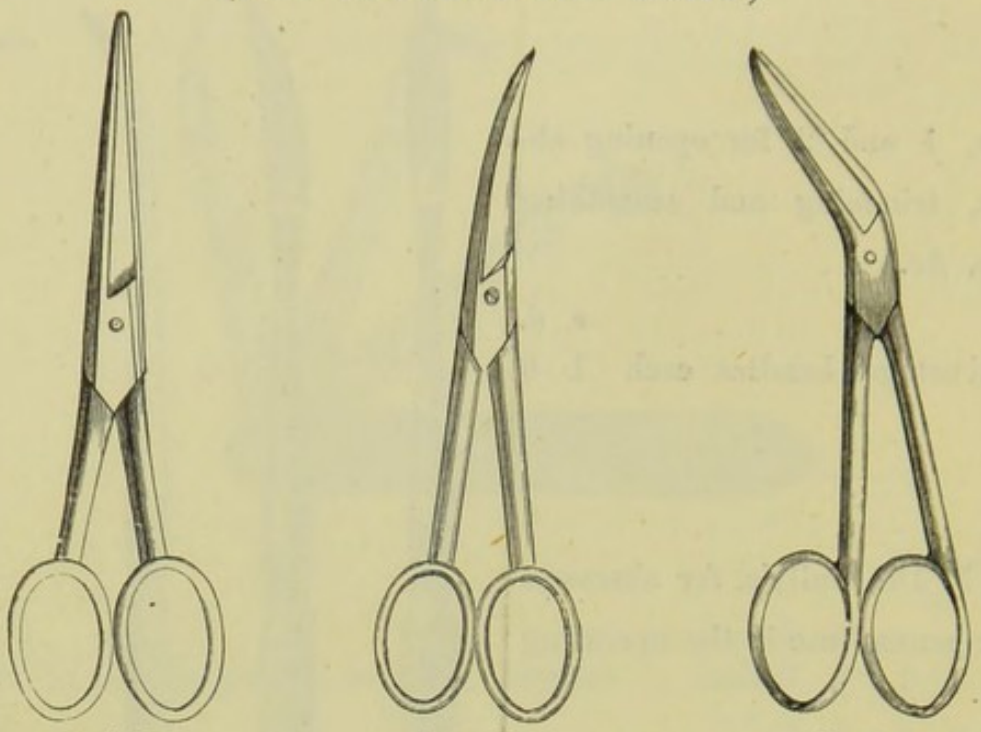
Other Lancets made or obtained to order.



1. 2. 3. 4.

SCISSORS.

(FOR CUTTING THE GUMS.)



Straight. Curved. Bent.

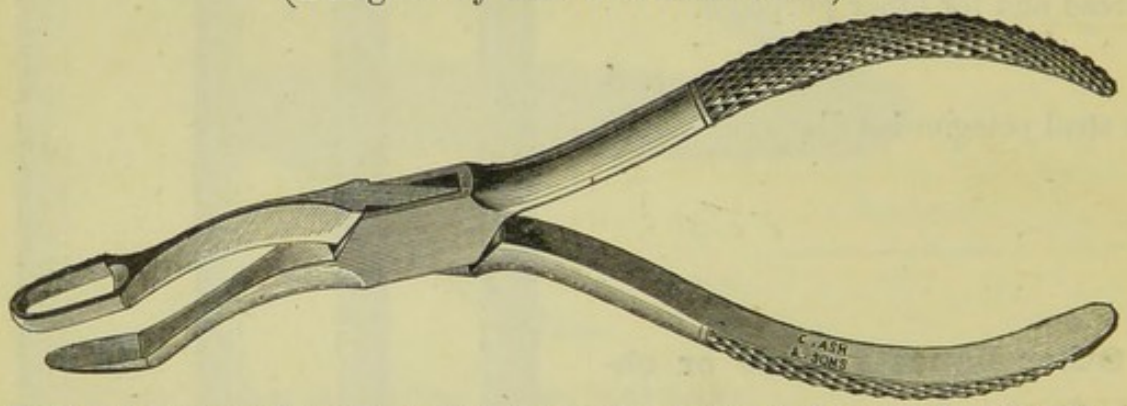
Full length of each 4½ inches.

			s.	d.
In Steel highly polished	.. ..	Straight each	1	9
„ „	.. ..	Curved „	3	6
„ „	.. ..	Bent „	2	6
„ Nickel-plated, extra	.. ..	.. .. „	0	9

Gum Scissors of any other form made or obtained to order.

GUM GUILLOTINE FORCEPS.

(Designed by Mr. WOODHOUSE.)



For removing gum from the masticating surfaces of partially erupted wisdom teeth. Before applying the Forceps, make an incision with a lancet along the anterior margin of the tooth ; then insert the blade and remove the gum by firmly closing the handles.

This instrument cannot be Nickel-plated without spoiling the cutting edges.

	s.	d.
Price, in polished Steel	9	6

MOUTH SAW.

69.



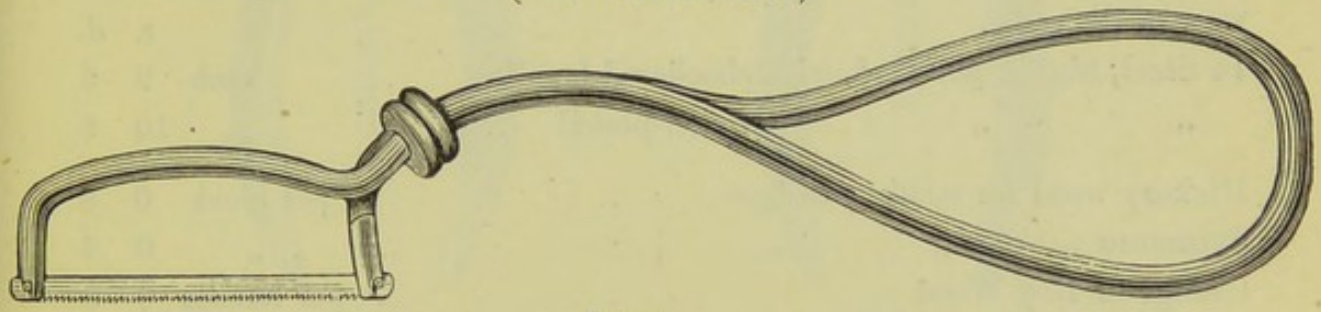
6¾ inches long.

Mouth Saw (Fig. 69). The frame is so contrived that the Saw blades are easily adjusted, either in a line with the frame, or at right angles; the Saw blade is tightened by means of an open screw loop.

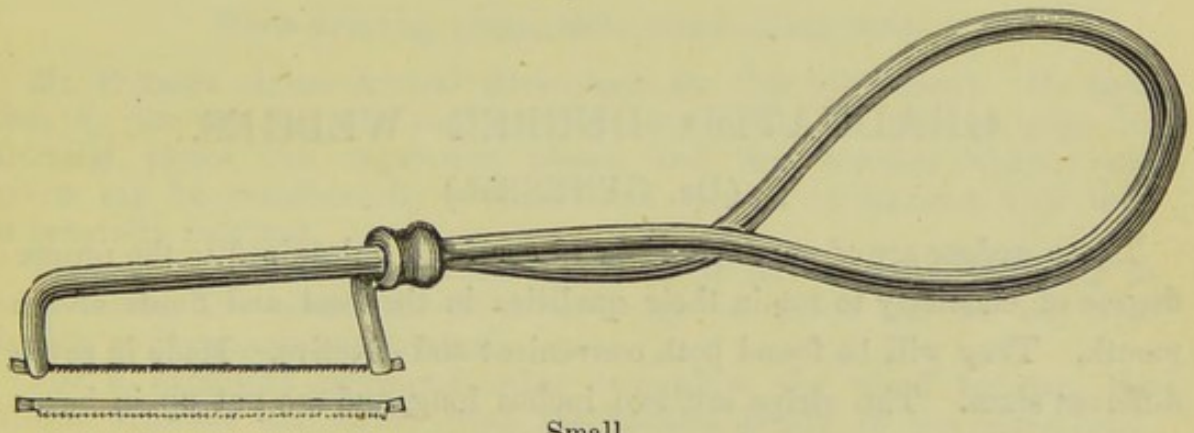
		s.	d.
In Ivory handle	each	10	6
„ Ebony „	„	9	0
Saw blades, all sizes	per doz.	0	4
„ „	per gross	3	0

MOUTH SAWS.

(Mr. KAEBER'S.)



Large.

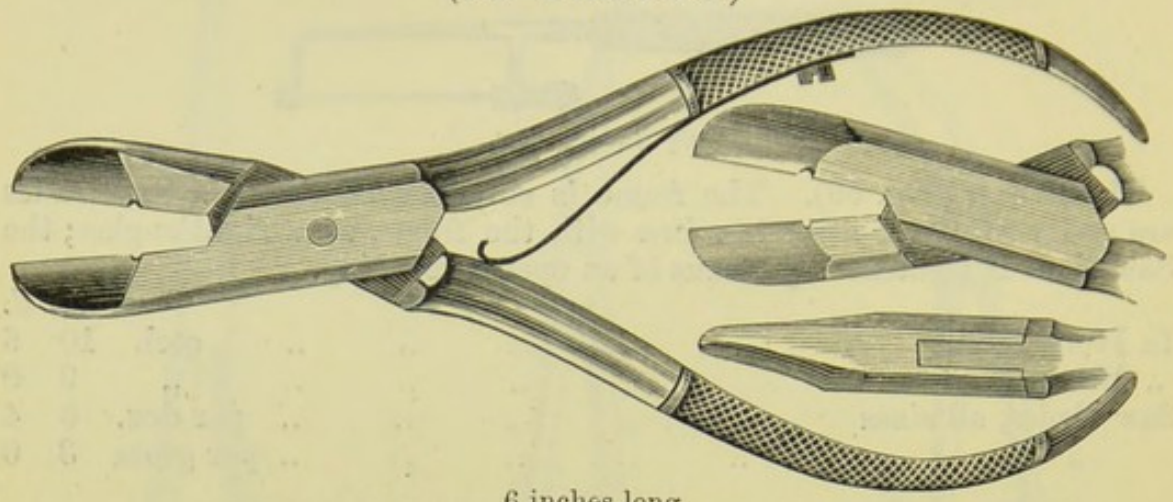


Small.

		s.	d.
Mouth Saws for finishing fillings, &c.:—			
Large size, Kaeber's, Nickel-plated	each	3	0
Small „ „ „	„	2	6
Mouth Saw, Clapp's, not illustrated	„	1	3
Saw blades for any of the above	per doz.	1	0

WEDGE CUTTERS.

(Dr. MILLER'S.)



6 inches long.

For cutting the wooden wedges which are used in regulating teeth. The illustration shows the inside and outside of the blades, and a side view of the same.

		s.	d.
In Steel, highly polished, with checkered handle ..	each	9	6
„ „ Nickel-plated	„	10	9
Hickory wood for making wedges	per block	0	6
Sycamore „ „ „	„	0	6
Orange or Dog Wood „	per bundle	0	3

GRADUATED RUBBER WEDGES.

(Dr. GENESE'S.)

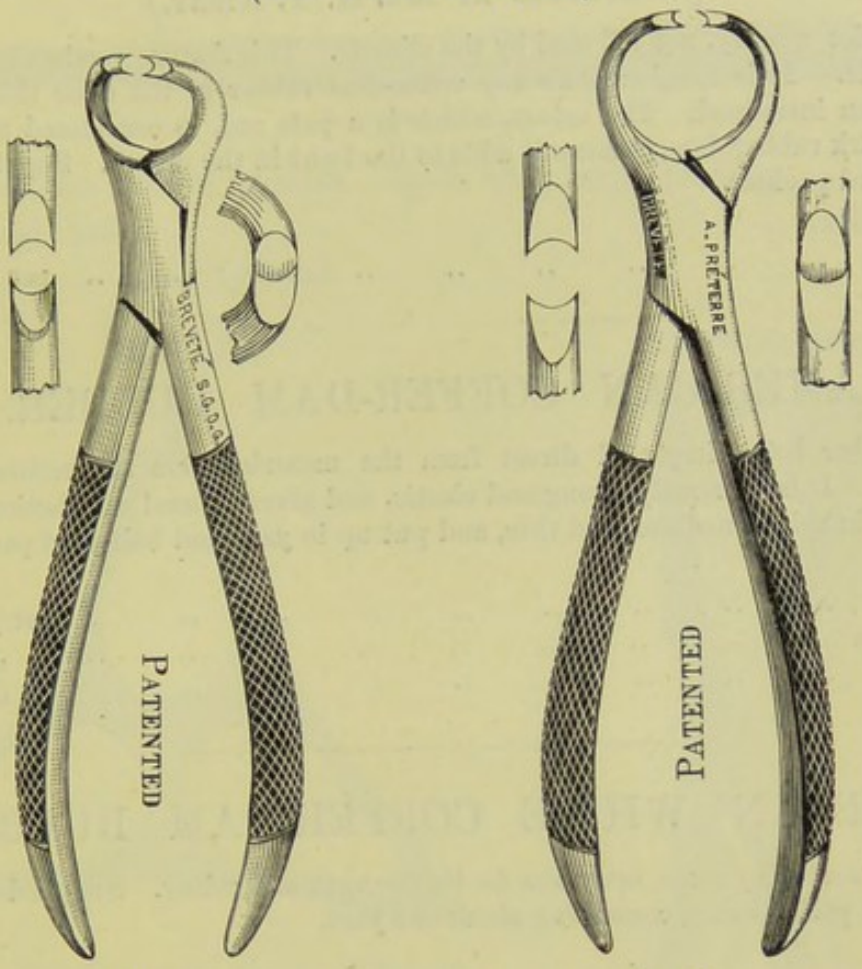
These wedges are of pure material and carefully vulcanized to the proper degree of elasticity to retain their qualities in the heat and fluids of the mouth. They will be found both convenient and effective. Made in seven different sizes. The strips are two inches long, and are put up in boxes containing thirty assorted pieces. Directions accompany each package.

		s.	d.
Price	per box	2	0

For Regulating Apparatus, see pages 297 to 300.

WEDGE CUTTERS.

(Mr. PRÉTERRE'S.)



Curved. Straight.

When ordering please state which is required.

Mr. Préterre claims several advantages for this instrument. He says that by its use the file and saw are superseded in placing pegs on artificial pieces and regulation plates, and that wooden wedges and pivots can be satisfactorily prepared and applied in far less time than is generally required.

The blades are so constructed that there is no danger of splitting or compressing the wood, and thus a wedge or pivot can be cut with facility to the exact size required.

For a **straight perpendicular** cut, place the wood between the blades with the left hand, grasp the handles firmly in the right hand, holding them parallel with the wood so that the cutting edges close vertically upon it, and a sharp clean cut will be given.

The **oblique** cut so necessary in lower regulation cases can be easily obtained with the instrument; and if carefully used, the cutting edges will remain serviceable for a long time.

			s.	*d.*
In polished steel, with checkered handles	each		8	6

GLOBE COFFER-DAM RUBBER.

(Introduced by Mr. H. T. Kirby.)

Of superior quality, not affected by the climate. This feature renders it practically imperishable. It is tougher than any coffer-dam rubber of the same thickness that has yet been introduced. The colour, which is a pale red, is considered much better than the dark rubber dam, because it adds to the light in the mouth. Supplied in yard and half-yard packets.

		s.	d.
Price	per yard	8	0

AMERICAN COFFER-DAM RUBBER.

This rubber being imported direct from the manufacturers its freshness can be guaranteed. It is extremely strong and elastic, and gives general satisfaction.

Supplied in thick, medium, and thin, and put up in yard and half-yard packets.

		s.	d.
Thick	per yard	10	0
Medium	„	8	0
Thin	„	6	0

GERMAN WHITE COFFER-DAM RUBBER.

Much esteemed by some operators for its strength and colour. Supplied in medium and thin, in packets each containing about one yard.

		s.	d.
Medium	per packet	8	0
Thin	„	6	0

FLOSS SILK, &c.

For tying ligatures, &c.:		per doz. s.	per doz. d.	each. s.	each. d.
Floss silk, ordinary	12 yards on reel	6	0	0	6
„ waxed	„	7	0	0	8
„ „ extra stout	„	7	0	0	8
„ American, ordinary .. .	„	6	0	0	8
„ „ waxed	„	9	0	0	10
„ „ various colours ..	„	6	6	0	8
Silk Twist	per reel			0	9
Gilling Thread, best English	per hank			0	5
„ Twine, American	per plait			0	5

		s.	d.
Floss Silk for wrapping round pivots, &c. Supplied in fine, medium, and coarse	per reel	0	4

RUBBER-DAM PUNCHES.

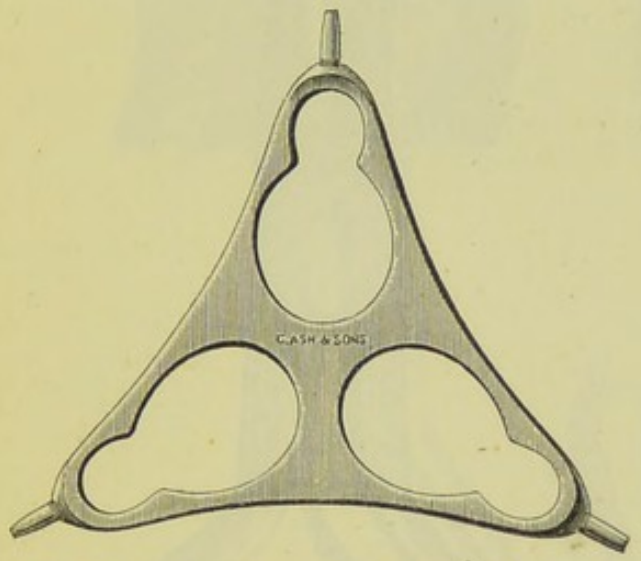
(SINGLE-ENDED.)



5 inches long.

	s.	d.
In Steel Octagon file cut handles. Made with large, medium, and small holes .. .. each	1	9
„ „ Nickel-plated .. .. „	2	1

TRIPLEX.



Triplex Punch with three different cutters. The frame is made of Brass and the cutters of Steel.

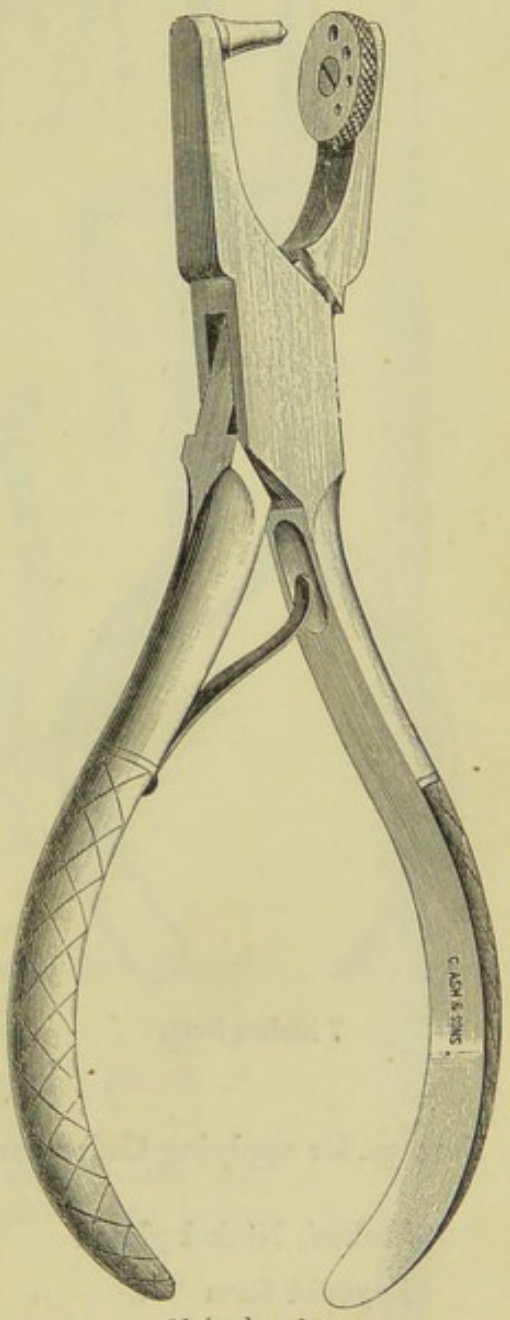
	s.	d.
Price, Nickel-plated	5	6
Extra cutters .. .. .. each	1	0

Rubber-dam Punch, Dr. Ainsworth's, with circular plate containing four holes of various sizes.

	s.	d.
In Steel, highly polished ..	12	6
„ Nickel-plated	13	9

Rubber-dam Punches of other forms made or obtained to order.

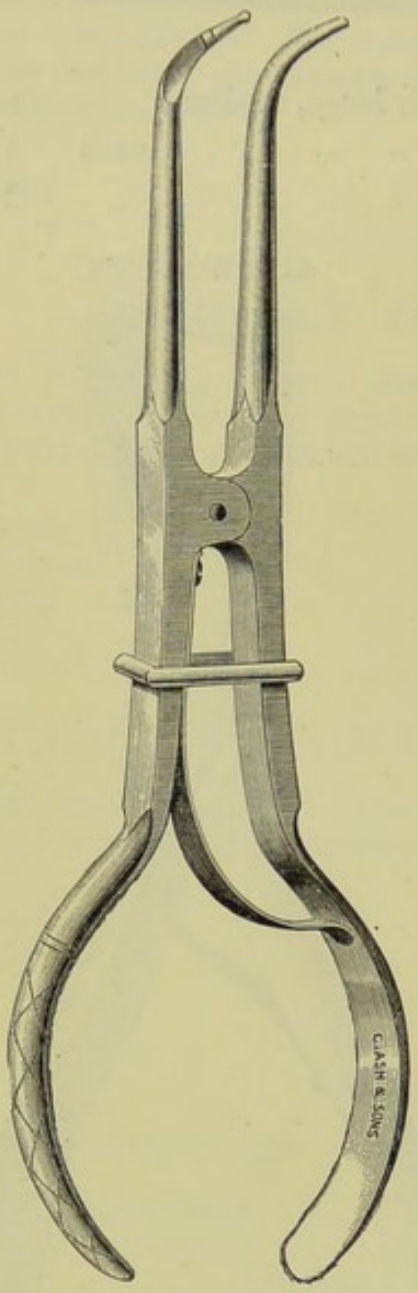
AINSWORTH'S.



6½ inches long.

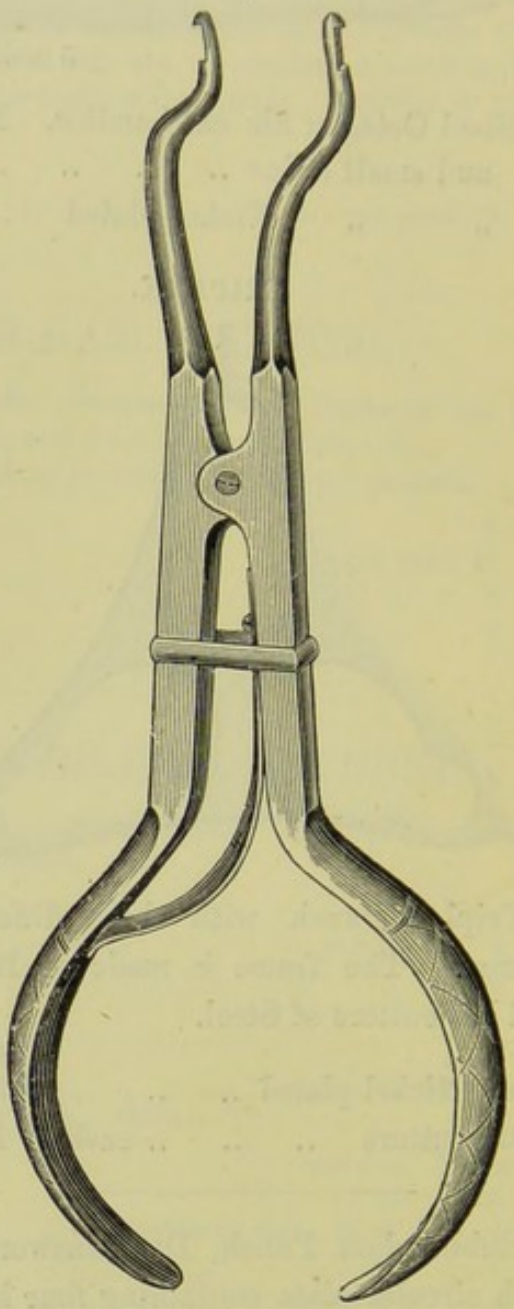
RUBBER-DAM CLAMP FORCEPS.

Stokes'.



7 inches long.

Bayonet.



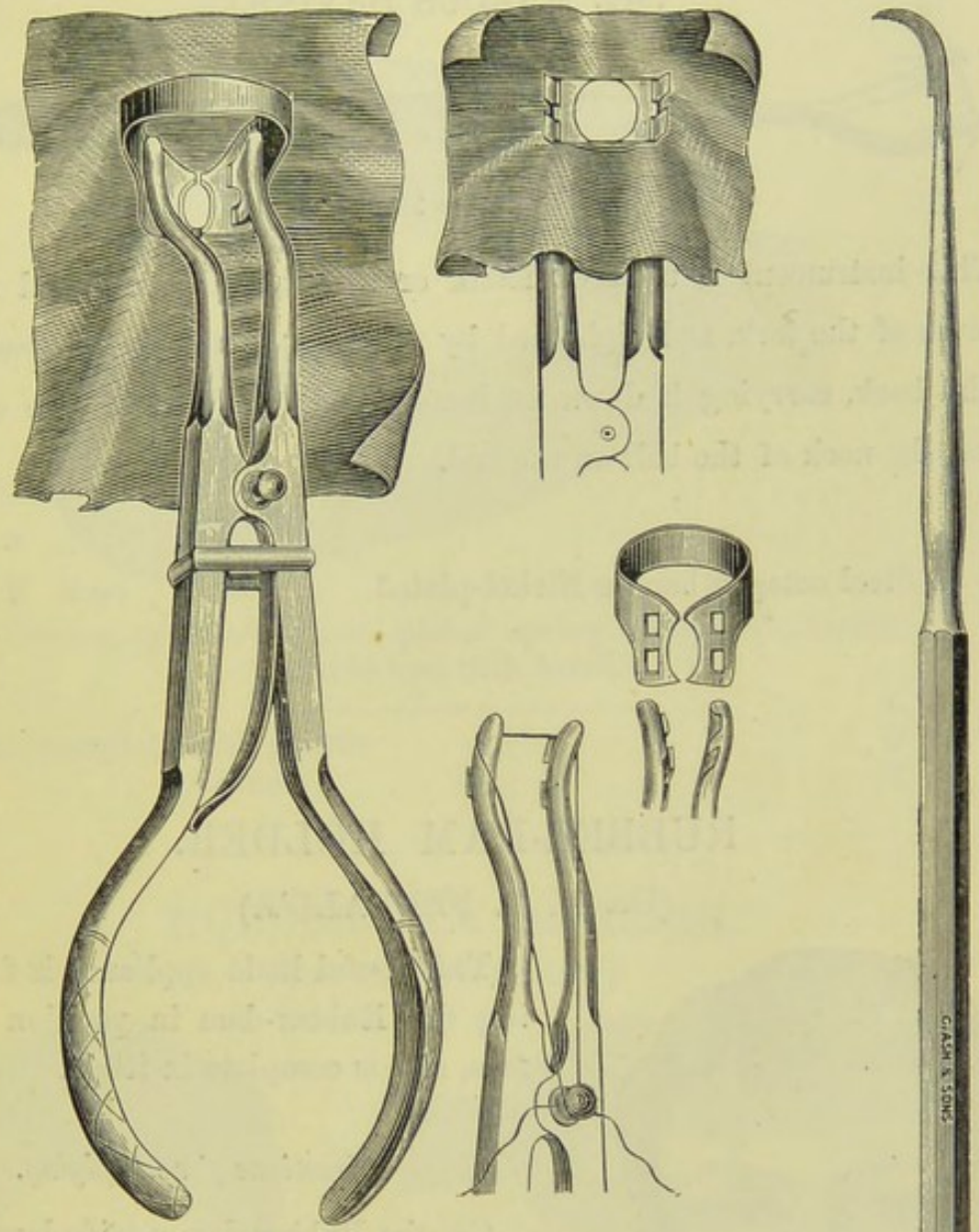
7 inches long.

Forceps for applying Coffer-dam Clamps:—

		s.	d.
Stokes', Nickel-plated	each	10	0
Bayonet form „	„	10	0

RUBBER-DAM CLAMP FORCEPS AND LIGATURE KNIFE.

ELLIOTT'S. WITZEL'S.



7 inches long.

Forceps (Dr. Elliott's), for applying Coffer-dam Clamps. Figs. 65 and 66, page 258.

			s.	*d.*
In Steel, Nickel-plated ..	..	each	10	0

Ligature Knife (Dr. Witzel's), for cutting silk and gilling twine after the Rubber-dam is applied, and before it is removed.

			s.	*d.*
In Steel octagon handle ..	..	each	1	2

RUBBER-DAM APPLIER.

(Mr. MARCUS DAVIS'S.)



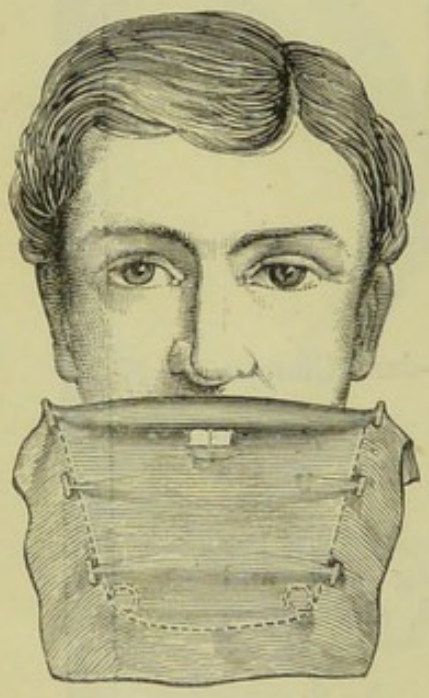
6¾ inches long.

This instrument is used with silk or thread, which is passed into the grooves of the fork, and tightened by wrapping it round the steel button at the back, carrying it down the handle, and wrapping it once or twice round the neck of the ball on the end.

			s.	*d.*
In Steel octagon handle Nickel-plated	each		3	9

RUBBER-DAM HOLDER.

(Dr. H. P. FERNALD'S.)



This useful little appliance is for keeping the Rubber-dam in position on the face, and is complete in itself.

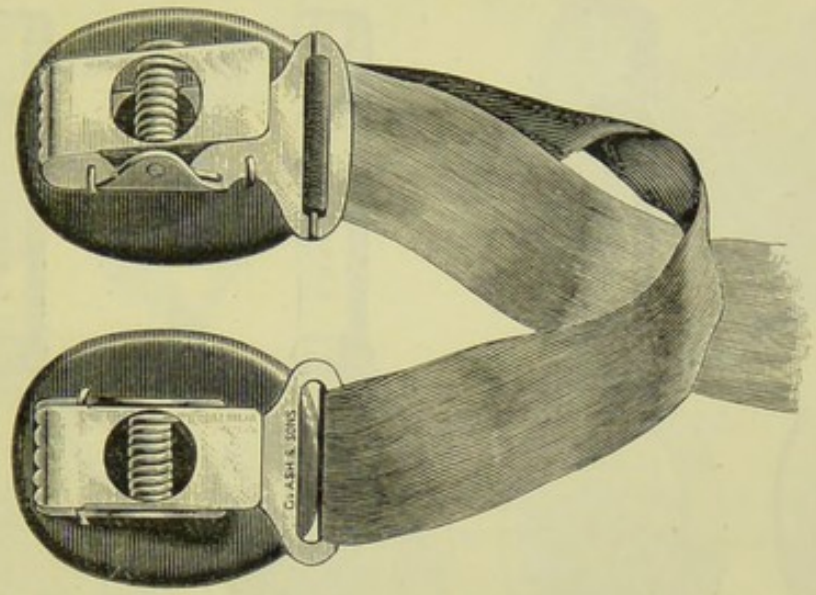
Directions for Applying.

Cut the Rubber-dam a trifle larger than the holder; apply to teeth, and secure same by means of thread, silk, or clamp—then stretch the free ends of rubber over the studs of holder, as shown in Illustration.

	s.	*d.*
Price, Nickel-plated	3	3

RUBBER-DAM HOLDER.

(HOSPITAL PATTERN.)

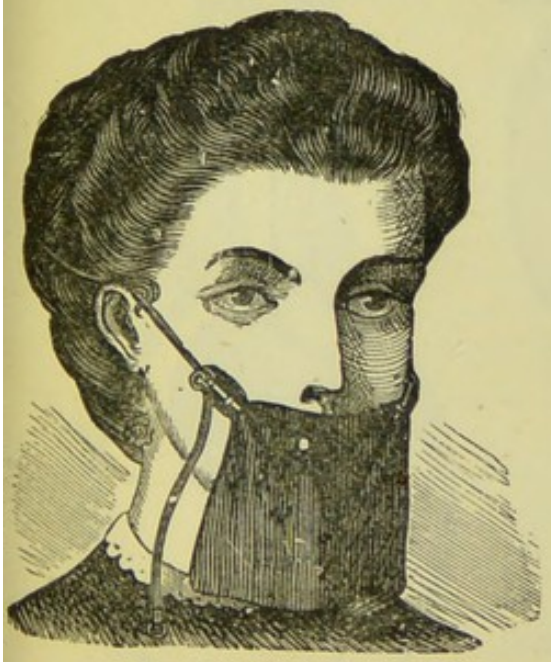


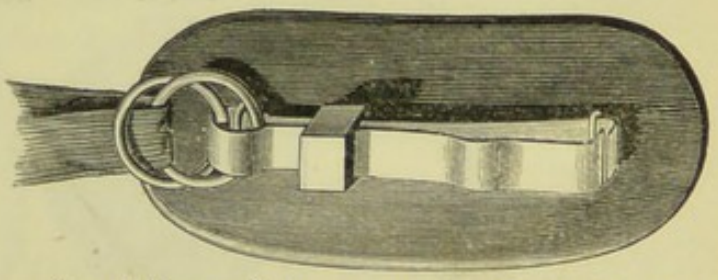
Consisting of two Nickel-plated spring clamps, Vulcanite guards and Silk braid.

	s.	d.
Price, complete with guards	3	6
,, without ,, ...	2	6

RUBBER-DAM HOLDER.

(Dr. COGSWELL'S.)



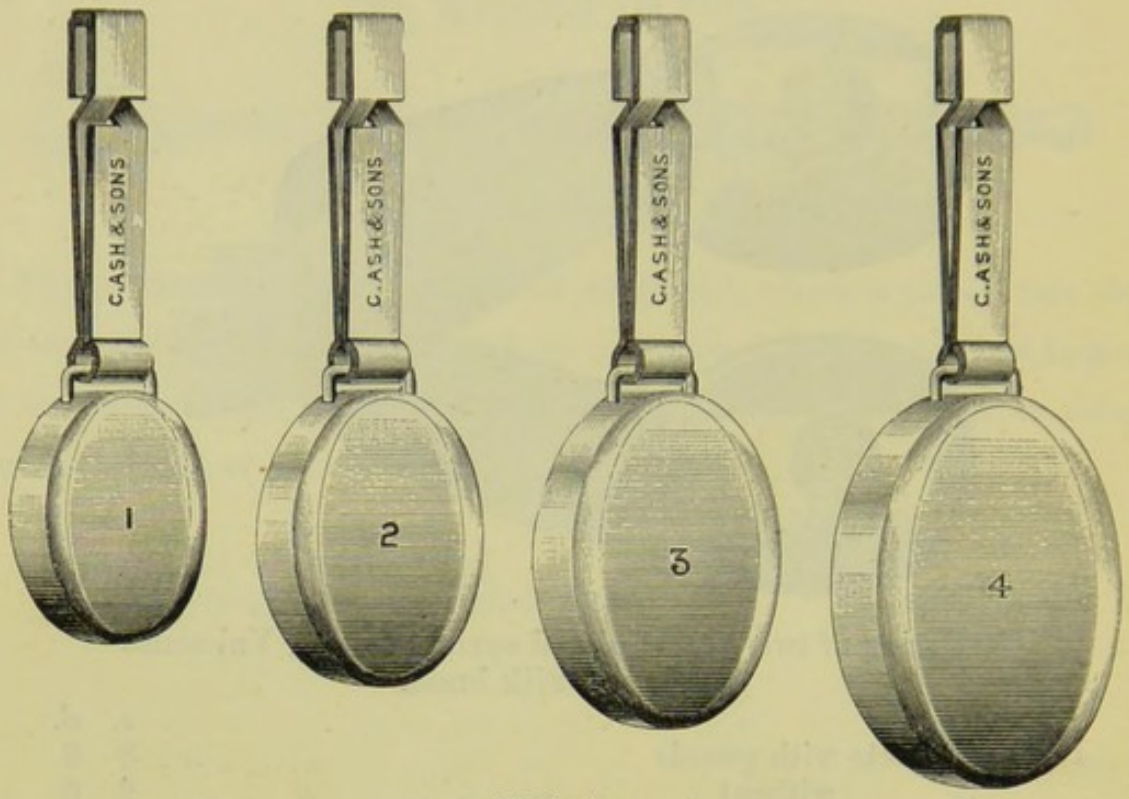


Consisting of two guards, Nickel-plated clamps, slides and rings, and Elastic Braid to pass round the head. The illustration on the left hand side shows the Holder in use, attached to the Rubber-dam, which has been forced over the teeth to be stopped.

	s.	d.
Complete, with Vulcanite guards	3	6
,, ,, Ivory ,,	5	6

RUBBER-DAM WEIGHTS.

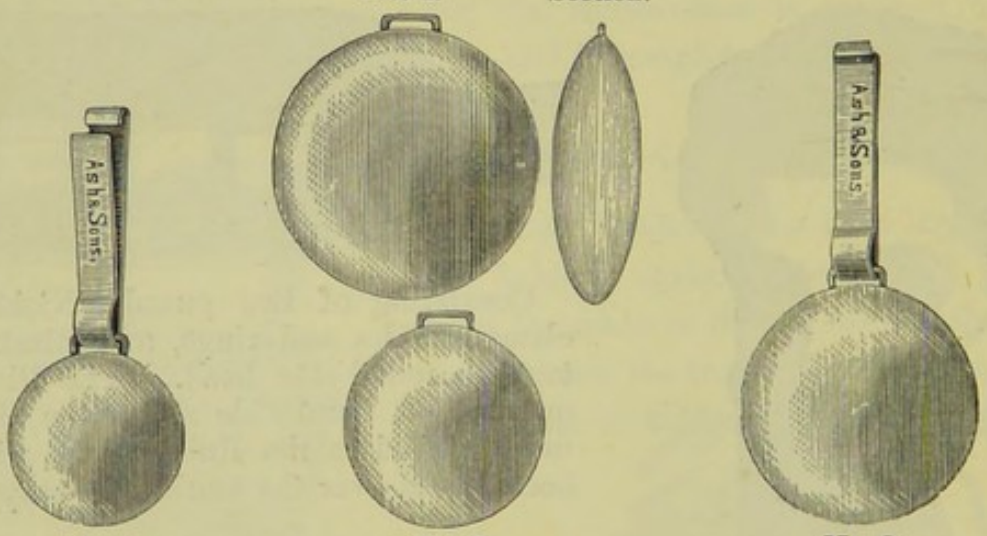
OVAL.



Full size.

			s.	d.
Made of Brass with German Silver Springs. Nickel-plated throughout, sizes 1, 2, 3, 4 ..	..	each	2	0

CIRCULAR.



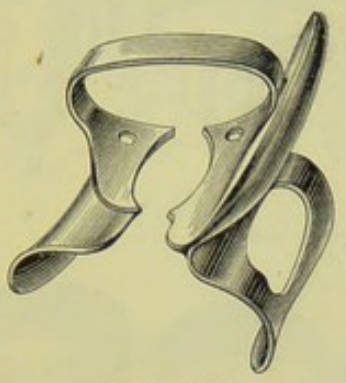
No. 1. No. 2. No. 3.

Two-thirds size.

			s.	d.
Made of Brass with German Silver Springs. Nickel-plated throughout, sizes 1, 2, 3, 4 ..	..	each	2	0

CLAMPS AND FORCEPS.

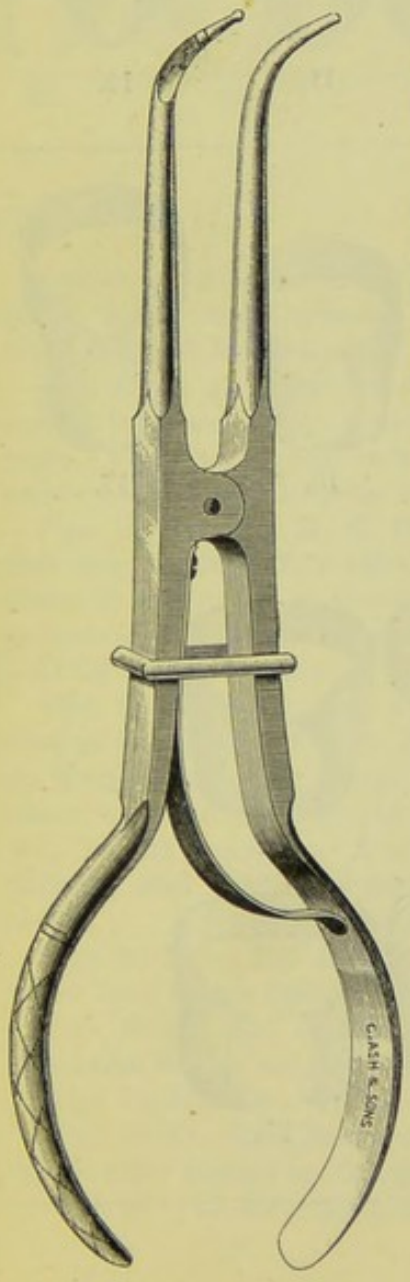
(Dr. C. STOKES'.)



Right Side.



Left Side.



7 inches long.

Clamps with Tongue Guards for lower Bicuspids and Molars, designed to be used with Bibulous Paper and Paper Fibre Lint.

Directions for use.—Take a roll of paper, pass it through the hole in the lip of the clamp, carry it round the back, bring it under the plain lip and apply the clamp. When the roll becomes saturated with moisture, pack additional paper under the lips over the top of the roll.

		s.	d.
In right and left sides, Nickel-plated.	each	5	6
Clamps, without Tongue Guards, for upper and lower Bicuspids and Molars, Nickle-plated	„	3	0
Forceps for applying these and all kinds of Coffer-dam Clamps, Nickel-plated	„	10	0

COFFER-DAM CLAMPS.

(Dr. C. STOKES'.)



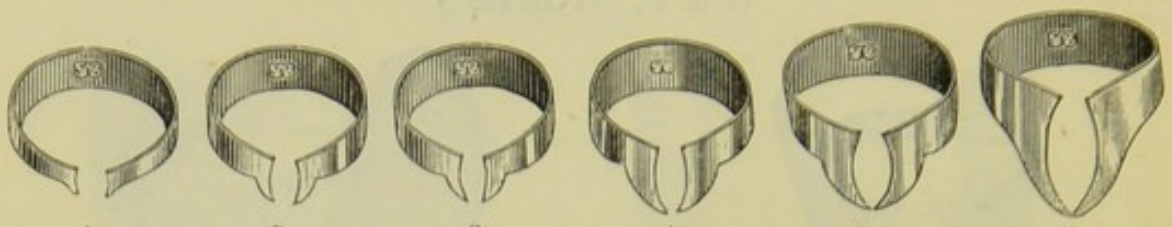
Molar.



Bicuspid

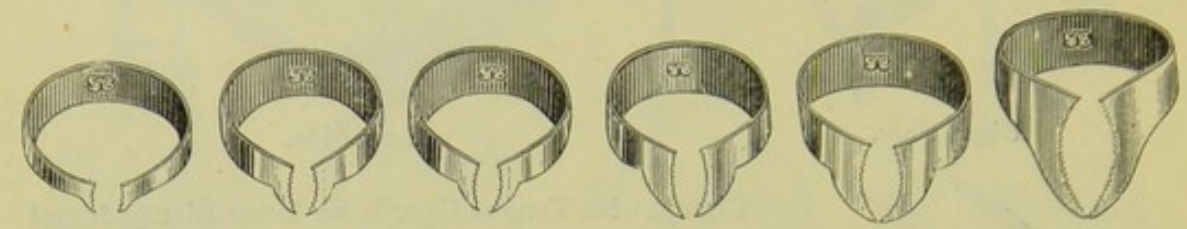
		s.	d.
Set of two, Nickel-plated	each	2	6

RUBBER-DAM CLAMPS.



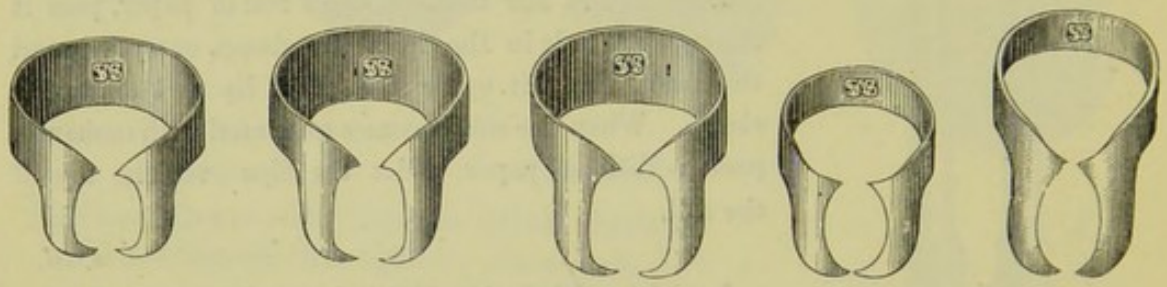
1. 2. 3. 4. 5. 6.

Each 2/-.



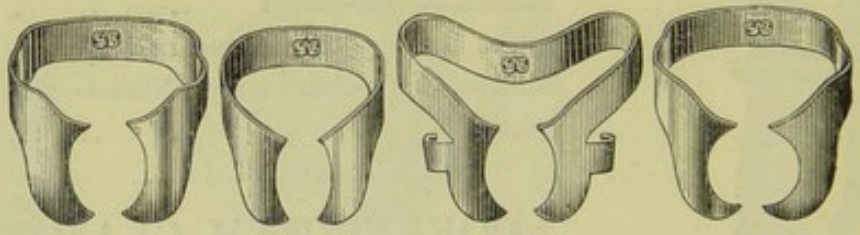
7. 8. 9. 10. 11. 12.

Each 2/-.

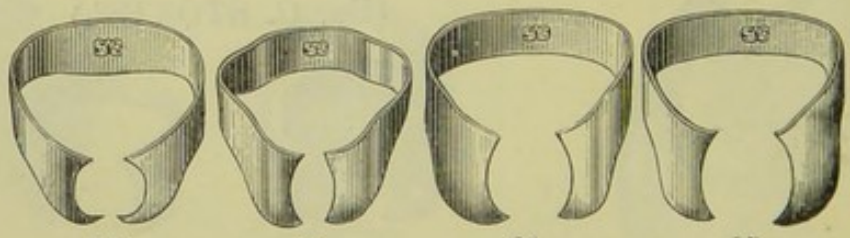


13. 14. 15. 16. 17.

Each 2/-.



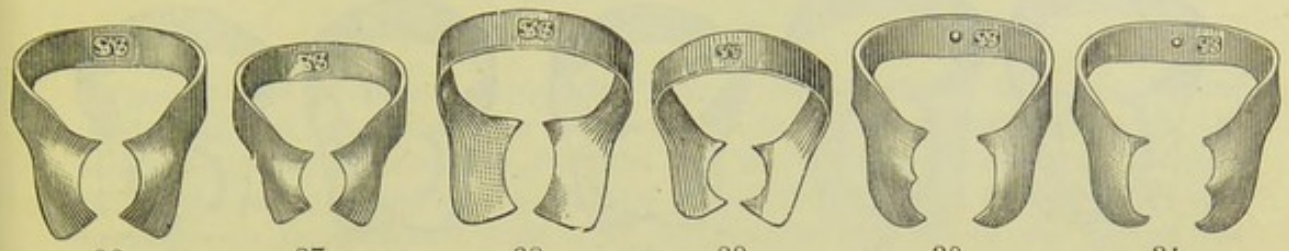
18. 19. 20. 21.



22. 23. 24. 25.

Each 2/6.

RUBBER-DAM CLAMPS.



26. 27. 28. 29. 30. 31.

Each 2/-. Each 2/6.



32. 33. 34. 35. 36. 37.

Each 2/6.

DESCRIPTION.

Figs. 1 to 12.—**Dr. Chas. F. Allan's Original Patterns.**—Figs. 1 to 6, plain edges, figs. 7 to 12, serrated edges. Designed for general use, the range of sizes being sufficient for all teeth.

Figs. 13, 14, 15.—Especially designed by **Dr. Chas. F. Allan** for use on lower molars, the inside edges of each Clamp being shaped to conform to the necks of these teeth. They have great back-set, entirely clearing the tooth on which they clamp, and broad flanges to keep the rubber spread.

Figs. 16, 17.—The **H. C.** Clamps, for ladies' and children's molars. Light, small, and very elastic. They have good back-set and well-spread flanges, affording easy access to any cavity in the tooth they are clamped on. The small hoop allows the patient to keep the mouth open without difficulty, and enables a very light Clamp to hold the dam down securely without pain.

Figs. 18 to 25.—**Dr. Delos Palmer's Set of Eight.**—Figs. 18 and 19, Universal Clamps for Molars. Fig. 20, for posterior cavities in molars standing alone. Fig. 21, for third molars, or any molar of a cone shape. This Clamp can oftentimes be turned round while on the tooth, so as to place the hoop out of the way of the Operator. Fig. 22, for bicuspids. Fig. 23, for lateral or central incisors. Figs. 24 and 25, **Rights and Lefts,** for cavities under the gum on the buccal or lingual surface of molars.

Figs. 26, 27.— **Dr. Ambler Tees' "Festooned."**—For molars and bicuspids which have deeply festooned gums.

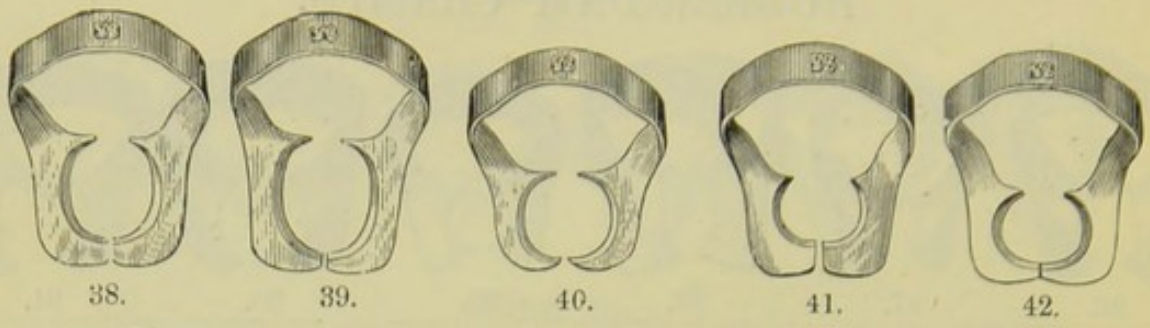
Figs. 28, 29.—**Dr. Ambler Tees' "Broad Flange."**—For molars and bicuspids. The broad flanges are intended to spread the dam wide.

Figs. 30, 31.—**Dr. W. W. Evans' "Beaked Molar."**

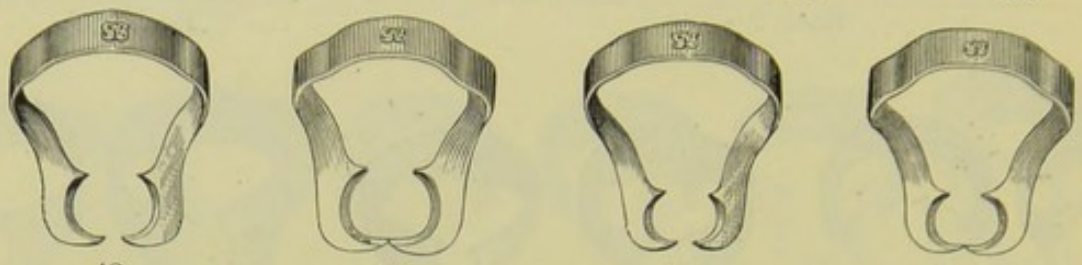
Figs. 32, 33.—**Dr. Robert Huey's "Dens Sap."**—For very difficult cases to which other Clamps are inapplicable.

Figs. 34 to 37.—For teeth which require one side to be smaller than the other.

RUBBER-DAM CLAMPS.



38. 39. 40. 41. 42.



43. 44. 45. 46.

Each 2/6.



47. 48. 49. 50. 51.

Each 2/6.



52. 53. 54. 55. 56.

Each 2/6.



57. 58. 59. 60.

Each 2/6. Each 2/-.



61. 62. 63. 64. 65. 66.

Each 2/6. Each 3/-.

RUBBER-DAM CLAMPS.

DESCRIPTION.

Figs. 38 to 46.—**"Reach-Arounds."**—Designed for isolated teeth, or wherever the dam requires to be held down between teeth in a space caused by removal. On wisdom teeth they may be used with the hoop placed forward to compress the dam behind the tooth, in addition to retaining it as a Clamp. Figs. 43 and 45 are also serviceable on bicuspids and incisors for holding the dam out of the way of the Operator, their long back-set favouring this application.

Figs. 47 to 50.—**Dr. John W. Holt's.**—When labial cavities are low down upon the neck of a tooth, it is very difficult to carry the rubber dam below the cavity and retain it there. These Clamps can be applied without pain, because there is usually a clear spot below the cavity on which the single point can be put, and the Clamp is steadied by the prongs, or two points, of the inner end.

Fig. 51.—**Dr. J. W. Lyder's.**—Of the general shape of Tees' Festooned and Evans' Beaked Molar, differing from the latter only in having beaks on both flanges.

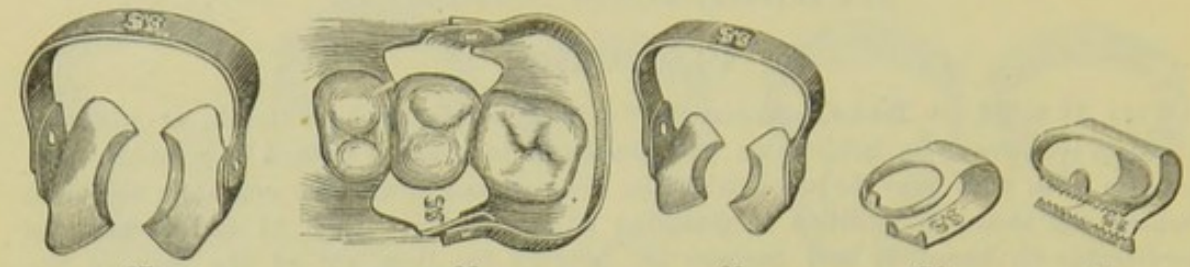
Figs. 52 to 59.—**Dr. H. C. Longnecker's.**—The forms are such that the dam may be put over the teeth and low down on the necks with certainty and ease, and because of the recurvature of the flanges they will not hurt the festoons of the gums, and will yet retain position firmly under hard pressure. Figs. 52 to 56, with straight hoops, must often be unavailable for the tooth to be operated on, but, by reason of the small "open" required, may be placed on back teeth, and also on the tooth in front. Dr. Longnecker claims for them peculiar usefulness in approximal fillings, in that they permit the finishing of the filling, with dam and Clamp on, more nearly to completion than any other Clamp Figs. 57, 58, 59, the same general shape of beaks as 52 to 56, but with back-set hoop.

Fig. 60.—**Dr. A. P. Southwick's.**—To all the advantages of Dr. Huey's Dens Sap Clamp, Dr. Southwick has added in this Improved Clamp a recess for the forceps points and so much back-set in the hoop as allows much freer access for filling than the straight band.

Figs. 61 to 64.—**Dr. E. C. Moore's.**—Dr. Moore says of these that they will get down, and stay firmly as placed, better than any other Clamp he has tried or made. The cuts show their neatness, and how they must be less obstructive than other Clamps; but their closeness of adaptation and perfect smoothness, which, with their great stiffness, permit rigid maintenance in place with very little pain and no injury to the tooth, will be known fully only to those who use them.

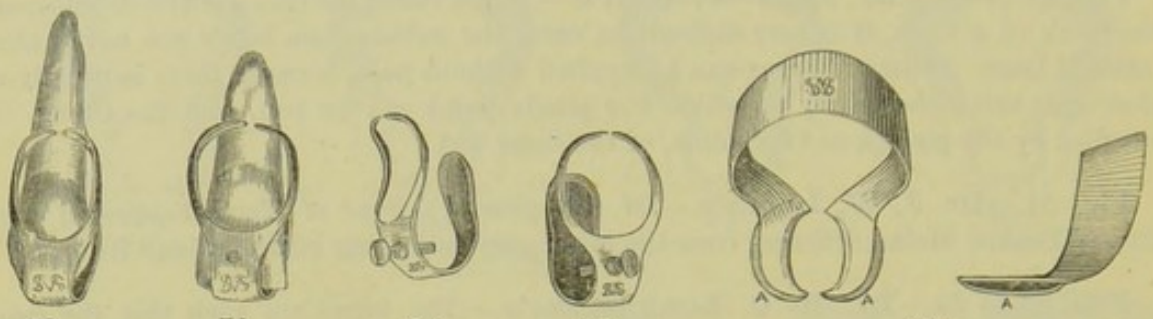
Figs. 65, 66.—**Dr. W. St. George Elliott's.**—Designed for molars. After inserting the four studs on the beaks of the forceps through the perforations in the Clamp, the rubber-dam is to be strained over the studs under the Clamp. The Clamp is then adjusted upon the neck of the tooth, and the forceps disengaged, when the rubber will slip under the Clamp up to the neck of the tooth. It will, however, usually lodge on the crowns of adjacent teeth, until the Operator, by a slight stretching motion of the rubber across the mouth, causes it to slip between them.

RUBBER-DAM CLAMPS.



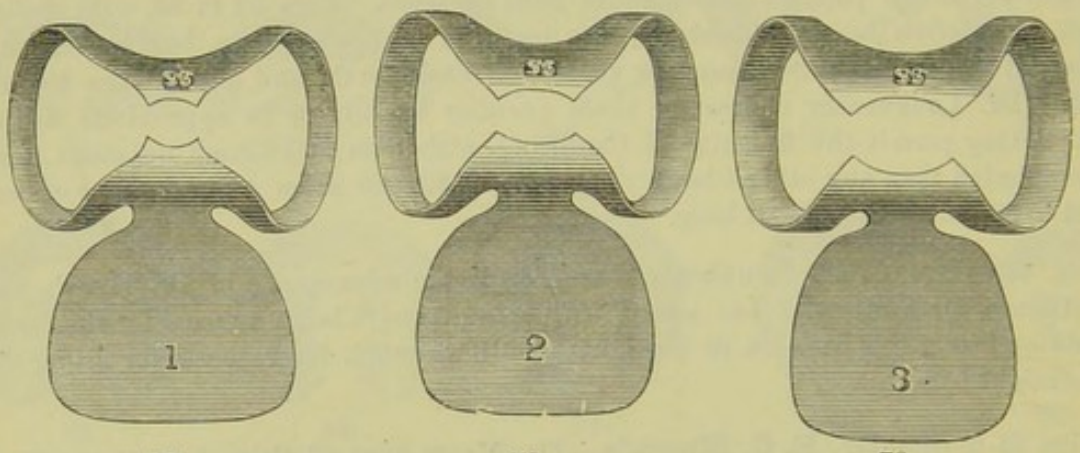
67. 68. 69. 70. 71.

Each 4/-.



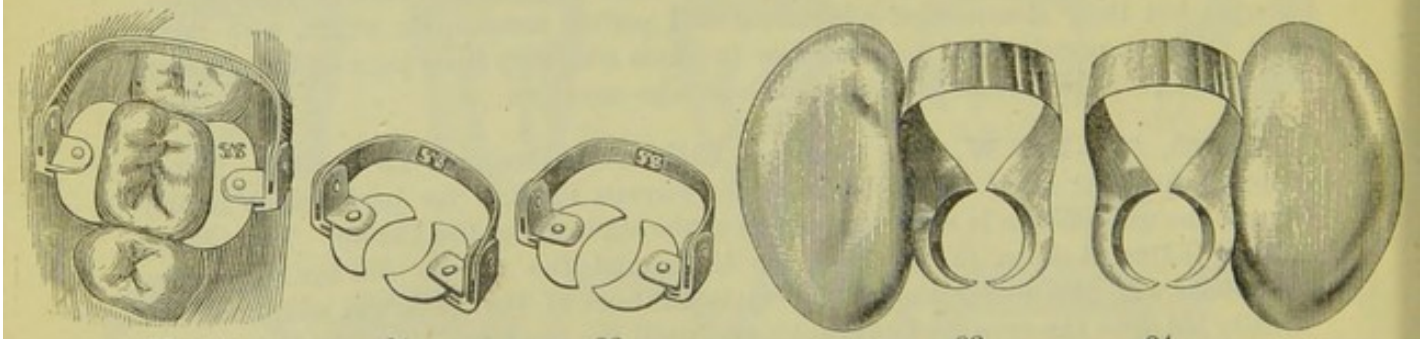
72. 73. 74. 75. 76.

Each 4/. Each 6/-. Each 2/6.



77. 78. 79.

Each 6/-.



80. 81. 82. 83. 84.

Each 10/-. Each 3/6.

RUBBER-DAM CLAMPS.

DESCRIPTION.

Figs. 67, 68, 69.—Dr. W. E. Buckman's Plain Hinged Clamps.—Designed to meet a want for a Clamp, the hoop of which can be turned down so as to permit of work at the tooth on which it is placed.

Figs. 70, 71.—Dr. J. F. P. Hodson's.—For labial or buccal gum cavities.

Figs. 72, 73, 74, 75.—Dr. W. W. Evans'.—These Clamps are designed for use in filling labial surfaces of incisors, cuspids, and bicuspids, when the cavity is close to or under the margin of the gum. They can be put on without the aid of forceps, as the peculiar shape of the beak adjusts it to the lingual surface of the tooth, and it has sufficient spring to retain its position in most cases. Made in two sizes, and with or without regulating screw. The office of the screw is to tighten the hold in cases where the Clamp does not fit securely.

Fig. 76.—Dr. F. Hickman's.—This Clamp is made with a double lip, forming a clear space for the rubber to be lodged in before applying to the tooth. When the rubber is punched it is to be put on the Clamp by stretching it over the lip and allowing it to fall into the recess. Then apply the Clamp and rubber, spreading both together; after which stretch the rubber out of the recess, or free space, and allow it to close on the neck of the tooth. This is especially adapted to teeth which are spurred and jagged, or broken down low on one side.

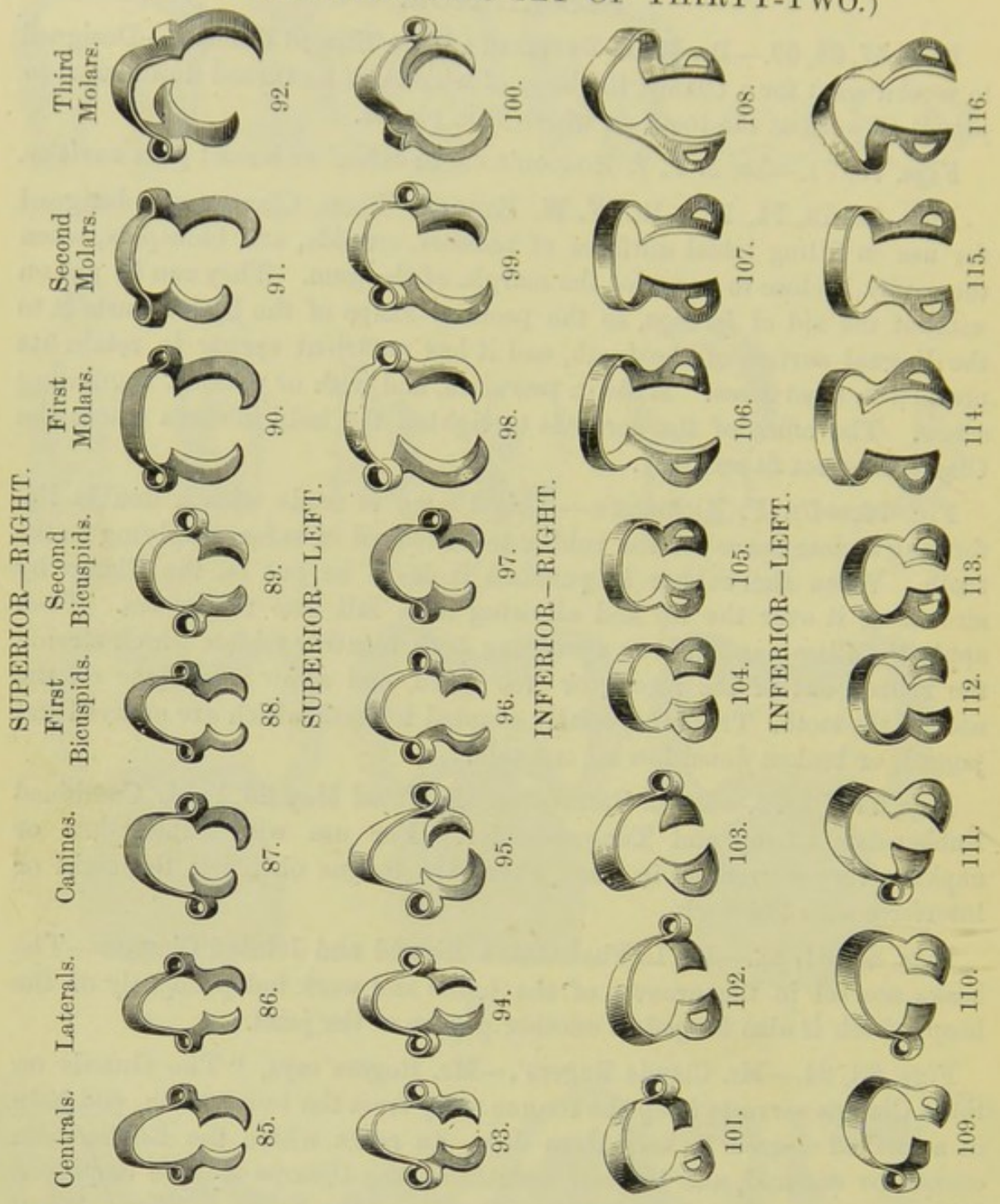
Figs. 77, 78, 79.—Dr. C. Bancroft's.—Patented May 26, 1874. Combined Rubber-dam Clamp and Tongue-holder. For use with rubber-dam or napkin; very convenient in cases where the tongue obstructs the sight or interferes with the work.

Figs. 80, 81, 82.—Dr. L. Ynchausti's Hinged and Jointed Clamps.—The beaks are set in the grooves of the joints and work independently of the hoop, which is also hinged in another groove of the joint.

Figs. 83, 84.—Mr. Claude Rogers'.—Mr. Rogers says, "The Guards on these Clamps serve to keep the tongue away from the lower teeth, and help in a marked degree to keep them dry. In cases where the Rubber-dam cannot be endured, and in brief operations, the Clamps may be employed in conjunction with pads of Bibulous Paper and the Saliva Ejector. When used in this manner, a cavity may often be kept dry for half an hour or longer. They are especially suitable for the mouths of children and nervous patients. I have also found them exceedingly useful when preparing cavities. They are easily applied, and readily removed when one requires to wash out a cavity."

RUBBER-DAM CLAMPS.

(Dr. DELOS PALMER'S SET OF THIRTY-TWO.)

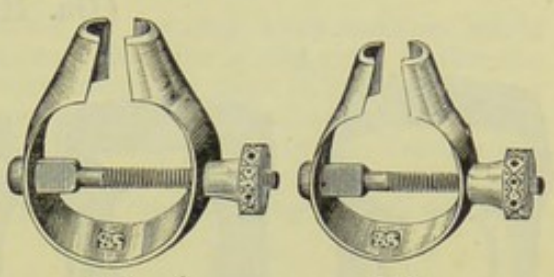


This set conveys its own description.

		s.	d.
Prices:			
Clamps, Nickel-plated .. .. (Figs. 85–116)	each	2	6
The entire Set of Thirty-two, with a pair of Palmer's Nickel-plated Clamp Forceps, in neat card-board box, with Pin for holding each Clamp		92	0
The same, in Morocco Case, with Satin and Velvet Lining		102	0
Clamp Forceps, Nickel-plated, separately	each	10	0

ROOT CLAMPS.

(Dr. E. L. HUNTER'S.)



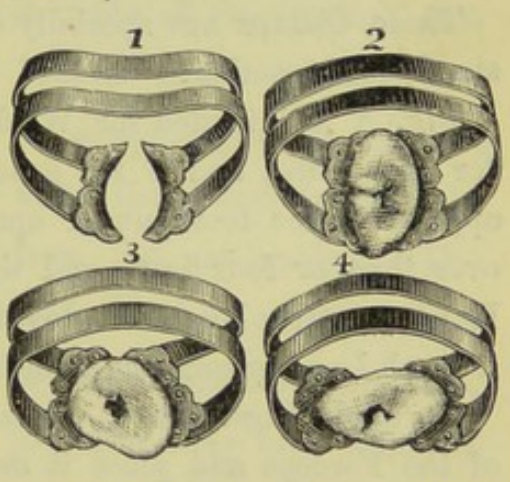
118. 119.

These Clamps will be found very useful in the application of the Rubber-dam to roots upon which porcelain crowns are to be fitted. After the thumb-screw has been adjusted so that the Clamp will slide over the root easily, the points are passed through the proper opening in a piece of *thin* Rubber-dam; then carried well under the gum and secured firmly to the root. The rubber is then placed over the adjoining teeth, and with a waxed silk ligature carried beyond the Clamp—the cone shape of which greatly facilitates the operation—and tied; after which the thumb-screw is loosened and the Clamp removed, leaving the dam in position.

		s.	d.
Price	each	8	0

RUBBER-DAM CLAMP.

(Dr. CARMICHAEL'S.)



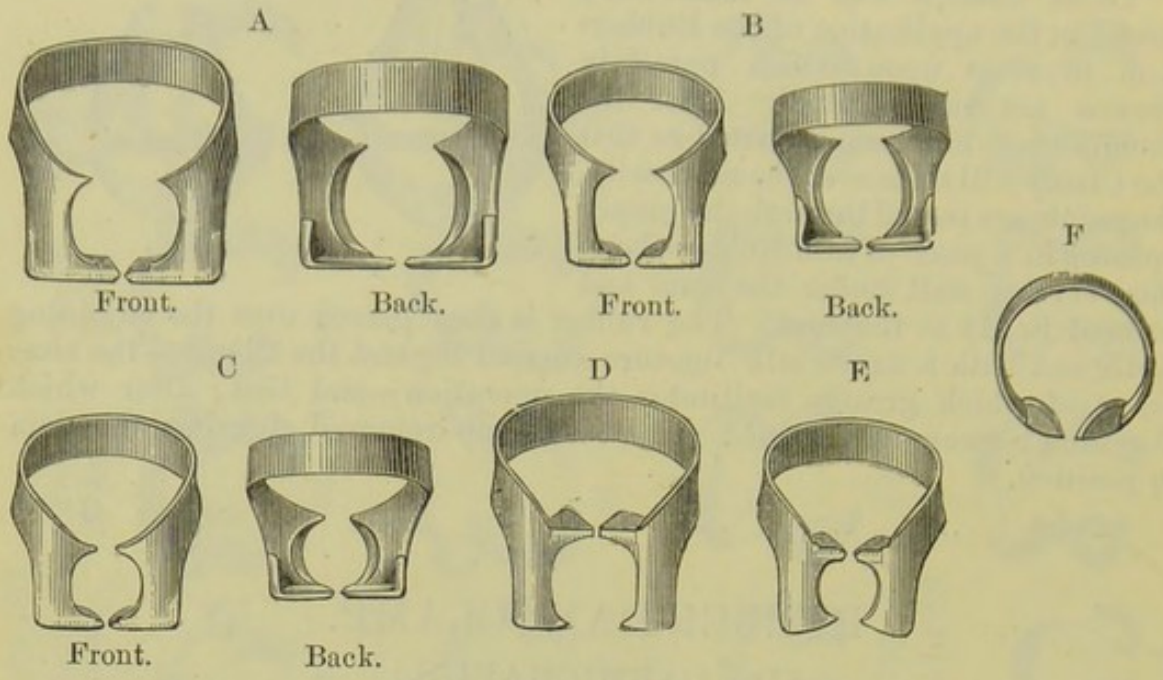
This Clamp, although designed for use upon molars, is applicable to bicuspids when they are of more than medium size. The double springs control the adjustable plates of which the grasping device is composed, causing them to bear upon the cervical portion of the tooth equally at all points, thus preventing the tipping of the Clamp by the elasticity of the Rubber-dam, and avoiding the consequent pain caused by the points pressing into the gum. It is as well adapted for irregular-shaped and for third molars as for large teeth.

The inventor claims that this Clamp, having self-adjusting jaws, will fit any molar perfectly, drawing the Rubber-dam so closely to the tooth that no amount of pulling at the rubber will cause the Clamp to tip or rock, thus rendering unnecessary, in most cases, the use of ligatures or the forcing of the Rubber-dam between the teeth to keep out moisture, and avoiding irritation of the gums; that the toggle-joint of the jaw permits it to be placed when desired beyond the cervical wall of the cavity; that the shape allows the mouth of the patient to be closed readily; that, in a word, the comfort and ease of the patient, as well as of the Operator, are greatly enhanced by its use.

		s.	d.
Price	each	12	0
Special Forceps for applying the Clamp, Nickel-plated	„	10	0

RUBBER-DAM CLAMPS WITH WEDGE LIPS.

(Dr. HERBST'S.)



These Clamps are specially designed for use in cases where the teeth stand close together.

Fig. A is intended for Wisdom Teeth ; B and C for Molars ; D and E for Bicuspids ; and F for general use when the Rubber-dam cannot be applied to the tooth under operation. In such cases the dam is placed over three or four teeth, and the Clamp is fixed on the most convenient. It can usually be so employed with facility, and sensitive patients find it much less disagreeable than the larger Clamps.

To apply Figs. A to E, proceed as follows:—Open the Clamp by means of the Forceps and place it over the tooth ; then release it by removing the Forceps, and the wedge lips will fit into the necks of the teeth. To make sure that the Clamp is properly adjusted gently press it with the thumb and finger. The Rubber-dam may now be stretched over the Clamp and the tooth to which it is fixed and applied to the adjoining one or two teeth anterior to it.

If, when this is done, the cavity is not quite moisture-tight, it may be rendered completely so by easing the Clamp with the Forceps and letting the lips grasp the Dam.

		s.	*d.*
Clamps, Nickel-plated	(Figs. A–F) each	3	6

HERBST'S MOISTURE PREVENTOR.

FOR LABIAL FILLING.

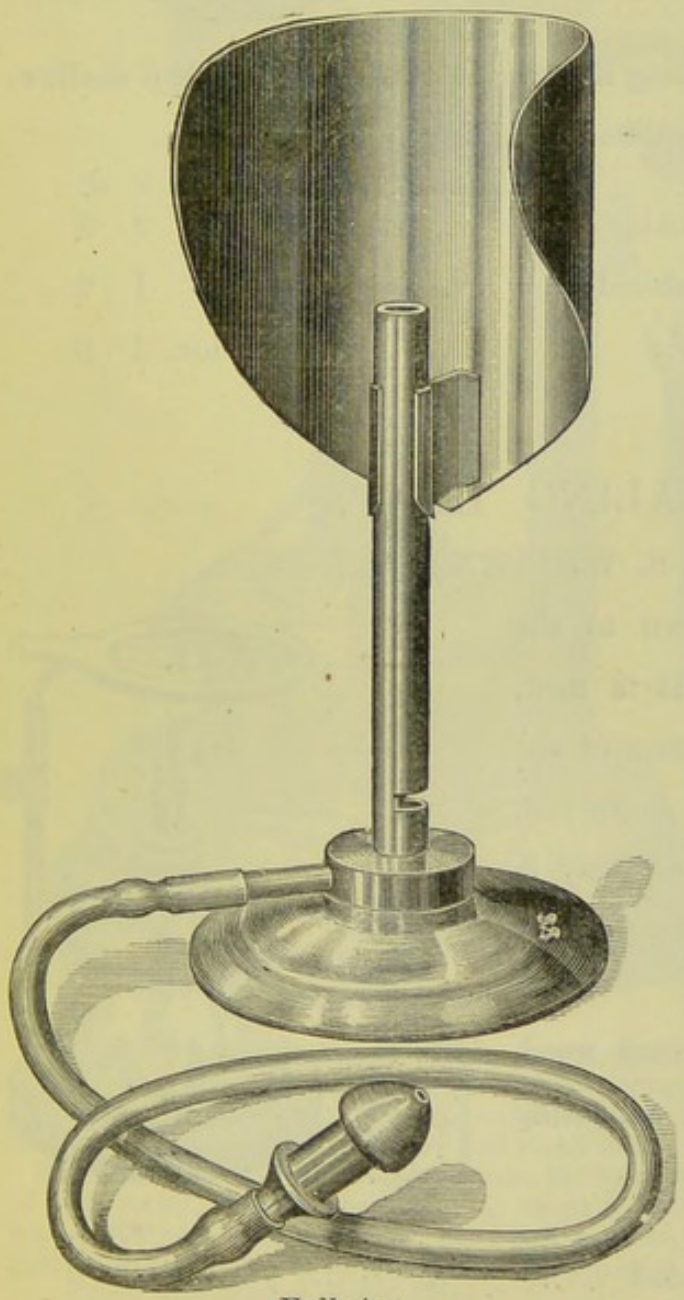
G



This appliance is specially suited for keeping away moisture while fillings are introduced into cavities near the edge of the gum. After the dam has been stretched over several teeth and fixed in position, wedges of wood or broken dividing files are inserted, and the teeth are imbedded in Stent's or Godiva composition. The lower portion of the Preventor is then heated over a spirit flame, and, the gum having been pushed well back by the projection on the top, pressed into the compo, which will hold it securely when set.

	s.	*d.*
Price, Nickel-plated	2	6

THE "MODEL" ANNEALING GAS-BURNER.



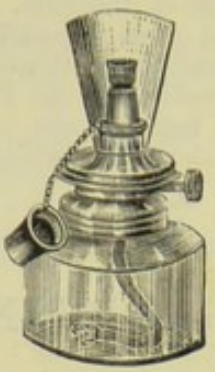
Full size.

This Burner is neat and small, occupying but little room on the bracket-table. The tubing, which rests upon the table or instrument stand, is made of the smallest size French rubber-tubing, with an expanding-tip to connect with the large supply-tube from the gas-bracket. The Burner is so constructed as to secure perfect combustion, giving a clear blue flame, of convenient size and proper temperature for annealing purposes. The shield may be adjusted at any height to suit the Operator, or it may be lowered so as to completely expose the flame.

	s.	*d.*
Price, Nickel-plated, each	4	0

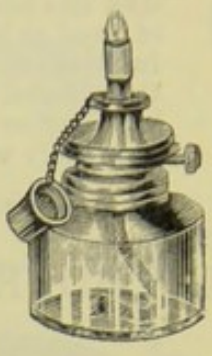
BRACKET LAMPS.

(AMERICAN.)



OUTSIDE MEASUREMENT OF GLASS PART.

	High.		Diameter.
Deep ..	1¾	by	2½ inches.
Shallow	1	by	2½ „



For general use in the Operating Room. In two sizes, deep and shallow. Made of flint glass with Nickel-plated mountings.

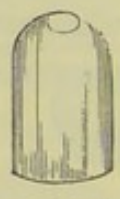
		s.	d.
Price, either size with Shield	each	2	9
„ „ without shield	„	1	9
Wicks for ditto	per doz.	1	0

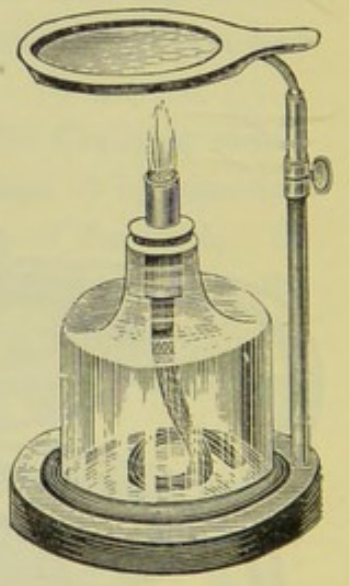
ANNEALING LAMP.

(S. S. WHITE'S.)

This Lamp has been known to the Profession for many years. It is neat, simple, and effective. By means of the thumb-screw, shown in the engraving, the rod to which the annealing tray is attached can be fixed at any height that may be desired.

The base is made of ebonized wood, and the upright tube, rod and annealing tray of brass, Nickel-plated.

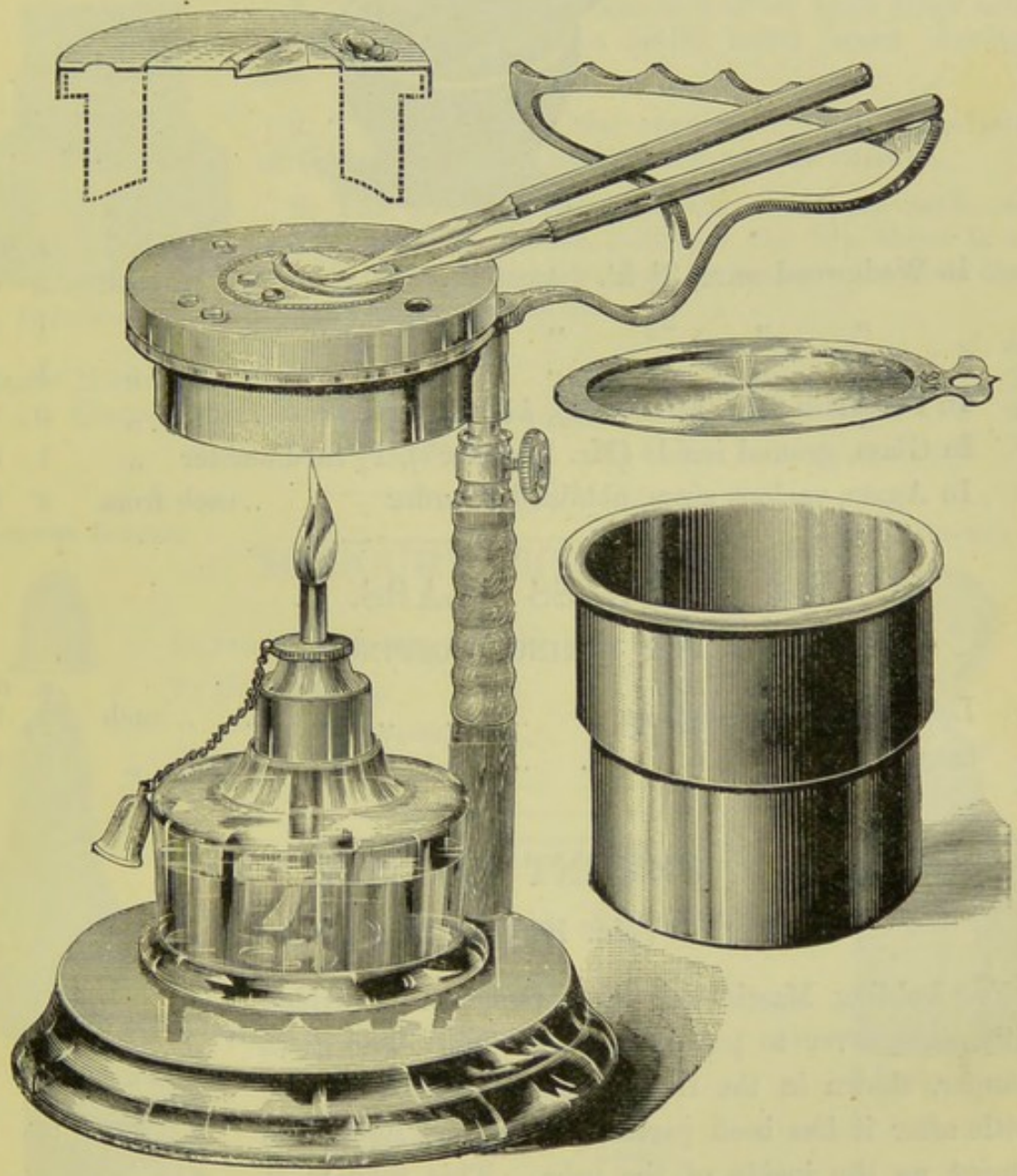




	s.	d.
Price, complete as illustrated	10	0

FLAGG'S GUTTA-PERCHA SOFTENER AND INSTRUMENT WARMER.

ADAPTED TO BOTH DRY-HEAT AND MOIST-HEAT GUTTA-PERCHA.



This useful office appliance will do practically all its name indicates. The skeleton cut above the lamp shows the section of the vessel, having a hollow centre, surrounded by a water-holder. By this ingenious arrangement the flame heats the centre-plate and the water-holder, giving both dry and moist heat.

There are two additional attachments, as shown in side-cuts. A boiler, made seamless, of hard metal, nickel-plated, holding about a half-pint, intended for keeping a small supply of tepid water ready for use; and a plain-top, nickel-plated annealing tray for gold foils; this tray can be attached to the upright, or simply laid on the ring.

	s.	d.
Price, with Nickel-plated Base	20	0
„ with Japanned „	18	0
Additional parts, Nickel-plated :—Boiler, 4*s.* 0*d.*; Annealing Tray ..	2	0

PESTLES AND MORTARS.



		s.	d.
In Wedgwood ware, $3\frac{1}{4}$ in. diameter .. .. each		2	0
„ „ $2\frac{1}{2}$ „ .. .. „		1	8
„ „ 2 „ .. .. „		1	4
In Porcelain (Mr. Fletcher's), $1\frac{1}{4}$ in. diameter .. .. „		0	9
In Glass, ground inside (Mr. Fletcher's), $1\frac{3}{4}$ in. diameter „		1	6
In Agate, various sizes, obtained to order .. .. each from		6	6

GLASS SLABS.

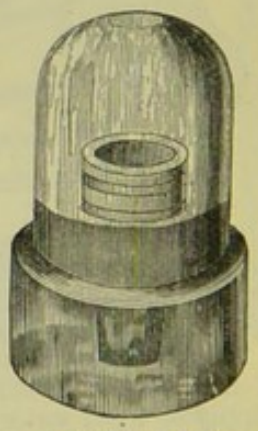
FOR MIXING STOPPINGS.

	s.	d.
Large size, ground glass .. .. each	1	0
Small „ „ .. .. „	0	9

CEMENT BOTTLE.

(Mr. ROWNEY'S.)

For holding Mastic and other Cements. Provided with glass cover to prevent evaporation. The glass plunger, shown in the illustration, is placed in the bottle after it has been partially filled, and forces the cement up the inside of the tube. This renders it easy of access, and keeps it away from the neck of the bottle, which should always be kept clean outside, or the cover will become fixed, and difficult to remove.



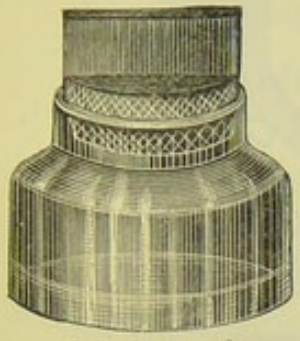
3 inches high.

	s.	d.
In Glass .. .. each	2	9

MASTIC BOTTLE.

(Mr. HOCKLEY'S.)

This little bottle possesses the following advantages :—



1½ inches high.

1. The glass at the base is ⅜ of an inch thick and effectually prevents the bottle being upset during use.

2. The diameter of the opening is 1¼ in., to admit of the cement being readily and rapidly reached.

3. The bottle is provided with a stopper made of soft vulcanized rubber. Across the top there is a thumb piece, of hard rubber, by means of which the stopper is easily removed.

		s.	d.
Mastic Bottle (Mr. Hockley's)	each	1	9
„ Cement, thick, for temporary stoppings	per bottle	0	6
„ „ thin, for fixing teeth, &c.	„	0	9

Mercury Bottle.

MERCURY BOTTLES.



2¾ inches high.

		s.	d.
In Ivory, with cap, to hold 1 oz.	each	4	6
In Boxwood „ „ „		1	0
„ without cap, „ „		0	6

Drop Bottle.

DROP BOTTLES.

For holding the liquid of Oxychloride Cements.

		s.	d.
In Glass, as illustrated	each	1	0



3 inches high.

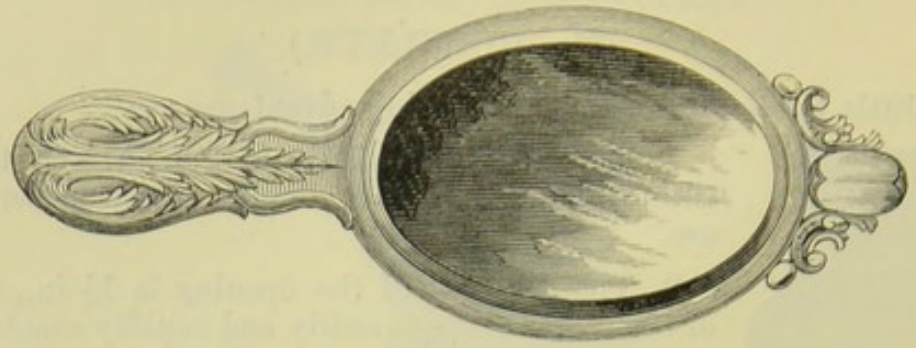
GLASS BOTTLES.

		s.	d.
Bottles, small square, cut glass, with stoppers, for holding tinctures, &c.	each	1	0
Bottles, glass stoppered, in boxwood case, large	„	1	6
„ „ „ medium and small	„	1	2
„ „ and capped, for holding volatile liquids	„	1	6

Other Glass Bottles obtained to order.

HAND AND CABINET MIRRORS.

1.



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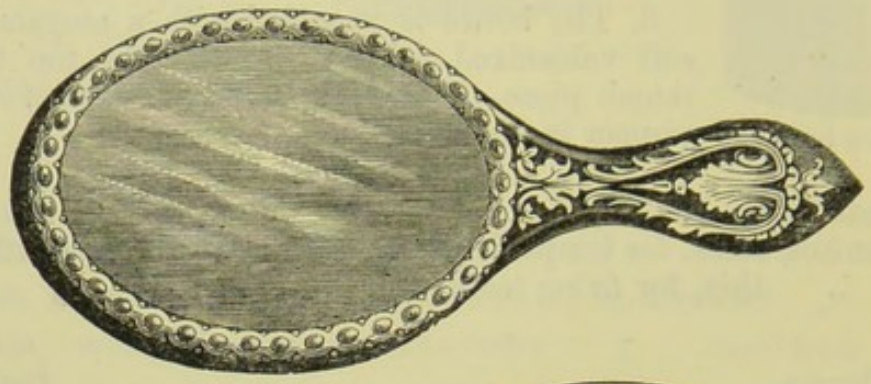

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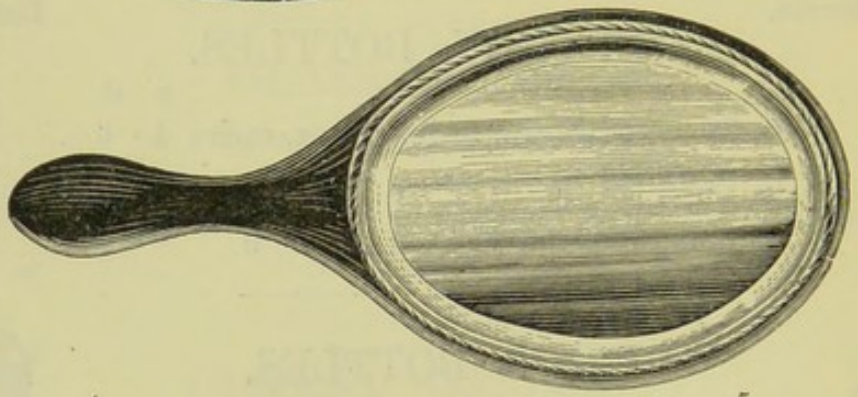

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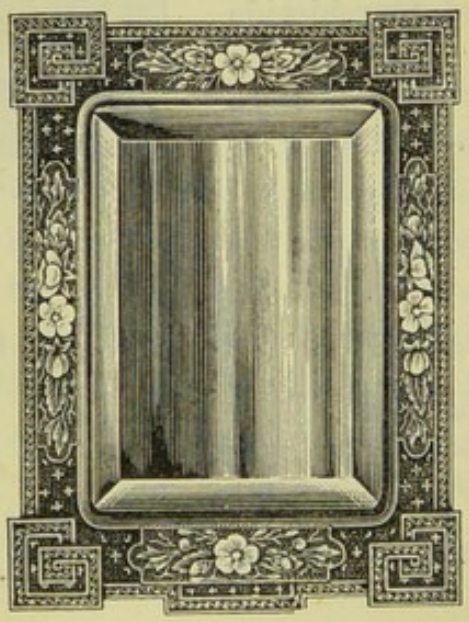

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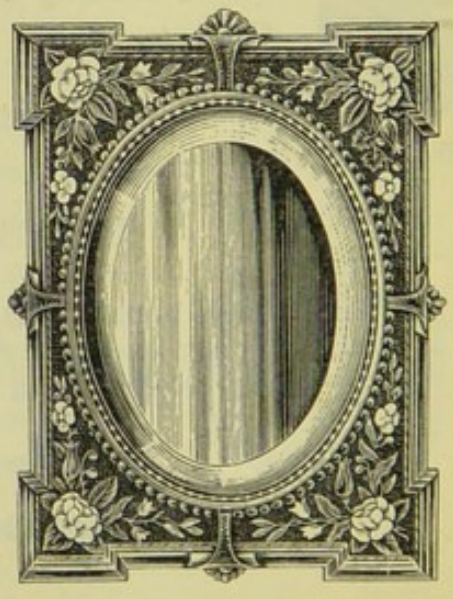


HAND MIRRORS.

In **Ivory** (Fig. 1), various styles, obtained to order.

In **Pearl**, round glasses „ „ „

In **Papier-Mache** (Fig. 2), large and small, obtained to order.

			s.	d.
In **Satin or Rosewood**, bevelled glass, large	(Fig. 3),	each	4	9
„ „ „ „ small	„	„	3	9
In **Lionite**, with plain glass, size 9 small ..	(Fig. 3)	„	2	0
„ „ „ „ 10 medium ..	(„ 3)	„	2	6
„ „ „ „ 11 large ..	(„ 3)	„	3	0
„ with bevelled glass „ 9 small ..	(„ 3)	„	4	0
„ „ „ „ 10 medium ..	(„ 3)	„	4	6
„ „ „ „ 11 large ..	(„ 3)	„	5	0
In **Mahogany**, with bevelled glass	(„ 3)	„	2	6
„ „ with two glasses, the one at the back magnifying		„	6	0

Other Hand Mirrors obtained to order.

The average sizes of the oval glasses are :—

Large .. .. 6 by 4 inches.

Small .. .. 5 by 3½ „

CABINET MIRRORS.

			s.	d.
In **Lionite**, with bevelled glass, square	(Fig. 4)	each	7	0
„ „ „ oval	(„ 5)	„	7	0

Other Cabinet Mirrors obtained to order.

PREPARATIONS.

FOR THE OPERATING ROOM.

		s.	d.
Absolute Alcohol	2 oz. bottle	1	6
Acetate of Morphia	⅛ oz. „	3	0
Arsenious Paste, for destroying nerves	per bottle	2	0
Asbestos, for lining cavities, &c.	per oz.	0	2
„ „ „ „	per lb.	2	0
Azotine (Mr. Rowney's), for destroying nerves ..	per bottle	5	0
Baldock's Improved Paste, for destroying nerves	„	5	0
„ „ **Tooth Dressing**	„	3	6
Bonhorst's Anæsthetic, with directions for use ..	„	6	0
„ **Applicator**, for applying ditto	.. each	5	0
Bunter's Nervine	.. per bottle	1	0
Calorific Fluid (Mr. Snape's), for annulling pain during the extraction of teeth	small bottle	4	0
„ „ „	large bottle	7	6
Camphor	.. per oz.	0	2
„	.. per lb.	2	0
Capsicum Bags (Dr. Foulks'), for nerve treatment. They are now largely employed, and are considered very good. Put up in boxes, containing one dozen bags, with general directions for use	per box	4	0
Capsicum Plasters, for nerve Treatment	„	4	0
Carbolic Acid, best quality, No. 1	.. per bottle	1	3
„ second „ „ 2	„	0	10
Carbolic Glycerine	„	1	0
Carbolized Resin (Mr. Fletcher's), for nerve treatment	„	1	0
„ „ „ „ „	per pint	12	0
Chlorate of Potash Tablets, with general directions for use, in large boxes	per doz.	17	0
„ „ „ in small „	„	9	0
Chloride of Zinc	1 oz. bottle	0	8
Chloroform, pure	„	1	0
***Cocaine, Citrate of**, as prepared for Mr. Brunton. In glass jars, containing two or five grains ..	per grain	0	4
***Cocaine, Crystals of**, in glass bottles	„	0	4
* „ **Hydrochloric of**, 20 per cent. in solution with oil of cloves	per ⅓rd drachm	3	6
Compound Bags (Dr. Foulks'), for nerve treatment. These contain Chlorate of Potassium, Hamamelis, and Tannic. Put up in boxes, containing one dozen bags, with general directions for use	per box	4	0
Condy's Fluid	.. per bottle	0	9
Copal Ether Varnish (Mr. Fletcher's)	„	1	0
„ „ „ „	per pint	12	0
Cork, specially prepared for capping nerves. In thin sheets.	per doz.	1	0

* The prices of Cocaine fluctuate.

PREPARATIONS.

FOR THE OPERATING ROOM.

		s.	d.
Creasote, best quality	1 oz. bottle	1	3
„ „	per lb.	10	0
Eucalyptus Oil	1 oz. bottle	0	10
Eugenol, for sensitive dentine, &c.	½ oz. „	2	6
Glycerole of Thymol, for Nerve treatment, &c. ..	1 oz. „	1	6
Horne's Nervine, for destroying Nerves	per bottle	5	0
Iodoform, for pulp dressing	1 oz. bottle	2	3
Liniment Iodine	1 oz. „	1	0
Marsh's Fluid, for annulling pain during the extraction of teeth	per bottle	3	6
Mastic Cement, thin, for fixing teeth, &c. ..	„	0	9
„ „ thick, for temporary stoppings ..	„	0	6
„ „ Bell's, „ Nos. 1, 2, 3	„	1	0
Myrrh Gum	per lb.	3	6
„ **Tincture**	8 oz. bottle	2	9
„ „	16 oz. „	5	0
Nerve Pastes for Destroying Nerves:			
Arsenious Paste	per bottle	2	0
Azotine, Mr. Rowney's	„	5	0
Baldock's Improved Nerve Paste (*recommended*)	„	5	0
Horne's Nervine	„	5	0
S. S. White's Creasote and Arsenic	„	2	0
Nitrite of Amyl Capsules, 3 minim size	8 in box, per box	2	6
Oil of Cloves	1 oz. bottle	0	10
Oil of Peppermint	1 oz. „	3	6
Perchloride of Iron	1 oz. „	0	8
Peroxide of Hydrogen	2 oz. „	1	3
Phenol Sodique	8 oz. „	1	9
Phenate of Soda	4 oz. „	1	0
„ „	10 oz. „	2	0
Potass c. Calc, in sticks	per bottle	0	9
Salicylic Acid Powder	„	1	0
Sanitas Oil	1 oz. bottle	0	9
Sandarac Varnish	per bottle	1	0
Scott's Calorific Fluid, for annulling pain during the extraction of teeth	small bottle	2	6
„ „ „ „	large „	4	6
Scott's Nerve Obtunder	per bottle	3	0

PREPARATIONS.

FOR THE OPERATING ROOM.

		s.	d.
Scott's Specific for Neuralgia	per bottle	2	6
" " "	per doz.	27	0
Stent's Liquid Amber, for temporary Stoppings	per bottle	1	6
Stent's Prepared Cotton, for " ..	per packet	1	0
Styptic Colloid, for arresting hæmorrhage ..	per bottle	2	6
Tannin, for reducing inflammation, &c.	1 oz. bottle	1	0
Tartrate of Quinoline	1 oz. "	2	3
Tincture, Aconite	1 oz. "	0	6
" "	2 oz. "	0	9
" Iodine	1 oz. "	0	10
" "	2 oz. "	1	0
" Iodine, double strength, and Aconite, in equal parts, **Dr. Fleming's**	3 oz. "	2	0
" Myrrh	8 oz. "	2	9
" "	16 oz. "	5	0
" Opium	1 oz. "	0	8
" "	2 oz. "	1	0
Tooth Dressing, Mr. Baldock's Improved ..	per bottle	3	6
Vaseline	"	1	0

Other Preparations obtained to order.

Full information concerning the properties and uses of most of the above Preparations will be found in the three following books:—

DENTAL MEDICINE.

A Manual of Dental Materia Medica and Therapeutics. By F. J. S. Gorgas, M.D., D.D.S.; Editor of "Harris's Principles and Practice of Dentistry;" Professor in the Dental Department of the University of Maryland, Baltimore. 8vo., 14*s*.

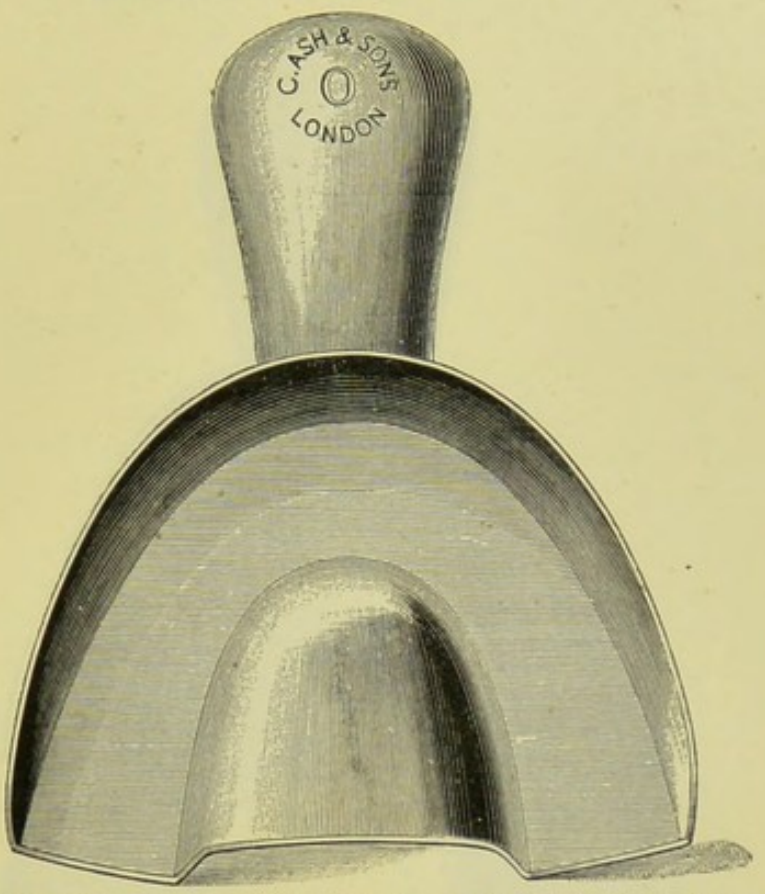
THE ELEMENTS OF DENTAL MATERIA MEDICA AND THERAPEUTICS.

By James Stocken, L.D.S.R.C.S., Eng.; late Lecturer on Dental Materia Medica and Therapeutics, and Dental Surgeon to National Dental Hospital. Assisted by Thomas Gaddes, L.D.S. Eng. and Edin. Third Edition. Fcap. 8vo., 7*s*. 6*d*.

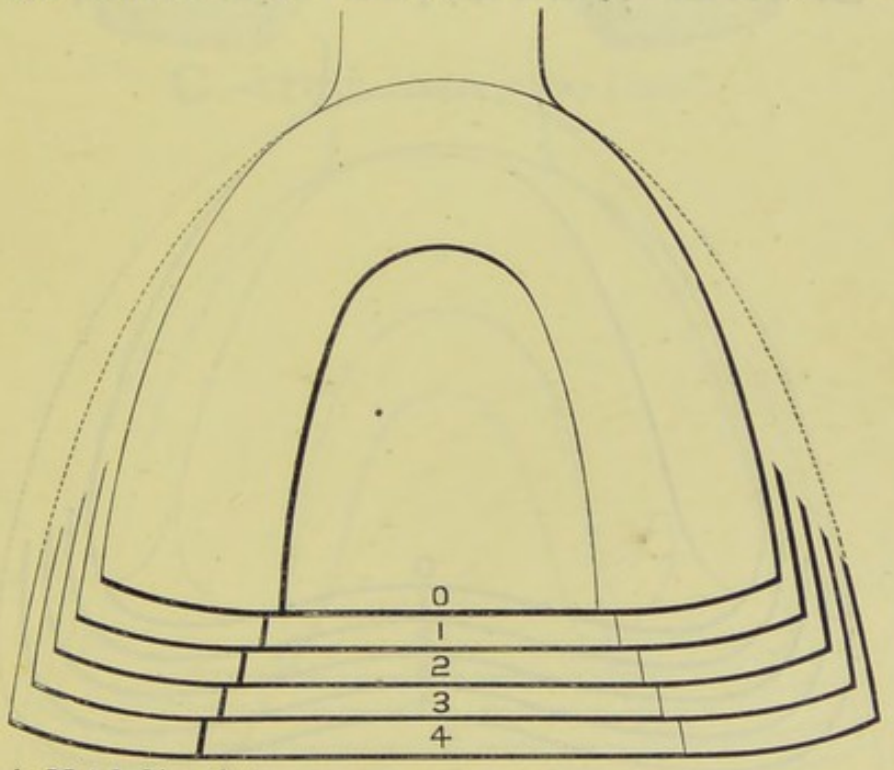
QUIZ QUESTIONS:

Course on Dental Pathology and Therapeutics, Philadelphia Dental College. Professor J. Foster Flagg, D.D.S. Answered by William C. Foulks, D.D.S. Third Edition, revised and enlarged. 8vo. 8*s*.

IMPRESSION TRAYS.



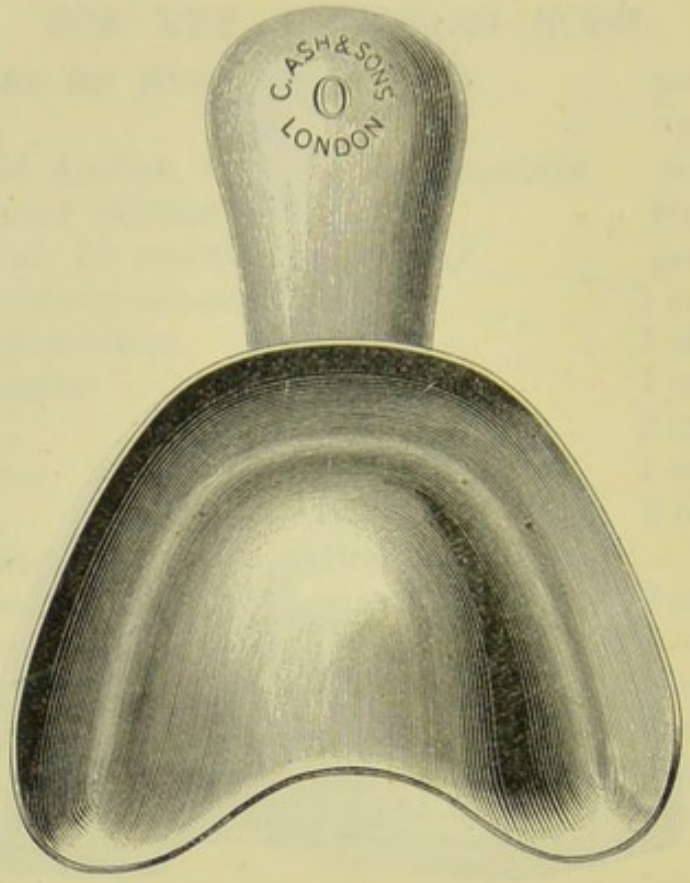
A.—UPPER. Depth of Tray $\frac{5}{8}$ inch. Height of Palate $\frac{1}{2}$ inch.



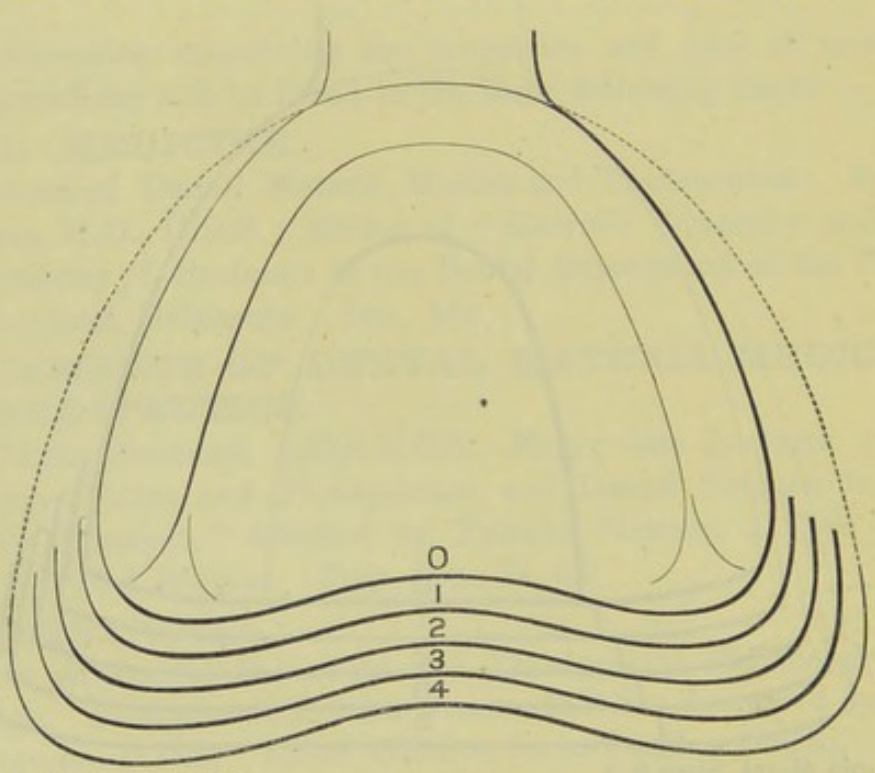
	s.	d.
In Britannia Metal, Sizes 0–4 .. .. each	2	0
In German Silver, „ 0–4 .. .. „	1	6

A discount of 10 per cent. is allowed when Impression Trays are purchased by the dozen.

IMPRESSION TRAYS.



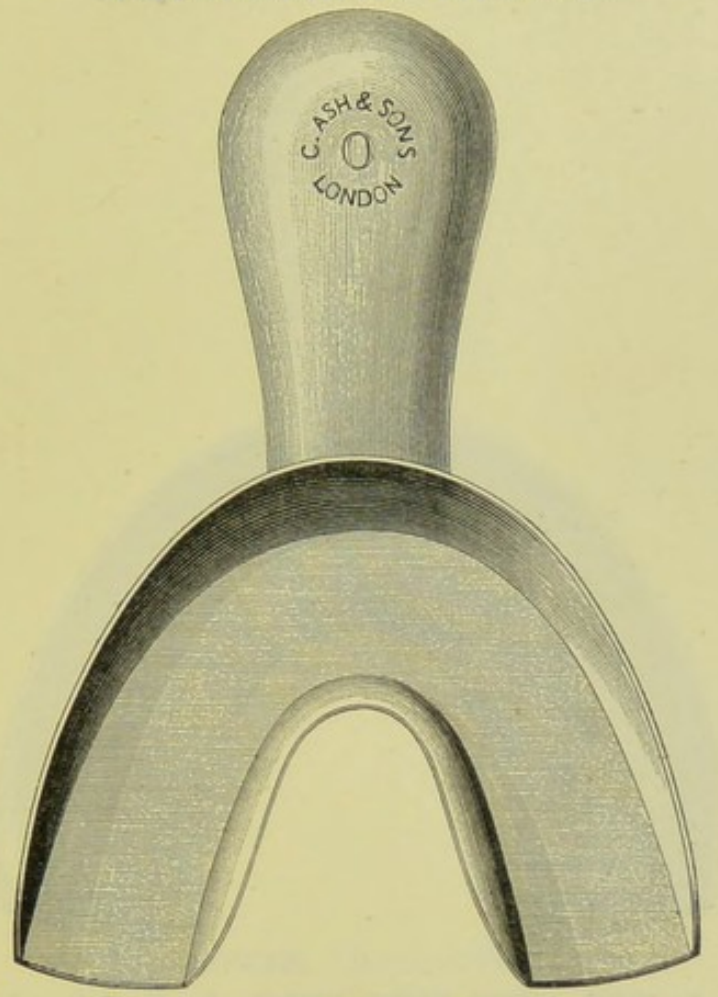
B.—UPPER. Depth of Tray $\frac{5}{8}$ inch. Height of Palate $\frac{3}{8}$ inch.



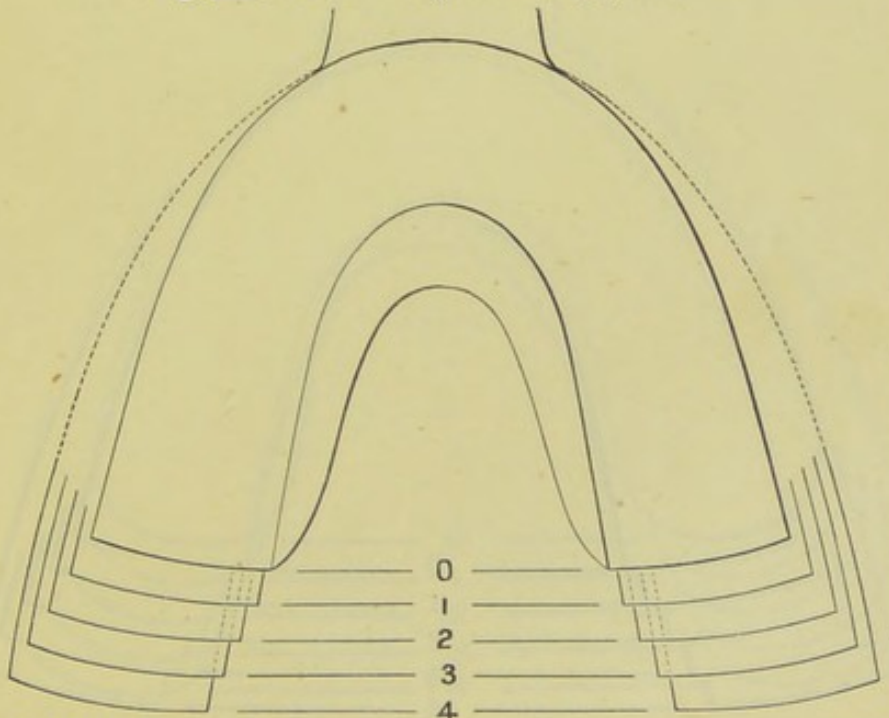
		s.	d.
In Britannia Metal, Sizes 0–4	each	1	6
In German Silver, „ 0–4	„	1	6

Larger or smaller sizes made to order.

IMPRESSION TRAYS.



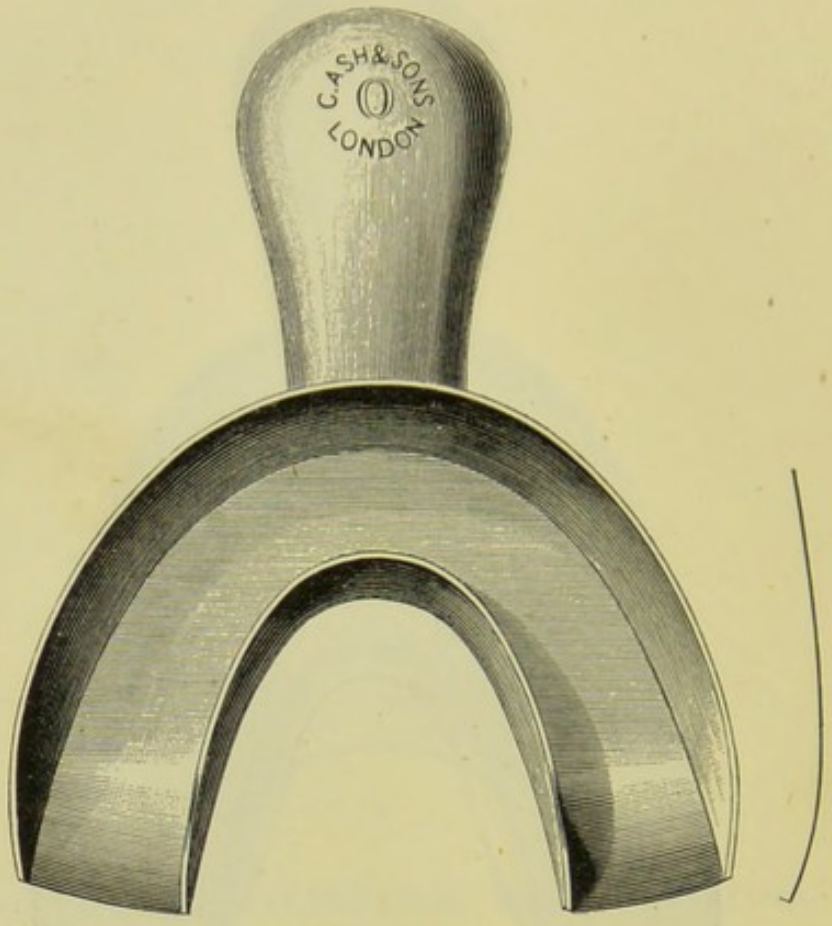
C.—UPPER. Depth of Tray ½ inch.



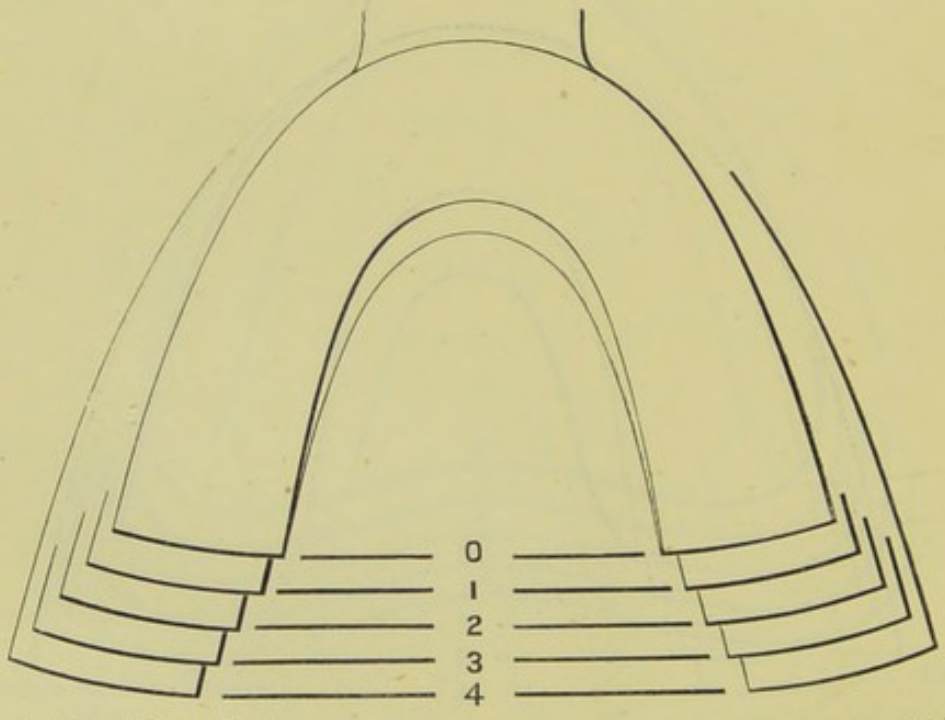
	s.	d
In Britannia Metal, Sizes 0–4 .. .. each	1	6
In German Silver, „ 0–4 .. .. „	1	6

A discount of 10 per cent. is allowed when Impression Trays are purchased by the dozen.

IMPRESSION TRAYS.



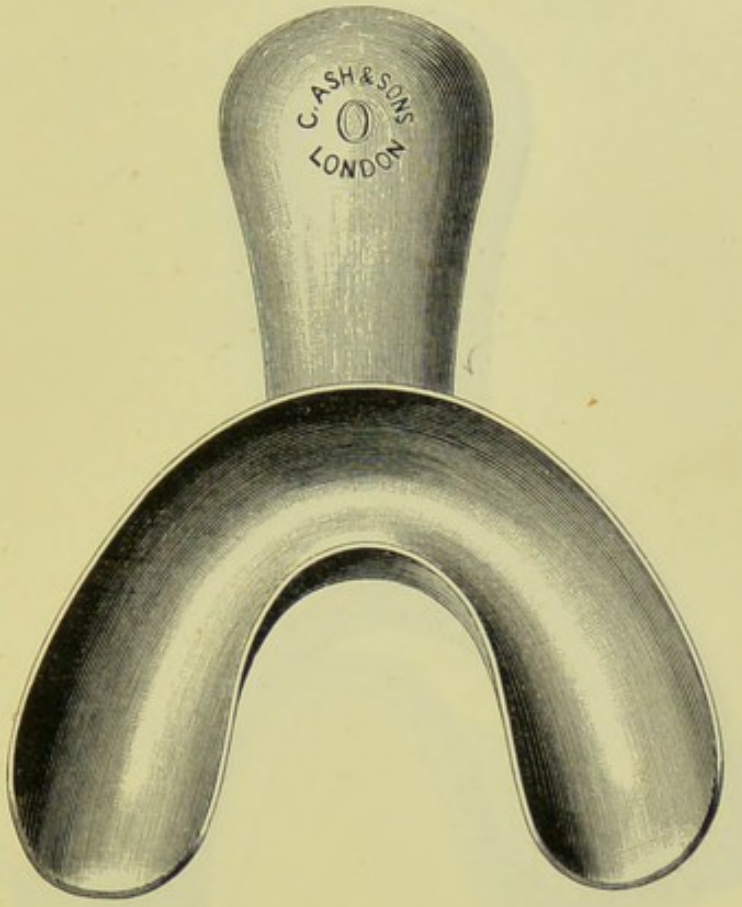
C.—LOWER, WITH BENT ENDS. Depth of Tray ½ inch.



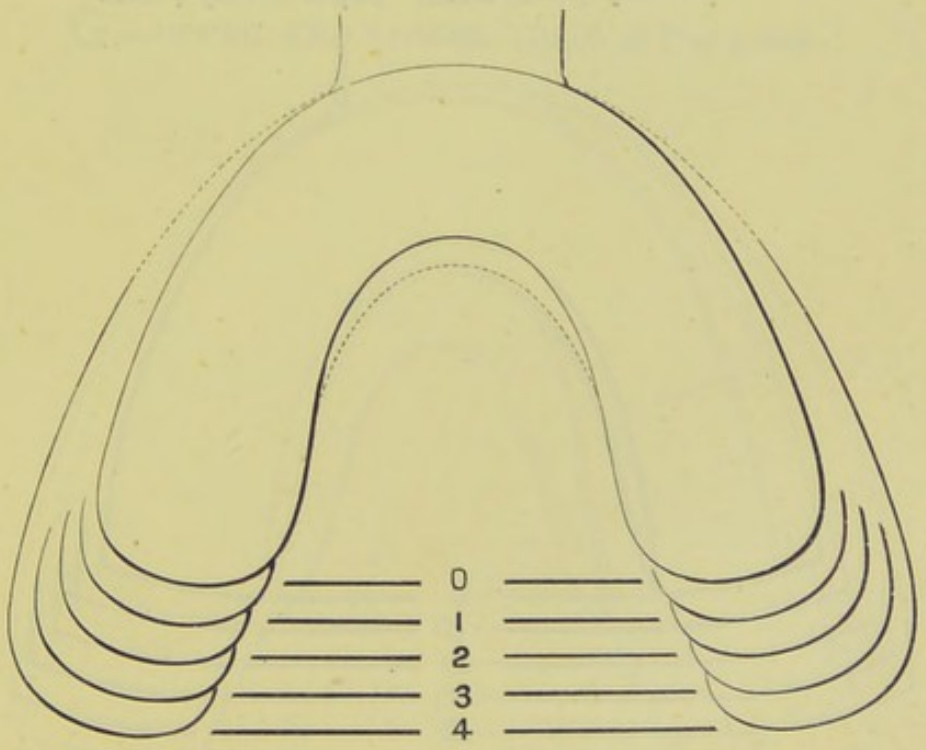
		s.	d.
In Britannia Metal, Sizes 0–4	each	1	6
In German Silver, „ 0–4	„	1	6

Larger or smaller sizes made to order.

IMPRESSION TRAYS.



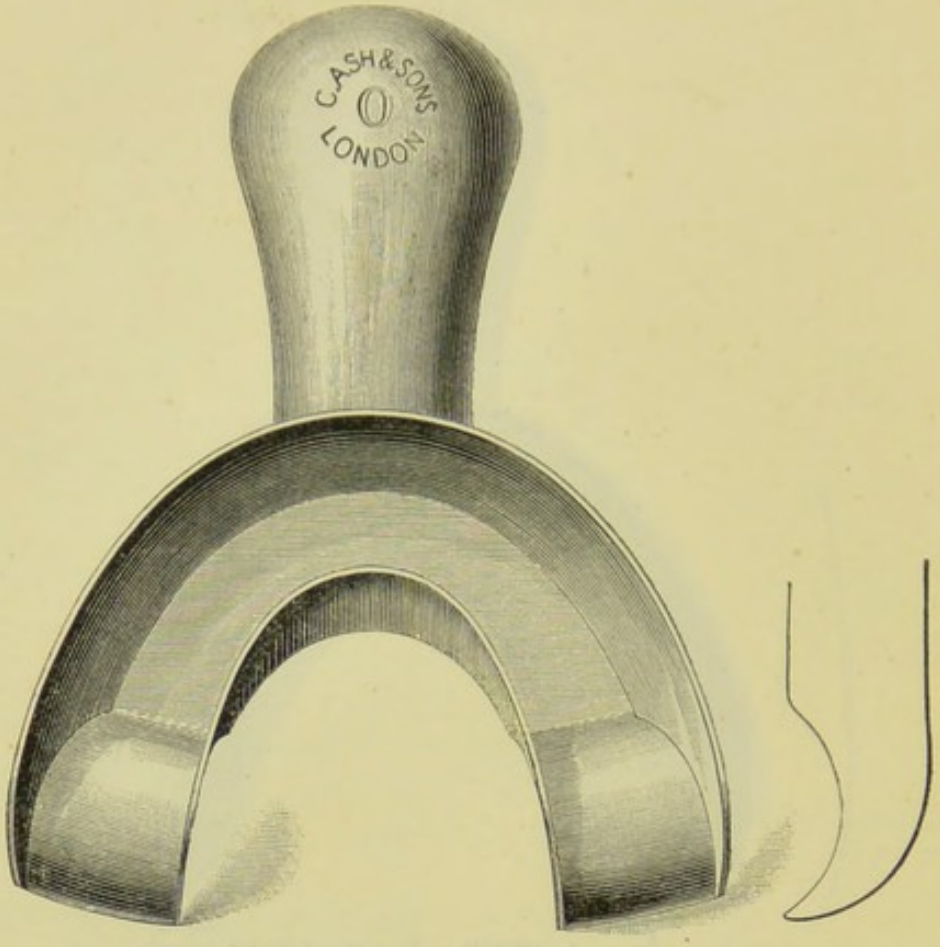
E.—LOWER. Depth of Tray $\frac{3}{8}$ inch.



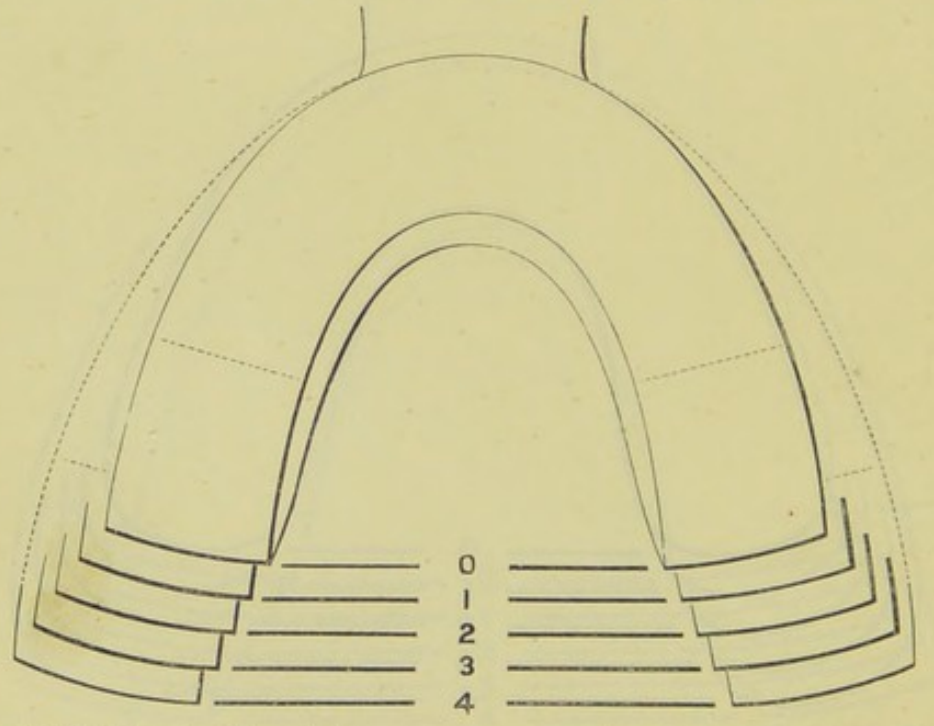
		s.	d.
In Britannia Metal, Sizes 0–4	each	1	6
In German Silver, „ 0–4	„	1	6

A discount of 10 per cent. is allowed when Impression Trays are purchased by the dozen.

IMPRESSION TRAYS.



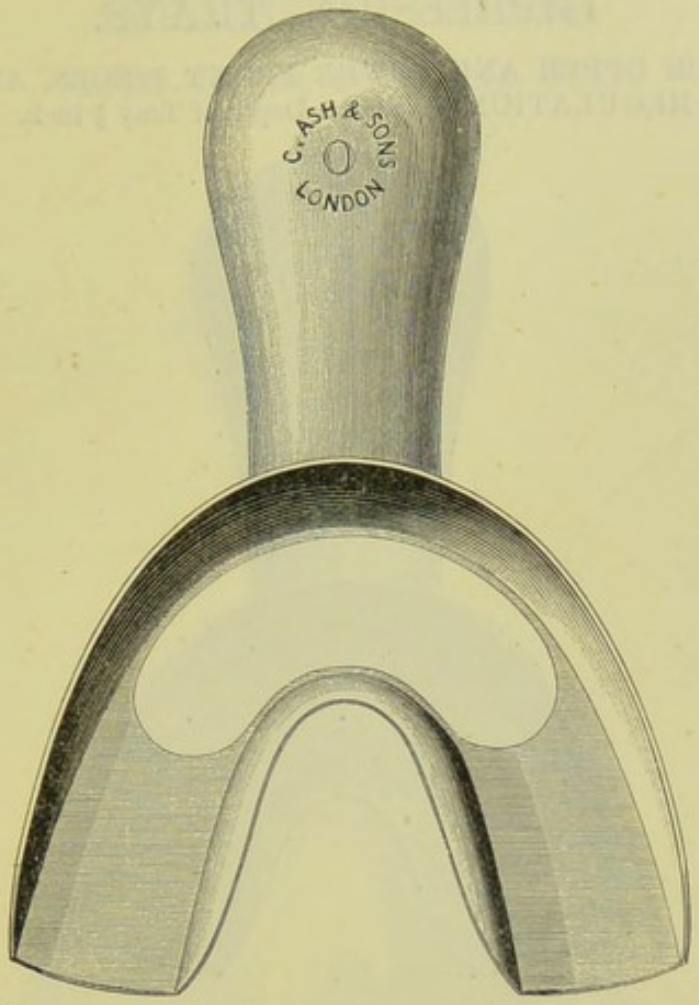
F.—LOWER. Depth of Tray ½ inch.



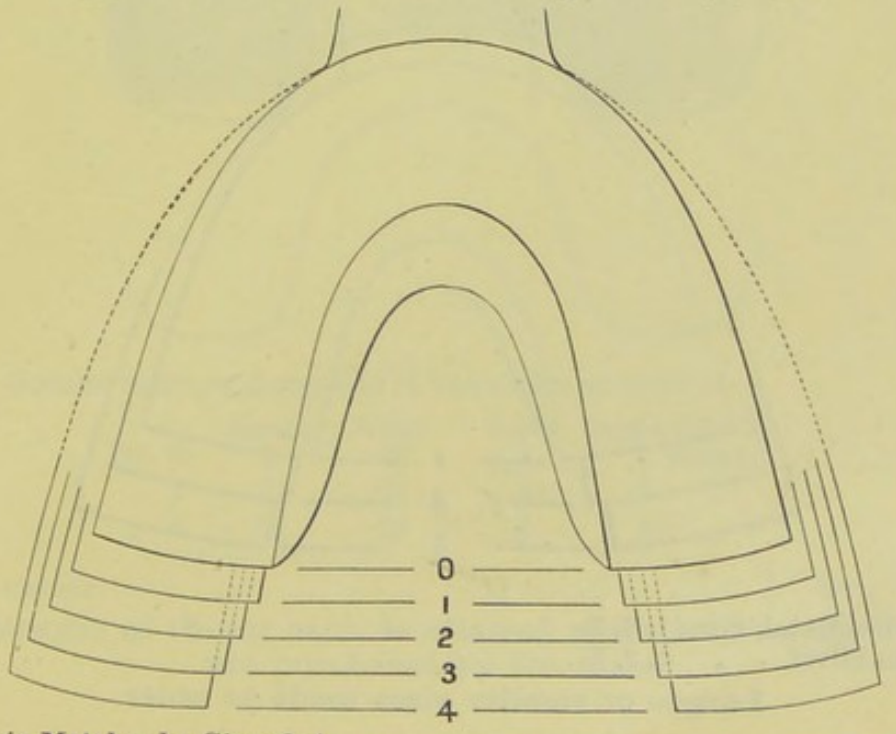
	s.	d.
In Britannia Metal only, Sizes 0–4 .. .. each	2	0

Larger or Smaller sizes made to order.

IMPRESSION TRAYS.



G.—UPPER AND LOWER. Depth of Tray ½ inch.

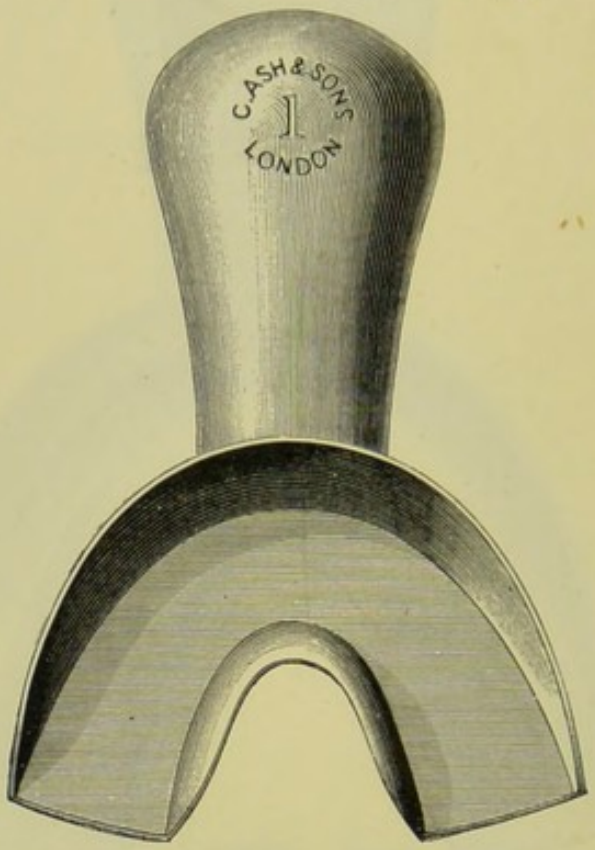


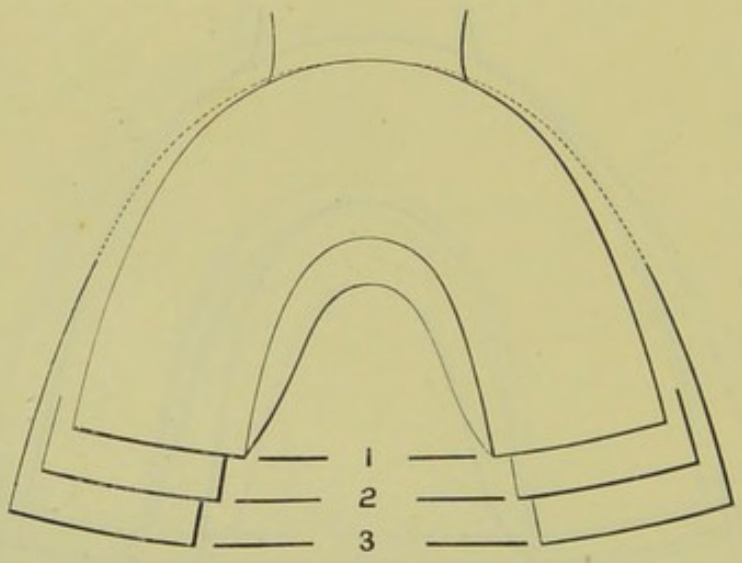
	s.	d.
In Britannia Metal only, Sizes 0–4 .. .. each	2	0

A discount of 10 per cent. is allowed when Impression Trays are purchased by the dozen.

IMPRESSION TRAYS.

K.—FOR UPPER AND LOWER FRONT PIECES, AND FOR REGULATION CASES. Depth of Tray ½ inch.



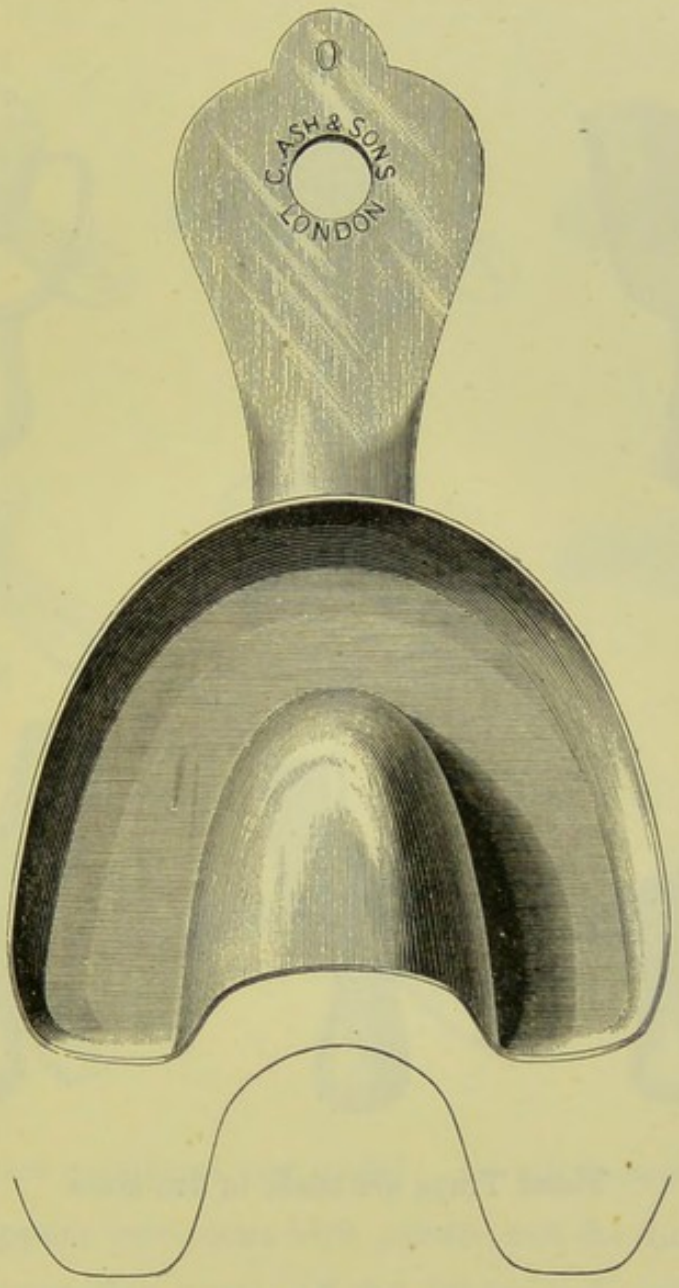


		s.	d.
In Britannia Metal, Sizes 1, 2, 3	each	1	3
In German Silver „ 1, 2, 3..	„	1	6

Larger or smaller sizes made to order.

IMPRESSION TRAYS.

UPPER—EXTRA LONG AND DEEP.



Made in German Silver, and supplied in three sizes as under :—

	Length.	Width.	Depth.	Height of Palate.
No. 0	2	$2\frac{3}{8}$	$\frac{1}{2}$	$\frac{7}{8}$ inches.
,, 1	$2\frac{1}{4}$	$2\frac{1}{2}$	$\frac{9}{16}$	1 ,,
,, 2	$2\frac{3}{8}$	$2\frac{5}{8}$	$\frac{9}{16}$	$1\frac{1}{8}$,,

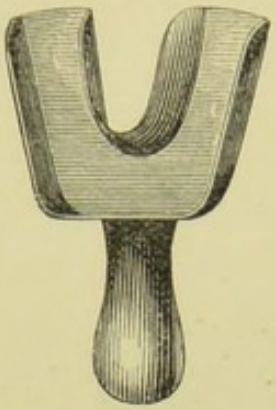
		s.	*d.*
Price, any size	each	1	6

A discount of 10 per cent. is allowed when Impression Trays are purchased by the dozen.

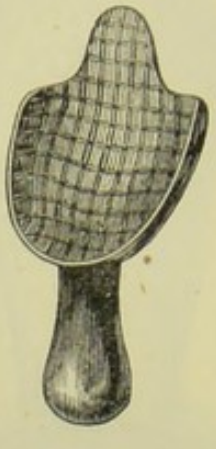
IMPRESSION TRAYS—D TO N.

BRITANNIA METAL.

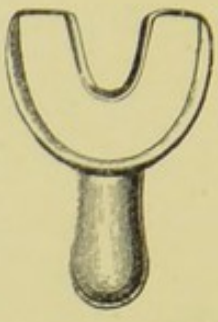
D.



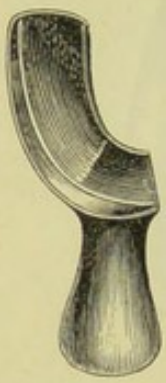
H.



I.



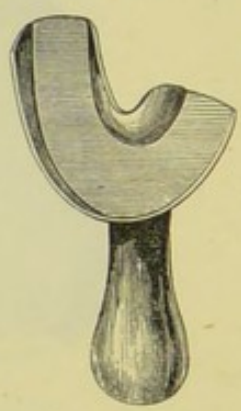
L.



M.



N.



These Trays are made in five sizes.

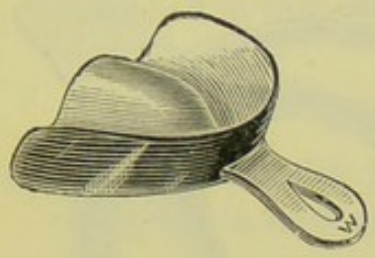
Prices :

			s.	*d.*
D, for Upper and Lower	sizes	0–4 each	1	6
H, Plaster Tray, for Upper	,,	0–4 ,,	2	3
I, Bite Frames, for Upper and Lower	,,	0–4 ,,	2	0
L and M, for Upper and Lower Side Pieces ..	,,	0–4 ,,	1	3
N, ,, ,, three-quarter Pieces	,,	0–4 ,,	1	6

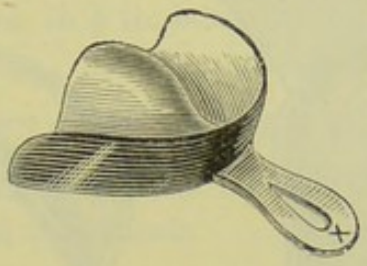
IMPRESSION TRAYS.

NEW FORMS.

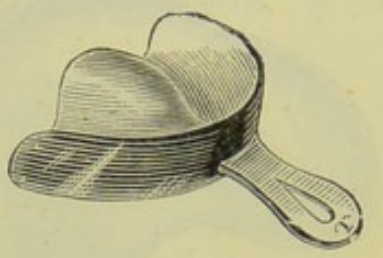
W.



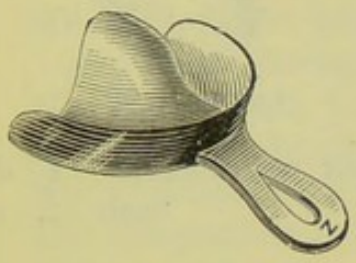
X.



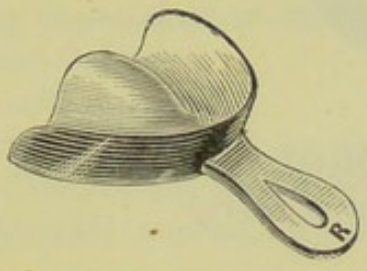
T.



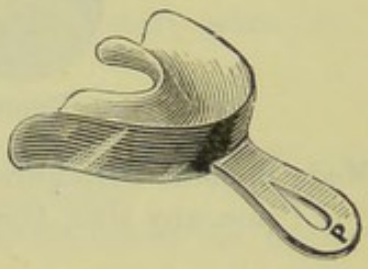
Z.



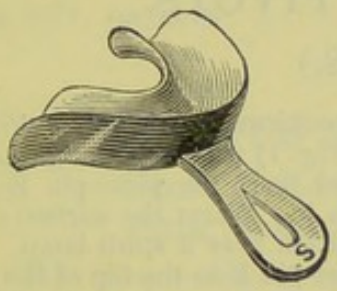
R.



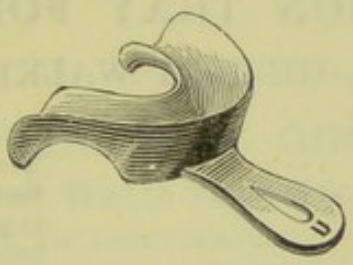
P.



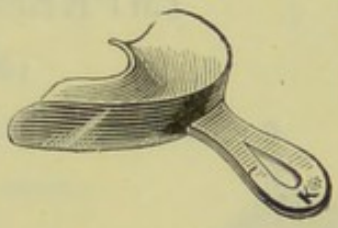
S.



U.



K*.

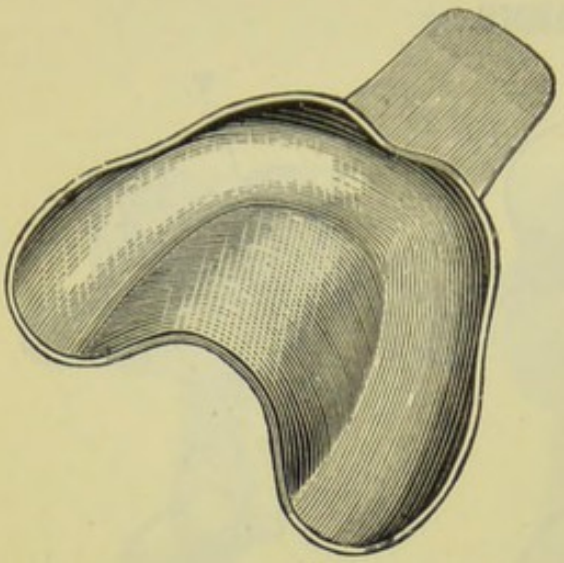


These Trays are considered very useful. As will be seen from the illustrations, the **Uppers** have extra high palates, and the **Lowers** are made considerably deeper than usual. Z and K* are only made in one size, but all the others are supplied in four convenient sizes.

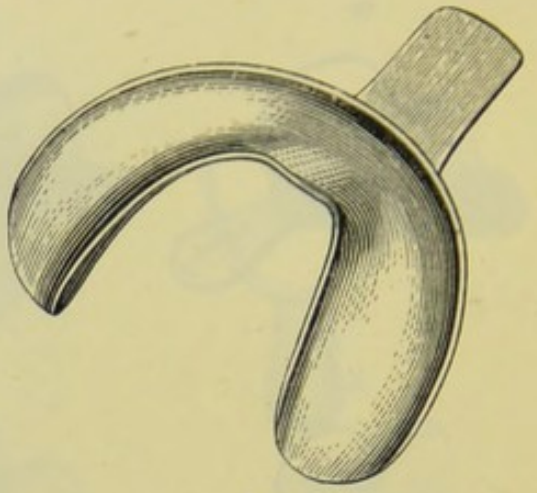
		s.	*d.*
In German Silver, Nickel-plated	each	2	0

Less 10 per cent. when purchased by the dozen.

IMPRESSION TRAYS.—(American Pattern.)



Upper.



Lower.

Made in stout Britannia Metal, and supplied in four useful sizes. *s.* *d.*
Price, any size, Upper or Lower .. .. .. each 2 0

IMPRESSION TRAY FOR PIVOTS.

(Mr. GILBERT WALKER'S.)

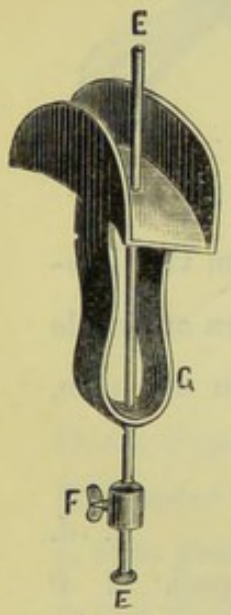


Fig. 1.

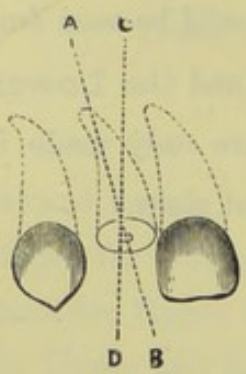


Fig. 2.

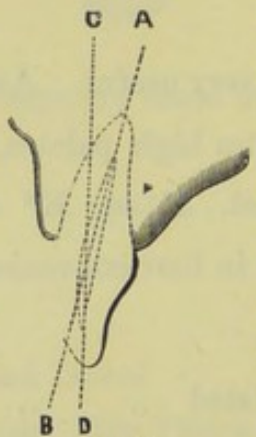


Fig. 3.

Directions for Use.—"Fill the Tray (Fig. 1) with modelling composition, and press the pivot-pin E right through it. Warm the surface of the composition over a spirit lamp. Pass the pivot-pin E to the top of the pivot cavity in the root, and gently slide the tray up the pin sufficiently for to take a good impression. When hardened place the set screw F close to the handle of the tray G, and fix it. Withdraw the pivot-pin, which can only be done in the direction of A B (Figs. 2 and 3), when the impression may be removed in the direction of C D, avoiding 'drags' or shifting of the pivot-pin. Replace the pivot-pin, which will be found to accurately retain the relative position of the pivot cavity, with respect to the plain of the root's surface, whilst the set screw F will unerringly adjust the depth of the pivot cavity."

In German Silver, Nickel-plated .. .. each 3*s.* 6*d.*

MATERIALS FOR IMPRESSIONS.

BEES' WAX.

This is the purest English Bees' Wax.

		s.	d.
Supplied in thin cakes, in ½ lb. boxes	per lb.	3	0

GUTTA PERCHA, PINK.

In ½ lb. packets, with full directions for use and for renovating.

		s.	d.
Supplied in thick and thin sheets	per lb.	6	6

HINDS' GODIVA COMPOSITION.

No. 1, Soft, for taking impressions of tender gums, cleft palate, &c.; also for use during cold weather.

No. 2, Medium, for ordinary cases.

No. 3, Hard, for edentulous cases, and for use during hot weather.

No. 4, Extra Soft, for renovating and for taking bites.

The Composition is agreeably scented, and full directions for use are enclosed in each box.

		s.	d.
In ½ lb. boxes	per lb.	5	0
In 6 lb. packets	,,	4	0

STENT'S SUPERLATIVE COMPOSITION.

Pink, Yellow and **White** for ordinary cases.

Pink, extra soft, for renovating.

This Composition is also agreeably scented, and each box contains full directions for use. The Pink is mostly used.

		s.	d.
In ½ lb. boxes	per lb.	5	0
In 6 lb. packets	,,	4	0

PLASTER OF PARIS.

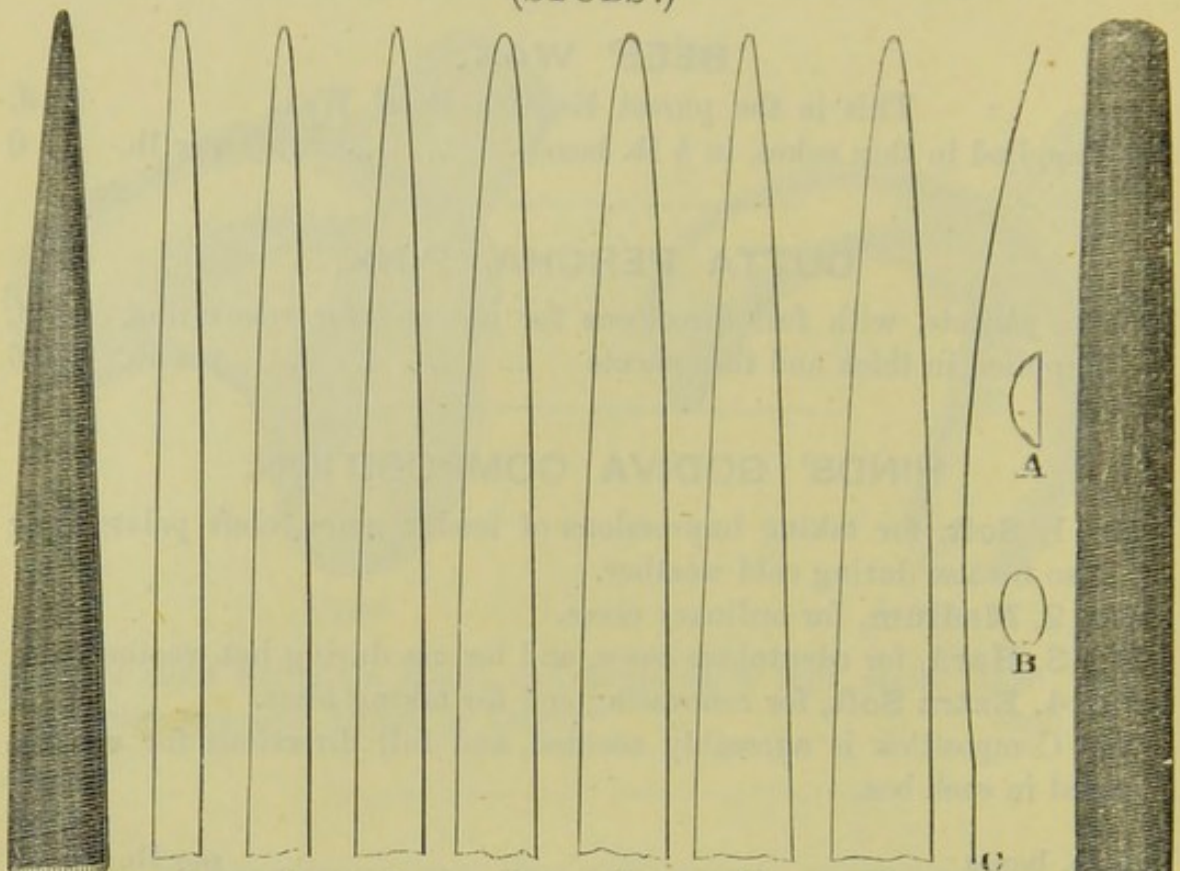
(Extra Superfine.)

		s.	d.
Very quick-setting	per 2 lb. tin	0	9
,, ,, ...	per 7 lb. bag	1	0
,, ,, ...	per cwt.	12	6

Other Impression Materials supplied to order.

STUMP FILES.

(STUBS'.)



A, section of half-round File.
B, section of oval ,,
C, bend of curved ,,

The Half-round are made in sizes 1 to 6.

	per doz.		each.	
	s.	*d.*	*s.*	*d.*
Straight or Curved, Pointed	6	0	0	6½
,, ,, Blunt	6	0	0	6½
,, double-ended, one end pointed, the other blunt	7	6	0	8

The Oval are made in sizes 0 to 3.

	per doz.		each.	
	s.	*d.*	*s.*	*d.*
Straight or Curved, Pointed	6	0	0	6½
,, ,, Blunt	6	0	0	6½
,, double-ended, one end pointed, the other blunt	7	6	0	8

Pointed. Blunt.

DIVIDING FILES.

(STUBS'.)



Knife edge, one safe side. Pointed and Blunt. The Pointed is made in sizes, 3 to 6, see previous page, and the Blunt in sizes, 1 to 4.

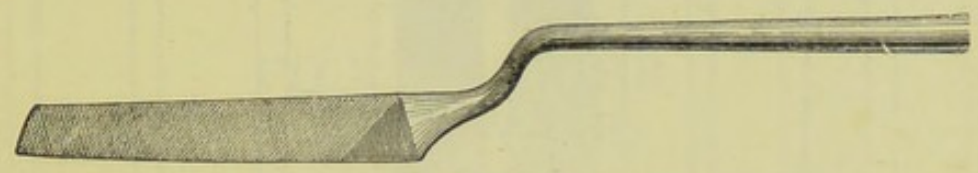
		s.	d.
Price, either kind, any size		0	6½
„ „ „	per doz.	6	0



Pointed. Blunt.

BAYONET FILES.

(STUBS').

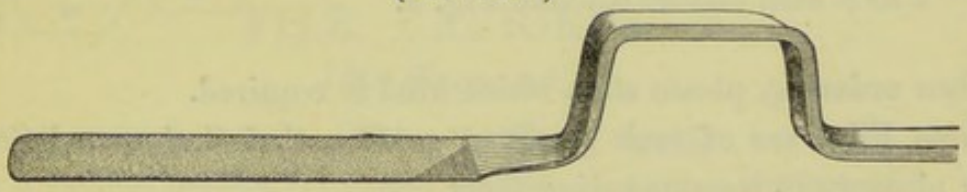


5 inches long.

Made in rights and lefts, cut inside and outside, with Tang to fit into wooden handle ..	each	s.	d.
		0	8½

CRANK FILES.

(STUBS'.)



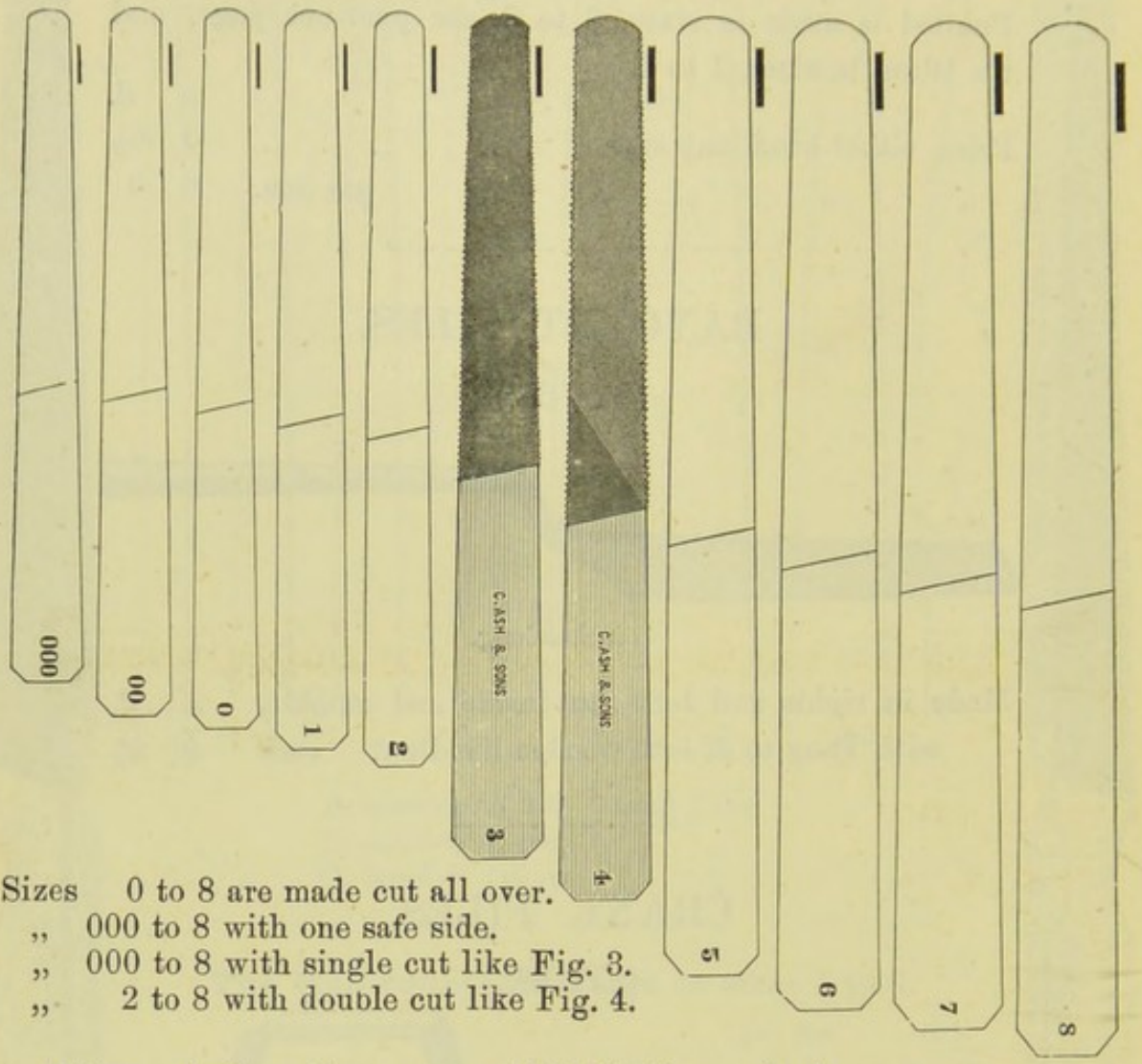
6½ inches long.

With one safe side and steel handles. Made in rights and lefts, medium and narrow widths. The illustration shows a narrow file ..	each	s.	d.
		0	8½

Other forms of Stump or Dividing Files obtained to order.

DIVIDING FILES.

(STUBS'.)



Sizes 0 to 8 are made cut all over.
,, 000 to 8 with one safe side.
,, 000 to 8 with single cut like Fig. 3.
,, 2 to 8 with double cut like Fig. 4.

When ordering, please state which kind is required.

These Files are of such excellent quality, that C. Ash and Sons have much pleasure in recommending them.

			s.	*d.*
Price, any size or kind	per doz.		3	3

A variety of Froid's Dividing Files kept in stock.

Other Dividing Files supplied to order.

DIVIDING FILES.

(STUBS'.)

SICKLE SHAPE.



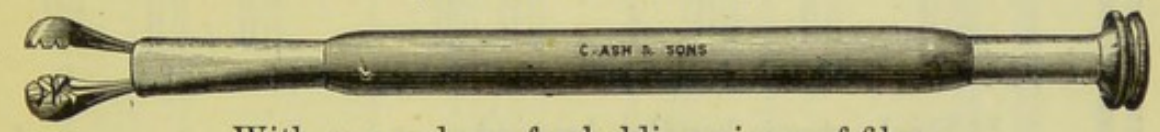
For sizes see previous page.

Made in Nos. 0 to 4, one safe side.
„ 0 to 4, cut all over.
„ 0 to 4, *single* cut.
„ „ 2 to 4, *double* cut.

		s.	d.
Price, all kinds and sizes	per doz.	3	3

FILE CARRIER.

(Dr. COGSWELL'S.)



With screw clamp for holding pieces of files.

By means of the slots in the head of the Carrier the files can be fixed at various angles.

		s.	d.
Price, in Ebony handle		6	6

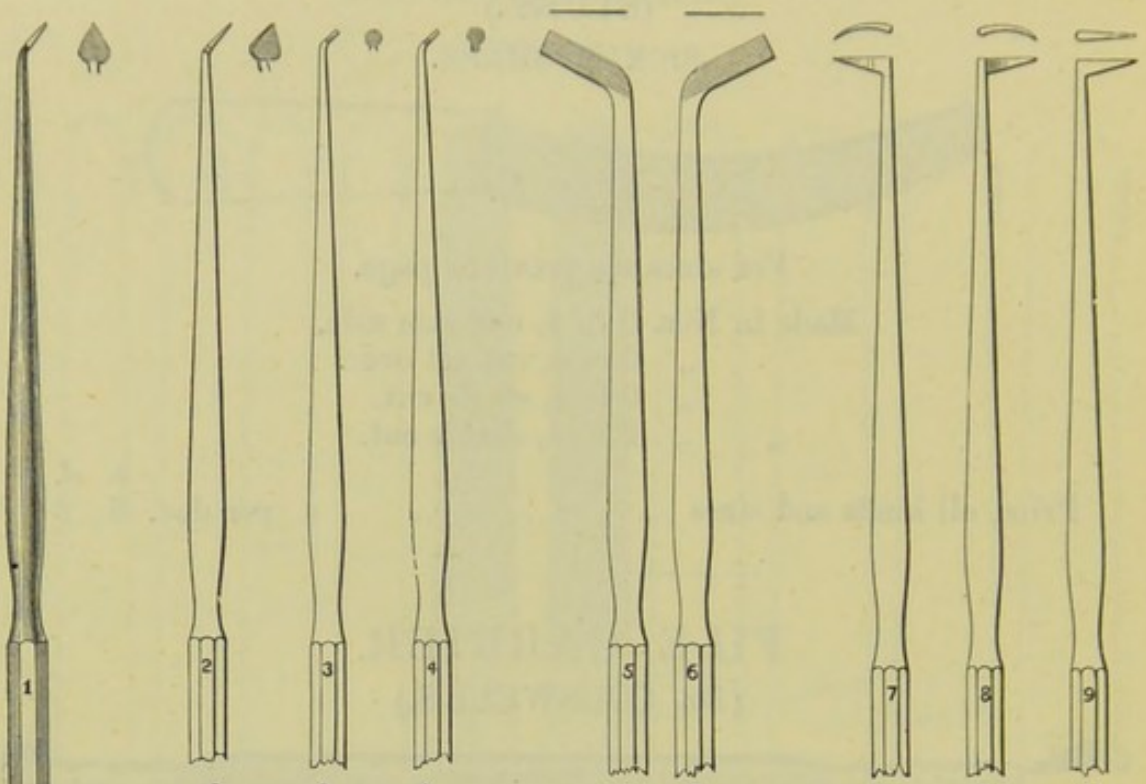
FILE CARRIERS.

(*Not illustrated.*)

		s.	d.
Dr. Jack's for carrying pieces of files, in Ebony handle ..	each	6	6
Dr. Line's, various angles, for pieces of files	per set of 5	8	0
Separately :—Nos. 1, 2, and 3	each	1	6
„ No. 4	„	1	8
„ No. 5	„	2	0
Dr. Miller's with three heads	„	20	0
„ „ two „	„	16	0
„ „ one „	„	12	0
Files for ditto	per doz.	4	0
Heads separately, Nos. 1, 2, 3	each	4	0

Other Dividing Files and Carriers obtained to order.

PLUG TRIMMERS.



1. 2. 3. 4. 5. 6. 7. 8. 9.

In Steel octagon handles, bronzed :—			s.	d.
Dr. Redman's	(Figs. 1, 2, 3, 4)	each	1	0
Mr. C. Rogers'	(„ 5 and 6)	„	1	3
Square edge	(„ 7, 8, 9)	„	1	0

Fig. 1, cut on the outside, is for trimming plugs in the mesial surfaces of molars and bicuspids; Fig. 2, cut inside, is for the distal surfaces of the same teeth. Figs. 3 and 4, cut inside and outside respectively, are for smoothing the cervical edges of approximal cavities previous to filling.

Figs. 5 and 6, right and left, are for trimming down the cervical margins of fillings. They are used with a pushing motion, and literally cut the gold away without any chance of tearing or fraying its edges or surface.

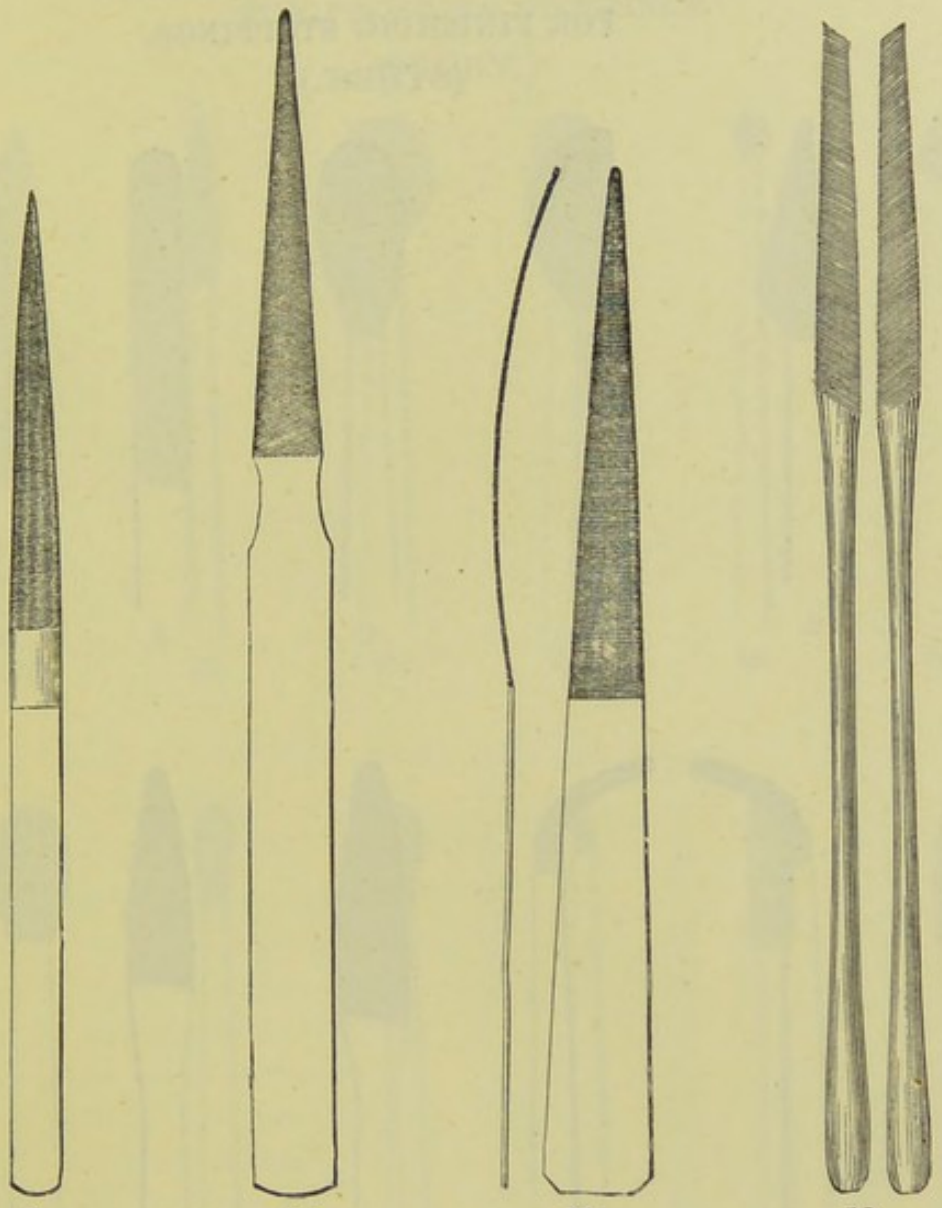
Figs. 7, 8, and 9, straight, right and left, are applicable to any angle or curve of any tooth, and can be used with a thrusting or drawing motion; they will also be found very useful as small scalers.

PLUG TRIMMERS.

(AMERICAN PATTERNS.)

In right and left sides, made in plain steel, octagon handles		s.	d.
	each	1	4

FINISHING FILES.



9. 10. 11. 12.

(STUBS' AND FRENCH.)

			s.	d.
Fig. 9,	half-round pointed, straight, cut all over	each	0	6½
„ 10,	„ „ straight and curved, one safe side	„	0	6½
„ 11,	half-round pointed, straight and curved, cut all over, sizes 0, 1, 2	each	0	4
„ 11,	half-round blunt, cut all over, sizes 0, 1, 2 ..	„	0	4
„ 12,	Dr. Taft's spring tempered, made in rights and lefts	„	0	5½
„ 12	„ „ „ „ „	per doz.	5	0

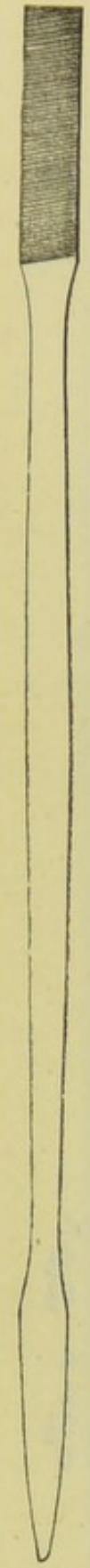
The side view of Fig. 11 shows the bend of the curved.

Size No. 1 is given in the illustration.

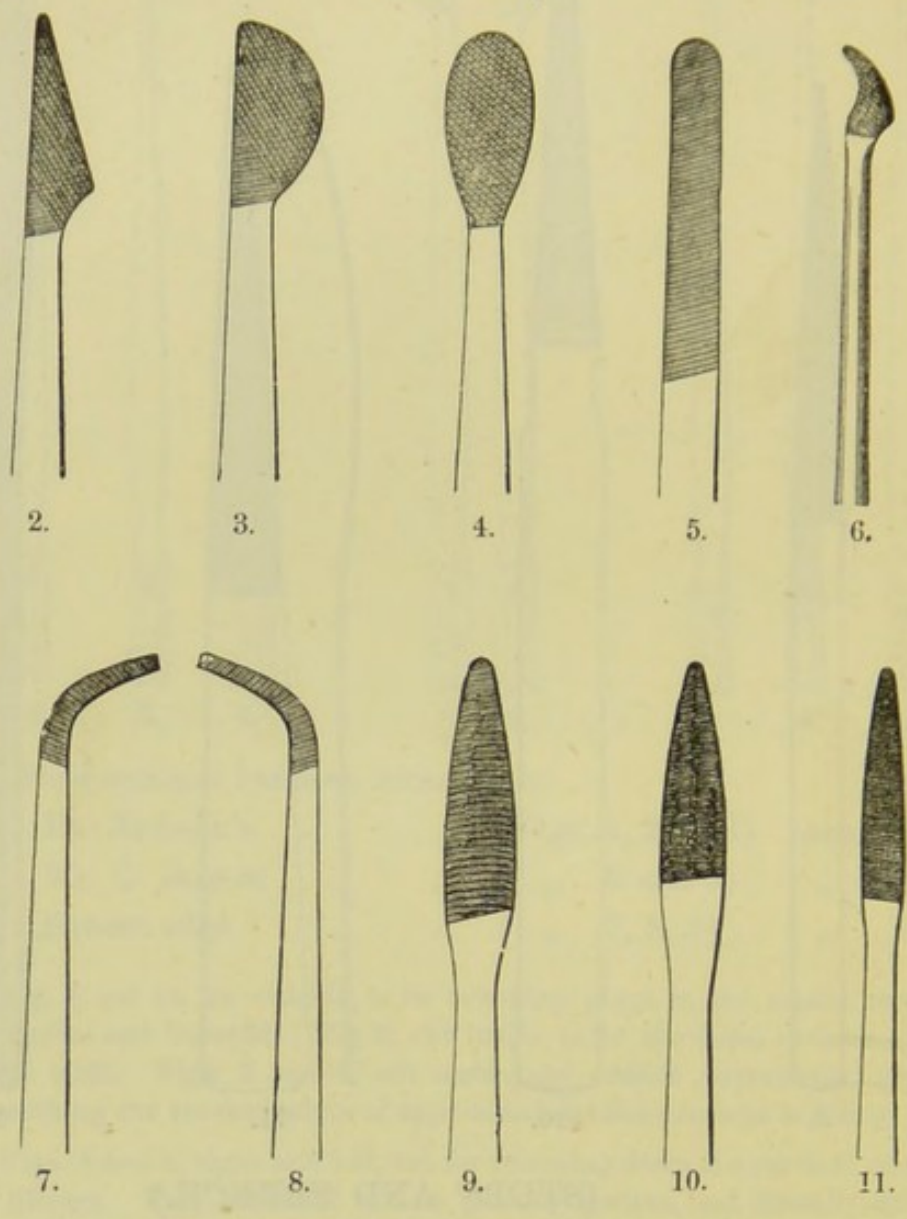
RIFFLERS.—Double-ended.

FOR FINISHING STOPPINGS.

(STUBS'.)



1.



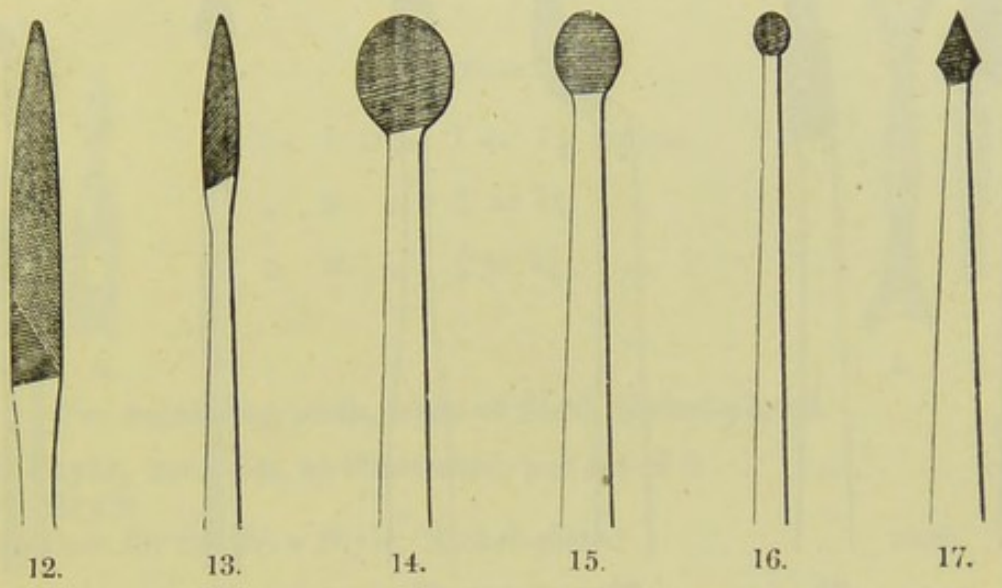
2. 3. 4. 5. 6. 7. 8. 9. 10. 11.

			s.	d.
Fig. 1.	Flat, curved, and half-round—curved at other end	each	0	7½
„ 2, 3, 6	„ straight—other end same shape	„	0	7½
„ 4	„ curved „ „	„	0	7½
„ 5	„ straight and narrow—other end same shape	„	0	7½
„ 7, 8	„ right and left sides „ „	„	0	7½
„ 9, 10.	Half-round, curved „ „	„	0	7½
„ 11.	Oval, thin, curved „ „	„	0	7½

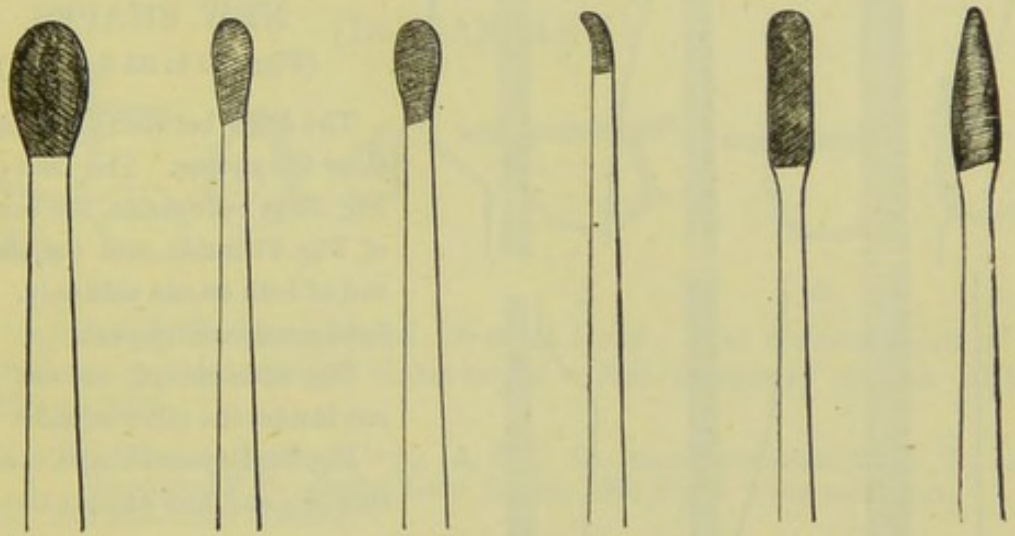
RIFFLERS.—Double-ended.

FOR FINISHING STOPPINGS.

(STUBS'.)



12. 13. 14. 15. 16. 17.



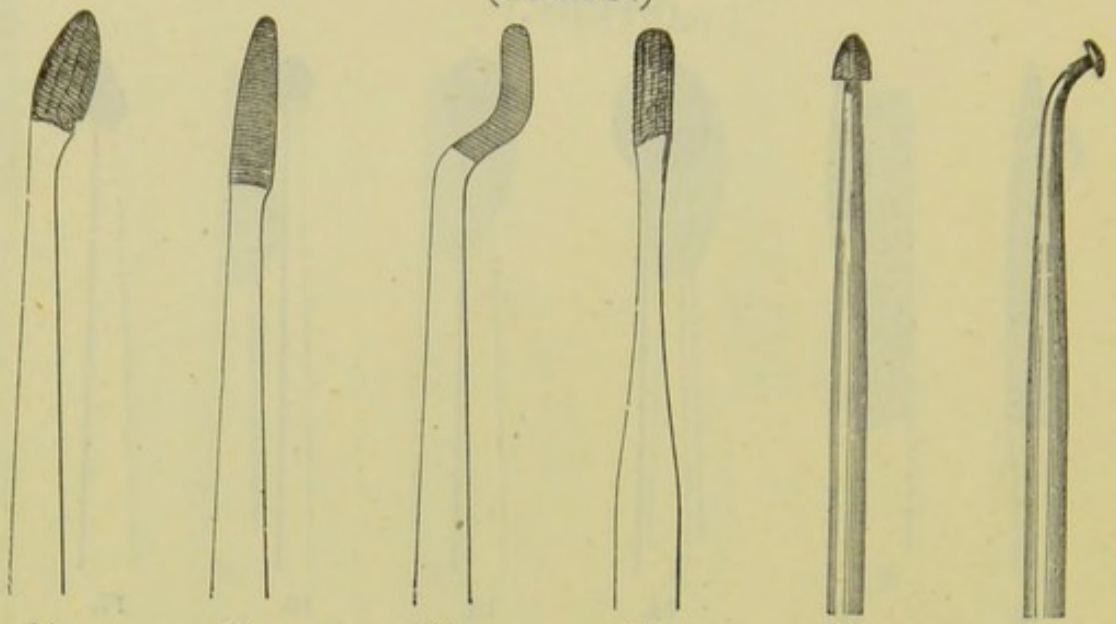
18. 19. 20. 21. 22. 23.

						s.	d.
Figs.	12 to 17,	Half-round,	curved	—other end same shape	each	0	7½
„	18 to 20,	Oval,	straight	„ „	„	0	7½
„	21	„	curved	„ „	„	0	7½
„	22	„	straight, thin	„ „	„	0	7½
„	23	„	curved	„ „	„	0	7½

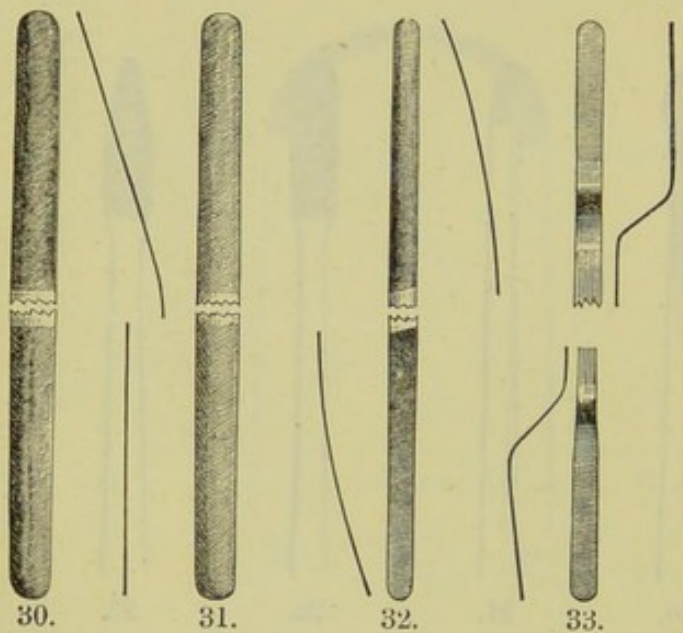
RIFFLERS.—Double-ended.

FOR FINISHING STOPPINGS.

(STUBS'.)



24. 25. 26. 27. 28. 29.



30. 31. 32. 33.

NEW SHAPES.

(Figs. 30 to 33 fine cut.)

The lines between these Rifflers show the shapes. The bent end of Fig. 30 is cut **outside**, the bent end of Fig. 31 **inside**, and the straight end of both **on one side** only. They form a very useful pair.

Fig. 32 is curved, one end being cut **inside**, the other **outside**.

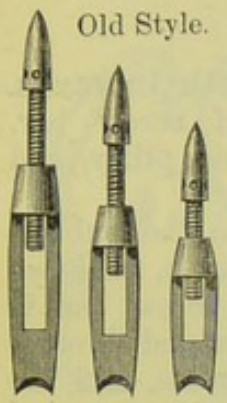
Fig. 33, Bayonet-shape, is cut **inside** one end, and **outside** the other.

			s.	d.
Fig. 24.	Oval, thin, flat—other end curved	each	0	7½
„ 25, 26.	„ „ straight—other end same shape ..	„	0	7½
„ 27, 28.	Round, straight „ „ „ ..	„	0	7½
„ 29.	Half-round, curved „ „ „ ..	„	0	7½
„ 30 to 33.	See description above	„	0	7½

Rifflers for Vulcanite Work, see page 402.

REGULATING APPARATUS.

Old Style.



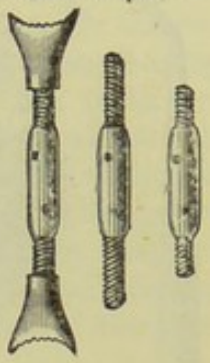
1. 2. 3.

JACK SCREWS.

RANGES:

No. 1, from 1 to $1\frac{1}{2}$ inches.
„ 2, „ $\frac{7}{8}$ to $1\frac{3}{8}$ „
„ 3, „ $\frac{3}{4}$ to $1\frac{1}{4}$ „

New Style.



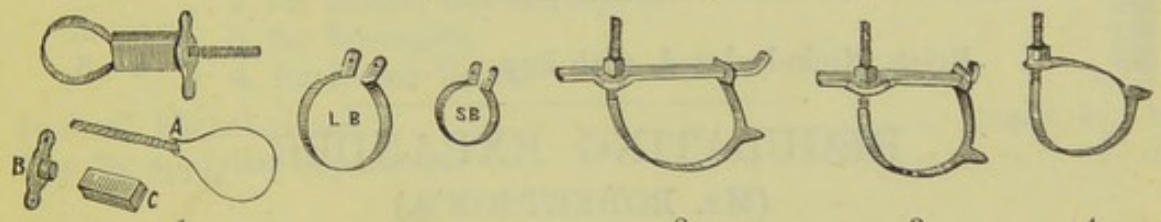
1. 2. 3.

For regulating teeth, made of Steel, Nickel-plated.

		s.	d.
Old Style, complete, as illustrated, per set of 3	.. ..	12	0
New Style „ „ „	.. ..	7	6
Extra Bars for the New Style, Nickel-plated	each	1	6

WRENCH LEVER AND SCREW APPARATUS.

(DR. FARRAR'S.)



1. 2. 3. 4.

For regulating Teeth, made of 18-carat Gold. For a description of the uses of these regulators, see Garretson's "Oral Surgery," fourth edition, pages 379 to 383.

Fig. 1. Box Wrench, with Lever; A B C, the same unmounted; L B, larger Loop, and S B, smaller Loop for use with Fig. 1 when necessary.
„ 2. Bar and Loop Wrench.
„ 3. „ „ „ with shorter Bar than Fig. 2.
„ 4. Rotating Loop for turning teeth in their sockets.

PRICES:

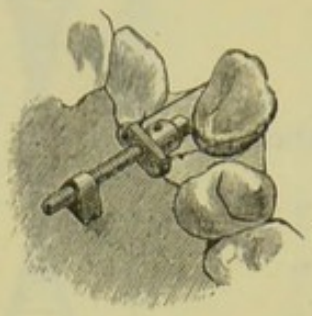
		s.	d.
Fig. 1. Consisting of parts A B C	each	16	0
Extra Bands or Loops, large	„	4	0
„ „ „ small	„	3	0
„ 2. With Long Bar	„	15	0
„ 3. With Short „	„	14	0
„ 4.	„	8	0

Other Kinds obtained to order.

REGULATING SCREW AND PULL-BACK.

(Dr. LEE'S.)





For drawing irregular teeth inwards. The appliance consists of screw bar, regulating nut, attachment plate, pillar, and key.

The pillar is vulcanized in the rubber-plate, which is fitted in the mouth, as shown in the illustration; then the screw bar is attached to it, a wire band is passed through the holes in the attachment plate, and the regulating nut is screwed up by means of the key.

	s.	*d.*
Price, Nickel-plated, with key	5	6

THE LEE-BENNETT JACK SCREW.

For pushing irregular teeth outwards. Applied and worked in the same manner as the above, and, if desired, can be attached to the same vulcanite plate.

	s.	*d.*
Price, Nickel-plated, with key	5	6

REGULATING EXPANDER.

(Mr. ROBERTSON'S.)

"Mr. L. Robertson, of Cheltenham, has made a valuable modification of the **Jack Screw.** In his invention a continuous spring does the work of the screw, giving a decidedly less disagreeable sensation to the wearer. It consists of two movable heads which are screwed on to a central spindle, divided into two parts, one stationary, the other sliding up and down in a hollow case. The movable part is subject to the pressure of a spiral spring.

"**To apply it without a regulating plate,** it is necessary to draw in the movable spindle by means of a little knob, and with binding wire fit it to the stationary spindle, to which is attached another knob. The heads are now removed, and tied to the teeth by means of fine wire or silk, to be followed by the central spindles being screwed into them. That being done, the wire, which caused the spring to be compressed, is cut and the force is applied. When the teeth have been pushed to the limit of the spring the heads may be unscrewed. This will extend the length.

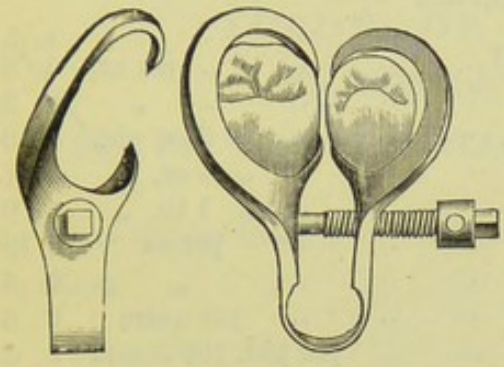
"**To apply it with a regulating plate,** insert the heads in the vulcanite, and cut the plate in half, so that when the central spindle works it moves the whole sides asunder. In this way the entire dental arch may be expanded."—*British Journal of Dental Science, December*, 1882.

Made of Steel, Nickel-plated, and supplied in two sizes:		*s.*	*d.*
Large	each	7	0
Small	,,	7	0

TEETH SEPARATORS.

(Dr. PERRY'S.)

No. 2.



These Separators are an improvement upon those designed by the late Dr. Jarvis. The improvement consists in so shaping the appliance, that, after the teeth are separated by its use, it may be allowed to remain in position, as illustrated in cut No. 2, during the operation of filling deep cavities in approximal surfaces, dispensing with the use of wedges, and offering no obstruction to a clear view of the parts operated upon.

If the teeth to be operated upon can be separated with cotton or tape for one or two, or more days before the operation, the screw separator being then applied, holds them steadily and firmly while the operation is being performed. . . . When the fillings are in, another turn is given to the screw, and room obtained to finish the cervical margins by means of discs, that cut only upon the outer edge, and by the use of polishing tapes and sharp lancets.

To meet general requirements they are made in four sizes, as under :—

No. 1, for use on Molars.
„ 2, for Molars and Bicuspids.
„ 3, for Bicuspids.
„ 4, for Front Teeth.

		s.	d.
In steel, Nickel-plated	each	14	0
Key for applying Separators	„	3	0

ARTICLES VARIOUS.

FOR REGULATING AND SEPARATING TEETH, &c.

		s.	d.
Hickory wood, in blocks, for cutting up as required	per block	0	6
Hickory wood, compressed, in sticks, for pivoting, &c.	per box	1	0
India-rubber rings, for regulating, various sizes ..	„	0	9
India-rubber sheeting, red, for cutting into strips ..	per oz.	0	7½
„ „ „ „ „ ..	per lb.	9	6
India-rubber wedges, in seven graduated sizes (Dr. Genese's), in boxes, containing 30 assorted pieces,	per box	2	0
Sycamore wood, in blocks, for cutting up as required,	per block	0	6
Wire Steel, for Dr. Coffin's system of regulating, in 6-inch lengths, four sizes, Nos. 13, 14, 17, 19. No. 19 is the largest and No. 13 the smallest. Made up in packets of one dozen lengths, any size	per pkt.	0	4
Pliers for cutting this wire, bright	each	4	0

SUNDRIES.

FOR THE OPERATING ROOM.

ABSORBENTS, &c.

		s.	d.
Absorbent Cotton, Dennison's, double carded	per oz.	0	6
„ „ Seabury and Johnson's	„	0	3
„ „ Lawton's	per 2 oz. pkt.	0	10
„ „ „	„ 4 oz. „	1	4
„ „ „	„ 1 lb. „	3	6
Amadou or Spunk, finest quality, selected	per oz.	0	10
„ „ second „	„	0	6
Bibulous Paper, French	per quire	0	6
„ „ Japanese, very fine	per pkt. 100 sheets	1	6
Cotton Wool	per oz.	0	3
„ „	per lb.	3	6
„ „ (Dr. Von Brun's) very absorbent	per ½ lb. pkt.	2	6
Paper Fibre Lint (Parker's)	„	2	0

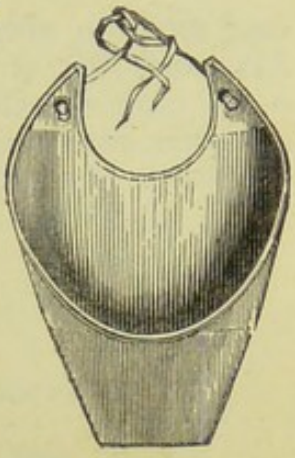
POLISHING MATERIALS, &c.

		s.	d.
Arkansas Slips	each from 1s. to	1	6
„ „ Knife edge	each	1	6
Buckhorn Tapes	„	0	4
Celluloid Strips, in boxes of 1 dozen	per box	2	0
Chalk Prepared, per lb., 3*d.*; French and Præcipitated, each	per lb.	0	6
Corundum Flour per lb., 3*s.* 6*d.*	per box	0	6
Corundum Tapes, fine and coarse	each	0	4
Cotton Wood, in sticks	per doz.	0	10
Crocus Cloth Strips	per gross	2	0
Cuttle-Fish Paper Strips	„	2	0
Dog or Orange Wood, in bundles	per bundle	0	3
Dragon Canes, Pointed, white, red, or purple	„	1	0
„ „ **Blunt** „ „ „	„	1	0
Dragon Cane Points to fit Holder on page 224	per doz.	0	6
Emery Cloth Strips	per gross	2	0
French Chalk	per lb.	0	6
French Emery Paper Strips	per gross	2	0
Holly Strips	per bundle	0	8
Lava „	„	2	0
Præcipitated Chalk	per lb.	0	6
Prepared „	„	0	3
Pumice Powder, coarse, per lb., 3*d.*; fine, per lb., 4*d.*; superfine	„	0	6
Putty Powder, Oxide of Tin	per box	0	6
Silex Tapes	each	0	4
Silicon Powder large packet, 6*d.*	small pkt.	0	3
Waterproof Tapes	each	0	5

For Polishing Discs, &c., see Engine section.
Other Polishing materials supplied to order.

SUNDRIES.

FOR THE OPERATING ROOM.



APRON, OR BIB.

(Dr. HORTON'S.)

FOR USE DURING DENTAL OPERATIONS.

	s.	d.
In White Rubber Cloth	4	0
In Check „ „	5	0

ARTICULATING PAPER.

	s.	d.		s.	d.
Broad Strips, black, in books .. .. per book	0	2	per doz.	1	6
„ „ blue „ .. .. „	0	2	„	1	6
Narrow „ black or blue .. .. „	0	1½	„	1	0
Broad black (Mr. Barkley's) thick and thin .. .. „	0	3	„	2	6
Extra Broad black (Dr. Richardson's) thin .. .. „	0	3	„	2	6

CAUSTIC AND HOLDERS.

	s.	d.
Caustic Points in Walnut holders .. .. each	0	4
„ „ in Ebony „ .. .. „	0	6
Caustic holders, in Metal, Nickel-plated, with Platinum sockets .. .. „	7	6
Caustic, Nitrate of Silver, in sticks to fit holders .. .. „	1	2

STONES FOR SHARPENING INSTRUMENTS, &c.

		s.	d.		s.	d.
Arkansas:						
Wheels 2¼ to 3 inches in diameter, for lathes ..	each from	13	0	to	18	0
Flat Slabs in Mahogany cases	„	3	0	„	8	0
Slips for hand, square and flat	„	1	0	„	2	6
Knife Slips with very fine edges	each	1	6			
Turkey:						
Flat Slabs in Mahogany cases	each from	4	0	to	6	0
Slips for hand, square and flat	„	0	9	„	2	0

Other Stones obtained to order.

ARTICLES, VARIOUS.

	s.	d.
Gutta-Percha (Mr. Truman's), pink, for lining artificial dentures, with directions for use .. .. per oz.	4	0
Mastic Cement, thick, for temporary Stoppings .. .. .. per bottle	0	6
„ „ **thin,** for fixing teeth, &c. .. .. „	0	9
Sulphur Cement, in powder „ „ .. .. „	0	6

Goods of every description obtained to order at current prices.

NITROUS OXIDE GAS APPARATUS.

FACEPIECES, &c.

Fig. 1.

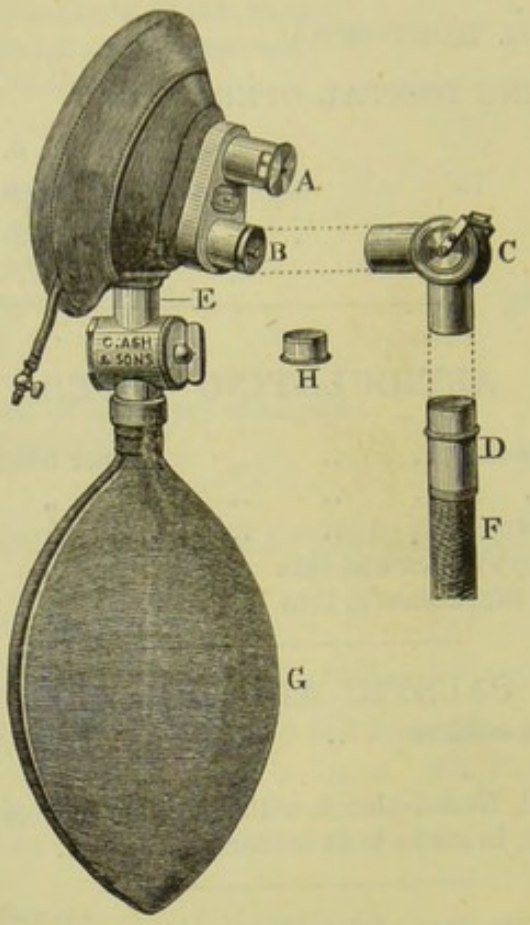


Fig. 2.

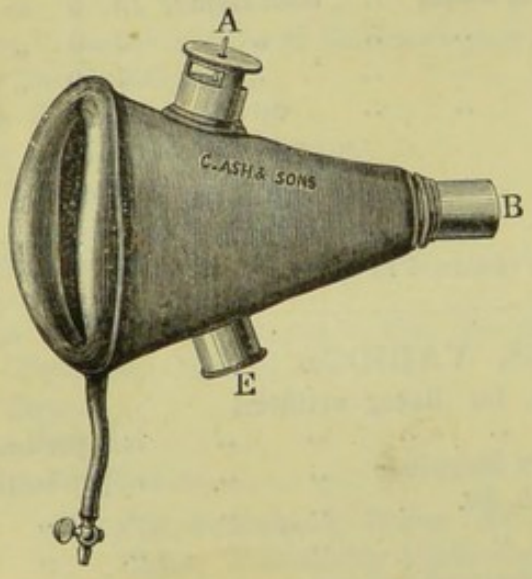
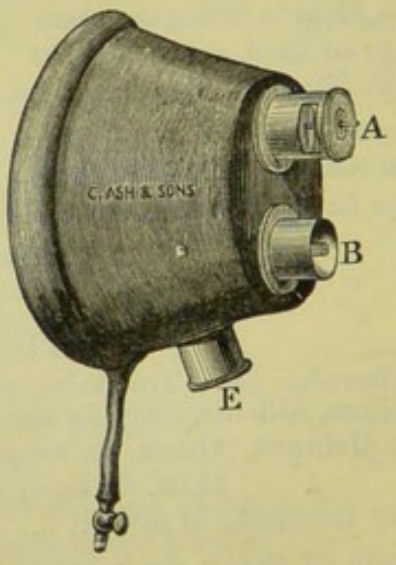


Fig. 3.



FACEPIECES, &c.

Fig. 1 shows Mr. Clover's well-known Facepiece, made of sheet lead covered with leather—which can be easily moulded to the face—and fitted with movable India-rubber Pad. To Dentists residing at a distance, who cannot conveniently send their Facepieces to be repaired, this is the most suitable, because a new pad can at any time be fitted in a few moments. It is made in three sizes—large, medium, and small.

Description.

A—Expiratory Valve.
B—Inspiratory Tube.
C—Two-way Stopcock for connecting Facepiece and Cattlin's Bag.
D—Mount attached to Mohair Tubing of Cattlin's Bag.
E—Mount for holding either an Ether or a Supplemental Bag.
F—Mohair Tubing leading to Cattlin's Bag.
G—Ether Bag or Supplemental Bag.
H—Cap to cover Mount when the Ether or Supplemental Bag is not used.

Prices:

		s.	d.
Facepieces (Mr. Clover's), large, medium, or small	(Fig. 1)	23	6
„ „ without mount E ..	(„ 1)	21	0
Two-way Stopcock C		8	6
„ „ and mount D		11	0
Ether Bag with Brass cup, containing Sponge for holding the Ether-G		23	0
Supplemental Bag for economising the Gas-G		12	0

Fig. 2 shows a Flexible Conical Facepiece with a fixed Pad, which is much esteemed for its perfect adaptability to the face of the patient.

Description.

A—Expiratory Valve. B—Inspiratory Tube.
E—Mount for holding either a Supplemental or an Ether Bag.

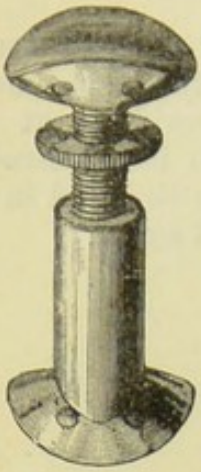
	s.	d.
Price, as illustrated	23	6
„ without mount E	21	0

Fig. 3 also shows a Flexible Facepiece with a fixed Pad, which adapts itself to the face of the patient.

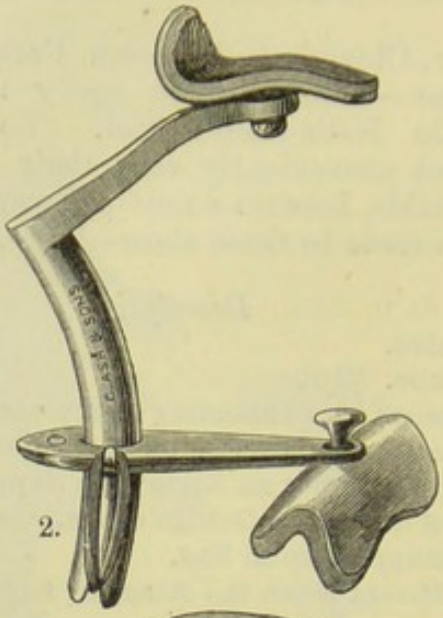
A, B, and E, same as in Fig. 2.

	s.	d.
Price, as illustrated	23	6
„ without mount E	21	0

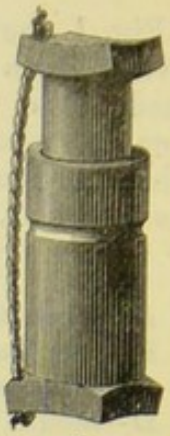
GAGS, OR MOUTH PROPS.



1.



2.



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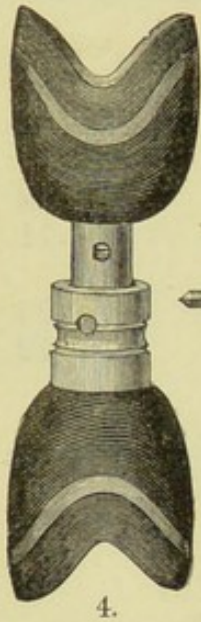

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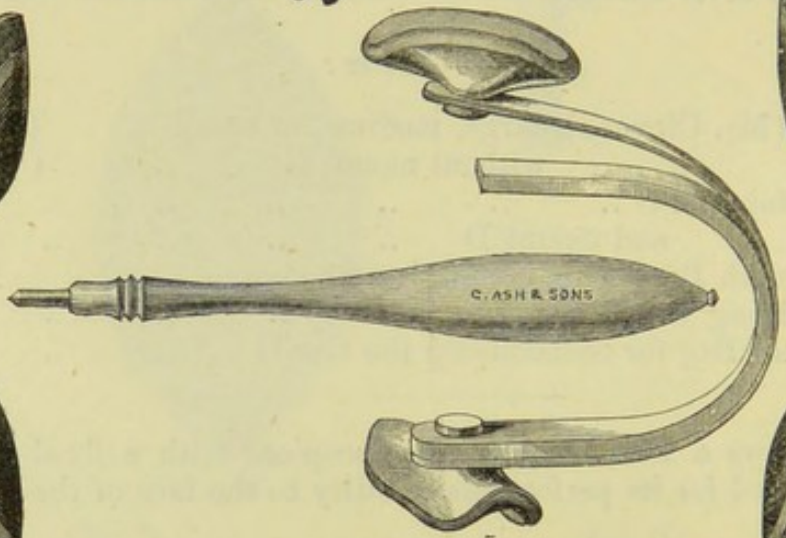

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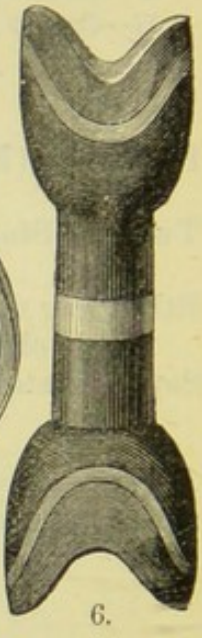

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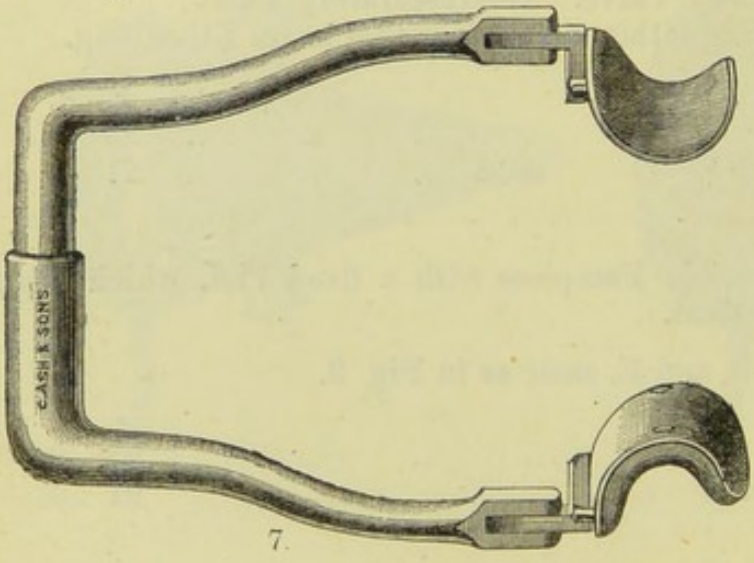

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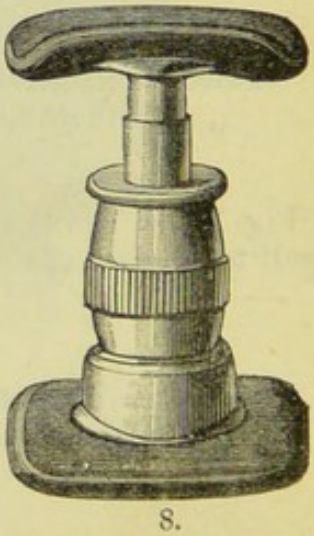


8.

GAGS, OR MOUTH PROPS—*continued.*

s. d.

Fig. 1. Spring Gag in steel, nickel-plated, with gutta-percha pads for the patient to bite into, to prevent slipping. By means of the nut shown on the screw of the upper part, it can be adjusted to any height. Made in two sizes, long and short .. .. each 5 6

Fig. 2. Hinged Gag (Mr. Brunton's) in steel, nickel-plated. The lower bar can be raised or lowered on the curved rod, but it is immediately thrown out of line when the patient bites on the pads, which are lined with india-rubber. The novel form readily lends itself to the dental arch, and when it is applied it can be swung against the cheeks out of the way, on either side of the mouth.

This Gag is also made with **straight Rods** and **larger Pads**, similar to the pads on Buck's Gag (see Fig. 8).

Each kind is supplied in large and small sizes as under:

s. d.

With Bent Rod—extreme length of large size 3 inches each 12 6
„ „ „ „ small „ 2 „ „ 12 6
With Straight Rod—extreme length of large size $1\frac{3}{4}$ inches 12 6
„ „ „ „ small „ $1\frac{1}{4}$ „ 12 6

s. d.

Fig. 3. Spring Gag (Mr. Woodhouse Braine's) in ebonite, made in two sizes, long and short .. .. each 3 0

Fig. 4. Spring Gag (Mr. McAdam's) with ivory centres, vulcanite ends, and soft india-rubber pads. The point on the handle is placed in the holes shown in the illustration until the patient bites the pads, when it is released, and, being attached to the stem of the gag by means of stout silk cord, allowed to hang out of the mouth. Made in three sizes, long, medium, and short .. .. each 5 0

Fig. 5. Hinged Gag (Mr. Hutchinson's) with spring in steel, nickel-plated. Like Mr. Brunton's, it can be swung against the cheeks out of the way during operations. Made in two sizes, large and small .. each 6 6

Fig. 6. Fixed Gag (Mr. McAdam's) with ivory centres, vulcanite ends, and soft rubber pads. Made in three sizes, long, medium, and short .. each 3 0

Fig. 7. Hinged Gag (Mr. Freeman's) in steel, nickel-plated, with spring and gutta-percha pads. By pressing the upper part it can be shortened to any length that may be desired, but directly the pads are pressed, by closure of the patient's mouth, the sliding-rod is thrown out of line and becomes firmly fixed. Like Figs. 2 and 5, it can be swung against the cheeks out of the way during operations. Made in two sizes, large and small .. .. each 18 0

Fig. 8. Spring Gag (Mr. Buck's) in steel, nickel-plated, with screw to raise and lower, india-rubber pads, and knuckle-joint which adapts itself to the dental arch. Made in two sizes, long and short .. .. each 7 6
Extra pads for ditto .. .. per pair 0 6

GAGS, OR MOUTH PROPS—*continued.*



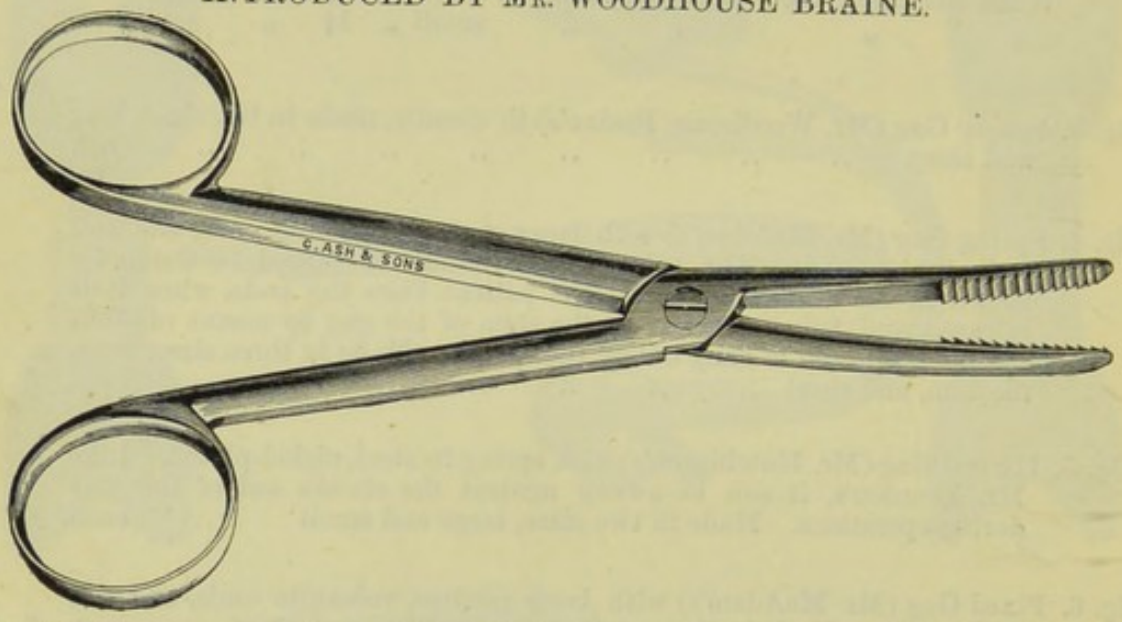
Fig. 9.

Fig. 9. Simple Gag in Vulcanite, with soft rubber pads. It is easily cleaned, very strong, and, as will be seen from the engraving, the shape adapts itself to the dental arch.

		s.	d.
Made in three sizes, long, medium, and short	each	1	3
Lignum Vitæ Wood Gags, same shape as Fig. 9, and various other forms, long, medium, and short ..	„	0	9

TONGUE FORCEPS.

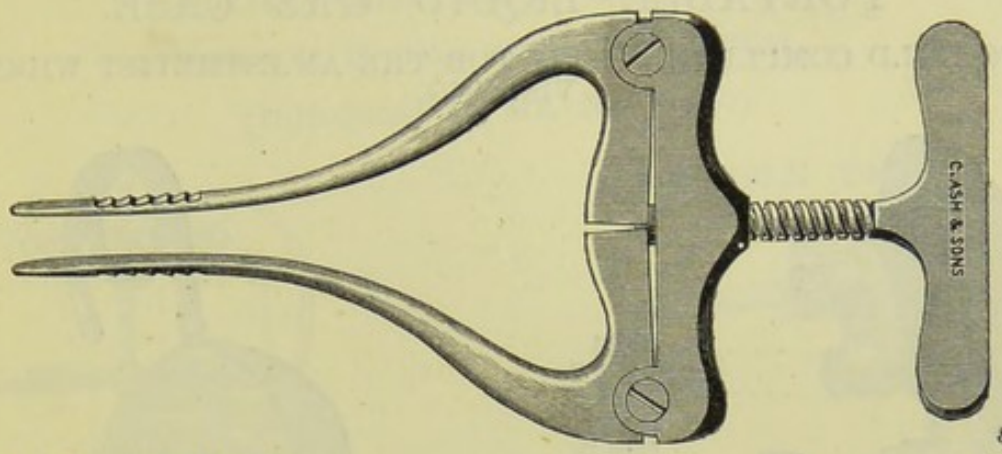
INTRODUCED BY MR. WOODHOUSE BRAINE.



This instrument is made sufficiently strong to serve also as a mouth opener in a large number of cases. Mr. Underwood says: "Should the breathing stop during the administration of Nitrous Oxide Gas, or any other anæsthetic, the forcible pulling forward of the tongue, and the administration of nitrite of amyl within a few seconds after unmistakeable signs of something unusual in the breathing have appeared, will in almost every case remove the difficulty, and the slight puncture made by the Forceps will probably assist the reflex stimulus."

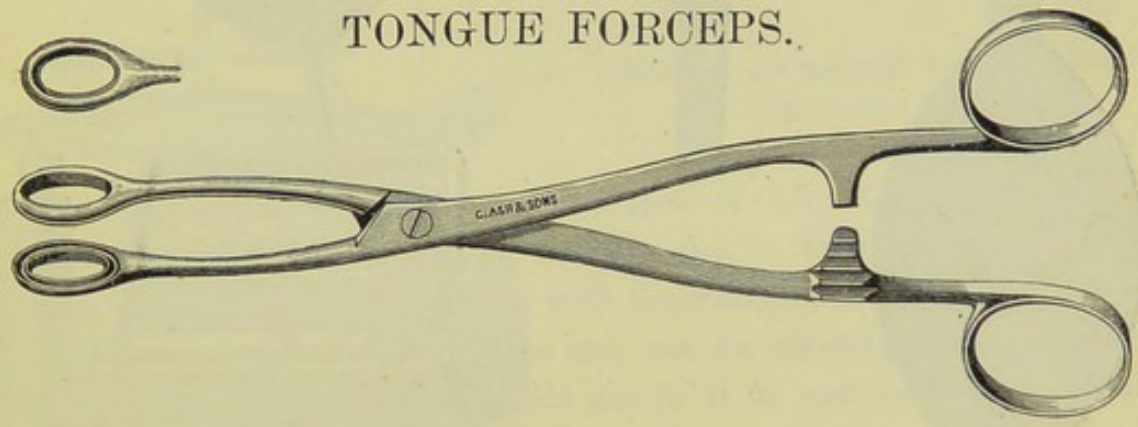
	s.	d.
Price, Nickel-plated	9	0

MOUTH OPENER.



	s.	d.
In Steel, Nickel-plated	12	6

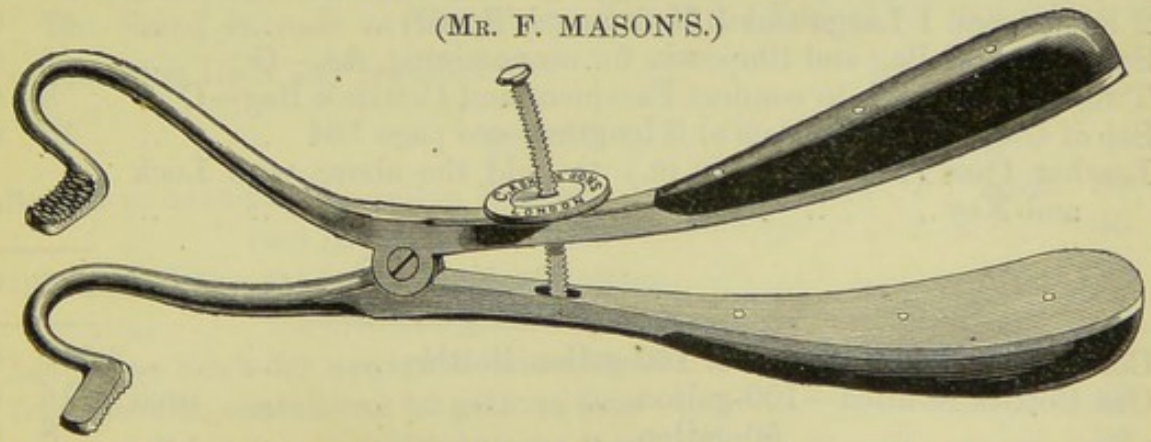
TONGUE FORCEPS.



	s.	d.
Price, Nickel-plated	12	0

ADJUSTABLE GAG.

(Mr. F. MASON'S.)

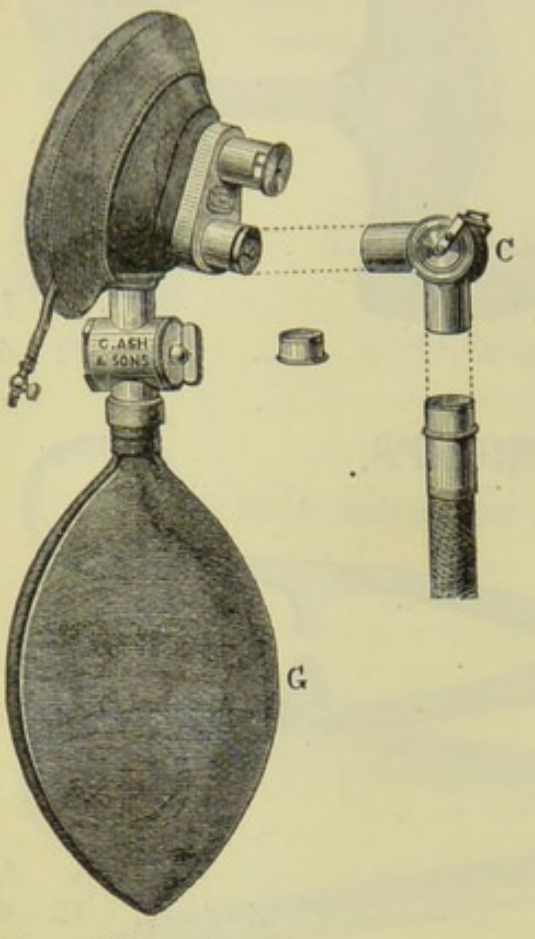


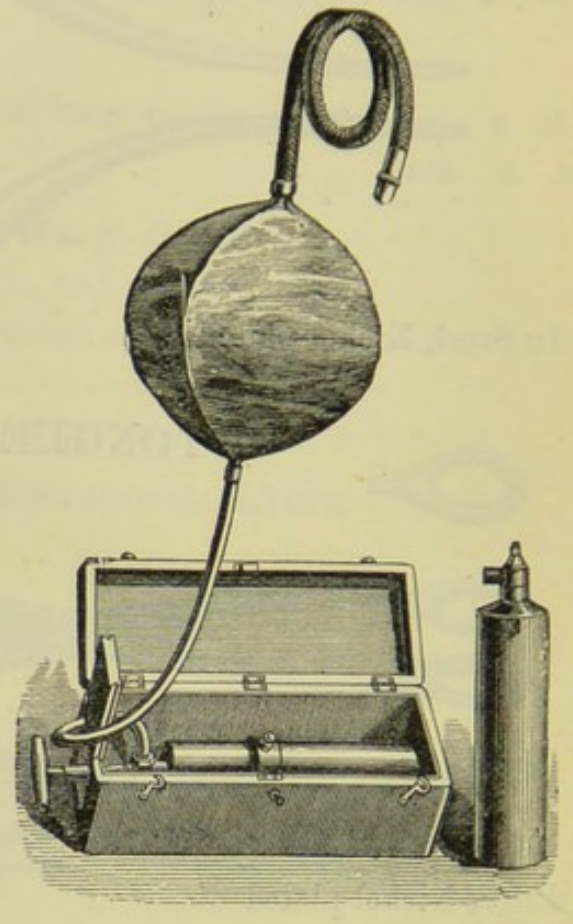
		s.	d.
In Ebony handles, beaks padded with India-rubber, bright parts Nickel-plated	long, each	16	6
" " " " "	short "	16	6

x 2

PORTABLE LIQUID GAS CASE.

TO HOLD COMPLETE OUTFIT FOR THE ANÆSTHETIST WHEN VISITING.





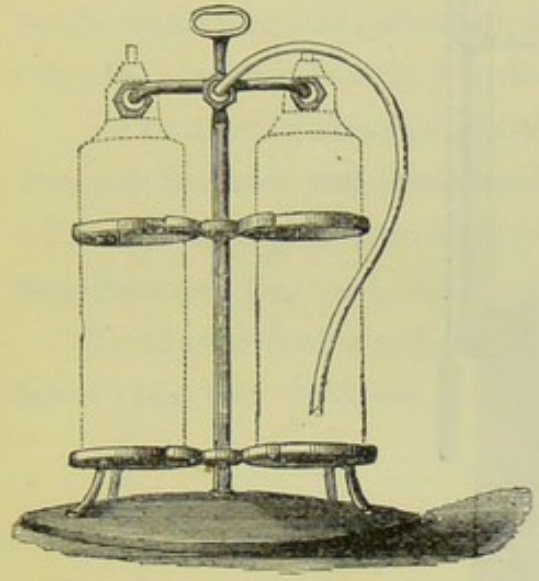
Consisting of:—	s.	d.
Wrought-iron Bottle, containing 100 gallons of Liquid Gas ..	56	0
Mr. Cattlin's Bag, to hold about 3 gall., with Union and Brass Mount	21	0
2 Facepieces, 1 Large and 1 Medium (or Small)	47	0
Supplemental Bag and Stopcock, for economizing, &c.—G ..	12	0
Two-way Stopcock to connect Facepiece and Cattlin's Bag—C ..	8	6
Set of Gags (Mr. McAdam's) 3 lengths—see page 304	15	0
Leather Case ($16\frac{3}{4}$ in. by $6\frac{3}{4}$ in.), to hold the above, with Lock and Key	16	0
Complete	175	6
Complete, with 50-instead of 100-gallon Bottle	157	6
Gas Bottles re-filled—100-gallon .. .. each	16	0
„ „ 50-gallon .. .. „	8	0

NOTE.—The above Cases are only made to carry the 50 or 100 gallon bottles. The Apparatus can be varied if desired.

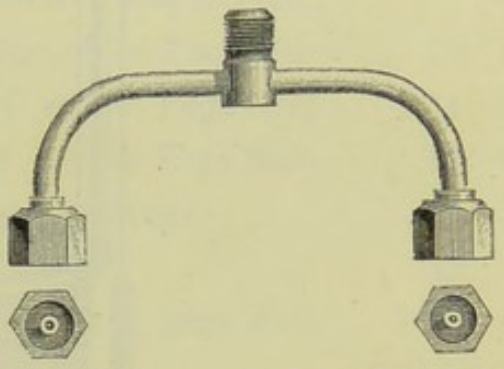
LIQUID GAS BOTTLE STAND.

FOR USE IN THE OPERATING ROOM.

(Introduced by Mr. NAPIER.)



DOUBLE UNION.



Suitable for use with two bottles with or without the Gas Stand.

This Apparatus will hold **two bottles** of Liquid Gas—which are secured in position by rings and screws—and is fitted with a **double union** which connects both bottles with the Facepiece.

By this arrangement the bottle in use can be entirely emptied without fear, for should there not be sufficient gas in it to complete an operation, it is only necessary to turn on the other bottle.

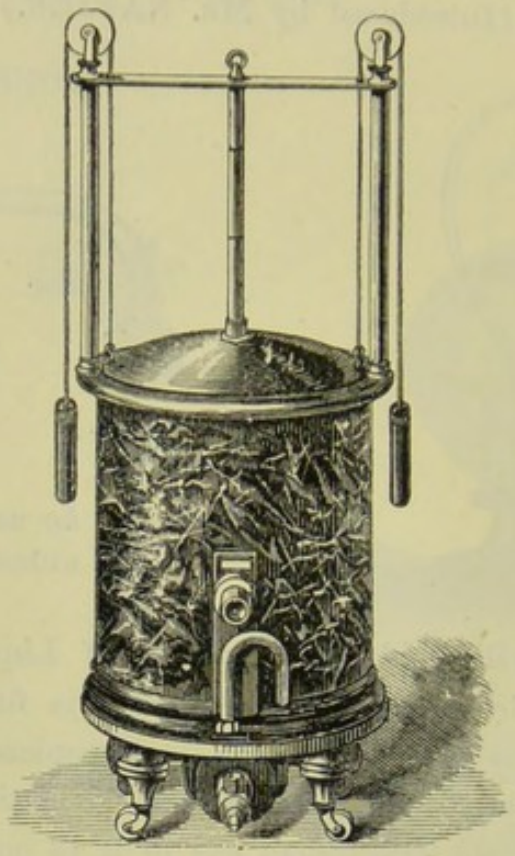
After the operation is completed, if another full bottle is not to hand, the double union can be removed, and the **union** of the Cattlin's Bag fixed to the remaining bottle, while the empty one is being refilled.

The Stand is made of iron, bronzed, and the Unions of gun-metal, the whole being light and portable.

PRICES:		s.	d.
Stands to hold two 50-gallon Bottles	each	30	0
„ two 100-gallon Bottles	„	30	0
Double Unions, for two 50-gallon Bottles	„	8	6
„ for two 100-gallon Bottles	„	8	6
Long Gas Keys, for use with above Stand	„	7	6
Iron Bottles, containing 50 gallons Gas	„	38	0
„ „ 100 gallons Gas	„	56	0
Gas Bottles refilled—100-gallon	„	16	0
„ „ 50-gallon	„	8	0

GASOMETER FOR LIQUID GAS.

FOR USE IN THE OPERATING ROOM.



This Gasometer is made expressly for holding Liquid Gas, to be used in the Operating Room. The bottle, containing the gas, is held underneath by two iron rings secured with two screws, and is attached to the Gasometer by means of the union on the bent pipe shown in Illustration. The brass tube with stop-cock, over the bent pipe, is for connecting the Gasometer with the Mohair Tubing, to which the Facepiece is attached. The centre brass rod, which is divided into intervals of two gallons each, indicates the quantity in the gasometer at any given time. To insure having sufficient for each operation, the gasometer should be filled for each patient.

When the bottle is empty, it can be replaced by a full one in a few minutes.

Other forms of Gasometers supplied to order.

PRICES:

	s.	d.
Gasometer, as illustrated, made of Zinc, Japanned in imitation of Marble, to hold 8 gallons of Liquid Gas	100	0
Bottle containing 100 gallons of Liquid Gas	56	0
6 feet India-rubber Tubing, $\frac{3}{4}$ in. diameter, covered with Mohair, for connecting Gasometer with the Stopcock on Facepiece	10	0
Two-way Stopcock and Brass mount .. (C and D, Page 302)	11	0
2 Facepieces, large and medium (or small) (See Page 302)	47	0
Supplemental Bag and Stopcock, for economizing:—		
To fit tube E of Facepiece	12	0
Set of Gags (Mr. McAdam's), 3 lengths (Fig. 4, page 304)	15	0
Complete	251	0

	s.	d.
Gasometers, as illustrated, 12-gallon capacity .. .. each	110	0

LARGE GAS BOTTLES AND TRIPOD STANDS.

FOR USE IN OPERATING ROOM.

		s.	d.
Bottles Containing 200 gallons Liquid Gas	each	82	0
Tripod Stands to hold ditto	„	7	6
Cattlin's Bags, 3 gallons capacity	„	21	0
Supplemental Bags, for economizing	„	12	0
Facepieces, large, medium and small (See Page 302)	„	23	6
„ „ „ „ without mount E ..	„	21	0
Two-way Stopcocks, for connecting Facepiece with Bag ..	„	8	6
Gags (Mr. McAdam's), long, medium, short	„	5	0
Gas Bottles refilled—200 gallons	„	32	0

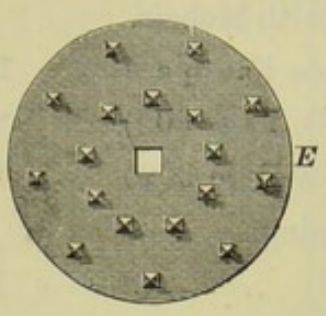
Note.—The above Apparatus can be varied if desired.

Bottles containing 500 gallons supplied to order, but they are not recommended.

PEDAL ATTACHMENT FOR LIQUID GAS BOTTLES.

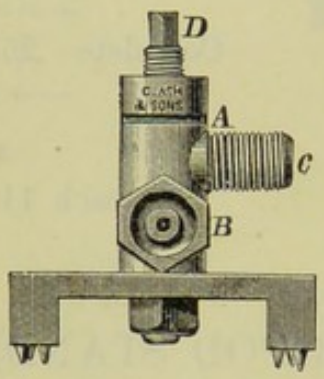
(Mr. CLARKSON'S PATENT.)

Made in two sizes, for use with 50 and 100-gallon bottles.



The attachment consists of a brass pillar with iron base, union, male screw, tap and foot key. It is designed to give complete freedom to the hands of the Anæsthetist during the administration of Nitrous Oxide Gas, and being simple in construction, it can be regulated and worked with the greatest case.

When ordering, please state which size is required.



Description:

A. Brass pillar with iron base.
B. Union for attaching to gas bottles.
C. Male screw to which the Cattlin's bag is fixed.
D. Tap leading to bottle.
E Foot key for releasing the gas.
F. Spanner.

Directions for use:

Connect the bottle to the attachment by means of the union B; fit the union of the Cattlin's bag on to the male screw C; open the tap of the bottle, place the foot key on the attachment and release the gas by gently unscrewing.



One third full-size.

	s.	d.
Pedal attachment and Foot Key ..	12	6
Spanner	1	6

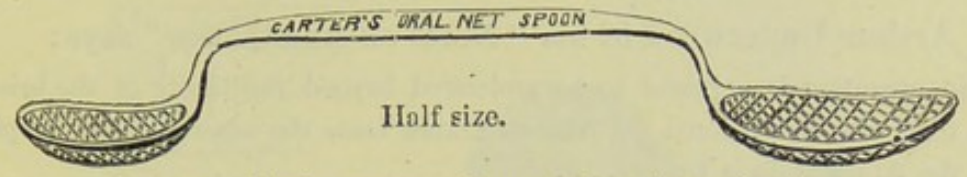
The attachment is also supplied with **double union** B for applying to two 50-gallon bottles of gas. When only one bottle is required, or while one is being refilled, the union not in use can be closed with a metal plug supplied for the purpose.

	s.	d.
Pedal Attachment, with double union and Foot Key	16	0
Spanner	1	6
Metal Plug for closing either union	1	6
Strong Wooden Box to hold two 50-gallon bottles equally suitable for use in the Operating Room or when visiting	23	6
Complete	42	6

Boxes to hold two 100-gallon bottles made to order.

ORAL NET SPOON.

(Mr. T. S. CARTER'S.)



Half size.

For use during extractions under Anæsthetics.

Mr. Carter says: "Owing to the increasing use of Anæsthetics for dental purposes, a serious danger has arisen, viz., that of a tooth or stump escaping from the forceps and passing into the larynx when the patient is in a recumbent position and under the influence of an anæsthetic. The position favours its falling backwards, and the loosened sensibility of the glottis, added to the rush of the current of air during an inspiration, renders the patient particularly liable to the occurrence of an accident of this kind.

"By the use of this instrument not only may an obvious danger be avoided, but a great source of anxiety is removed from the mind of the operator."

In German Silver, with wire gauze bowls, Nickel-plated .. .. 6*s.* 6*d.*

GAS QUIETER AND UNION.

This little device is complete in itself, and can be attached to any Cattlin's Bag in use, in place of the Union which connects the Gas Bottle with the Bag.

Price in Brass .. .. 4*s.* 6*d.*

NITRATE OF AMYL CAPSULES.

(As recommended by MR. WOODHOUSE BRAINE.)

Encased in Cotton Wool and Silk, 3 minims in each.

Mr. Braine finds these capsules very effectual in case of syncope under anæsthetics. In a paper read before the Medical Society of London, Nov. 24, 1884, he remarked:—

"Should much pallor be present, or syncope appear imminent, a few whiffs of Nitrate of Amyl furnish the quickest means of restoring the heart's action, and the most convenient form for carrying it is in little glass capsules. If one of these be dropped on the floor and stamped on the fluid runs into the cotton wool, and on this being held opposite the patient's mouth the vapour is inhaled and the heart begins to beat forcibly."

In boxes containing eight capsules .. per box 2s. 6d.

ETHER APPARATUS,

FOR PROLONGING ANÆSTHESIA.

Mr. Arthur Underwood in his "Notes on Anæthetics" says:

"If an operation is required to be prolonged beyond the limits of the brief insensibility that can be procured by Nitrous Oxide Gas, the agent usually employed to extend the Anæsthesia is Ether.....

"Many authorities pass ether and gas through the same face-piece; but there is an objection to this practice, namely, the face-piece becomes so impregnated with ether that the whole apparatus reeks of it, and afterwards, when gas alone is passed through it, patients frequently complain of the smell and taste, and even in some cases of headache and malaise.....

"It is with the greatest possible diffidence, however, that I mention this objection, seeing that many administrators of the greatest experience and ability adopt the combined method.

"It is best in all cases to commence the administration with Nitrous Oxide; by this means any unpleasantness during the preliminary stages is avoided. After eight or nine good inspirations a sufficient stage of insensibility is reached to commence the exhibition of Ether."

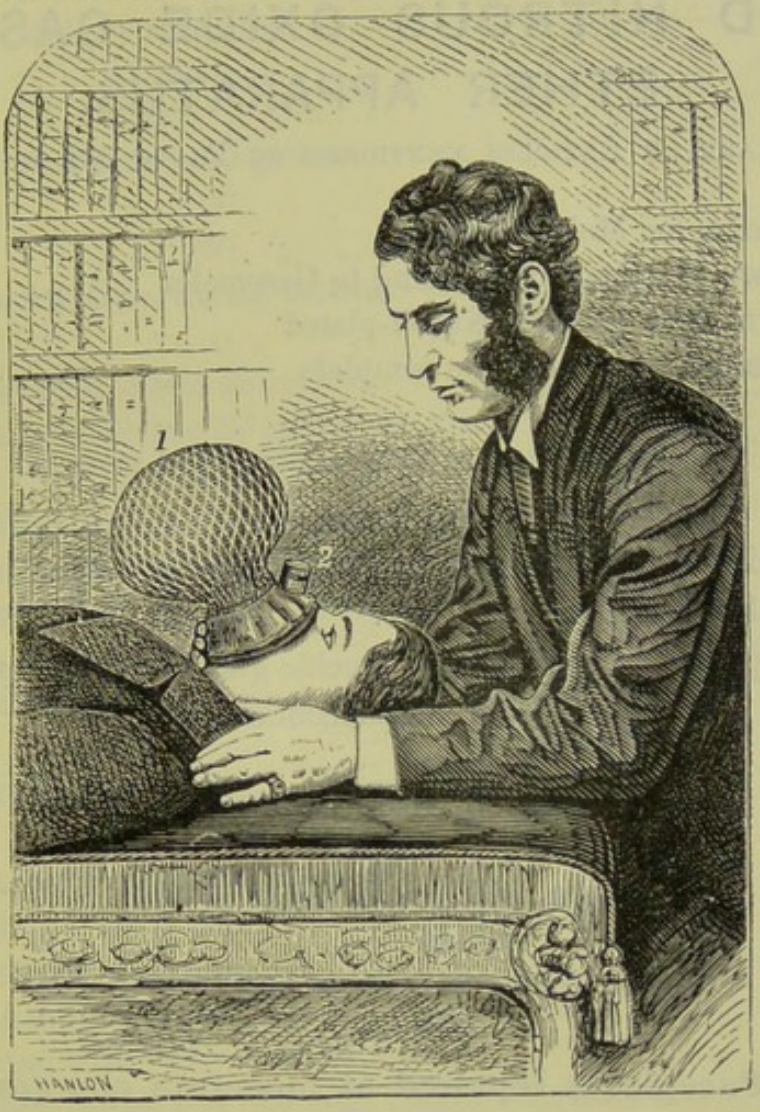
Mr. Woodhouse Braine gives some very clear directions on this subject. He says:

"Quickly change the face-piece for the Ormsby or Dublin inhaler. This must be done very rapidly, so that the nitrous oxide which the patient gets rid of by the first expiration, passes through the sponge, and becomes charged with ether-vapour for the first inspiration. This first inspiration is seldom a full one, the glottis taking cognisance of the pungent character of the vapour; but, in a few seconds, this irritation appears to subside, respiration becomes normal, and the patient sinks to sleep without any struggling whatever.

"There is one precaution to be taken in using an Ormsby inhaler when the patient is lying on his back; and that is, to hold the edge of the india-rubber bag between your finger and thumb, so that it does not become completely distended during expiration; because, if this take place, any ether that is on the bag runs at once through the sponge into the patient's eyes and mouth.

"The cold produced by the rapid evaporation of the ether is often so great that the sponge on which it is poured becomes frozen into a hard solid mass; and when in this condition it only gives off a very small quantity of ether-vapour. This is best prevented by warming the inhaler before using it, by placing in it a napkin, or large sponge, wrung out in hot water. If this plan be pursued, the ether-vapour comes off rapidly, the patient gets under its influence quickly, so that a small quantity of ether suffices, and, the patient having little to get rid of, nausea and vomiting are frequently absent together."

ORMSBY'S ETHER APPARATUS.



Description:

Fig. 1. Flexible india-rubber bag covered with netting to prevent undue expansion during expiration.

Fig. 2. Face-piece of soft metal, which can be readily moulded to any face, covered with leather and provided with movable india-rubber pad. The valve on the Face-piece serves two purposes:—*A.* To admit air if required, or to allow its escape if necessary. *B.* Additional ether can be poured down the tube leading to the sponge without removing the Face-piece.

Directions for use:

Pour one ounce of anhydrous anæsthetic ether—specific gravity 0·720—on the sponge in the cone-shaped wire cage, and the inhaler is ready for use. After eight or nine good inspirations of nitrous oxide, change the gas face-piece for the inhaler. This must be done very rapidly, so that the nitrous oxide, which the patient gets rid of by the first expiration, passes through the sponge, and becomes charged with ether-vapour for the first inspiration. Complete anæsthesia is produced in about two and a half minutes.

Prices:		*s.*	*d.*
Ether inhaler as illustrated		24	0
Face-piece pads without taps, extra	each	2	6
Anhydrous anæsthetic ether, sp. gr. 0·720	per pint	7	0

LIQUID NITROUS OXIDE GAS AND ETHER APPARATUS.

SUMMARY OF ARTICLES MENTIONED ON PAGES 302 TO 315.

			s.	d.
Brass Mounts, for Mohair Tubing	.. .. ..	each	2	6
„ **Screws**, for attaching Tubing to Gasometer	..	„	6	6
Carter's Oral Net Spoon, Nickel-plated	.. ..	„	6	6
Cattlin's Bags:—3 gallon size complete	.. ..	„	21	0
5 „ „	.. .. ..	„	28	0
3 gallon size, minus tubing and mounts		„	10	0
5 „ „	„	„	17	0
Double Unions, to fit two 100 or two 50-gallon bottles		„	8	6
Ether Inhaler, Ormsby's	.. ..	„	24	0
Ether Anhydrous, for inhalation, specific gravity 0·720		per pint	7	0
Facepieces:—**Clover's**, with Supplemental Mount	..	each	23	6
„ without „ „	..	„	21	0
Cone-shaped, with Supplemental Mount		„	23	6
„ without „ „		„	21	0
Flexible, with Supplemental Mount	..	„	23	6
„ without „ „	..	„	21	0
Extra Pads, with Taps for Clover's	..	„	4	6
„ without „ „	..	„	2	6
Facepieces repaired at moderate charges.				
Gags:—**Braine's**, with spring, in Ebonite, two sizes	..	each	3	0
Brunton's, hinged, in Steel, Nickel-plated, four sizes		„	12	6
Buck's, with spring, „ „ two „		„	7	6
Extra pads for Buck's Gags	.. ..	per pair	0	6
Freeman's, hinged, in Steel, Nickel-plated, two sizes		each	18	0
Hutchinson's, spring „ „ „		„	6	6
Mason's, adjustable, with set screw	„	„	16	6
McAdam's, with spring, in Vulcanite, three sizes		„	5	0
„ fixed „ „ „		„	3	0
Simple Gag „ „ „ „		„	1	3
Spring „ in Steel, Nickel-plated, two sizes	..	„	5	6
Various forms and sizes in Lignum Vitæ Wood		„	0	9

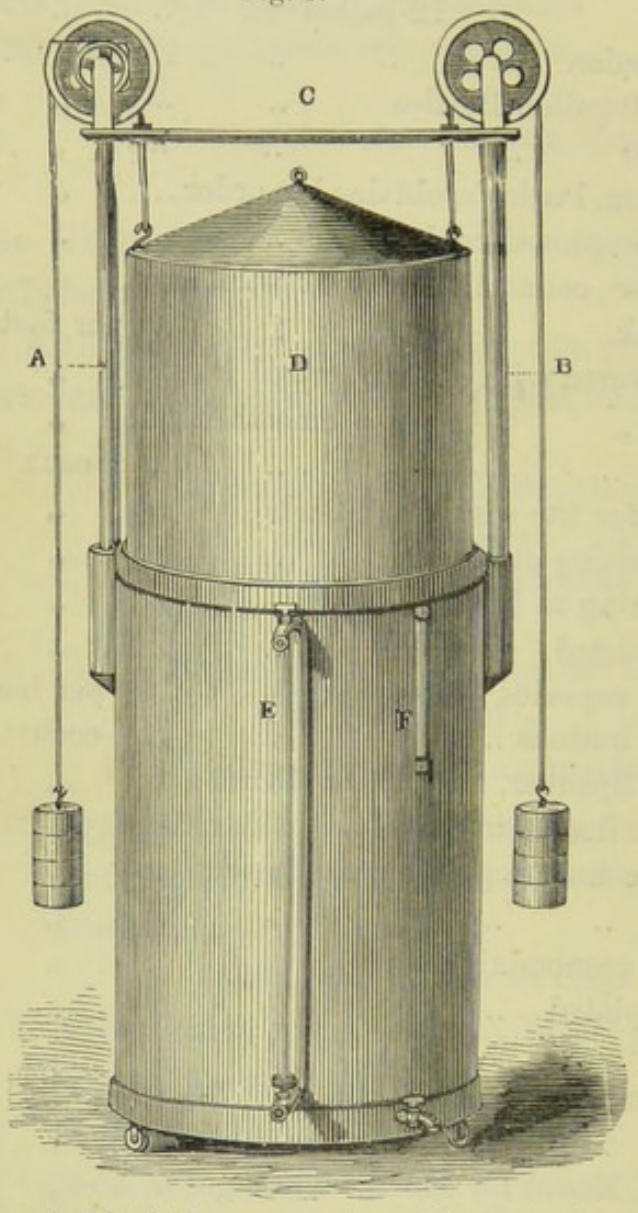
		s.	d.
Gas Bottles, full:—50-gallon	each	38	0
100 „	„	56	0
200 „	„	82	0
Gas Bottles refilled:—50-gallon	„	8	0
100 „	„	16	0
200 „	„	32	0
Gasometers for Operating Room:—8-gallon size ..	„	100	0
12-gallon „ ..	„	110	0
Gas Quieter, with single union	„	4	6
Gas Stands, to hold two 50-gallon Bottles	„	30	0
„ „ 100 „	„	30	0
Gas and Ether Apparatus, Pedley's, obtained to order ..	„	70	0
Gas and Ether Bags, in improved rubber	„	23	0
India-rubber Tubing, for connecting Gas Bottle and Cattlin's Bag, very thick .. .. : ..	per foot	0	8
India-rubber Tubing, covered with Mohair, wired inside	„	1	8
„ „ „ „ smooth inside	„	2	6
Keys for Gas Bottles	each	1	6
„ „ „ long, for use with Gas Stands ..	„	7	6
Leather Cases, to hold visiting outfit	„	16	0
Mounts in brass, for attaching to Mohair Tubing ..	„	2	6
Mouth Openers, Nickel-plated	„	12	6
Nitrite of Amyl, in glass capsules, 3-minim size ..	per box	2	6
Nose Clamps, with Ivory buttons	each	2	6
Pedal Attachments, and Spanner, single, Clarkson's ..	„	14	0
„ „ with double union, Wooden Box, &c.	„	42	6
Screws, in Brass, for connecting Mohair Tubing to Gasometer	„	6	6
Supplemental Bags, for economizing	„	12	0
Tongue Forceps, Nickel-plated	„	9	0
„ „ „	„	12	0
Tripod Stands, to hold one 200-gallon bottle	„	7	6
Two-way Stopcocks	„	8	6
„ „ and Mount for Mohair Tubing ..	„	11	0
Underwood's Notes on Anæsthetics	„	3	6
Unions, for connecting Gas Bottle and Cattlin's Bag ..	„	4	6
„ double, for connecting two Bottles of Gas ..	„	8	6
Valves for Facepieces, Inspiratory and Expiratory ..	„	3	0

A summary of articles used in the manufacture, &c., of Nitrous Oxide Gas will be found on pages 318 to 329.

APPARATUS FOR MANUFACTURING AND ADMINISTERING NITROUS OXIDE GAS.

GASOMETER.

Fig. 1.



DIRECTIONS

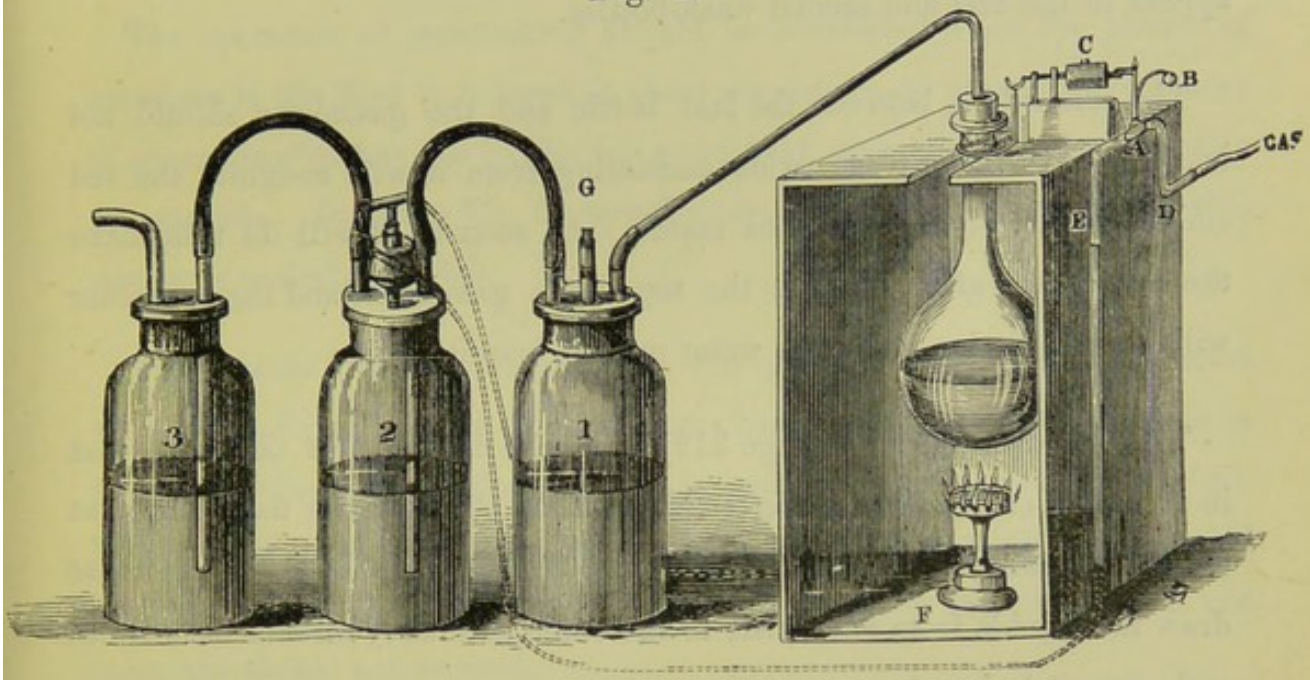
For setting up the Apparatus.

Place the Gasometer, Fig. 1, on level ground, then put the tubes A and B, with the lettered ends downwards, into their respective sockets. Then put the stems of the wheels A and B into their proper holes, in the cross-piece C, and drop them into the upper ends of the tubes A and B.

Then attach each cord to the hooks on the top of the gasholder D, and after passing them over the wheels attach to the other ends their sets of weights. Then fill up the lower half of the gasometer with water to within an inch of the top of the glass tube or water gauge F. Before using the gasometer, press down the holder as far as it will go, so as to empty it as much as possible of the atmospheric air. Then shut the top tap in pipe E and open the bottom tap, through which the Nitrous Oxide Gas has to pass.

APPARATUS FOR GENERATING THE GAS.

Fig. 2.



Put into the flask, one, two, or more pounds of nitrate of ammonia. Then suspend it inside the glazed wooden case by means of the wire cramp to the iron hook on top of the case, or to Kirby's Extinguisher B, C, Fig. 2 (described at page 322), if that is used. Then arrange the three wash-bottles in a row, connecting them one with the other, as shown in Fig. 2; then half-fill the bottle No. 1 with water, No. 2 with a solution of iron, and No. 3 with a solution of potash. The iron solution is made by dissolving three ounces of proto-sulphate of iron in a pint and a half of water. For the potash solution dissolve one ounce of caustic potash in a pint and a half of water.

When all the connections are made, light the gas-burner, or spirit lamp, under the flask, and gently get up the heat. As soon as the nitrate of ammonia begins to melt, the heat may be gradually increased. When the

nitrous oxide gas begins to be evolved, which will be known by the appearance of bubbles of gas passing through the wash-bottles, care must be taken to so regulate the heat that nitric or nitrous acid, &c., is not generated. When either of these acids is being evolved, dense white fumes will appear in the first and second wash-bottles.

The connection between the last bottle and the gasometer should not be made until the nitrous oxide emanating from it will re-ignite the red embers of a newly-extinguished match. As soon as it will do this, make the connection, after opening the tap of the gasometer, and the gasholder will gradually rise out of the water until it is quite full.

The vacuum valve G (page 319) is placed in the first bottle, so that in the event of the heat being suddenly shut off from the flask, sufficient air will be admitted through it to fill up the vacuum that would otherwise draw the liquids from one bottle to the other, and lastly into the flask itself, and cause it to burst.

When sufficient nitrous oxide has been made, turn off the gas from the burner under the flask, and (if no vacuum valve is used) immediately after break the connection between the first and second bottles by slipping the india-rubber pipe off the end of one of the glass tubes, so as to prevent the vacuum forming as described above.

When first making the gas it is absolutely necessary to generate sufficient to fill the gasholder, in order to saturate the water in the tank. Water will take up about its own volume of gas, therefore in starting a 50-gallon gasometer it will be necessary to make 50 gallons of gas, which will take about 2½ lbs. of nitrate of ammonia; the gradual descending of the gasholder will indicate the action of the water in absorbing the gas. Care, however, should be taken to make a fresh supply before the gasholder

has quite descended, otherwise a vacuum will be formed, and the weight of the atmosphere pressing on the outside of the gasholder will crush it in, besides causing other injuries. When the water is once charged with gas it will last many months without taking up any more.

The operation of gas-making should be concluded when the nitrate of ammonia in the flask is reduced to about six ounces, to prevent the danger of generating impure gas by the too great heat upon the smaller quantity of ammonia. By using Mr. Kirby's Extinguisher (see B, C, page 319) this danger is entirely avoided.

Two pounds of nitrate of ammonia will produce in one hour at least 40 gallons of pure nitrous oxide gas, provided constant attention is given in regulating the heat, so that nitrous or nitric acid cannot be formed. Nitrous oxide gas, when pure, should have a slightly agreeable odour, and a pleasant sweetish taste. When it tastes of copper or is pungent, it is not pure, and should not be used.

After the gas is made it should stand in the gasometer in contact with the water for several hours before being used. Some prefer it when it is two or three days old.

The iron solution in the wash-bottle will last for some weeks, but should be renewed when a quantity of red precipitate collects at the bottom of the bottle. The potash solution will also last a long time, but should be renewed when crystals of nitrate of potash are deposited on the sides of the bottle.

The action of heat upon nitrate of ammonia is as follows:—It fuses at 226° Fahrenheit, boils at 360°, and evolves gas at from 460° to 485°; at 500°, and upwards, it gives off nitrous and nitric acids, accompanied sometimes with an explosion.

MR. S. A. KIRBY'S GAS EXTINGUISHER.

(See B, C, Fig. 2, Page 319.)

THE use of this self-acting apparatus is to shut off the coal gas from the burner when the nitrate of ammonia in the flask is reduced to six ounces. It is considered desirable never to have less than this quantity in the flask, for heat acts so rapidly upon a small quantity that, without constant watching, the temperature rises quickly to 500° Fahrenheit, and the consequence is the generation of nitrous or nitric acids, ammoniacal gases, or other impurities.

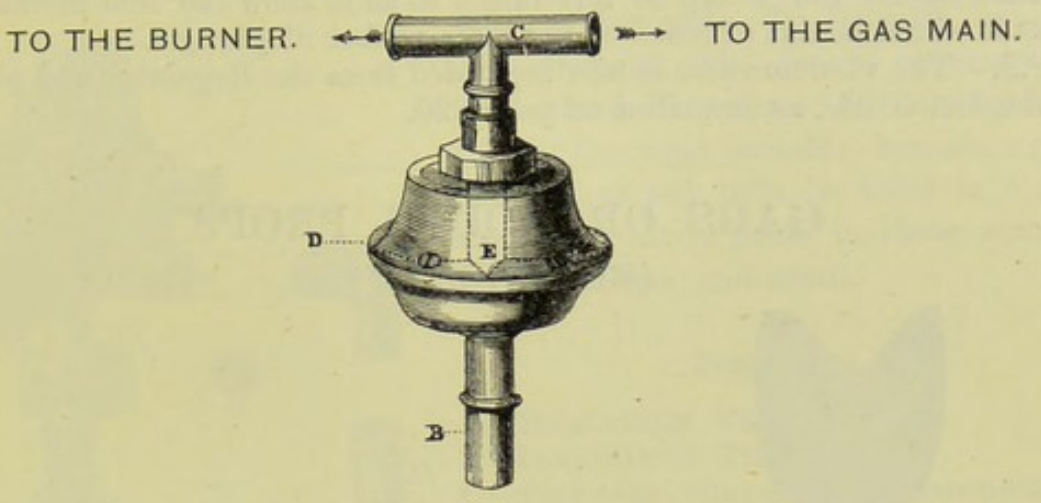
DIRECTIONS.

When first starting with a new flask, put into it six ounces of nitrate of ammonia, then hang it on to the hook at the end of the apparatus by means of the flask cramp, then slide the movable weight C (Fig. 2, page 319) to the other end of the bar, until it exactly balances the flask with its contents. When this is done, fix the weight by means of the screw provided for that purpose. Then put into the flask, in addition to the six ounces, one, two, or more pounds of nitrate of ammonia, hang it again on the hook, and open the tap A of the extinguisher by bringing the projecting piece of wire on the balance handle B in contact with the projecting end of the bar on which the weight slides. Then attach a piece of flexible tubing from the gas supply pipe to the end of the tube D, and another piece from tube E to the gas-burner F;* then light the burner, and proceed with the gas-making. As soon as the contents of the flask are reduced to just below six ounces, it being lighter than the weight on the end of the lever, the weight moves downwards, and the balance-handle attached to the tap falls and shuts off the coal gas. When once the weight is adjusted to the flask it need not be touched, so long as that particular flask lasts; but, as flasks differ in size, the weight must be set each time a new flask is used.

* If the Thermo-Regulator (Fig. 3) is used, the flexible tubing from tube E (Fig. 2) must be attached to one end of the ⊤ piece of the Thermo-Regulator, and another piece of tubing from the other end of ⊤ piece to the burner, so that the coal gas must pass through the Regulator before it reaches the burner.

ASH'S THERMO-REGULATOR.

3.



The use of the above invention is to regulate the supply of coal gas to the burner, when making the nitrous oxide gas, so that the right temperature may always be kept in the flask, thus ensuring pure nitrous oxide being made, and also preventing breakages as far as possible.

DESCRIPTION OF REGULATOR.

The Regulator consists of two chambers, divided through the centre by a diaphragm of india-rubber, D. Into the upper chamber is inserted a T tap, C and E, which is divided through its length, so that the coal gas entering on one side passes down into the chamber and up the other side to the burner. Into the lower chamber is inserted a tube (open at the end) which is in direct communication with the pressure in the wash-bottle. The pressure is caused by a small plug placed in the exit tube of the second bottle, so that if the gas is generated faster than it can escape through this plug, there is a pressure in the bottle, which acts upon the Regulator, and so partially cuts off the supply of coal gas to the burner. The T tap has a small hole through its division, which admits sufficient gas to the burner to prevent the flame being at any time entirely extinguished.

DIRECTIONS FOR USE.

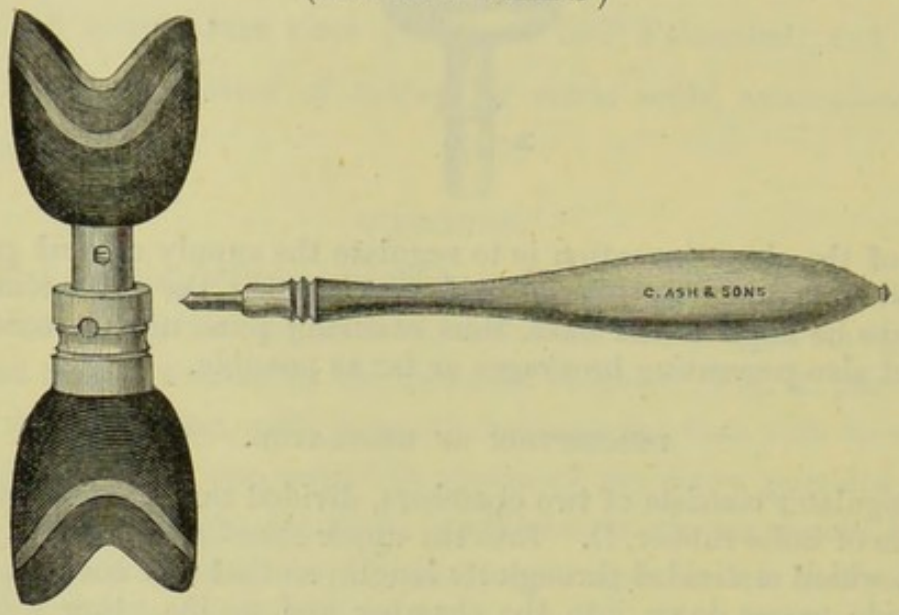
Take out the T piece or tap of Regulator and attach to one side of it (either will do) a piece of india-rubber tube from gas main, or from Kirby's Extinguisher (if that is used), and from the other side of T tap, another piece to burner, then replace the tap in its former position and press down as far it will go. Turn on the tap of service pipe and light the gas at burner; the flame obtained with the T tap in this position is sufficient to warm up the flask; then increase the flame by gradually raising the T tap until the ammonia is melted and nitrous oxide is being generated, and after having tested the purity of the gas, as per directions on page 321, make

the connection between the last wash-bottle and gasometer; then set the T tap of Regulator so that it be raised about $\frac{3}{8}$ inch. This should give a nice steady flame to burner, and the Regulator is then self-acting. At no time should the T tap be left raised so as to show the line marked on it, as it would be out of reach of the india-rubber diaphragm.

P.S.—The vacuum valve is now separated from the Regulator and placed in the first bottle, as described on page 320.

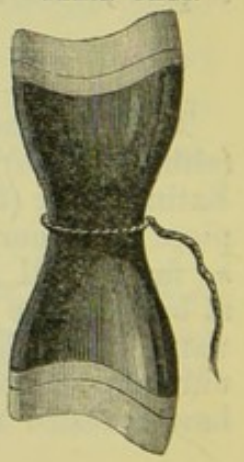
GAGS OR MOUTH PROPS.

(Mr. McADAM'S)



Mr. McAdam's Gags are made in two parts, with spring or elastic body intervening, but they have the advantage of soft rubber pads for the teeth. The Gag is placed in the mouth with the handle inserted, which keeps it at its shortest position. When securely placed between the teeth, the handle is removed, so that, should the patient open his mouth while inhaling the gas, the Gag will rise, and thus be prevented from falling into the larynx.

PLAIN GAGS.

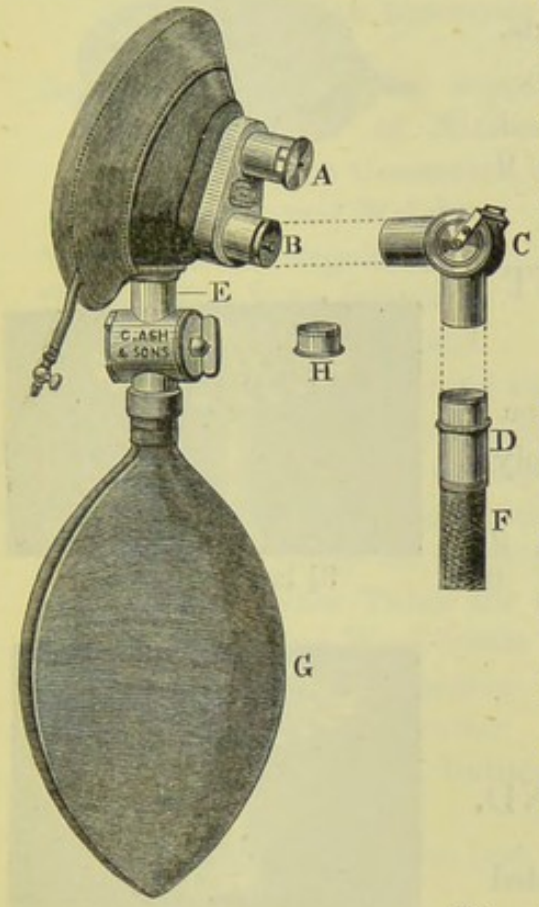


These Gags are generally used in pairs, tied together with stout silk cord. One is left hanging out of the mouth during the operation, and serves to prevent the one in position being swallowed while the gas is being administered.

For other Gags see pages 304 to 306.

MR. CLOVER'S FACEPIECE, &c.

This well-known Facepiece is made of soft metal, which can readily be moulded to fit any face, covered with leather, and provided with movable india-rubber pad. To Dentists residing at a distance, who cannot conveniently send their Facepieces to be repaired, this is the most suitable, because a new pad can at any time be fitted in a few moments. It is made in three sizes—large, medium, and small.



Description.

A—Expiratory Valve.
B—Inspiratory Tube.
C—Two-way Stopcock for connecting Facepiece and Gasometer.
D—Mount attached to Mohair Tubing of Gasometer.
E—Mount for holding either an Ether or a Supplemental Bag.
F—Mohair Tubing leading to Gasometer.
G—Ether Bag or Supplemental Bag.
H—Cap to cover Mount when the Ether or Supplemental Bag is not used.

Directions for Use.

Push the tube of the Stopcock C on to tube B of the Facepiece, and connect Mount D and Mohair Tubing F, which lead to the Gasometer, to the vertical tube of the Stopcock. After the Gag has been placed in the mouth, adjust the Facepiece, and allow the patient to breathe pure air through it for a few inspirations. This will beget confidence, and give the Anæsthetist time to assure himself that everything is in proper working order. Then close the air-hole in the Stopcock by an upward movement of the slide near C.

It is better to avoid any admixture of air during the inhalation, because it weakens the effect of the gas, and may even nullify it altogether.

When the Supplemental Bag is used to economize the gas, it is attached to tube E as shown in the above illustration. After four or five inhalations of gas open the tap of this bag, and close the expiratory valve A by placing the finger upon it. This will cause the expired gas to be breathed into and from the Supplemental Bag.

For other Facepieces see page 302.

BURNERS FOR HEATING GLASS FLASKS.

EVAPORATING BURNER.



In stout copper, with folded joints, 4 inches diameter.

		s.	d.
Price	each	5	0

STAR BURNER WITHOUT STAND.



3½ inches high.

Adapted for fixing to ¼ inch Supply Pipe. Will work steadily with any gas supply from 2 to 8 feet per hour.

		s.	d.
Price	each	2	0

STAR BURNER WITH STAND.

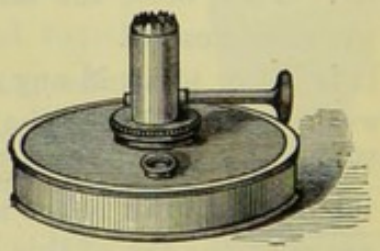


6 inches high.

Similar to the burner above, but mounted on a firm stand, and provided with gas supply pipe as engraved.

		s.	d.
Price	each	3	0

SPIRIT LAMP.



5 inches high.
5 „ diameter.

The spirit holder of this lamp is 2 inches deep. It is intended for use in places where coal gas cannot be obtained.

		s.	d.
Price	each	6	0

Other Burners supplied to order.

PRICE LIST OF

NITROUS OXIDE GAS APPARATUS, &c.

(AS DESCRIBED ON PAGES 318 TO 326.)

		s.	*d.*
Apparatus (as generally supplied) for the Manufacture and Administration of Nitrous Oxide Gas, consisting of a Japanned Zinc Gasometer, without Core, 50-gallons capacity, with Cords and Weights	(page 318)	140	0
*Ash's Thermo-Regulator	(„ 323)	15	0
*Kirby's Gas Extinguisher	(„ 322)	15	0
*Star Gas Burner with stand	(„ 326)	3	0
Wood Shield, with Tin lining and Zinc Tray ..	(„ 319)	16	0
3 Wash-bottles fitted with Bungs and Tubes ..	(„ 319)	24	0
4 Glass Flasks, each 100 oz. capacity	(„ 319)	6	0
Wire Hook for suspending Flasks	.. ..	0	6
3 India-rubber Bungs for Glass Flasks	.. ..	3	0
2 long Bent Glass Tubes for connecting Glass Flask and first Wash-bottle	(page 319)	5	0
Wood Union for connecting Tubes of last Wash-bottle to Gasometer	.. ..	0	6
6 feet each $\frac{3}{4}$ in. and $\frac{5}{8}$ in. India-rubber Tubing ..	.. ..	16	0
*12 „ $\frac{5}{16}$ in. „ „ ..	.. ..	4	0
$\frac{1}{2}$ cwt. Nitrate of Ammonia, best quality	.. ..	70	0
2 Jars for ditto	.. ..	8	0
2 lbs. Proto-Sulphate of Iron, in bottles	.. ..	2	8
1 lb. Caustic Potash	.. ..	4	0
1 each Large and Medium (or Small) Facepieces	(page 325)	47	0
Two-way Stopcock for ditto, with mount	(„ 325)	11	0
Set of Gags (Mr. McAdam's), 3 sizes	(„ 324)	15	0
	Complete ..	405	0
Apparatus as above, if with 40-gallon Gasometer	.. ..	390	0
Ditto „ „ 30 „ „	.. ..	382	0

Packing Cases for above Apparatus, extra, from 30/0.

* Dentists residing in places where coal gas cannot be obtained can have the Spirit Lamp (shown on page 326) for heating the ammonia, then the Gas Burner, the Regulator, Gas Extinguisher, and 12 feet of small india-rubber tubing, not being required, the total cost would be 31*s.* 0*d.* less than above. The Apparatus can be varied if desired. For other prices see pages 328 and 329.

APPARATUS FOR MANUFACTURING AND ADMINISTERING NITROUS OXIDE GAS.

SUMMARY OF ARTICLES MENTIONED ON PAGES 318 TO 327.

		s.	d.
Ammonia, Nitrate of, best quality	per cwt.	140	0
„ „ „	per lb.	1	4
Supplied in Jars containing 7, 14 and 28 lbs. Jars charged extra: 7 lb. size, 1s.; 14 lb. size, 2s.; 28 lb. size 4s.			
Ash's Thermo-Regulator	each	15	0
Caustic Potash, in ½-lb. bottles	per lb.	4	0
Facepieces—see page 302.			
Gags—see pages 304 and 306.			
Gas Burners:			
Fletcher's Evaporating	each	5	0
„ Star, without Stand	„	2	0
„ Star, with Stand	„	3	0
Gasometers:			
Japanned Zinc, without core, 50 gallons capacity	„	140	0
„ „ „ 40 „ „	„	125	0
„ „ „ 30 „ „	„	117	0
Glass Flasks:			
50-oz. size, with flat bottoms	„	1	0
100-oz. „ „ „	„	1	6
140-oz. „ „ „	„	2	3
Glass Tubes:			
Long, bent for connecting Glass Flask with first Wash-bottle	„	2	6
Straight, for second and third Wash-bottle	„	1	6
Bent, for the third Wash-bottle	„	1	3
Short, for first and second Wash-bottles	„	0	9
Short, with Valve for first Wash-bottle	„	2	0
India-rubber Tubing:			
Williamson's, for connecting Wash-bottles, specially made to withstand heat, ½-in. diam.	per foot	0	6
Small, $\frac{5}{16}$ inside, for connecting Coal Gas Pipe with Thermo-Regulator	„	0	4
Large, $\frac{5}{8}$ inside, for connecting Gasometer with last Wash-bottle	„	1	0
Covered with Mohair, wired inside	„	1	8
„ „ „ smooth „	„	2	6

APPARATUS, &c.—*continued.*

		s.	d.
India-rubber Bungs, for Flasks	each	1	0
„ „ for Wash-bottles	„	1	3
Kirby's Gas Extinguisher	„	15	0
Nose Clamps, spring Steel, with Ivory Buttons	„	2	6
Proto-Sulphate of Iron, in ½-lb. bottles	per lb.	1	4
Spirit Lamp, for heating Flasks, &c.	each	6	0
Stopcock and Mount, for Mohair Tubing	„	11	0
Thermo-regulator (Ash's)	„	15	0
Vacuum Valves, in Glass Tube, for No. 1 Wash-bottle ..	„	2	0
Wash-bottles, mounted ready for use, with Glass Tubes fixed in India-rubber Bungs	„	8	0
Wire Hook, for suspending Glass Flasks	„	0	6
Wood Shield, with Tin lining and Zinc Tray	„	16	0
Wood Union, for connecting tubes of last Wash-bottle to Gasometer	„	0	6

NOTES ON ANÆSTHETICS.

WITH

AN APPENDIX.

CONTAINING ILLUSTRATIVE CASES AND ENGRAVINGS OF ANÆSTHETIC APPARATUS.

By ARTHUR S. UNDERWOOD, M.R.C.S., L.D.S. Eng.,

Lecturer on Dental Anatomy and Physiology,
and Assistant-Surgeon at the Dental Hospital of London;
late Dental Surgeon to the West London Hospital.
Author of 'Surgery for Dental Students.'

"We congratulate Mr. Underwood in having brought out a book on anæsthetics which contains much useful information, and which does *not* contain lengthy tables of statistics which are held to be inseparable from the subject on which he writes. To the student in medical or dental schools we can thoroughly recommend this small volume as worthy of study and attention. . . . .

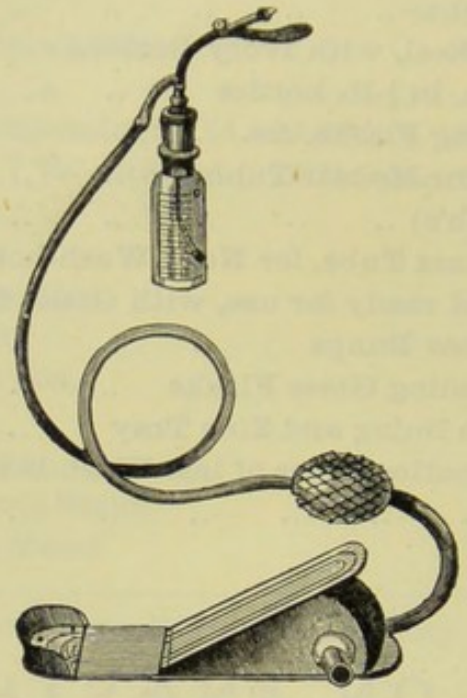
"His forcible remarks upon the dangers incurred by any one combining the functions of the anæsthetist and the duties of the operator are well worthy of careful consideration."—*Dental Record*, December, 1885.

	s.	d.
With 31 Illustrations, 119 pages, cloth 8vo.	3	6

ETHER APPARATUS.

FOR PRODUCING LOCAL ANÆSTHESIA.

(Dr. B. W. RICHARDSON'S.)



Ether Apparatus, consisting of a graduated Glass Bottle, with tube to insert in same, straight, curved, and double Jets, for various positions in the mouth, a Tongue or Cheek Holder (Mr. Welsh's), an elastic connecting Tube, and Foot Bellows.

		s.	*d.*
In Wooden Box with Instructions	each	34	0
„ „ „ with Hand Bellows ..	„	26	0
„ „ with Foot Bellows and no Tongue Holder	„	30	0
„ „ with Hand „ „ „	„	24	0
Foot Bellows only	„	15	0
Hand „ „	„	11	3
Glass Bottle, for Ether, Graduated, in Leather Case ..	„	2	6
Nozzles, straight, curved and double ..	each 1/6, 2/6, and	4	0
Ether Compound, in bottles, 4 oz., 2/0; 10 oz., 4/0; 20 oz.,		7	0
„ „ in Tin Cases, for export, 10 oz., 4/6; 20 oz.,		7	7

Other kinds of Ether supplied to order.

LATHES, FURNACES, BLOWPIPES, GAS-BURNERS, VULCANIZERS, TOOLS

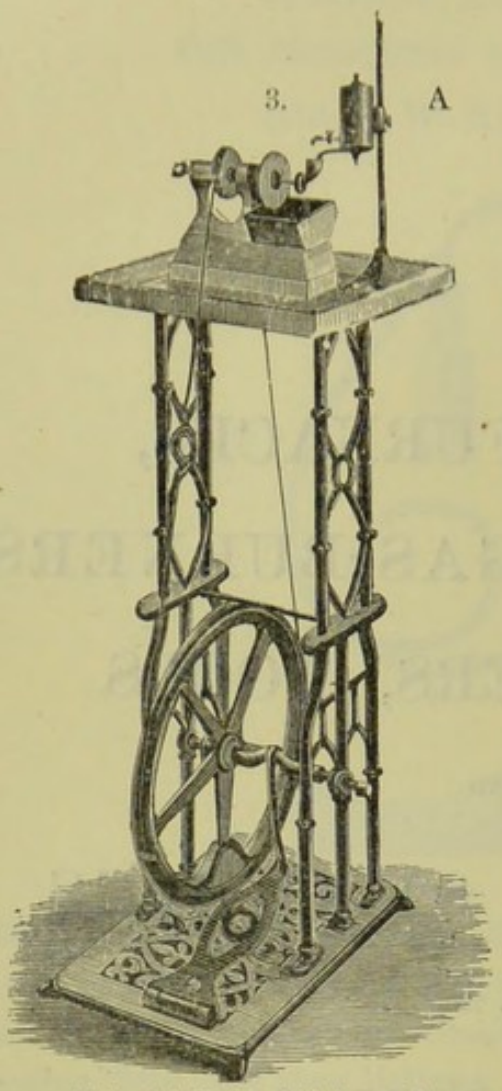
AND

GENERAL SUNDRIES

FOR THE

WORKROOM, &c.

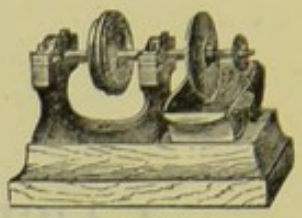
LATHES.



3. A

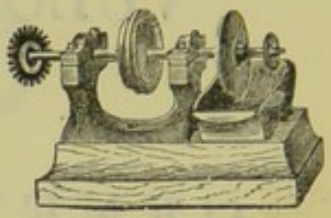
45 in. high, by 14½ in. wide.

B.



Single Lathe Head.

C.



Double Lathe Head.

Lathe for Grinding Mineral Teeth, &c., consisting of Iron Stand, Wheel and Treadle, Upright, Oak Table, Lathe Head Fig. B, Grinding Chuck, Gut with Hook and Eye, 2 Corundum Wheels, and Brass Spanner .. .. (Fig. 3) each 80 0

Lathe for Grinding and Polishing, with Lathe Head Fig. C, to carry Brush and 2 Corundum Wheels at the same time. Complete with Chucks, Lathe gut, 2 Corundum Wheels, one Brush and Brass Spanner .. .. .. (Fig. 3) „ 90 0

Water Apparatus with Sponge Holder .. („ A) extra 7 0

Lathe Head with Grinding Chuck, 2 Corundum Wheels and Brass Spanner, 10 in. long; 7 in. high (Fig B) each 27 0

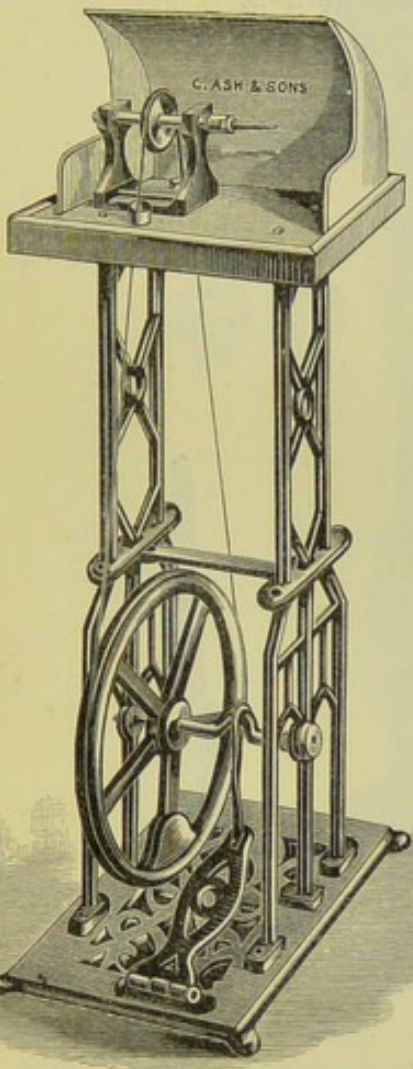
Lathe Head with Grinding and Polishing Chucks, 2 Corundum Wheels, Brush and Brass Spanner, 12 in. long; 7 in. high .. .. (Fig. C) „ 37 0

Troughs for Lathe Heads, japanned Tin .. .. „ 2 3

For extra Chucks, see page 334.

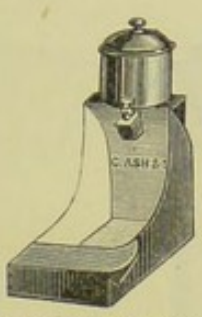
LATHE, DRIVING WHEEL, &c.

4.



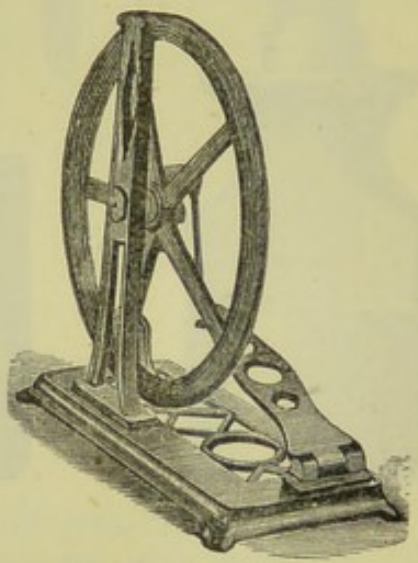
45 in. high, by 14½ in. wide.

D.



Water Apparatus.

E.



Driving Wheel.

Lathe for Polishing Plate and Vulcanite Work, &c., consisting of Iron Stand, Wheel and Treadle, Uprights, Zinc Table, Head with tapering screw Chuck, Zinc splash guard, one polishing Brush and Brass Spanner .. .. .. (Fig. 4) — *s.* 75 *d.* 0

Water Apparatus, with Trough, Sponge Holder and Splash-guard combined. In japanned Tin, with Tank to slide from right to left; 12 in. high; 6 in. wide, and 9 in. long .. (Fig. D) — 12 6

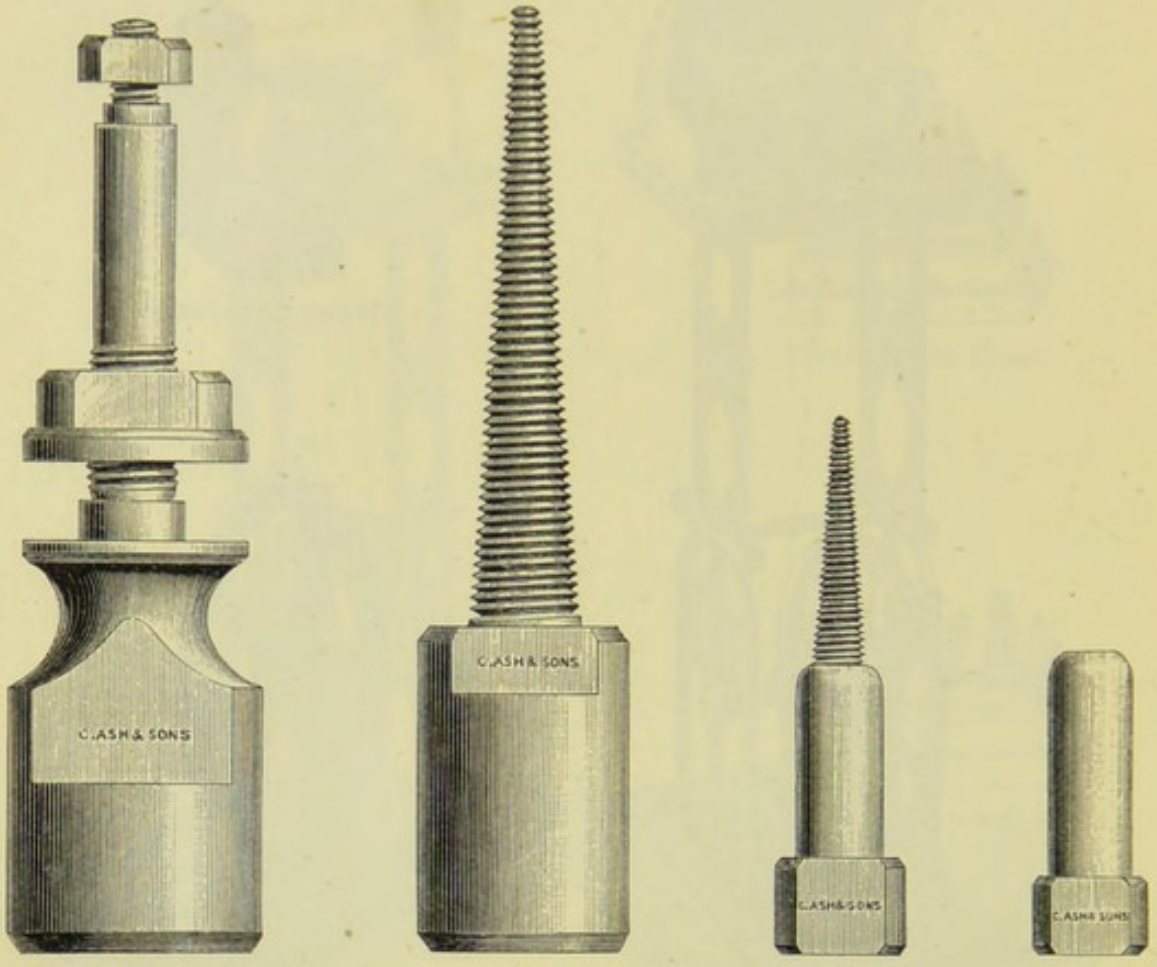
Driving Wheel and Treadle, in cast Iron, 21 in. high; 9 in. wide; 22 in. long, for driving Lathe Heads B and C on the previous page, when they are fitted on the workbench; also for working Lathe Heads shown on pages 336 and 337 .. (Fig. E) — 37 0

Driving Wheel and Treadle, Lawrence's .. .. — 48 0

For extra Chucks, see page 334.

CHUCKS FOR LATHES

Shown on Pages 332–3.



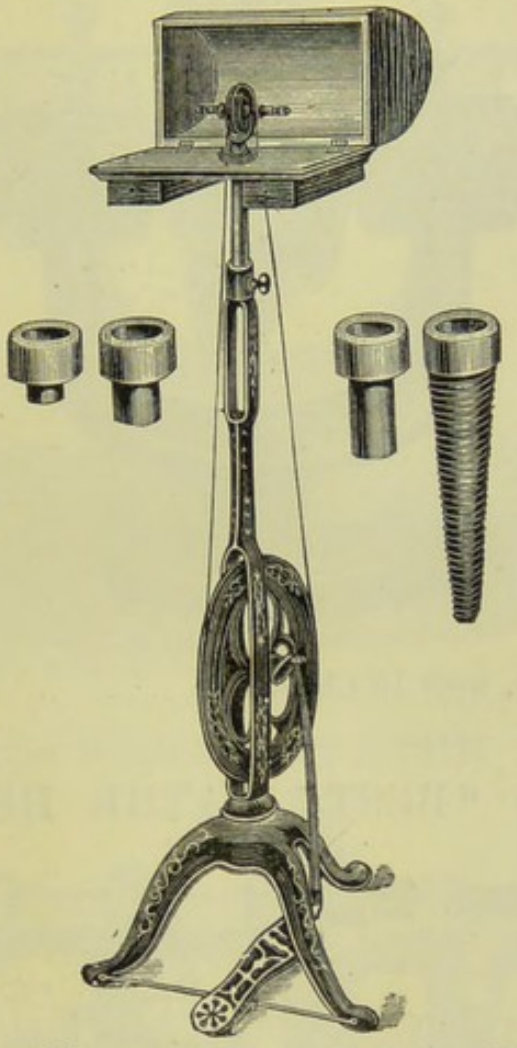
1. 2. 3. 4.

Full Size.

				s.	d.
Chuck to carry 2 Corundum Wheels	(Fig. 1)	each		7	0
,, ,, Polishing Brushes	(,, 2)	,,		3	9
,, ,, Steel Burs and Wheels, see page 405 ..		,,		6	6
,, ,, Small Corundum Wheels and Polishing Brushes	(Fig. 3)	,,		3	0
,, ,, Corundum Countersinks	(,, 4)	,,		2	3
,, ,, Burs and Drills, with Screw Clamp ..		,,		2	0
Gut for Lathe Bands		per hank from 10*d.* to		3	6
Hooks and Eyes for Gut, all sizes		per pair		0	10
Leather Band for Lathes, round		per foot		0	2

Other Chucks supplied to order.

LABORATORY LATHE.



Laboratory Lathe, as illustrated, with four Chucks, Treadle, Stand, and Upright, japanned black and relieved with gold ornamentation .. .. s. d. 100 0

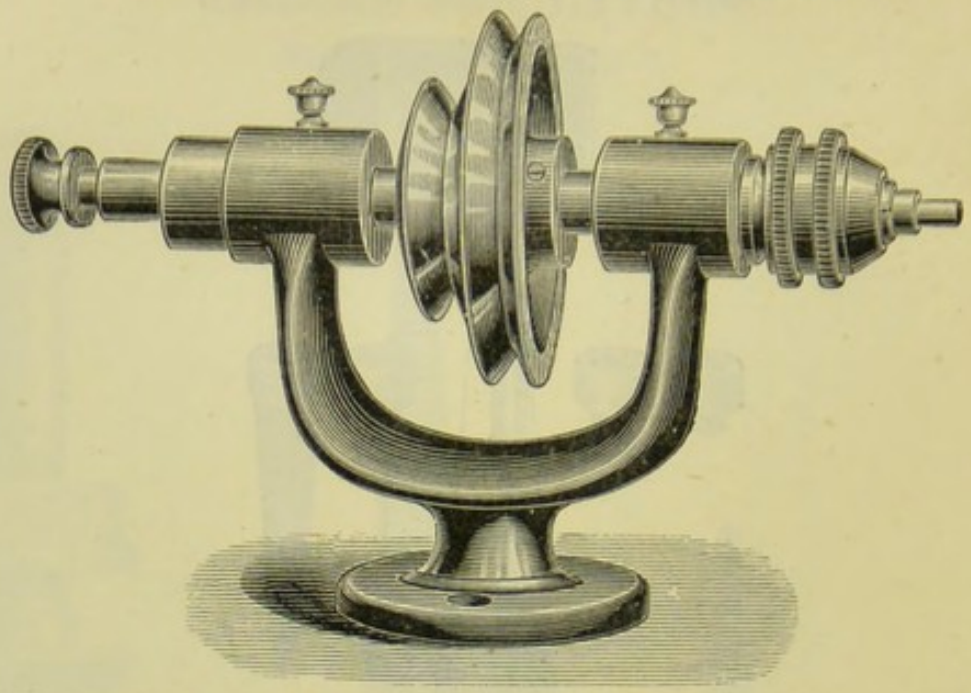
TRAVELLING LATHE.

With Head, Fig. B, shown on page 332, and set of five Chucks to carry Corundum Wheels, Polishing Brushes, Steel Burs and Wheels, Broaches, Drills, &c.; suitable for both heavy and light work; fitted in dovetailed mahogany box, strengthened with corner plates, and provided with two locks and keys and strong strap. The workmanship is of the best quality throughout, and all the parts are so arranged that the Lathe can be fitted up or dismounted in about two minutes. The outside dimensions of the box when closed are 16½ in. long, 14¾ in. wide, 19½ in. deep; the total weight being 73 lbs.

	s.	d.		s.	d.
Price, complete, from	250	0	to	280	0

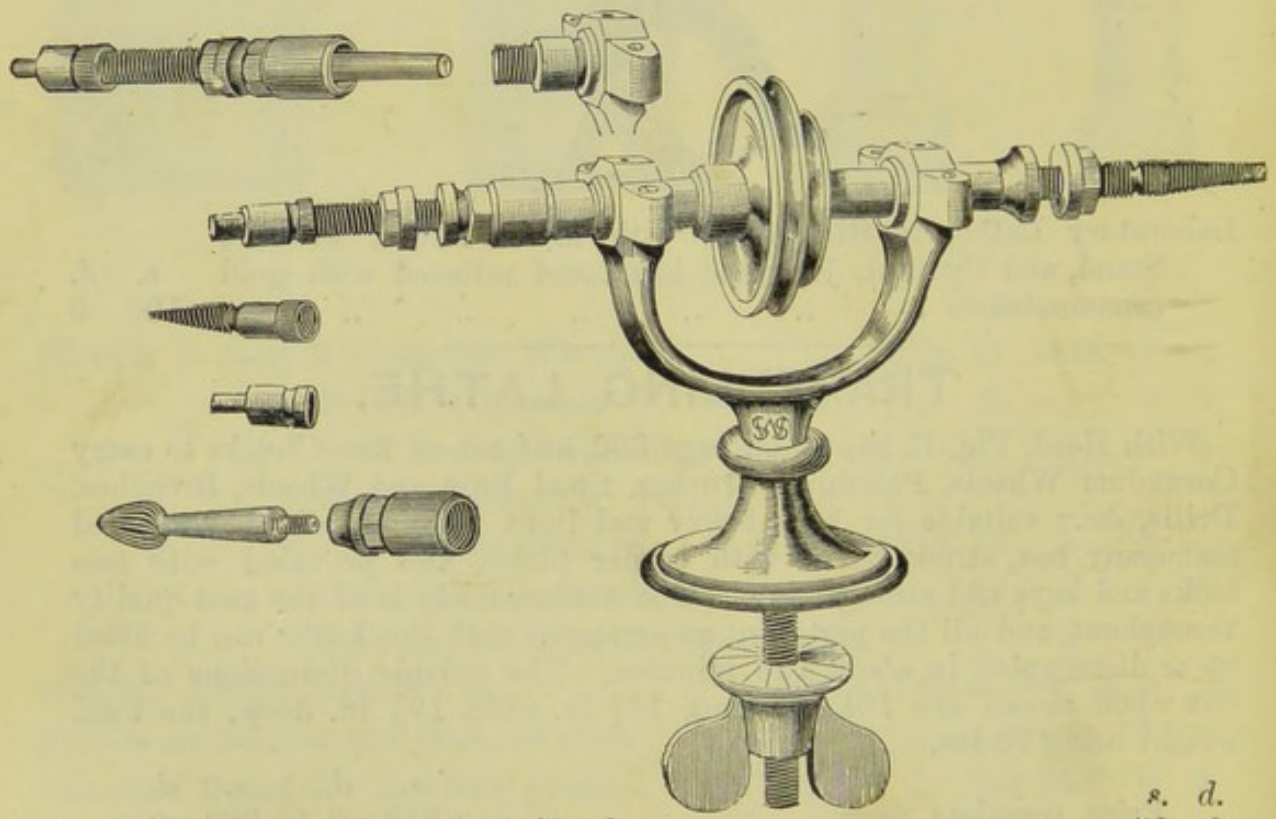
For Operating Room Lathes, see page 64.

CONE-JOURNAL LATHE HEAD.



	s.	d.
Lathe Head complete, with 10 Chucks	44	0

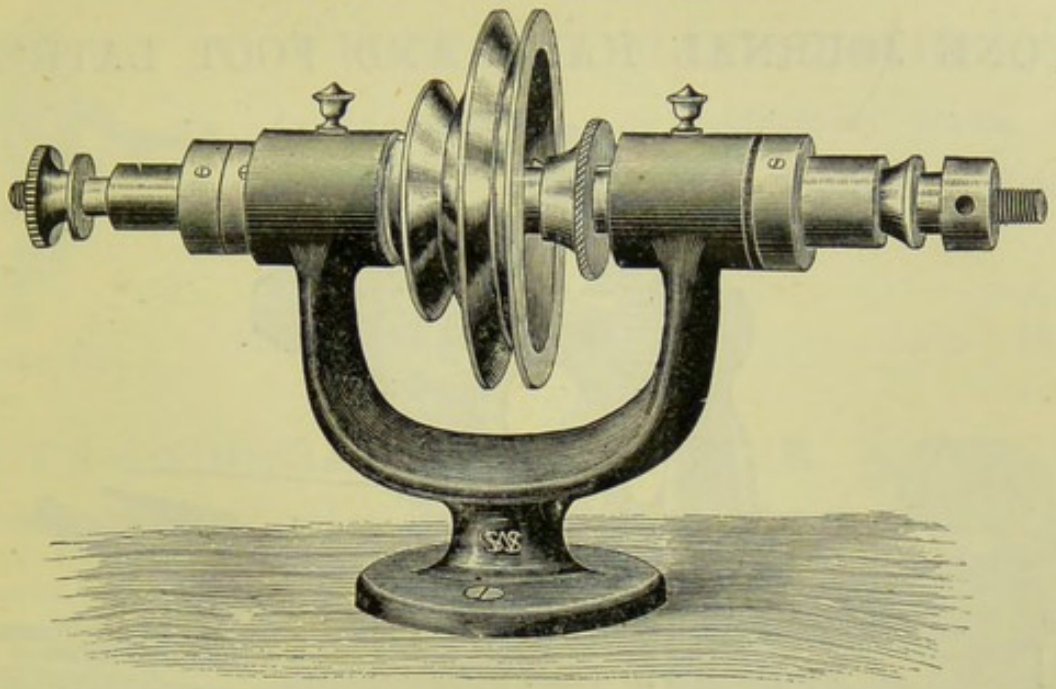
THE "BEST" LATHE HEAD.



	s.	d.
Lathe Head complete, with 4 Chucks	56	0

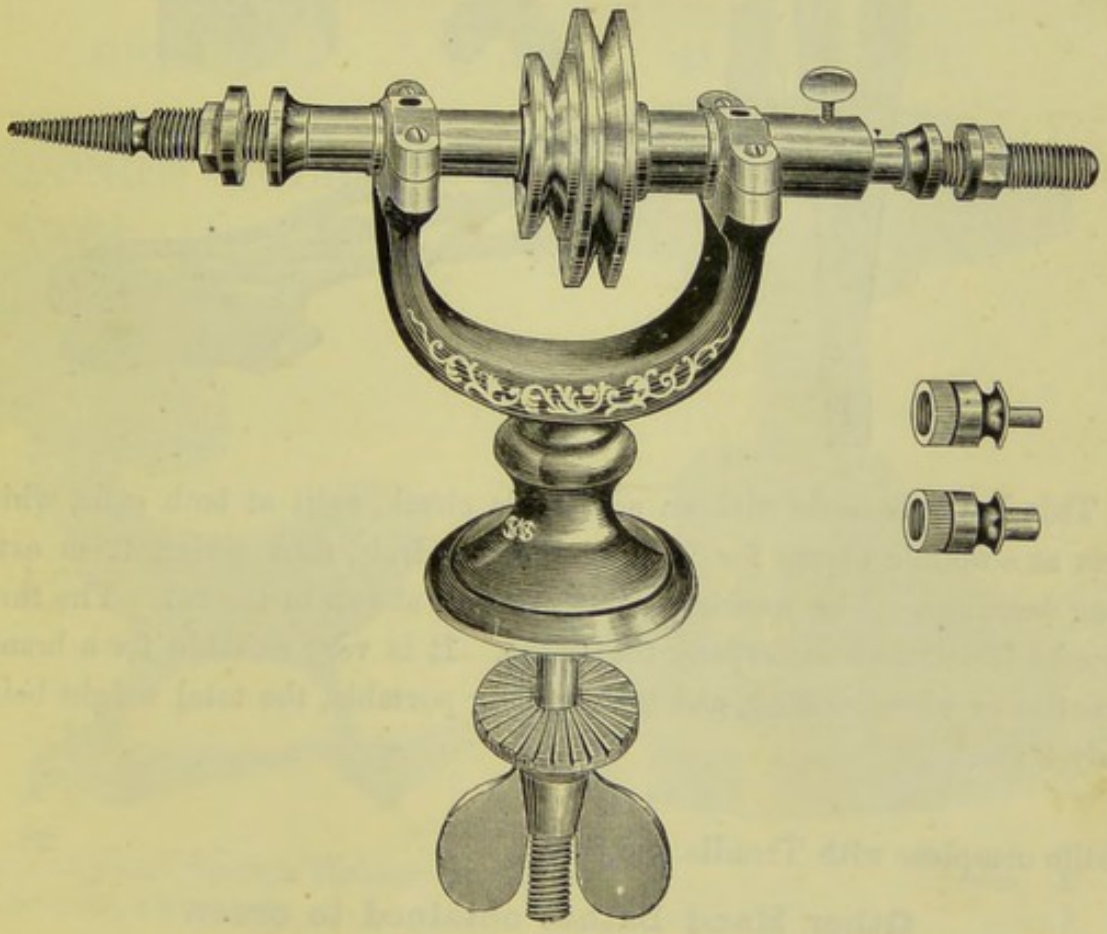
For Driving Wheels, see page 333.

CLUTCH LATHE HEAD.



	s.	d.
Lathe Head complete, with 10 Chucks	52	0

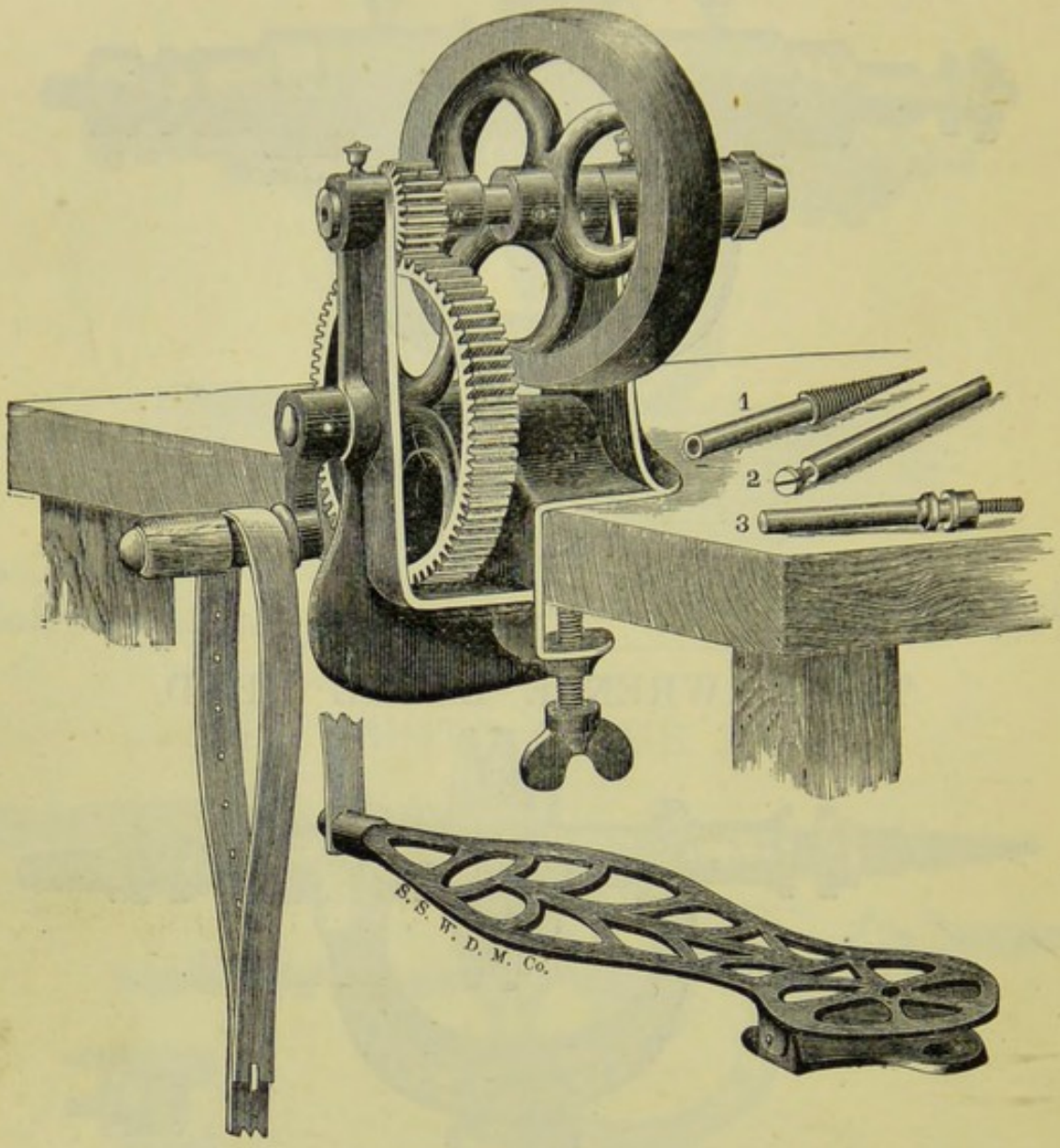
THE LAWRENCE LATHE HEAD.



	s.	d.
Lathe Head in Iron, with Chucks as illustrated	30	0
„ in Brass „ „	40	0

For Driving Wheels see page 333.

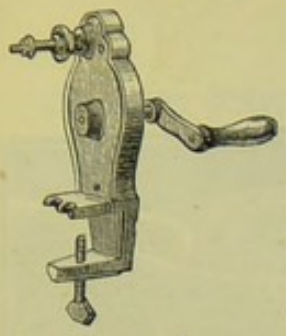
CONE JOURNAL HAND AND FOOT LATHE.



This Lathe is made with an adjustable chuck, split at both ends, which acts as a double clamp for holding the mandrels, thus giving them extra long bearings. The working parts are well shown in the cut. The three chucks illustrated accompany the Lathe. It is very suitable for a branch practice or when visiting, and is extremely portable, the total weight being only 8 lbs.

	s.	*d.*
Lathe complete with Treadle and Strap	28	0

Other Hand Lathes obtained to order.



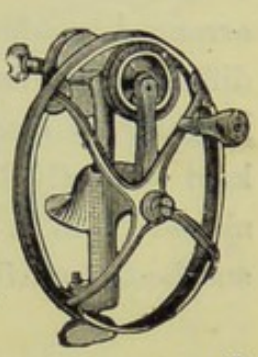
7 inches high.

PORTABLE HAND LATHE.

In bronzed iron, with multiplying wheels, two Corundum Wheels, and Brass Spanner. Weight, 2¼ lbs.

	s.	d.
Price complete	18	6

COY'S "NOISELESS" HAND LATHE.



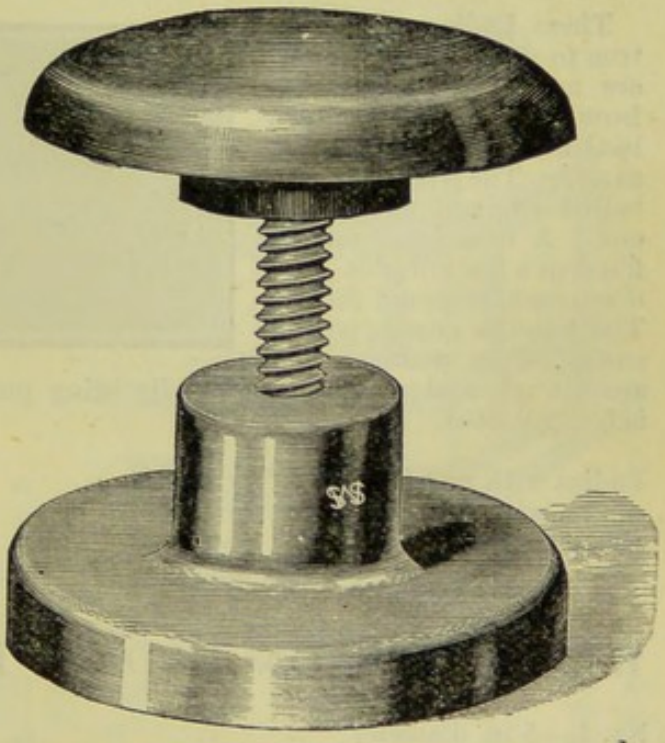
For grinding and polishing. It possesses sufficient power to do any work that may be required in the Operating Room or when visiting. The grinding chuck is made to hold one large and one small Corundum wheel, and the polishing chuck will take brushes from 1½ to 3 inches in diameter. The Lathe is quite noiseless and extremely portable; the total weight being 5 lbs.

	s.	d.
Lathe complete, with Grinding and Polishing Chucks	30	0

DRIP CUP AND SPONGE HOLDER.



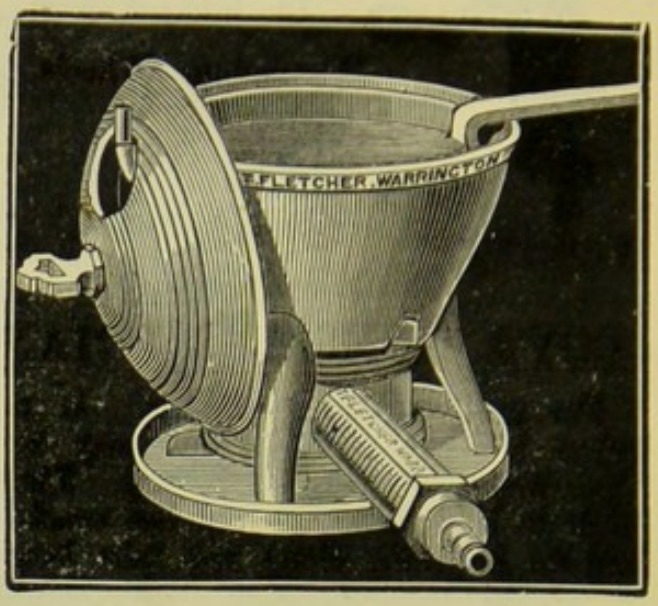
HAND-REST.



	s.	d.
Drip Cup and Sponge Holder, for Lathes .. .. .. each	2	0
Hand-rest, adjustable .. .. „	1	6

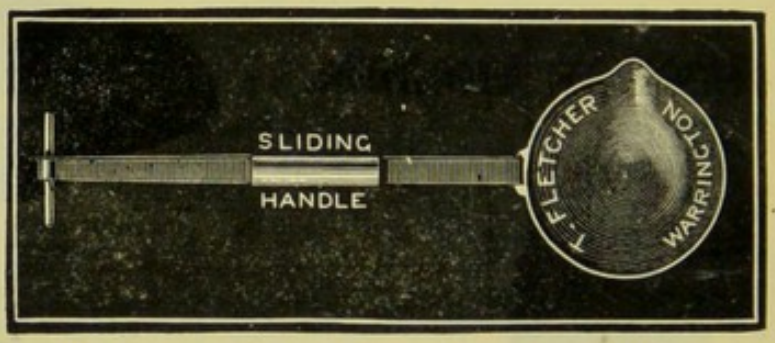
LADLE FURNACE.
(FLETCHER'S.)

This Furnace will take Ladles 7 inches in diameter. The burner, which is removable, can also be used for heating soldering irons, boiling water, and other purposes. The body and lid are arranged to admit the handles of different size Ladles at different heights, to enable them to be kept perfectly level. It is furnished with a metal skimmer, and hook for lifting the lid.



	s.	d.
Furnace complete, without Ladles	12	6

LADLES FOR ZINC AND LEAD.
(FLETCHER'S.)



These Ladles, which are true to shape and thickness, are made with **cast-iron bowls for lead and malleable iron bowls for zinc.** The handles are bolted on, and never wear out. A new bowl can be fixed in a few minutes. The diameter of each is 7 inches. The handles ensure perfect steadiness in pouring, and are always cold; the sliding handle being pushed to the cool end while the metal is being heated.

		s.	d.
Ladles with cast-iron bowls, for lead	each	2	6
„ with malleable „ for zinc	„	3	9
Extra Bowls—Cast-iron, for lead	„	1	3
Malleable, for zinc	„	2	6

WROUGHT-IRON LADLES FOR LEAD AND ZINC.

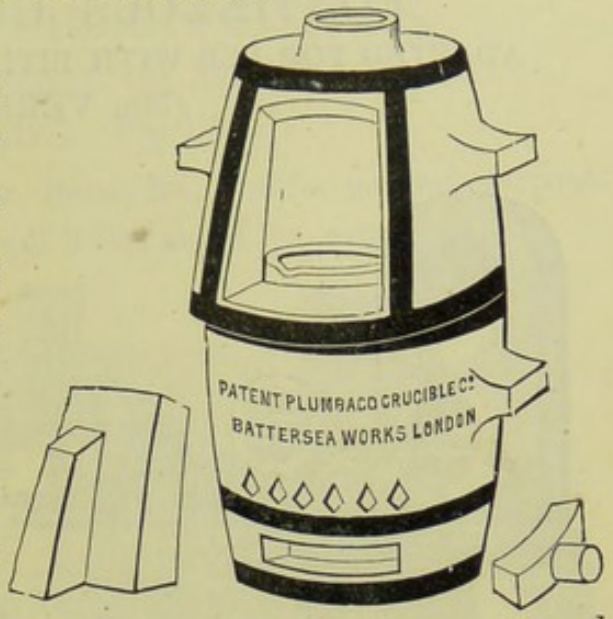
		s.	d.
No. 1.—5 in. diameter	each	1	9
„ 2.—5½ in. „	„	2	0
„ 3.—6 in. „	„	2	6
„ 4.—6½ in. „	„	3	0
„ 4.—4½ in. „ Light	„	1	0
Lead and Zinc—price fluctuates	per cwt. 24/0; per lb.	0	3

DRAFT FURNACES.

Crucible Furnace, for melting gold, silver, &c., heated by Foundry Coke and Charcoal. Made in three sizes, to take Crucibles of 4, 8, and 12 lbs. capacity, and strengthened by iron bands.

Bars are charged extra.

Larger sizes supplied to order.

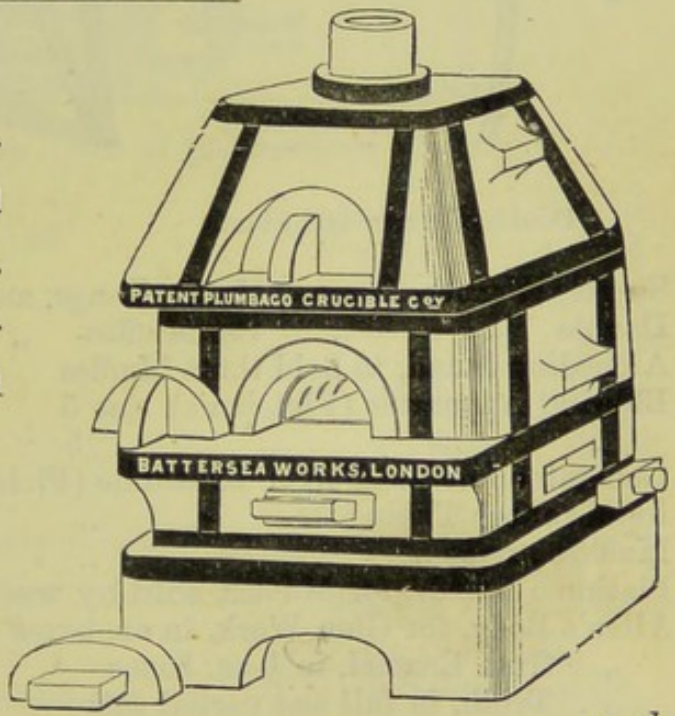


									s.	d.
Furnace, 4-lb. size, 9¼ in. diameter, 17½ in. high	..	..	..	..	each	23	0
„ 8-lb. „ 9¾ in. „ 20 in. „	..	..	..	..	„	29	0
„ 12-lb. „ 11 in. „ 22 in. „	..	..	..	..	„	35	0
Plumbago Crucibles—4-lb. size, each 8*d.*; 8-lb.size, each 1*s.* 3*d.*; 12-lb. size					„	1	10
Crucible Tongs					„	2	0

Clay Crucibles and Melting Pots of all sizes and kinds obtained to order.

Muffle Furnace, for continuous gum work, &c., heated by Foundry Coke and Charcoal. Made in three sizes, large, medium, and small, strengthened by iron bands.

Larger sizes supplied to order.



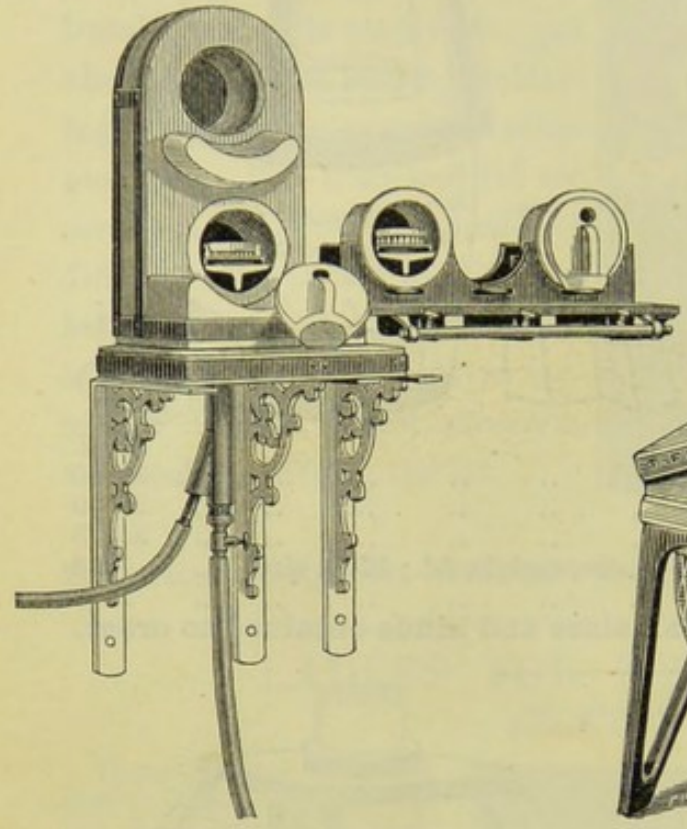
									s.	d.
Furnace, small size, 13¼ in. diameter, 25¼ in. high	..	..	..	..	each	53	0
„ medium „ 15½ in. „ 28½ in. „	..	..	..	..	„	70	0
„ large „ 17½ in. „ 30 in. „	..	..	..	..	„	94	0
Fireclay Muffles: small, each 1*s.* 8*d.*; medium, each 2*s.* 4*d.*; large					..	„	3	0
Muffle Slabs: „ „ 6*d.*; „ „ 1*s.*; „					..	„	1	6
Gum Enamel (Allen's) in ½-oz. boxes ..	..	..	..	..	..	per oz.	10	0
Body for Gum Work (Allen's), in 1-oz. boxes	..	..	..	..	„	6	0

Dr. Ambler Tees' Gum Enamel and Body supplied to order.

CONTINUOUS GUM FURNACE,

ADAPTED FOR USE WITH EITHER COAL GAS OR AIR GAS.

(Mr. VERRIER'S.)



Double Furnace and Stand.

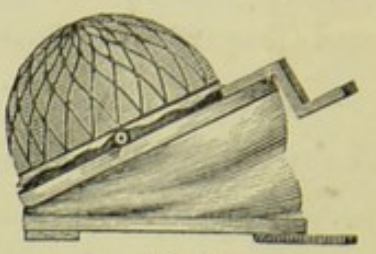


Fig. 9.

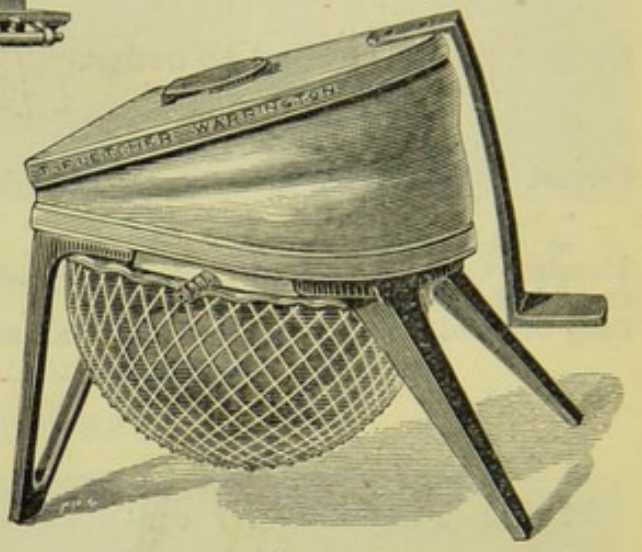


Fig. 9B.
Blowing Apparatus.

		s.	d.
Single Furnace, Burner, Muffle, Tongs, and Book of Instructions		65	0
Double „ „ two Muffles „ „		90	0
Annealing Stand, to hold three Muffles		14	6
Blowing Apparatus (Fletcher's), size 5	(Fig. 9)	27	0
„ „ „ „ 5	(„ 9B)	35	0
Generator for Gasoline or Benzoline (Fletcher's) ..	.. ..	27	6
India-rubber Tubing	per foot	0	6
Muffles, extra	each	3	0
Platinum Stands, for Muffles, **sold by weight** ..	per oz.	42	0
Allen's Body, for Gum Work, in oz. boxes	„	6	0
„ Gum Enamel, in ½-oz. boxes	„	10	0
„ Teeth, in full and partial sets	per 100	40	0
Fireclay, for repairing Muffles	per lb.	1	6
„ for making Investing Batter	per 14 lb. bag	1	6
Asbestos „ „ „ finely powdered	per lb.	1	6
Powdered Silex „ „ „	„	1	6

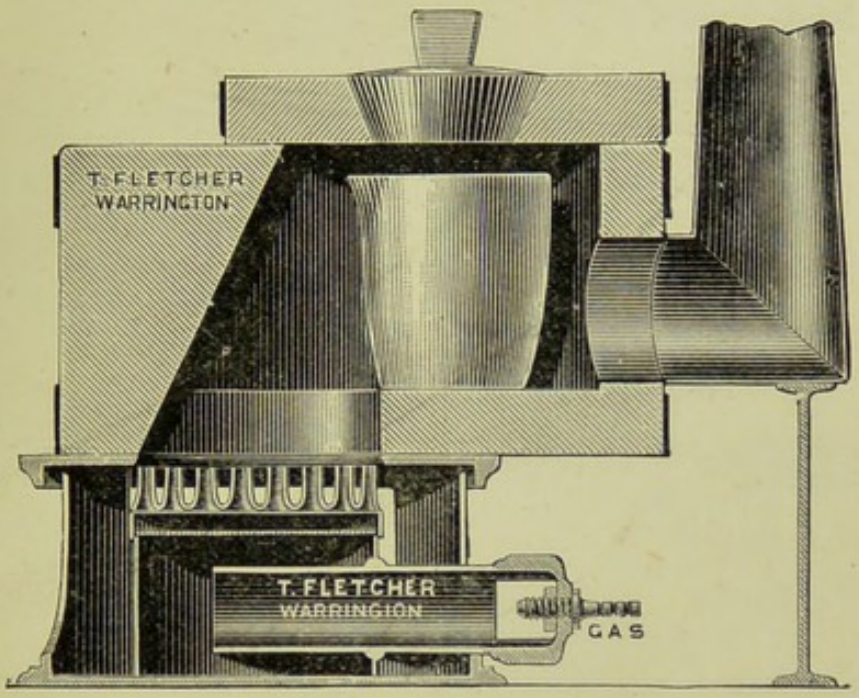
When ordering, please state whether the Furnace is required for use with Coal Gas or Air Gas.

DRAUGHT CRUCIBLE FURNACE,

FOR USE WITH COAL OR AIR GAS.

(FLETCHER'S. Fig. 63.)

Suitable for melting Gold, Silver, Brass, &c., and for general purposes, made in two sizes, to take Crucibles of 2 lbs. and 6 lbs. capacity.



Each Furnace is supplied with 3 feet of India-rubber Tubing.

		2-lb. size.			6-lb. size.	
		s.	*d.*		*s.*	*d.*
Furnace	each	30	0	..	45	0
Plumbago Crucibles	„	0	4	..	1	0
Fireclay „	„	0	2	..	0	5
Crucible Tongs	„	1	6	..	2	0
Bow Tongs for 6-lb size		..			3	0

Gas supply required.		**Crucibles, outside measurement.**	
Cubic Feet.	Inch.	High.	Diameter.
2-lb. size, 17 per hour.	$\frac{3}{8}$ pipe and tap.	3 by	$2\frac{5}{8}$ inches.
6-lb „ 22 „	$\frac{3}{8}$ clear bore „	4 by	$3\frac{1}{2}$ „

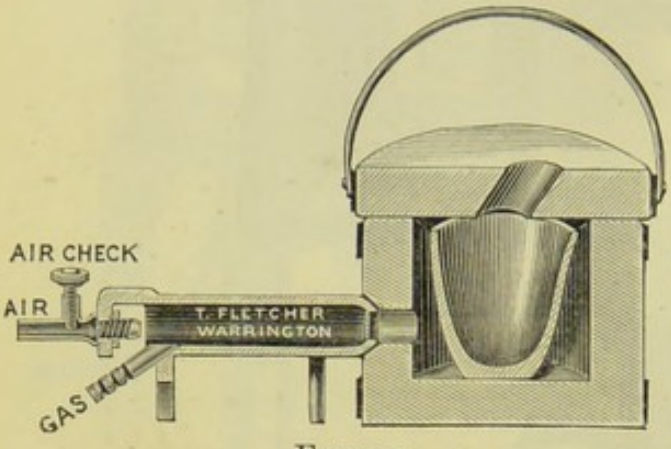
The above Furnace to take 12-lb. size Crucibles supplied to order.

Mr. Fletcher's latest List of Laboratory Apparatus sent on application.

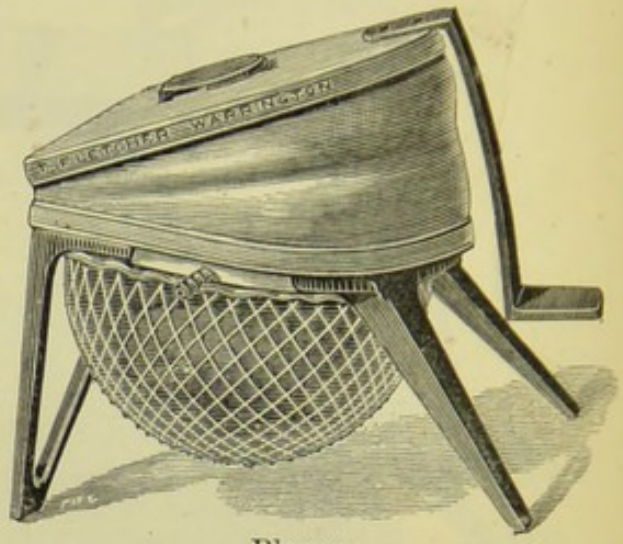
PERFECTED INJECTOR FURNACE AND BLOWING APPARATUS.

(FLETCHER'S.)

For melting Gold, Silver, &c., works equally well with coal gas or air gas, and is, beyond comparison, the best and simplest gas Furnace made for ordinary use.



Furnace.



Blower.

PRICES.

Sizes of Furnaces .. .. / Taking Crucibles, Nos.	6 oz. 00	2 lb. 1	6 lb. 3	12 lb. 6
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Furnace, as illustrated (Fletcher's, Fig. 41) ..	11 6	13 6	21 0	30 0
Blowing Apparatus („ „ 9B) ..	25 6	25 6	35 0	35 0
India-rubber Tubing	3 0	3 0	4 0	4 0
Crucible Tongs	1 6	1 6	2 0	2 0
Bow Tongs	..	..	3 0	4 0
Crucibles, Fireclay	0 1½	0 2	0 5	0 10
„ Salamander	0 3	0 4	1 0	2 0
Extra Furnace Bodies	3 6	4 6	8 6	14 0
„ „ Lids	2 6	2 6	4 6	7 0

Gas supply required.

Cubic Feet.		Inch.
6 oz. size, 7 to 30	per hour,	⅜ pipe
2 lb. „ 10 to 40	„	⅜ „
6 lb. „ 25 to 60	„	½ „
12 lb. „ 30 to 70	„	⅝ „

Crucibles, outside measurement.

High.	Diameter.
2	by 2¼ inches.
2⅞	by 2⅜ „
4	by 3½ „
6	by 4½ „

Mr. Fletcher's List, giving full details concerning the above Furnace, &c., sent on application.

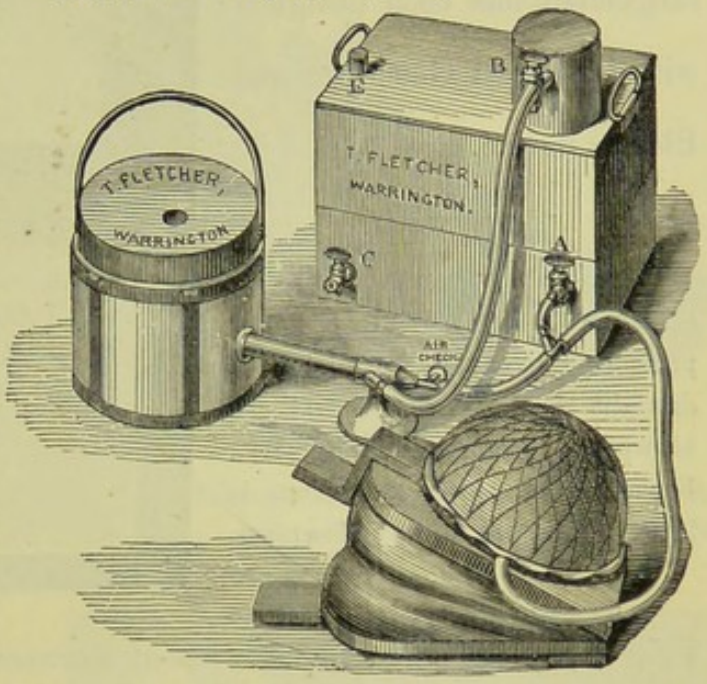
PERFECTED INJECTOR FURNACE, GENERATOR, AND BLOWING APPARATUS.

(FLETCHER'S.)

Arranged as a simple Furnace for burning the vapour of gasoline or benzoline. It gives a power and efficiency fully equal to that which can be obtained by a large gas supply. The arrangement is perfectly safe, and is in every way as simple as when gas is used, requiring no more trouble or attention.

It equals a gas furnace in every respect, and in addition gives a heat of absolute purity, fitting it for the most delicate chemical operations where gas cannot be used owing to the presence of sulphur and other matters.

This illustration shows the 6 lb. size Furnace, Generator, and Blower as when in use, Scale, 1 inch to the foot. The Blower now supplied with it is No. 5 (Fig. 9B), see previous page.



The ordinary pattern of Injector Furnace is used in precisely the same way as with gas, the only difference being that a branch pipe is taken out of the air supply and connected to the lower tap A on the generator, and a tube is carried from the upper tap B to the side tube of the Injector burner, marked "gas." The quantity of vapour required is adjusted by the lower tap A when the furnace is working, and the flame must be just visible at the hole in the lid, exactly as when gas is used, the instructions being precisely the same for both fuels.

To charge the generator, pour benzoline, or gasoline, in the top hole until it overflows at the small tap C in the side, replace the cork firmly and close the overflow tap. It will then work for about ten or twelve hours at the full power of the Furnace.

Benzoline varies much in quality; it must, when a few drops are poured on a plate or the hand, evaporate quickly and completely, leaving no greasy stain, and if good will produce more vapour than the furnace can burn at its maximum power. All the tubing used must be perfectly smooth inside, or the power of the furnace is greatly reduced.

At the conclusion of an operation close both taps on the generator. It can then be left for any length of time ready for instant use. For ordinary meltings the generator can be used about thirty or forty times without refilling.

The No. 3 size will refine and perfectly fuse 6 lbs. of chemically pure nickel so that it can be poured clean, using an open crucible, a feat beyond the capabilities of any other known furnace.

Benzoline often contains heavy oils. If the generator works badly, empty it and refill with fresh.

Prices:

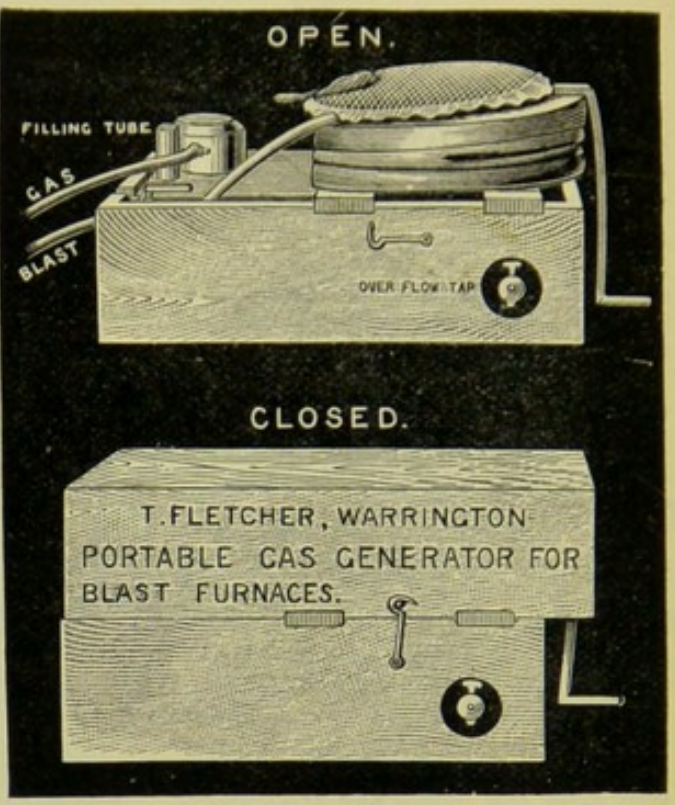
Furnace, Blower, Tubing, and Generator complete—

	6 oz.		2 lb.		6 lb.		12 lb. size.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*	*s.*	*d.*
	78	0	80	0	100	0	110	0
Generator only	27	6	27	6	40	0	40	0

Crucibles, Tongs, and extra parts, as on previous page.

PERFECTED INJECTOR FURNACE, GENERATOR, AND BLOWING APPARATUS.

For compactness and convenience of carriage an arrangement has been designed with the small Generator and Blower in one case.



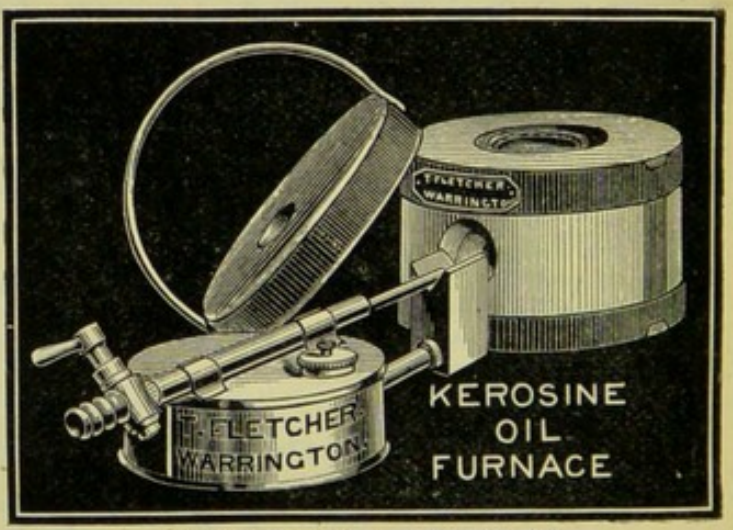
NOTE.—The Generator is useless except with a supply of air under pressure. It cannot be used with draught furnaces. If used for blowpipes, gasoline is necessary; benzoline or spirit petroleum is little, if any, use for any blowpipes.

	s.	d.
Price complete, as engraved, without Furnace	70	0

PERFECTED INJECTOR FURNACE.

FOR USE WITH KEROSINE OR PETROLEUM.

In places where there is no Gas, and where Benzoline cannot be obtained, this Furnace, 6-oz. size, is recommended. It is adapted to work with a lamp burning ordinary Kerosine or Petroleum oil. In using it, the wick holder of the lamp must be placed close against the hole in the furnace casing. It is *inferior in power* to a Gas, Gasoline, or Benzoline Furnace, but with a little experience in management, ½ lb. of cast iron can be fused in 12 minutes, starting all cold.

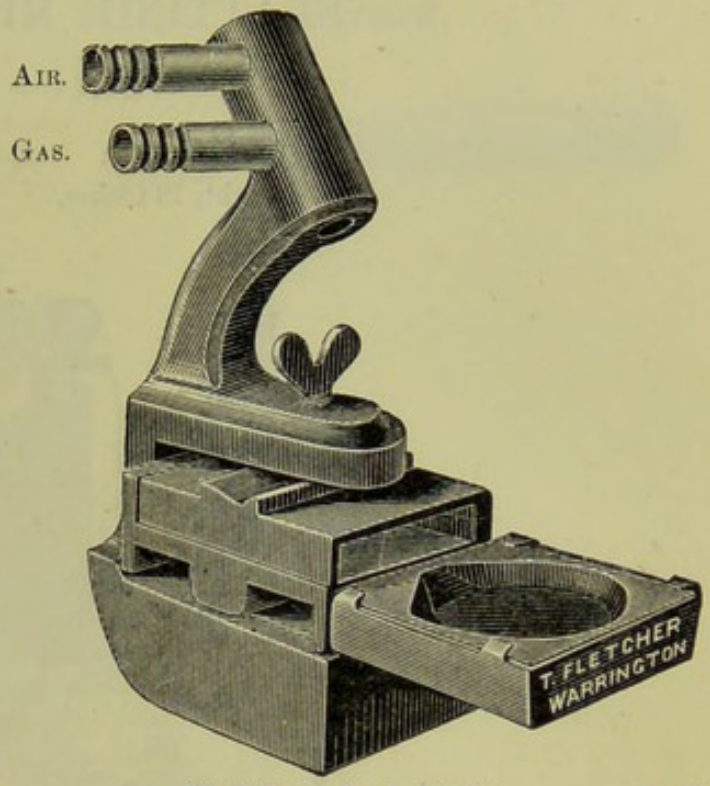


For melting Gold, Silver, &c.

Prices:	s.	d.
Furnace and Lamp, without Blower and Tubing	14	6
Blower (Fletcher's) size 3 .. .. (Fig. 9)	21	0
India-rubber Tubing, smooth inside .. .. per foot	0	6
Crucibles, size 00; Fireclay, each 1½*d.*; Salamander .. .. .. each	0	3

NEW MELTING ARRANGEMENTS.

For melting up to three ounces of gold or silver rapidly, without the use of a furnace. In this arrangement the two parts of the ingot mould slide on each other, to enable ingots of any width to be cast, and the Blowpipe is part of the rocking stand. Connect the blower to the upper tube and the gas to the lower. When the metal is melted in the shallow crucible, tilt the whole apparatus over so as to fill the ingot mould. A sound ingot can be obtained in about two minutes. Thousands of these are in use, and this arrangement is far superior to any furnace for small work. Very bulky scrap should be run into a mass in one of the moulded carbon blocks before being placed in the crucible.



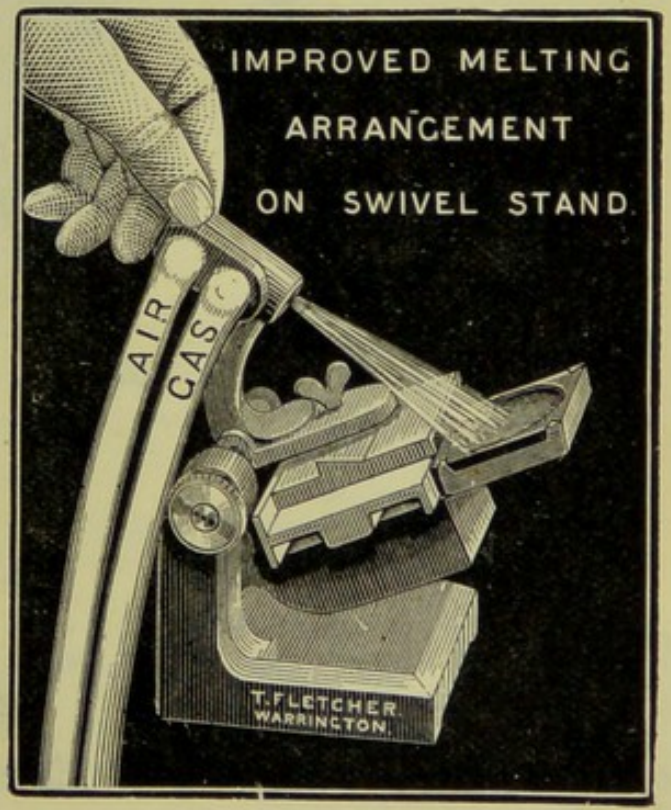
Slightly under half-size.

	s.	d.
Price, as engraved, 3-ounce size	10	0

IMPROVED FORM.

The same arrangement as the above on heavy swivel stand, to prevent risk of pulling over by the weight of the rubber tube when not held by the hand.

Mr. Fletcher's No. 3 Blower, either Fig. 9 or 9B, will efficiently work these melting arrangements.



	s.	d.
Price, as engraved, 3-ounce size	14	6
Carbon Crucibles .. .. each 2*d.*, per doz.	1	10
Fireclay „ .. .. „ 4*d.*, „	3	6
Slides to carry Crucibles .. .. „ 2*d.*, „	2	0

Two slides are given when one dozen crucibles are purchased.

FLATTING MILLS.

Fig. 1.

Height, 13 inches.

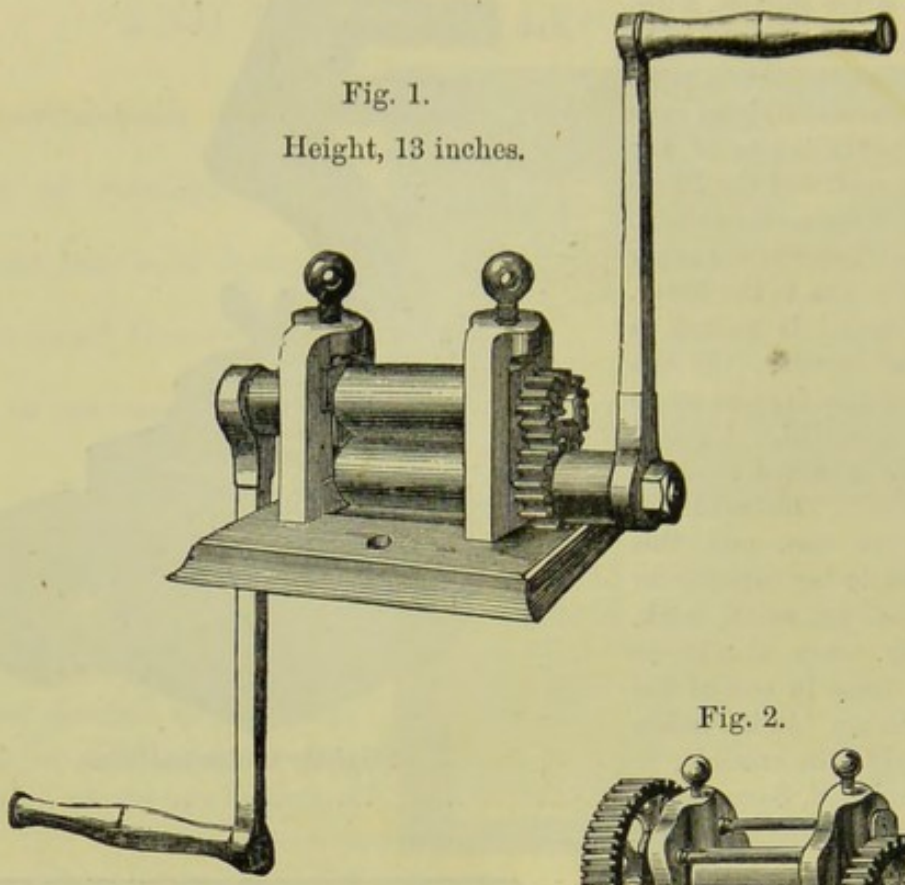
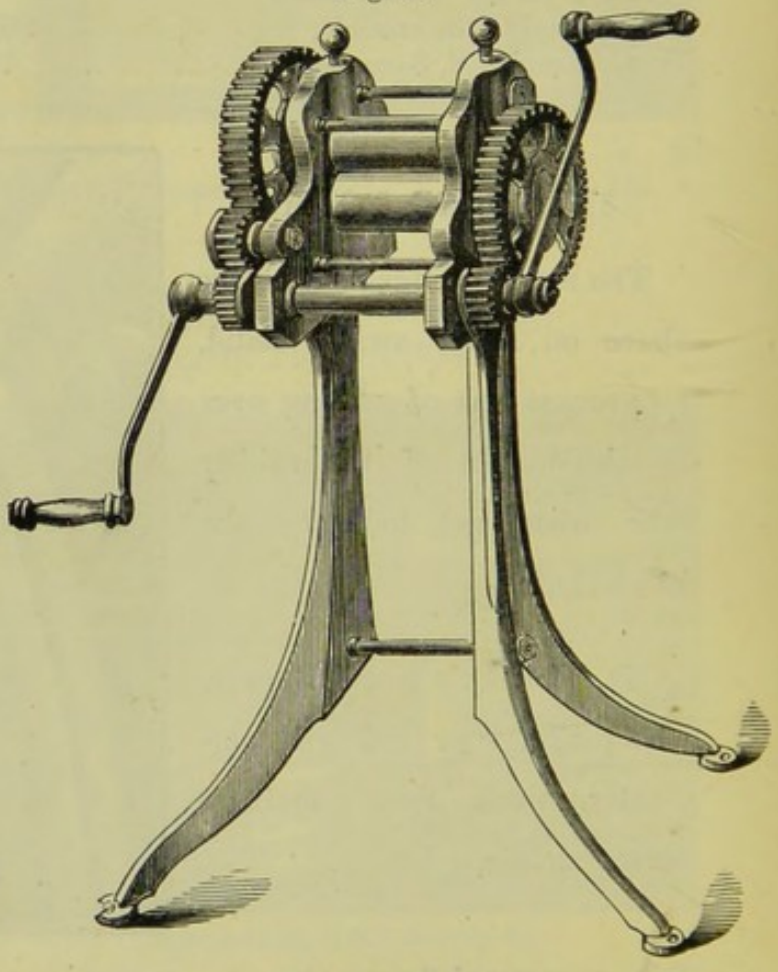
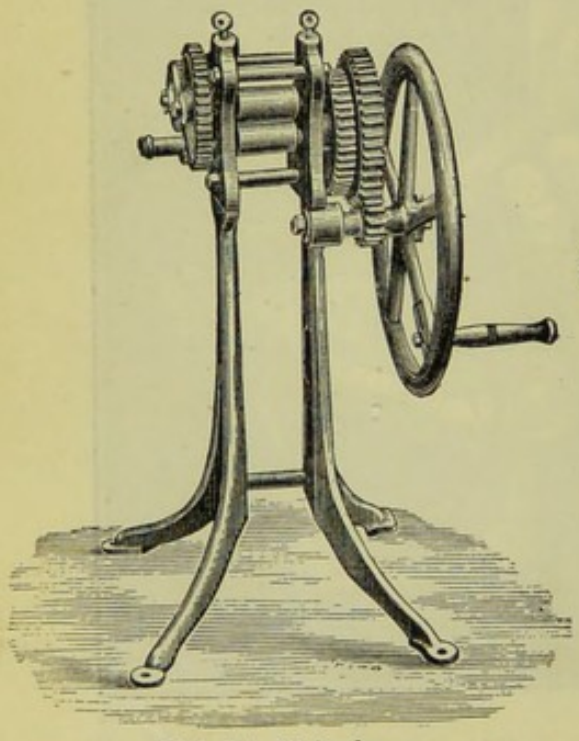


Fig. 2.



Height, 42 inches.

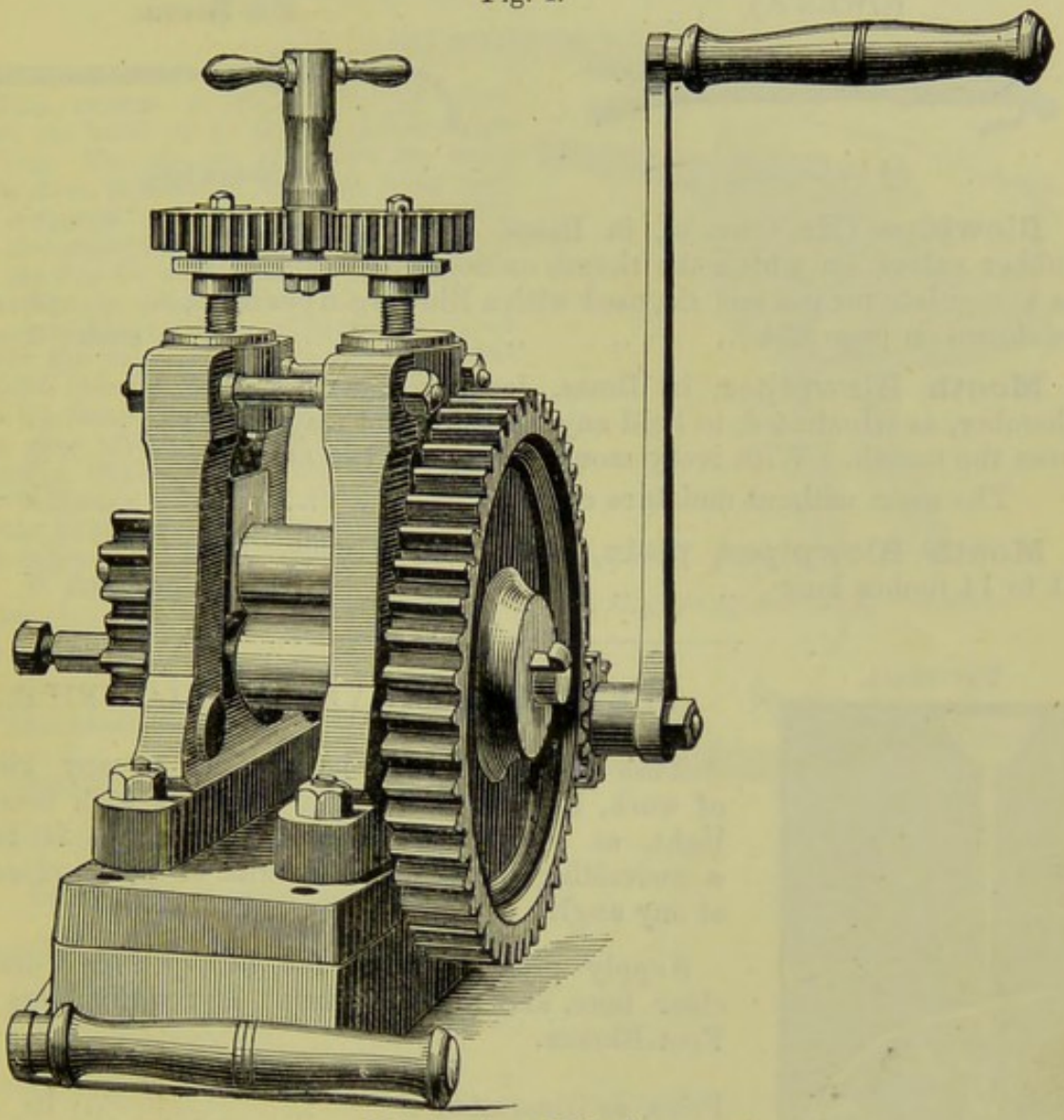
Fig. 3.



Height, 42 inches.

FLATTING MILLS—*continued.*

Fig. 4.



Height, about 21 inches.

		s.	d.
Flatting Mill, on short stand, for screwing on to a bench or block, with hardened rollers, 3 inches long by 2¼ inches diameter (without multiplying wheels), and two handles	(Fig. 1)	120	0
Flatting Mill, on iron stand, to fasten to the floor, with hardened rollers, 4 inches long by 2¾ inches diameter, double set of cog-wheels for multiplying the power, and two handles	(„ 2)	210	0
„ „ „ „ **Best quality**	(„ 2)	252	0
Flatting Mill, similar to **Fig. 2, best quality,** fitted with extra gearing and fly-wheel	(„ 3)	320	0
Flatting Mill, on short stand like Fig. 1, but with regulating handle over the top, for raising or lowering both ends of the roller at once	(„ 4)	300	0

Larger sizes supplied to order. **Packing Cases charged extra.**

BLOWPIPES, &c.

(OWEN'S.)



8½ inches long.

For Mouth.



13 inches long.

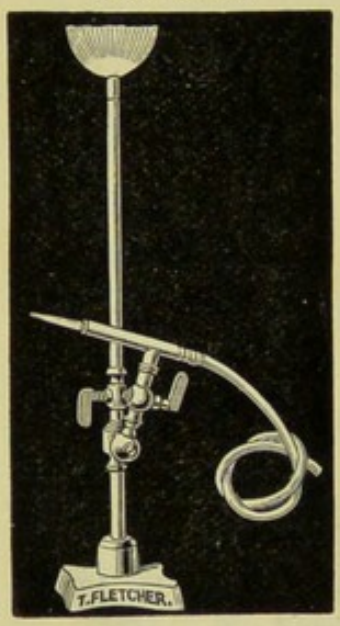
Blowpipe (Mr. Owen's), in Brass, with double India-rubber valves, on which the thumb or fingers are placed so as to regulate the gas and air, used with a Blowing Apparatus, as shown on page 354 .. .. each 5 6

Mouth Blowpipes, in Brass, lacquered, with hollow chamber, as illustrated, to hold any moisture that may escape from the mouth. With ivory mouth-piece, and two nozzles . „ 2 9

The same without moisture chamber .. .. .. „ 1 9

Mouth Blowpipes, plain, with tinned ends, from 11 to 14 inches long .. .. per inch 0 1

Universal.



FLETCHER'S UNIVERSAL BLOWPIPE.

This Blowpipe can be applied to any kind of work, but the illustration shows it with bench light, as adapted for dental purposes. It has a swivelling joint, which admits of being placed at any angle.

Supply pipe required for full power ⅜ inch clear bore, and tap the same. It requires size 3 Foot-Blower.

		s.	d.
Price, as illustrated		10	6
Extra Jets	each	0	3
India-rubber Tubing	per foot	0	6

Other Blowpipes obtained to order.

Moulded Carbon Blocks, circular, for supporting work under the blowpipe, 4 in. diameter, hollow on the face .. each 1 6

Soldering Coals, of compressed willow charcoal:

Large size, with flat sides .. 2 × 2 × 6 inches „ 1 0

Small „ „ „ .. 1½ × 1½ × 5 „ „ 0 6

Fine Willow Charcoal, in selected sticks, free from flaws per lb. 1 0

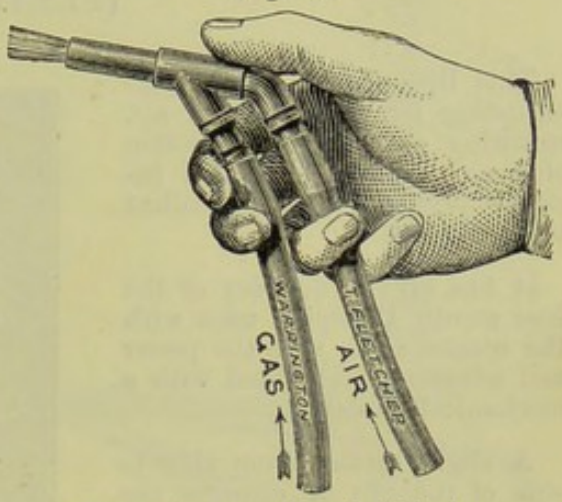
BLOWPIPES, &c.—*continued*.

(FLETCHER'S.)

This pattern is suited for all work from the finest up to brazing ½-inch brass tubing. The air and gas tubes are made very short, to admit of the hand being used to compress the rubber tubes, as shown in the engraving. The air tube must rest *on the knuckle* of the little finger, and the blowpipe be held precisely as shown. A slight opening or closing motion of the hand gives the most perfect and instantaneous control over the flame. With a little practice the flame adjusts itself to the wish of the user without any apparent effort or thought. Takes Jets, sizes 2, 4, 6; requires size 3 Blower. To change the jets, unscrew at the joint where the thumb is shown in the engraving.

	s.	*d.*
Price	4	6

Fig. 8D.

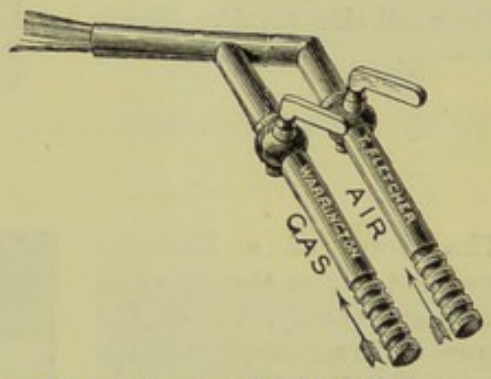


Engraving one-fourth full size.

The same as 8D, with the addition of taps for gas and air, to enable a steady flame of any size and power to be kept continuously without trouble.

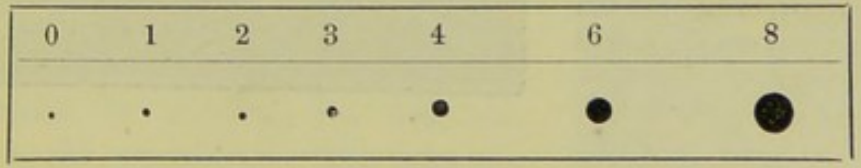
	s.	*d.*
Price	7	6

Fig. 8E.



Engraving one-fourth full size.

SIZES OF BLOWPIPE JETS.



	s.	*d.*
Price .. .. each 3*d.* and	0	4
India-rubber Tubing, smooth inside .. per foot	0	6

For Foot Blowers, see page 354.

AUTOMATON BLOWPIPE.

(FLETCHER'S.)

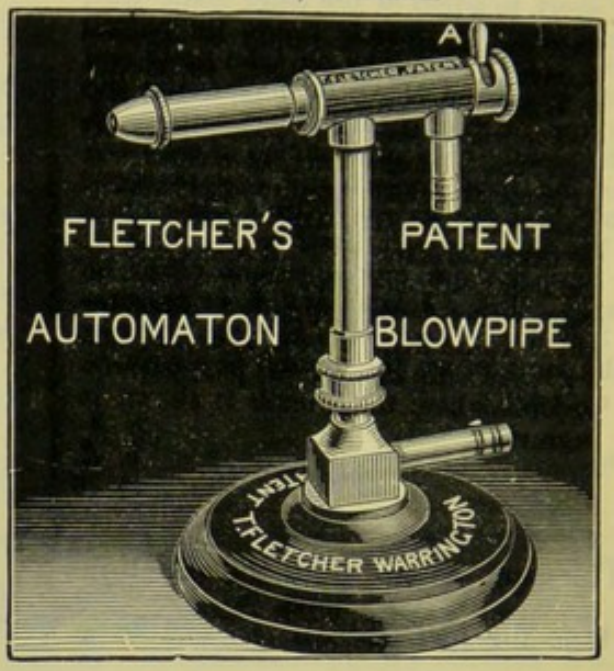
This Blowpipe is simple, self-adjusting for both gas and air, requiring only a slight motion of a small lever to obtain instantly any flame, from the smallest to the largest.

It has all the delicacy of the best mouth Blowpipe used with the utmost skill, with the power and advantages obtained with a mechanical blower.

A slight motion from side to side of the pin A changes the power and character of the flame instantly as required, or stops the power without extinguishing the flame.

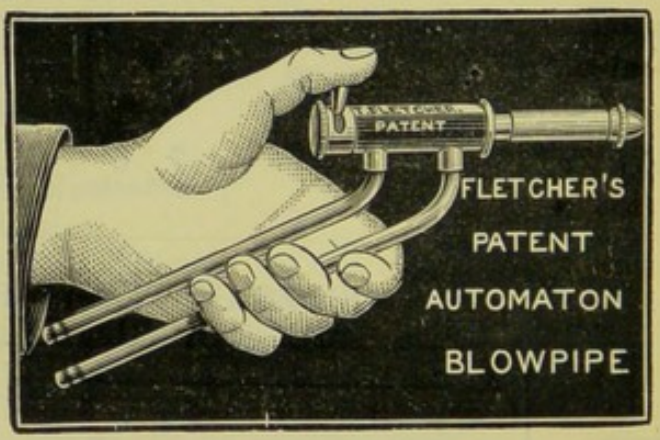
The small size requires Blower Size 3.

Small size, on Stand.



Small size, for Hand.

The power of a Blowpipe depends not only on the size of air jet and gas supply, but on the pressure of the air supplied by the blower. The Foot-Blowers, Figs. 9 and 9B, are so perfect for all blowpipe work as to leave nothing to be desired. After ten years they remain beyond the possibility of improvement in the slightest detail, and unapproached by any other form.



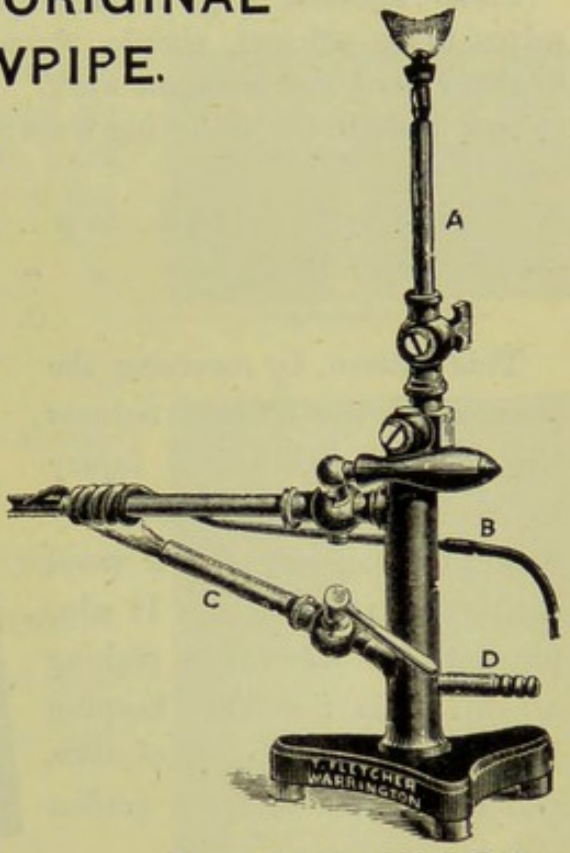
		s.	d.
Automaton Blowpipe on Stand, small size	.. ..	10	0
„ „ for Hand „ „	.. ..	9	0
Extra Jets—See previous page	.. .. each	0	3

For Blowers, see page 354.

IMPROVED FORM OF ORIGINAL HOT-BLAST BLOWPIPE.

(FLETCHER'S.)

Fig. 1B.



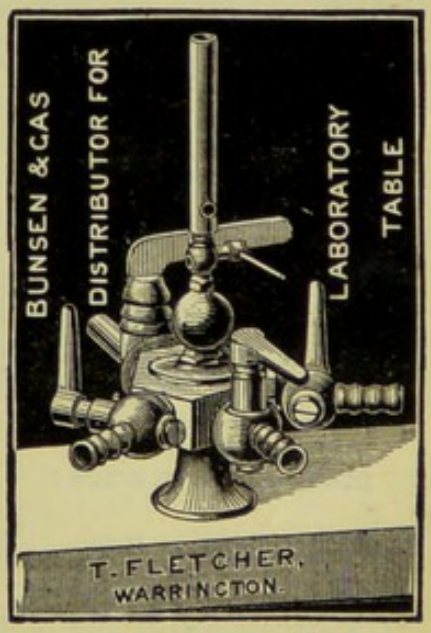
Engraving one-fifth full size.

For a large rough flame the Bunsen heater should not be used. The advantage of the hot blast shows only when a pointed flame is required having a high temperature.

The engraving shows the Blowpipe arranged with Bench Light A, but it is also supplied without.

	s.	d.
With Bench Light, as illustrated ..	12	6
Without „	10	6
Duplicate Coils and Jets	1	6

GAS DISTRIBUTOR FOR LABORATORY TABLES.



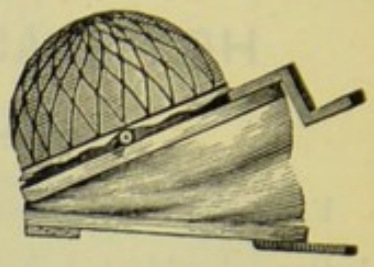
Consisting of a brass pillar, with screwed pipe to pass through the table, taking its supply from underneath. On the top of the pillar is a small jet, which may be either used as a pilot jet for keeping a constant light, or can be converted into a small Bunsen by slipping the tube on, as shown in the engraving. The taps are fitted for rubber tubes, the one engraved having three $\frac{3}{8}$ taps and one $\frac{1}{2}$ inch.

	s.	d.
Gas Distributor	12	6

FLETCHER'S FOOT BLOWERS.

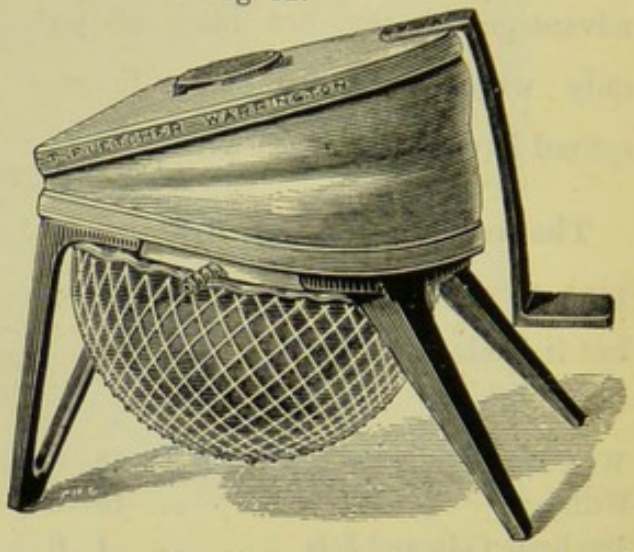
These blowers, Fig. 9, have proved themselves to be efficient, simple, strong, and able to stand hard and constant work. The pattern is now made in the following sizes:

Fig. 9.



		s.	d.
Size 3, 13 by 10 by 6½ in. deep ..	each	21	0
„ 5, 15 by 12 by 7 in. „ ..	„	27	0

Fig. 9B.



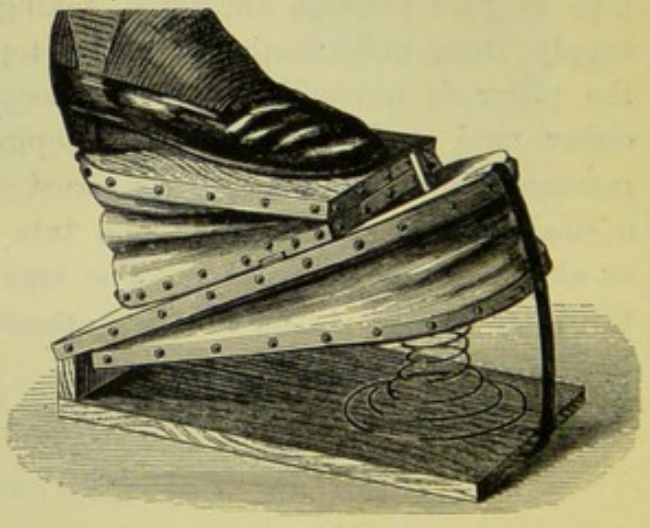
This pattern, by reversing the position of the blower, reduces the risk of mechanical injury to the disc, and does away with the necessity for a wood casing or protection. It also prevents the valve from picking up dirt from the floor, keeping the whole arrangement cleaner, and the valves in more perfect order.

		s.	d.
Size 3, same dimensions as Fig. 9	each	25	6
„ 5, „ „ „ 9	„	35	0
Rubber Discs, for size 3 .. .. each 2s.; for size 5	„	3	0
Nets „ 3 .. .. „ 1s.; „ 5	„	1	4

(Two Rubber Discs are used on each Blower.)

(COTTON AND JOHNSON'S.)

With double bellows, which, with very little pressure of the foot, keeps up a continuous blast and ensures a steady flame while soldering.



Made in three sizes:

	s.	d.
Small, 12 by 9 in. ..	18	0
Medium, 13 by 11 in. ..	21	0
Large, 15 by 13 in. ..	25	0

STAR GAS-BURNERS.

(FLETCHER'S.)



$3\frac{1}{2}$ inches high.

STAR BURNER WITHOUT STAND, for heating Vulcanizers, Glass Flasks, &c., adapted for fixing to $\frac{1}{4}$ inch supply-pipe. Will work steadily with any supply from 2 to 8 feet per hour.

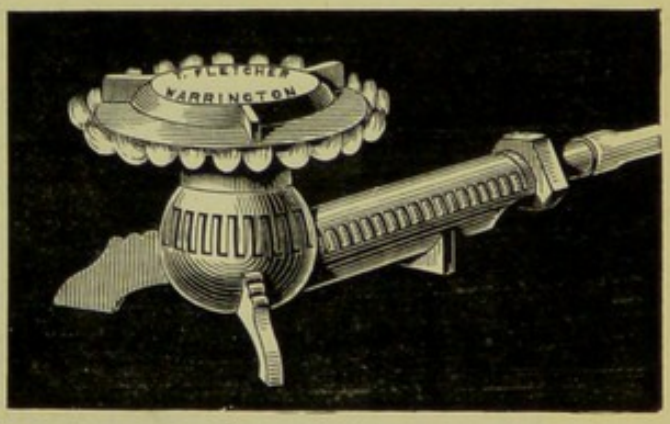
	s.	d.
Price	2	0



6 inches high.

STAR BURNER WITH STAND.—This is similar to the above, but mounted on a firm stand, and provided with gas supply-pipe, as engraved. Unless any other kind is ordered, this is usually sent with all C. ASH and SONS' Vulcanizers that are required for use with gas.

	s.	d.
Price	3	0



DRIP-PROOF STAR BURNER.—Specially designed for wet and dirty work. It will burn steadily with any gas-supply from 2 to 14 feet per hour, and is small enough to pass through an opening $3\frac{1}{2}$ inches high by $4\frac{1}{2}$ inches wide.

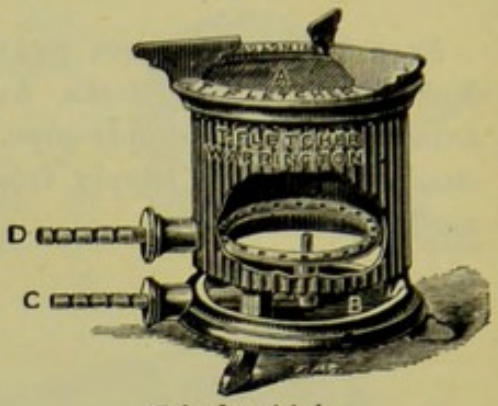
	s.	d.
Price, as engraved	3	6
The same on upright Stand, 6 inches high	3	3

Other Burners, for almost any purpose, supplied to order.

LOW TEMPERATURE GAS-BURNER.

This Burner gives a complete range of temperatures, from a gentle current of warm air to a clear red heat. It is equally well adapted for warming pieces, drying flasks, &c., evaporating, boiling and general purposes. For boiling, the light must be applied to the surface of the gauze, thereby providing a body of blue flame, which can be urged by the blast pipe C.

Fig. 7B.



7 inches high.

		s.	d.
Burner, as illustrated	(Fig. 7B)	7	6
„ without the blast pipe C	(„ 7B)	6	6
Extra Gauzes	each	0	4

ARGAND BUNSEN GAS-BURNERS.

Fig. 200.

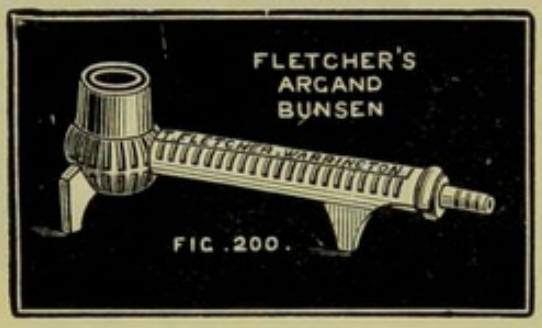
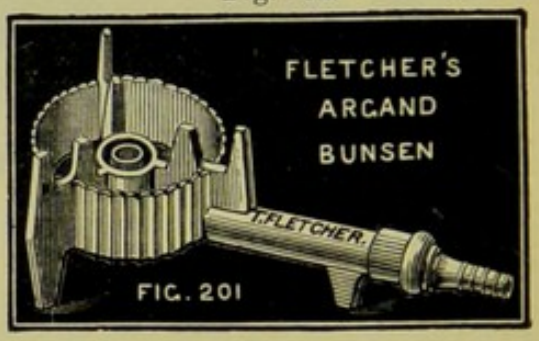


Fig. 201.



Gas consumption, either form ½ inch size, 3½ feet per hour.
„ „ ¾ inch „ 7 feet „

The sizes given are the bore of the horizontal tube. They will be found very useful for modelling and for small general work.

		s.	d.
Burner, without tripod	(Fig. 200), large size 2s., small each	1	6
„ with „	(„ 201), „ 3s., „ „	2	0

INDIA-RUBBER TUBING.

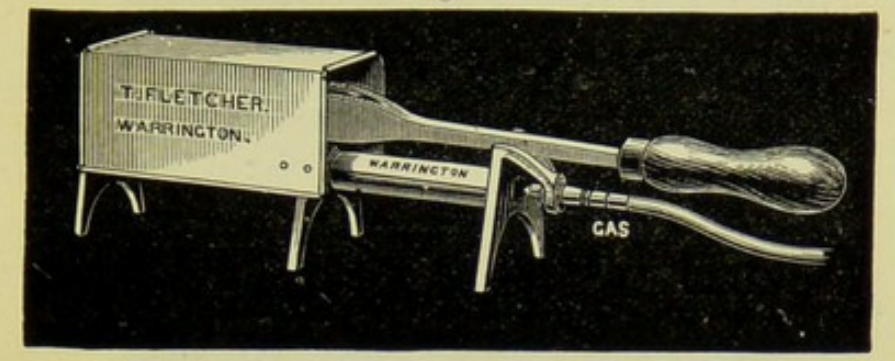
(BEST QUALITY.)

		s.	d.
Red or White, 5/16 inch, clear bore, any length, smooth inside	per foot	0	4½
„ „ 3/8 inch „ „ „	„	0	6
„ „ ½ inch „ „ „	„	0	9

India-rubber Tubing, wired inside, supplied to order.
For other kinds of Tubing, see pages named in the Index.

GAS SOLDERING BOLT-HEATERS.

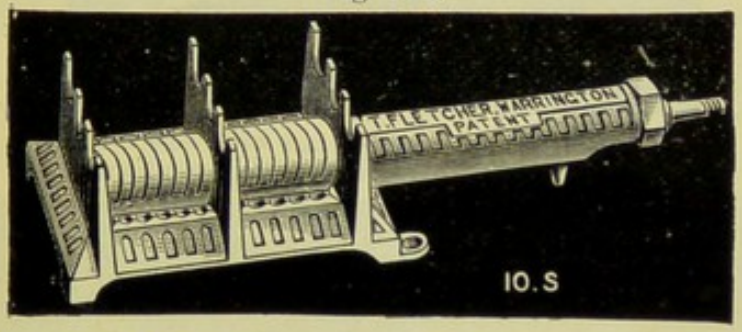
Fig. 70.



Original Soldering Bolt-Heater, will heat a full-sized copper-bit in five minutes, starting all cold.

	s.	d.
Price, as engraved, without soldering bolt	2	6

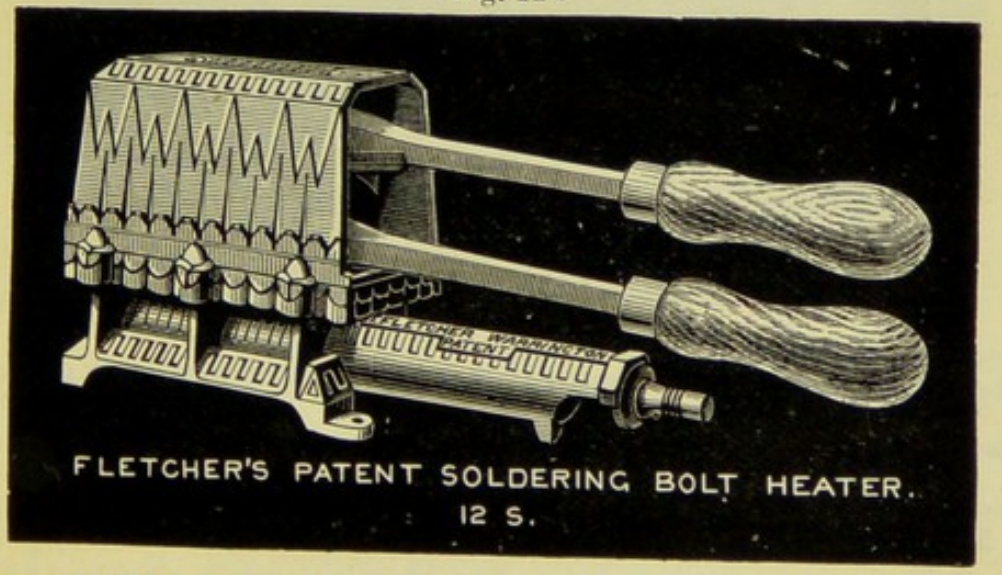
Fig. 10 s.



Total length 12 inches. Maximum consumption, at full power, 13 cubic feet per hour. Useful for soldering irons, boiling, and general workshop use.

	s.	d.
Price	2	6

Fig. 12 s.

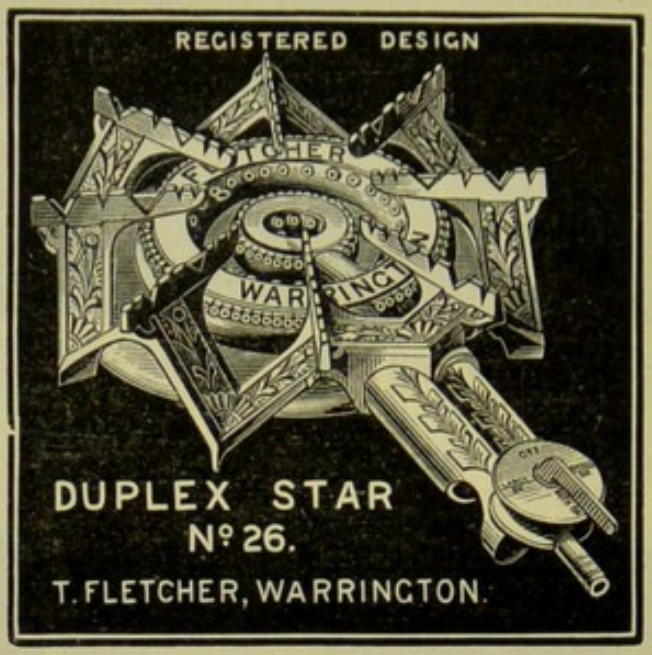


The same as Fig. 10 s, with cover for soldering bolts. This will heat two heavy bolts at once, with one burner.

	s.	d.
Price, as engraved, without soldering bolts	5	0

GAS-BURNERS.

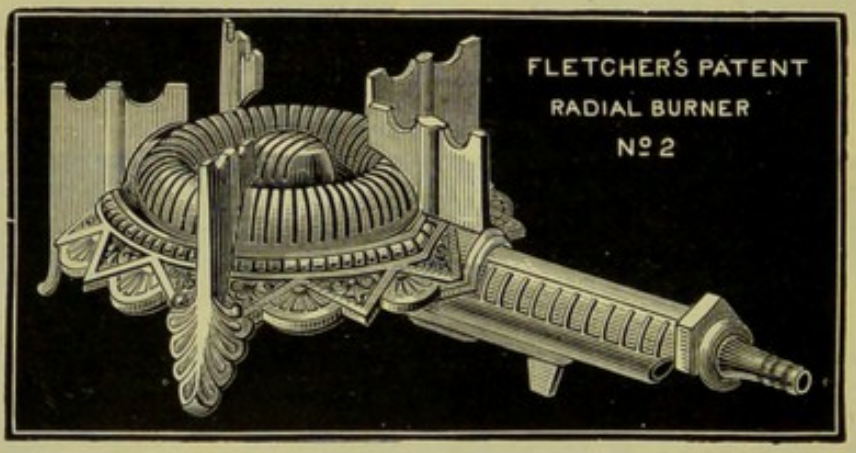
LARGE DUPLEX STAR.



Consisting of two concentric rings with taps to each.
Gas consumption at full power, 26 feet per hour.
Will boil from six to eight gallons of water per hour.

	s.	d.
Price, No. 26, as illustrated	13	0

RADIAL.



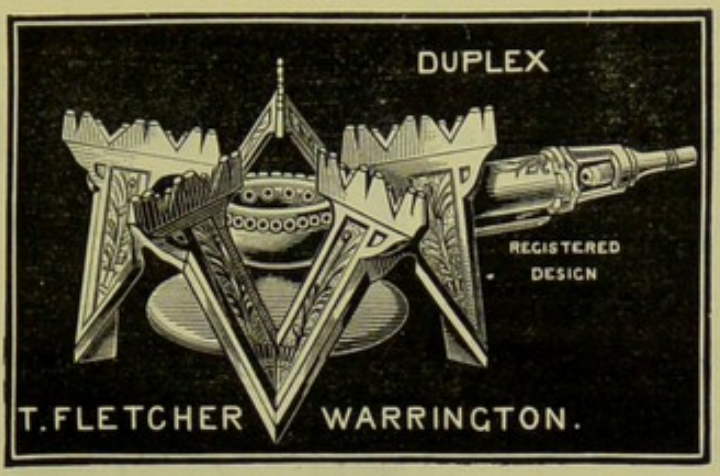
Gas consumption, small size, 12 feet; large size, 20 feet per hour.
In the Duplex Radial, the numbers indicate the gas consumption of each per hour.

		s.	d.
Radial Burner, as illustrated	Small size	4	6
,, ,, ...	Large ,,	6	6
Duplex Radial, three sizes:			
No. 9		3	6
,, 11		4	6
,, 15		6	0

Larger sizes supplied to order.

GAS-BURNERS.

DUPLEX STAR.

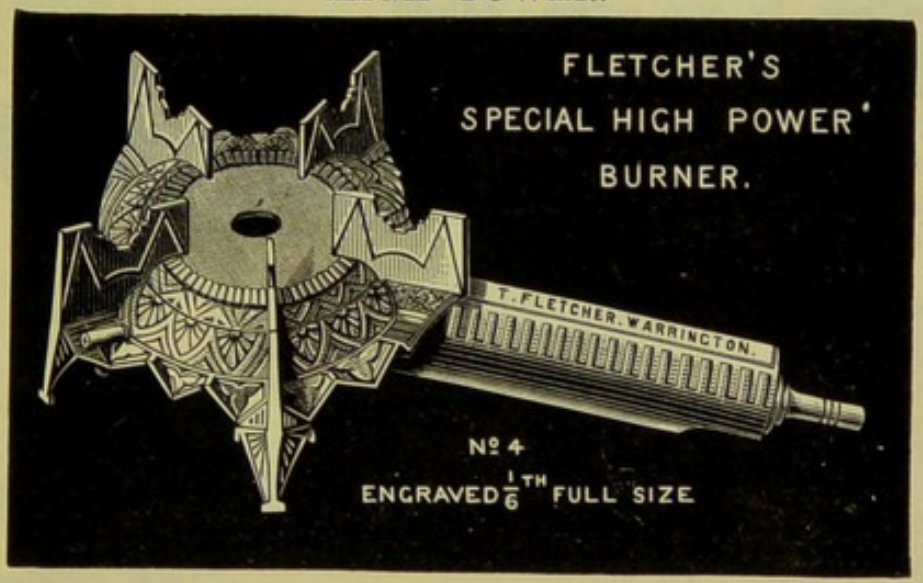


Made in three sizes, the numbers indicating the gas consumption of each per hour.

	s.	d.
No. 10	3	6
„ 12	4	6
„ 16	6	0

Larger sizes supplied to order.

HIGH POWER.



This Burner will boil one gallon of water, in a flat copper vessel, in seven minutes, or from ten to thirteen gallons per hour. Made in four sizes as under :—

	Size across the gauze.	Gas consumption per hour.	Size of pipe required.	With Tripod.	Without Tripod.
				s. d.	s. d.
No. 3.	2¾ in. diameter	25 cubic feet	¾ in. clear bore	3 9	2 3
„ 4.	4 „	40 „	¾ „	6 6	4 0
„ 6.	6 „	90-100 „	¾ „	—	12 6
„ 8.	8 „	200-250 „	1 or 1½ in. bore	—	21 0

No. 4 is shown in the engraving. The 6-inch and 8-inch sizes have no tripod or support for vessels, as the Burners are too small to carry the vessels they will heat.

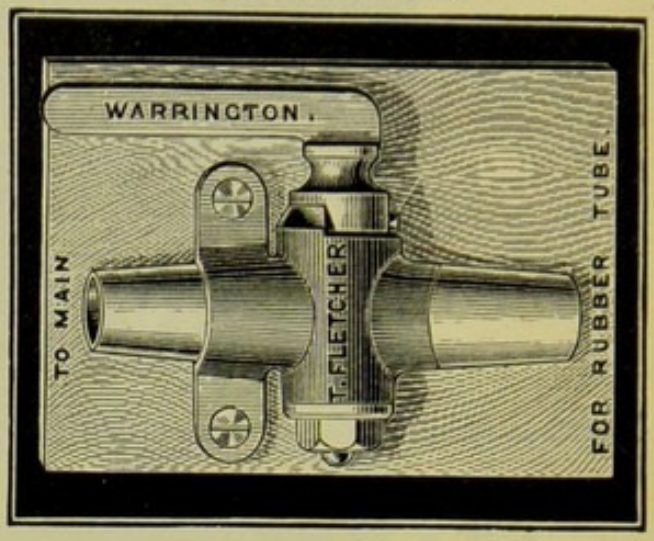
GAS SUPPLY TAPS,

FOR CONNECTING WITH INDIA-RUBBER TUBING.

Mr. Fletcher says, "Taps for gas should be what are known as main cocks, with a large way through. For the smaller heating burners ordinary taps will do if the way through be good and clear, but higher powers must not be expected with a deficient gas supply."

		s.	d.
Main Supply Taps:			
For ⅜-in. pipe ..	each	1	6
For ½-in. „ ..	„	3	0

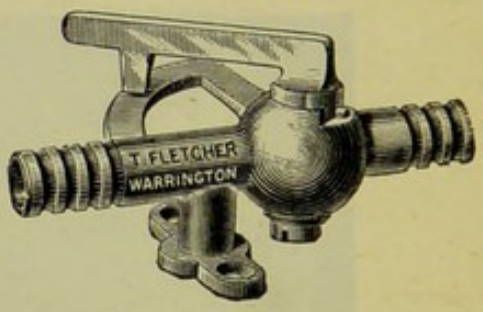
Main Supply Tap.



For obtaining a supply from the end of a gas pipe. It can be attached to a gas pipe by any person without soldering or trouble, or can be soldered at both ends to ordinary tube. This is the best for heating stoves. Any power desired for special purposes can be marked on the quadrant with a sharp tool or the edge of a file.

		s.	d.
Price, ⅜-inch size	each	2	6
„ ½-inch „	„	4	0

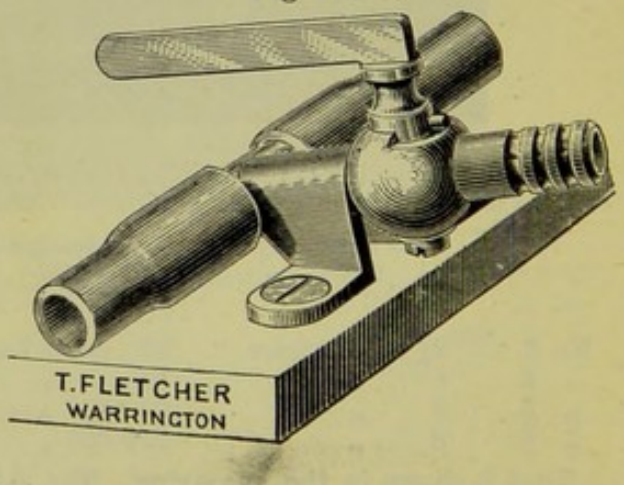
Fig. 111.



This pattern is for obtaining a supply out of the middle of a gas pipe without interfering with the other lights. To fix this, cut about three inches out of the lead pipe with a sharp knife, and connect the cross tube with short bits of india-rubber tube so as to make up the pipe as before, but with the tap leading out of it.

		s.	d.
Price, ⅜-inch size ..	each	2	0

Fig. 112.



GAS SUPPLY TAPS.

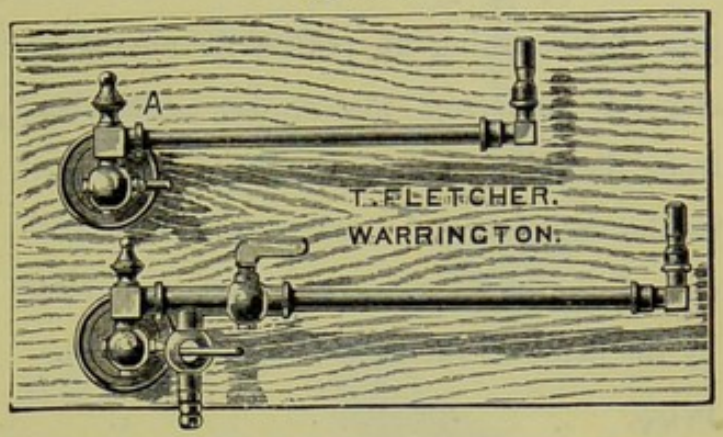
FOR FIXING TO GAS PIPES.

For obtaining a supply from an ordinary bracket.

NOTE.—The supply from a bracket is usually very small, and of little use for heating purposes. It is generally insufficient to supply the small Radial Burner, page 358, at its full power.

The engraving shows the same bracket with and without the attachment.

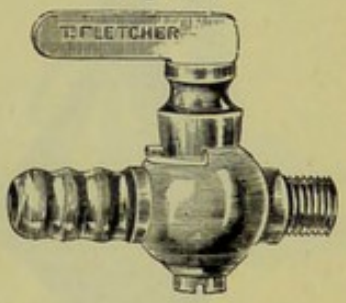
Fig. 113.



Gas Supply Tap only	s.	d.
$\frac{3}{8}$-in. size .. .. each	2	6
$\frac{1}{2}$-in. „ .. .. „	3	0

For fixing by a gas-fitter.

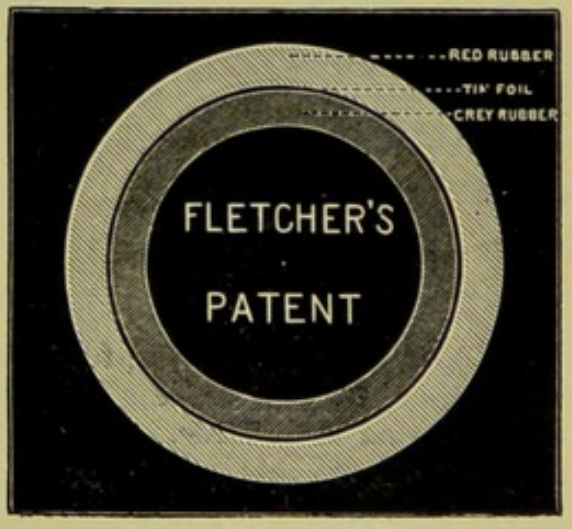
Fig. 114.



	s.	d.
Price, $\frac{3}{8}$-inch size .. .. .. each	1	0
„ $\frac{1}{2}$ „ „ .. .. .. „	2	0

GAS-TIGHT INDIA-RUBBER TUBING.

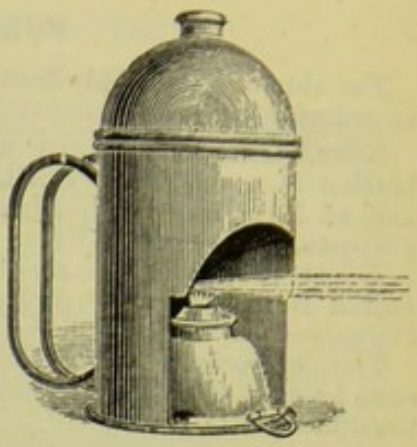
Mr. Fletcher says, "I have at last succeeded in making an elastic rubber tube, *perfectly gas-tight and free from smell under all conditions.* As compared with the braided tube commonly sold, it has a clear large bore, enabling it to be used for large burners and gas-fires, and it requires no special unions or connexions, being sufficiently elastic to make a perfect joint by slipping on exactly the same way as ordinary elastic tube, fitting all nipples without special connexions or trouble. The tube is formed of two separate layers of rubber, with a film of soft, pure tin foil vulcanised between. As it is not possible at present to manufacture this tube in long lengths, it will be supplied only in lengths of 2, 3, 4, and 6 feet."



	s.	d.
Gas-tight India-rubber Tubing $\frac{5}{16}$ inch, clear bore .. .. per foot	1	2
„ „ „ $\frac{3}{8}$ inch „ .. .. „	1	3
„ „ „ $\frac{1}{2}$ inch „ .. .. „	1	9

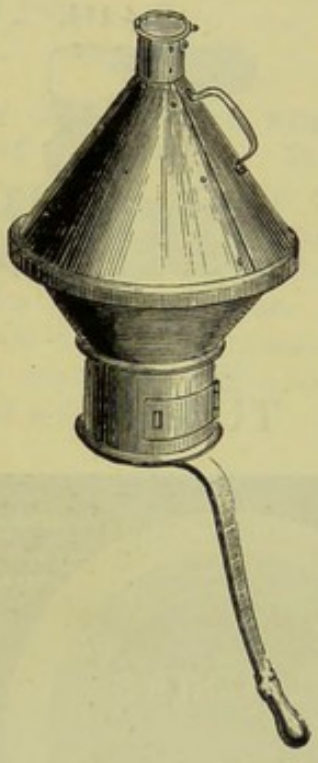
SPIRIT APPARATUS.

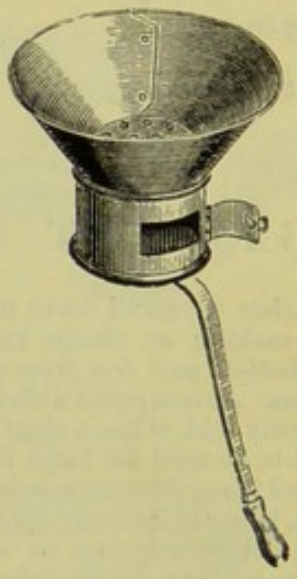
Consisting of short iron stand, with handles, and a copper spirit-lamp and vessel with pipe, for warming up pieces, for annealing, and for soldering plates, &c. The heat from the lamp below vaporises the spirit in the upper vessel, and causes it to rush out of the small pipe, and become ignited by the flame of the lamp—5½ inches high.



		s.	d.
Price	each	6	6

SOLDERING PAN.





10 inches high, 6½ diameter.

In sheet iron, with cover, for gradually warming up pieces with mineral teeth before soldering, and also for gradually cooling them afterwards. The handle has a loose pivot, to allow the pan to revolve .. .. each 7 0

		s.	d.
Soldering Compo, silver sand and plaster	per lb.	0	4
Stone Slabs, for borax, small	each	1	0
,, ,, large	,,	1	4
Borax, in lumps	per lb.	1	3
,, ,, ...	per ¼ lb.	0	4
Solder Tongs, large, blunt, each 10*d.*; medium, pointed ..	each	0	9
,, small ,, ,, 4*d.*; small, ,, ..	,,	0	6

GAS-BURNERS AND SPIRIT-LAMPS.

FOR SOLDERING, MODELLING, &c.

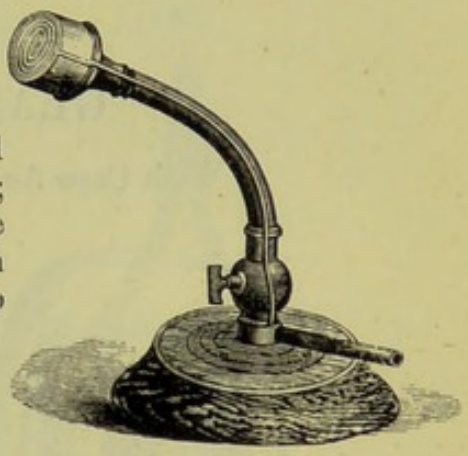


Bunsen Gas-Burner, in Brass, for modelling and for general purposes. Height, 5½ inches.

	s.	d.
Price	5	6

GAS LAMP.

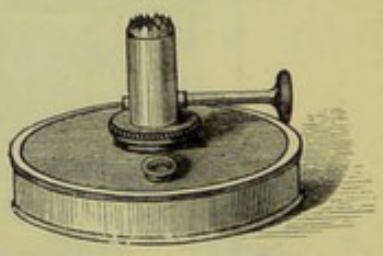
(MR. OWEN'S.)



For soldering, consisting of a mahogany stand with bronzed pipe, and large wire coil burner; it has also a fine tube at the side, so that the flame may be turned down to a small jet, in order to save the gas at intervals when the lamp is left for other work, &c. Height, 8 inches.

	s.	d.
Price	7	6

Spirit-Lamp, Tin, with regulating wick-holder, suitable for heating Vulcanizers, and for soldering, &c.



4 in. high by 6 in. diameter.

	s.	d.
Price, best make	6	0

Spirit-Lamp, Tin, deeper than the above, suitable for heating Glass Flasks containing ammonia, &c., or small cast-iron Vulcanizer, and for soldering, &c.

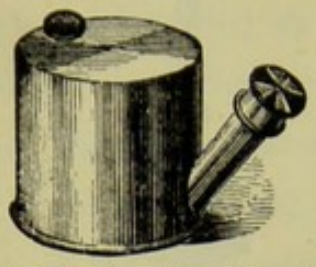
	s.	d.
Price, best make	6	0

Oil Lamp, Tin, for soldering, with back to hang against the wall, and tray, with perforated cover, to catch the drip. It gives a good powerful flame, the size of the wick-holder being nearly one inch in diameter.

	s.	d.
Price	6	6

SPIRIT-LAMP.

FOR SOLDERING, MODELLING, &c.



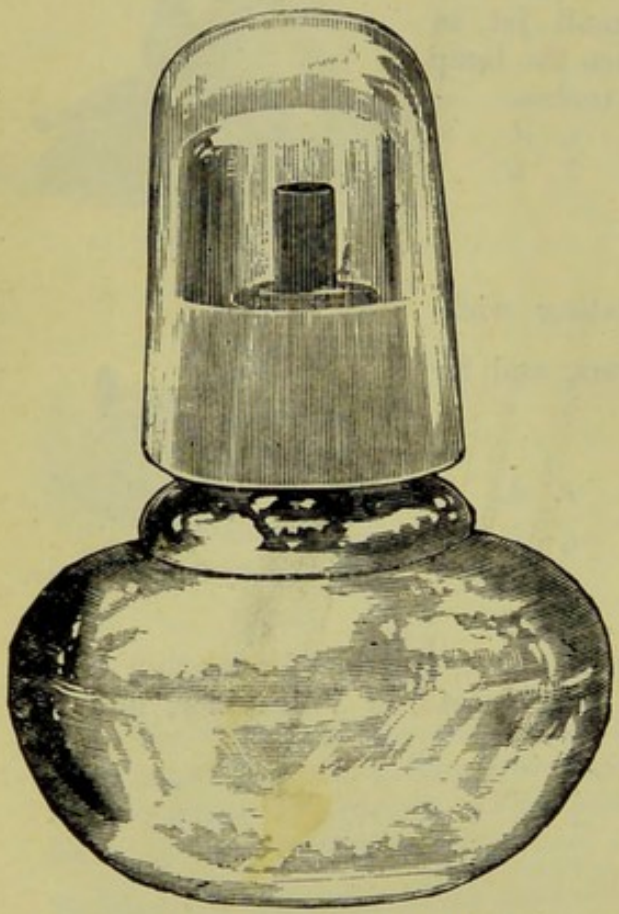
3½ in. high by 3 in. diameter.

Spirit-Lamp, Brass, with screw caps, for soldering, &c. It is substantially made, and well finished, and will be found very useful when travelling, the screw caps serving effectually against waste of the spirit.

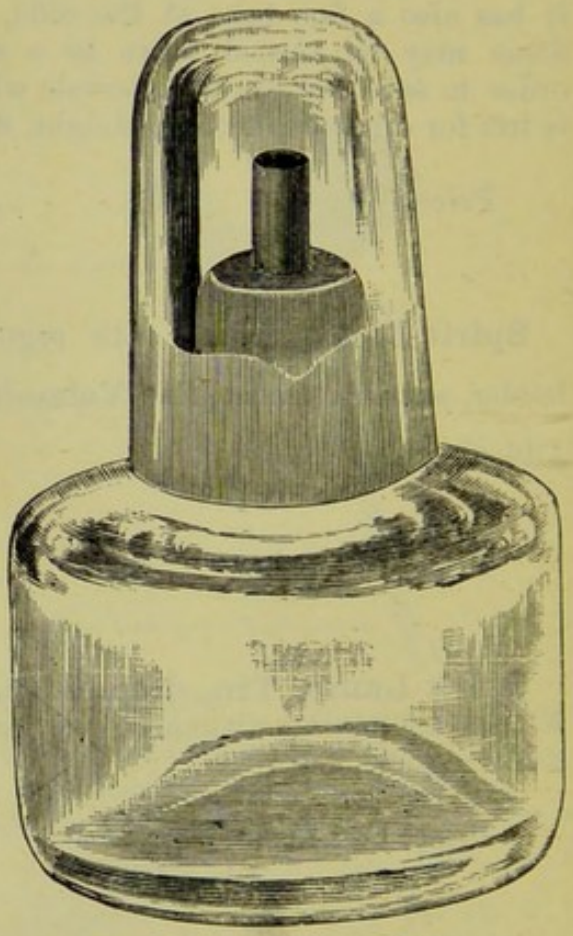
	s.	*d.*
Price	6	6

GLASS SPIRIT LAMPS.

With Caps for modelling and for general purposes.



Shallow—4 inches high.

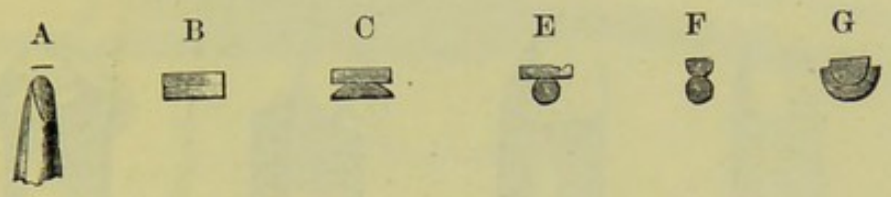


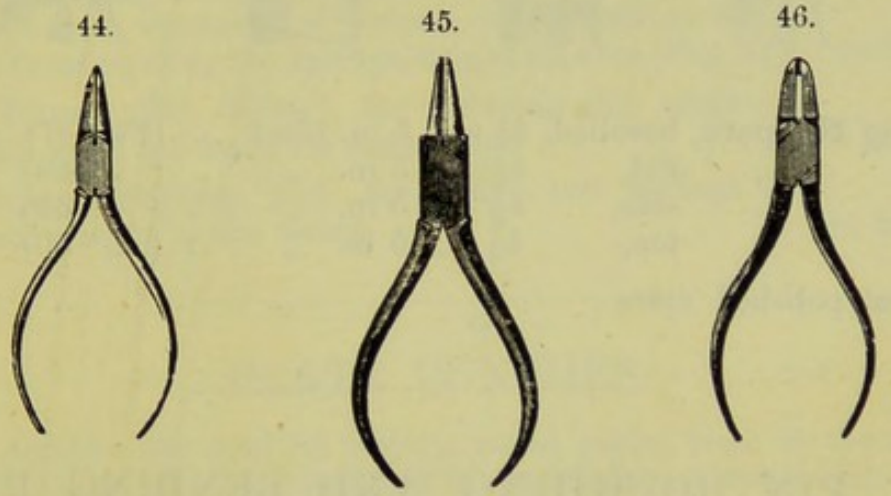
Deep—4 inches high.

	s.	*d.*
Price, either kind .. .. each	1	6

PLIERS.

FORMS OF THE VARIOUS NOSES.





A to F are made in three sizes, 4, 4½ and 5 inches long.

They are thus named :

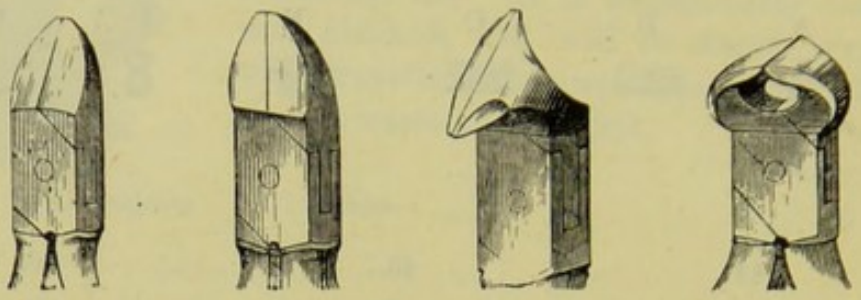
A—Flat pointed (Fig. 44).
A—Snipe nose.
B—Flat, broad nose.
C—Flat and half round.
E—Flat and round.
F—Round (Fig. 45).

		s.	*d.*
Price, any size or kind, black	each	1	3
,, ,, ,, polished	,,	1	6

Pliers, with one oval, and one hollow chop, 5 inches long, form G	each	2	6
,, **grooved, for roughing pins,** 5 inches long (Fig. 46)	,,	2	0
,, ,, **for holding pins,** 5 inches long	,,	1	6
,, **form A, copper faced,** for holding steel instruments, &c., without injuring them, 5 inches long	,,	2	6
,, **very strong,** for cutting the steel wire, used in Coffin's method of regulating	,,	4	0

CUTTING NIPPERS.

47. 48. 49. 50.



							s.	d.
Cutting Nippers,	bevelled,	4½ and 5 in.	black	..	(Fig. 47)	each	2	3
,,	,,	flat, 4½ ,, 5 in.	,,	..	(,, 48)	,,	2	3
,,	,,	side, 4½ ,, 5 in.	,,	..	(,, 49)	,,	2	3
,,	,,	top, 4½ ,, 5 in.	,,	..	(,, 50)	,,	2	3
The same polished, extra		.. ..	..	..	..	,,	0	6

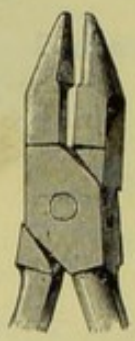


PIN ROUGHING AND BENDING PLIERS.

With very fine noses, &c., for cutting, roughening, and bending the pins of flat and vulcanite teeth.

This has long been a stock article, and has had a very extensive sale. The illustration gives a clear idea of its usefulness.

	s.	d.
Price, 6 inches long .. .. .. each	4	6



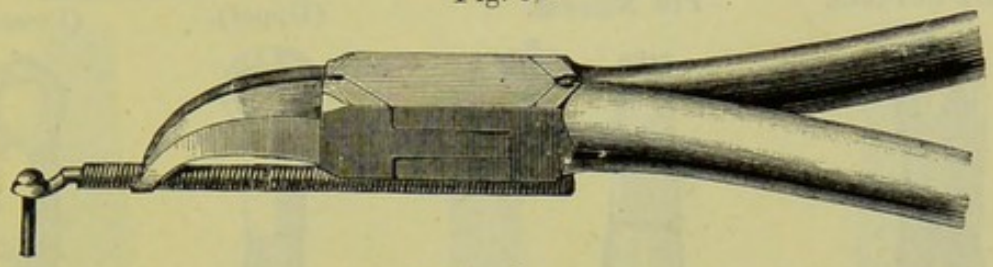
COMBINED PLIERS AND CUTTING NIPPERS (WITH FLAT NOSES).

This useful tool is a combination of Fig. 48 Cutting Nippers, and form A Pliers shown on page 365. Being made in bright steel, it will be found equally suitable for either the Operating Room or the Laboratory.

	s.	d.
Price in bright steel, 4½ inches long .. each	2	6

SPRING AND SWIVEL PLIERS, &c.

Fig. 51.



5 inches long.

		s.	d.
Spring Adapting Pliers (Mr. Edwards'), used for forcing springs on to the tangs of swivels, or for pulling them off without injuring the springs, bright all over (Fig. 51)	each	2	9
Swivel Pliers (Mr. Miles'), for reducing the tangs of swivels when too large for the springs	„	2	3
India-rubber Tubing, red, for fitting over springs to prevent friction in the mouth	per foot	0	3

PLATE PUNCHES.

These punches are used for forcing metal plates close to the necks of the teeth while on the metal casts. They are made in three widths—broad, medium, and narrow. The illustrations show the medium width.

FLAT.



THIN OVAL.



HOLLOW.



		s.	d.
In polished Steel	each	0	9
„ Brass	„	0	6
Steel numbers for stamping metal plates, per set of nine		4	6
Steel numbers or letters, made to order, per number or letter		0	6

PLATE CUTTERS, &c.

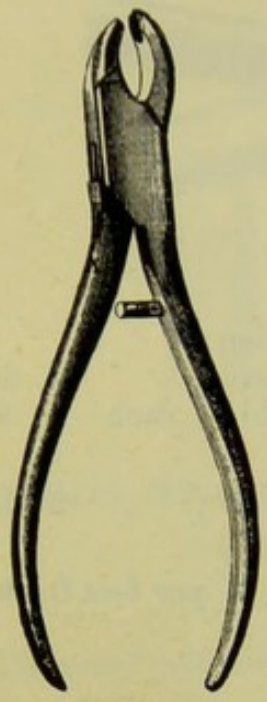
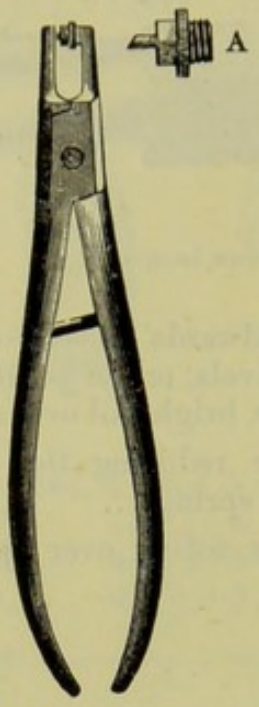


PLATE CUTTERS.

6¾ inches long.



PIN NIPPERS.

6½ inches long.



PLATE BENDERS. (Upper).

7¼ inches long.



PLATE BENDERS. (Lower).

7¼ inches long.

	s.	d.
Plate Cutters (Stubs'), with round noses, large, medium, small each	5	0
" " with square noses, small only .. "	5	0
Pin Nippers, improved, for punching metal backings for flat teeth, with 6 pins .. .. "	5	6
Pins for ditto, extra .. .. per doz.	2	0

These Pin Nippers are so arranged that the cutting pins can be renewed as often as necessary. This is accomplished by merely unscrewing the movable socket A, and dropping in the pin from the back. The pins are flattened at the opposite end, to prevent them turning round or falling through, and when the socket A is screwed home in the head of the nippers the pin is perfectly secure.

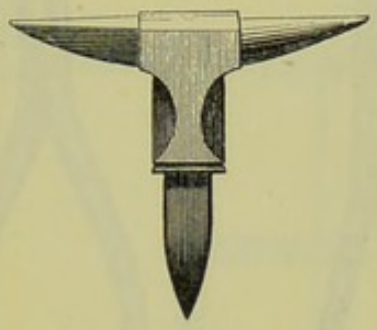
	s.	d.
Plate Benders (American pattern), for upper plates .. each	5	6
" " " " lower " .. "	5	6
Plate Burnisher, polished steel, double ended .. .. "	1	6
" " in wooden handle .. .. "	0	10
Scratch Brushes, brass wire, for Lathes, coarse .. .. "	2	0
" " " " fine .. .. "	2	6
" " " for Hand, coarse .. .. "	1	0
" " " " fine .. .. "	1	3

SCREW PLATE, BEAK IRON, &c.

Screw Plate. Beak Iron. Plate Gauge.



6 inches long.





5¼ inches long.

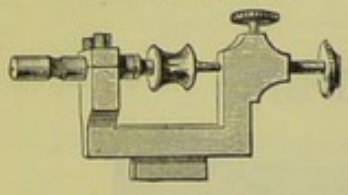
	s.	d.
Screw Plate (Stubs'), notched, with six taps .. .. each	5	3
Beak Irons, large size, width of face about 1 inch .. .. „	3	0
„ medium „ „ ⅞ „ .. .. „	2	9
„ small „ „ ¾ „ .. .. „	2	6
Plate and Wire Gauge, small sizes, 1 to 20 .. .. „	5	6

PLATE AND WIRE GAUGE.

Showing the sizes of Plate and Wire manufactured by C. Ash and Sons.

	s.	d.
In bright Steel .. .. each	7	6

Drilling Tool. Drill Stock.



5 inches long.



3¼ inches long.

	s.	d.
Drilling Tool, with Steel Rest, Vice Stock and Thumb Screw— not shown in the illustration—to carry Broach Drills of any size, each	7	6
Drills for the same, with round stems .. .. per doz.	2	6
Drill Stocks, large, medium, and small bore .. .. each	1	8
„ with screw clamp sockets .. .. .. „	1	0
Broach Drills for the same, large, medium, and small per doz.	2	4

PERFORATORS, SHEARS, &c.

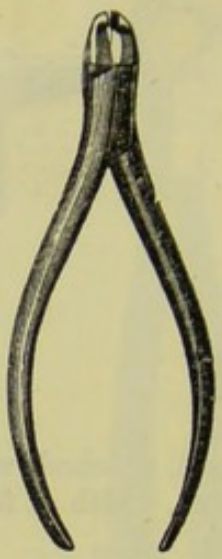
PERFORATORS. SHEARS. ROUND-NOSE NIPPERS. CLASP BENDER.



7½ inches long.



Right side.



5½ inches long.



7 inches long.

	s.	d.
Perforators for punching Metal Plates for Tube Work. In polished Steel, with plain handles, and six Pins .. each	6	6
Pins for the same, extra .. .. per doz.	2	0
Shears for cutting Plate (Stubs'), curved, 7 in. and 8 in. long, each	4	6
„ „ „ straight, 7 in. and 8 in. long „	4	0
Made in right and left sides, see illustration.		
Round-nose Nippers (Stubs'), for cutting off pins inside plates .. .. „	4	6
Clasp Bender, with one oval and one hollow chop .. .. „	6	0

BROACH HOLDER.

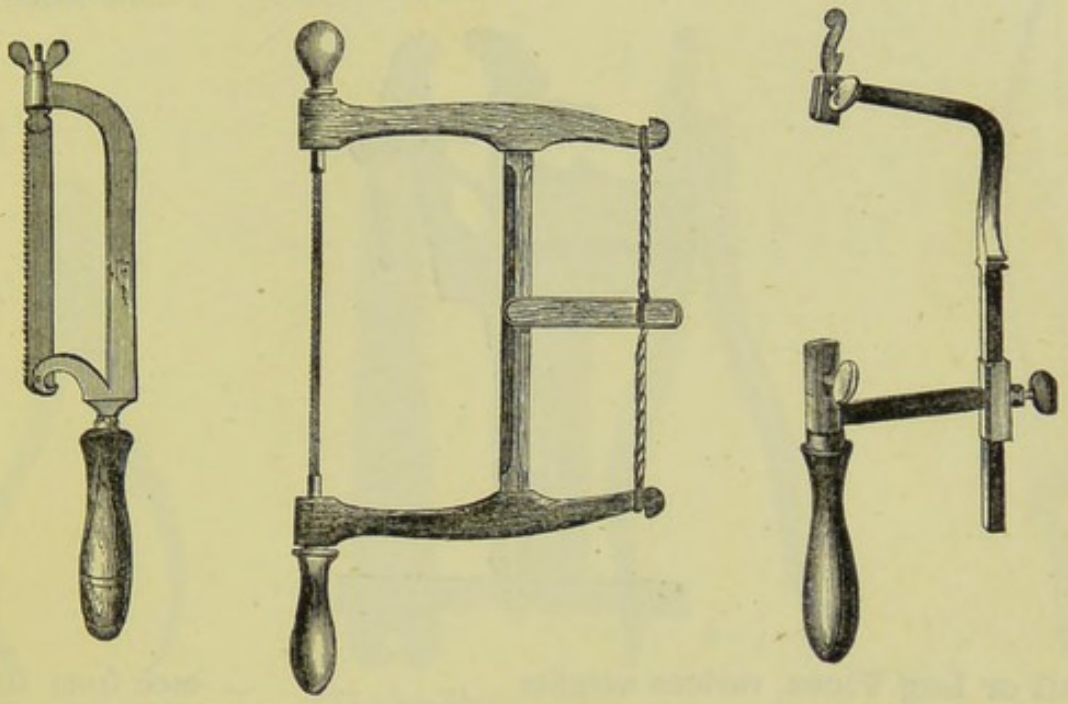


With universal Socket and Screw Clamp.

	s.	d.
In Steel Handle, milled, as illustrated .. .. .. each	1	0
„ **Ebony** „ .. .. „	1	6
Broach Handles, bone, with screw socket .. .. .. „	0	4
„ „ ebony .. .. „	0	3
„ „ wood .. .. „	0	1
Broaches, Stubs', all sizes .. .. .. each 2½*d.*; per doz.	2	4

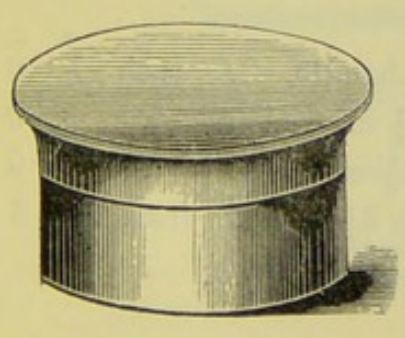
SAW FRAMES.

METAL SAW. BOW SAW. PIERCING SAW.



		s.	d.
Metal or Bone Saw Frames, various lengths ..	each from	3	9
Saw Blades for the same	per inch	0	1½
Bow Saw Frames, various sizes	each from	3	0
Saw Blades for the same	„ „	0	6
Piercing Saw Frames, best quality	each	3	9
Blades, narrow to broad, fine to coarse cut	per gross	3	0
„ „ „ „	per doz.	0	4
Circular Saws for Lathes, 1 to 4 inches diameter ..	per inch	1	0

Files for sharpening Saws supplied to order.



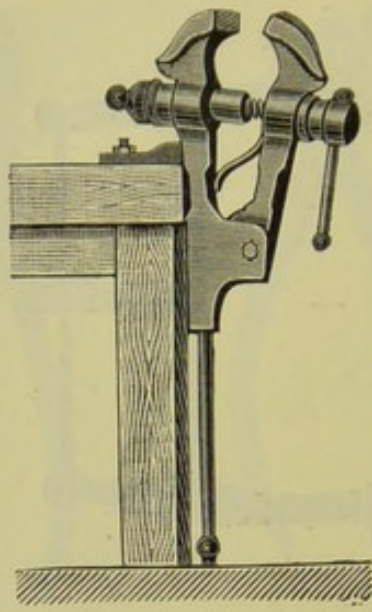
BOXES FOR METAL SCRAPS.

IN JAPANNED TIN, CIRCULAR, WITH SIFTERS.

	s.	d.
Made in three sizes—3¼ in. diameter, each	1	3
„ 4 in. „ „	1	6
„ 4½ in. „ „	1	9

VICES.

TAIL VICE.



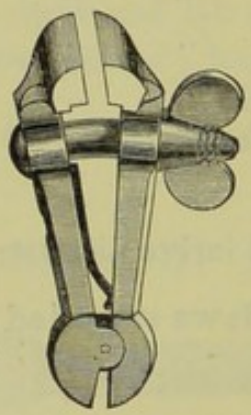
	s.	d.
Tail or Leg Vices, various weights .. .. .. each from	10	6

When ordering, please state weight required.

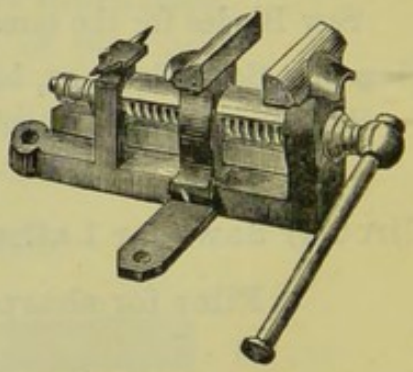
PIN VICE.



HAND VICE.



HORIZONTAL VICE.



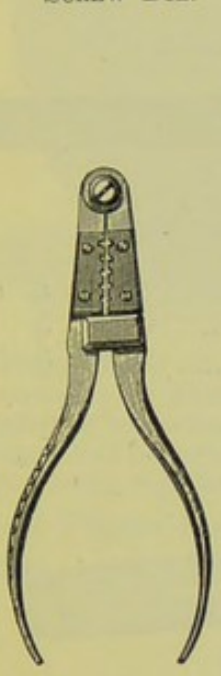
$4\frac{1}{2}$ inches long.

	s.	d.
Pin Vices, Stubs', all Steel, with hole through handle .. each	5	0
Hand Vices, 4 in. long, width of chops about $1\frac{1}{4}$ in. .. „	3	0
„ $4\frac{1}{2}$ in. „ „ „ $1\frac{1}{2}$ in. .. „	3	9
Horizontal Vices, to fix on bench, weight, from $3\frac{1}{2}$ lbs. .. from	23	6

When ordering, please state weight required.

TOOLS—VARIOUS.

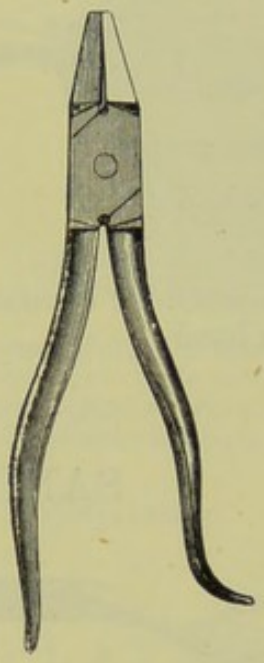
Screw Die. Sliding Tongs. Drawing Tongs. Drill Bow.



5¾ inches long.



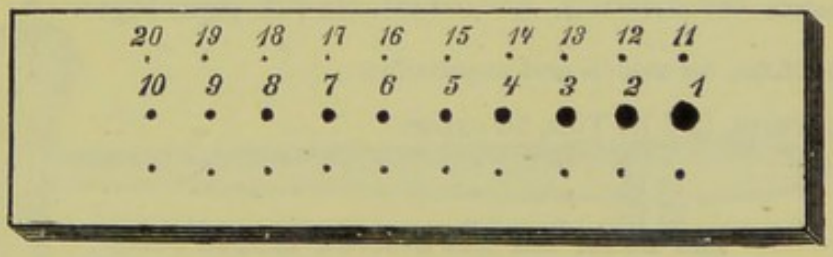
5¼ inches long.





		s.	d.
Screw Dies to open with plates, to unscrew, &c., and set of Taps, various sizes	from	18	0
Sliding Tongs, with round, oval, or vice chops	each	3	0
Drawing Pliers or Tongs, 7 inches long	„	3	0
Drill Bows, spring steel, with ratchet screw	„	5	0
Gut for Drill Bows, three sizes	per hank	0	2½

DRAWPLATES—Best Quality.



			s.	d.
Draw Plates, for round wire, 20 holes, small sizes ..	each		4	0
„ „ 30 „	„		5	6
„ for half-round 20 „	„		6	0
„ „ 30 „	„		8	0
„ for square wire obtained to order.				

PLASTER KNIVES.

On board.



16 inches long.

For hand.



7 inches long.

			s.	d.
Plaster knife on board for trimming models, &c.	each		5	6
„ for hand „ „	„		0	9

SAND SPATULA.



About half size.

		s.	d.
Spatula for mixing casting sand, &c.	each	2	0

PLASTER OF PARIS.

SPECIALLY PREPARED FOR DENTAL PURPOSES.

		per bag. s.	d.	per cwt. s.	d.
Fine, for models	in 7 lb. paper bags	0	6	5	6
Superfine „	„ „	0	9	9	6
Extra Superfine, for models and impressions	„ „	1	0	12	6

			s.	d.
Extra Superfine, in 2 lb. Tins, for export	per tin	0	9	
„ „ 7 lb. „ „	„	2	0	
„ „ 14 lb. „ „	„	3	9	
„ „ 25 lb. „ „	„	7	0	

The 25 lb. Tin has a screw-capped outlet.

Plaster of Paris in Barrels supplied to order.
Plaster, in paper bags, packed for export, to order, in tin-lined cases.

		s.	d.
Casting Sand for Dental purposes	per 14 lb. bag	1	4
Cement for mending models	per stick	0	2
Stearine for hardening models	per lb.	1	3
Plaster Pins crimped for strengthening teeth of plaster models	per box	0	8

RUBBER BOWLS FOR MIXING PLASTER.

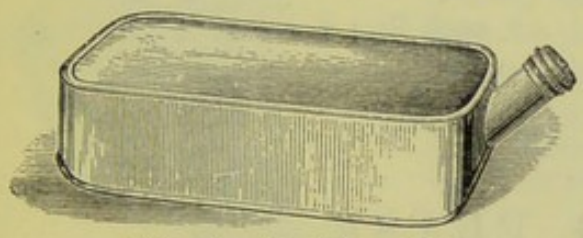




These Bowls are made of soft rubber about one-eighth inch thick. The principal advantages in their use are: They cannot be broken; their sides can be pressed together so as to form a lip or spout for pouring out soft plaster; the plaster that remains in them and becomes set can be thoroughly crushed and removed by squeezing the sides of the bowls together.

		s.	*d.*
Small Plaster Bowls, 4 in. diameter by $2\frac{3}{4}$ in. deep inside	each	3	0
Large „ $4\frac{1}{2}$ in. „ by $3\frac{1}{2}$ in. „	„	4	0

HOT-WATER PLATE.



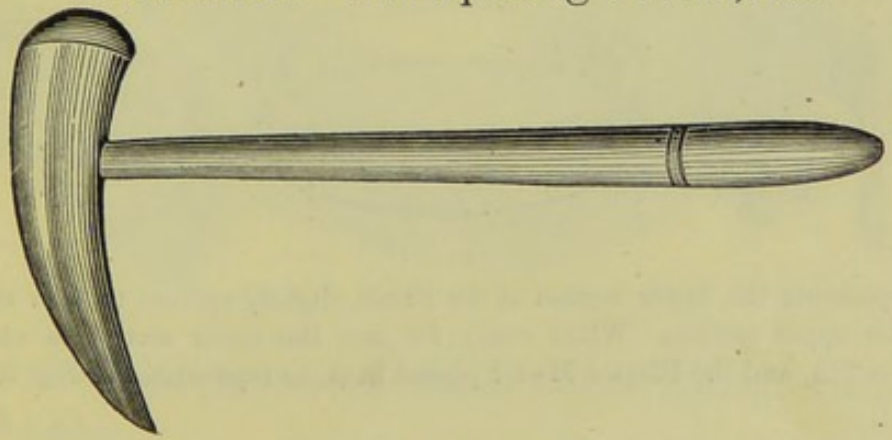
10 in. long by 7 in. wide.

For softening Dental Rubber previous to packing. Made of block tin, with screw-capped opening for the water.

"Moist heat is preferred for softening Rubber, as dry heat is liable to injure it by overheating."—GILBERT.

	s.	*d.*
Price	4	6

MALLETS—For opening Flasks, &c.



		s.	*d.*
In Horn, as illustrated, various sizes	each	1	6
In Boxwood, large, medium and small	„	0	9

FLASKS FOR MAKING METAL DIES.

(BAILEY'S.)

Fig. 1. Fig. 2. Fig. 3.



Directions for Use.—Place a shallow Plaster Cast, A, B, C, on a level surface; turn over it the lower half of the Flask (Fig. 1), with joint side down; pack the sand in it, and level off the top; turn up the Flask, remove the superfluous sand, tap the cast lightly, when it can be easily lifted out; pour in the Zinc; when the impression is filled, place over it the upper half of the Flask (Fig. 2), and fill up immediately; knock out the sand, invert the whole Flask, and pour the Lead upon the Zinc; when cooled, part and remove the Flasks, and with a few sharp blows at the joint the Dies will separate.

		s.	*d.*
Price	each 2*s.*; per set	4	0

MOULDING FLASK.

(HAWES'.)

Fig. 1. Fig. 2. Fig. 3.

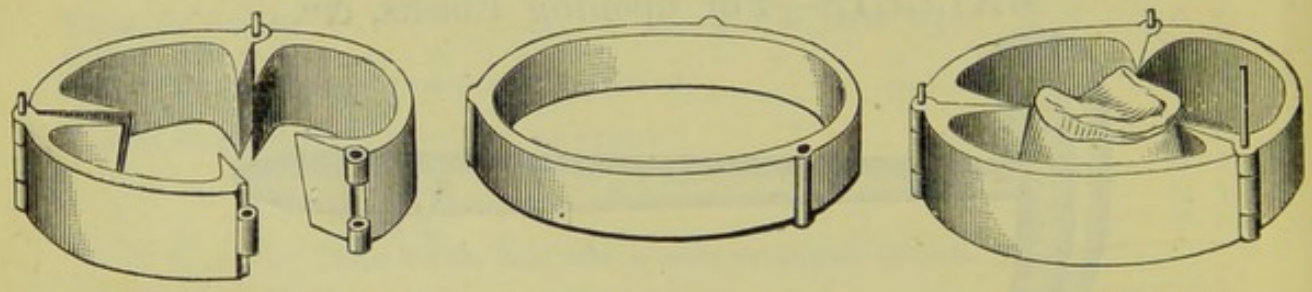


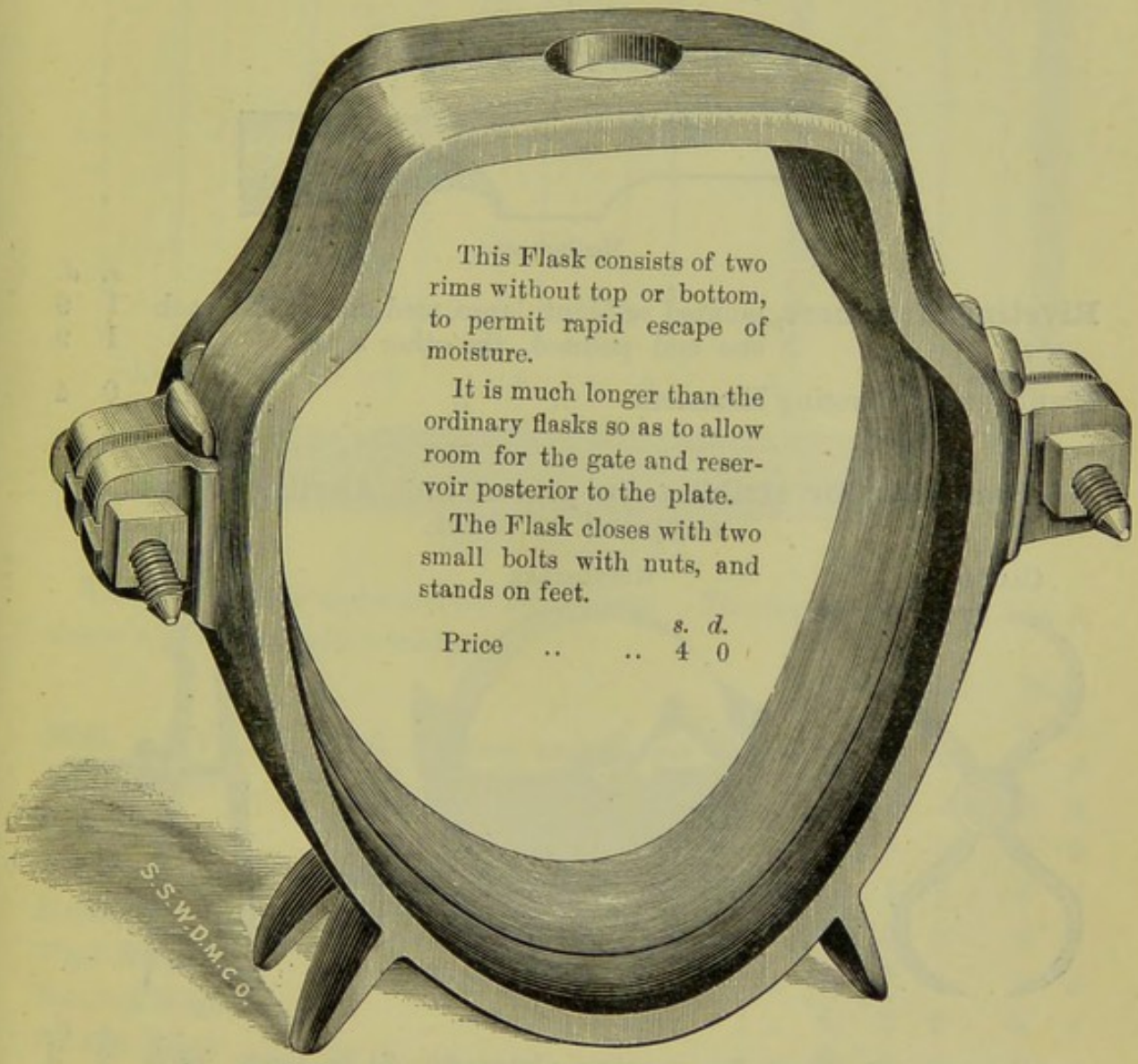
Fig. 1 represents the lower section of the Flask, slightly opened, to show the Joints. Fig. 2 is the upper section. When ready for use, the lower section is closed and confined by a Pin, and the Plaster Model placed in it, as represented in Fig. 3.

	s.	*d.*
Price, complete	12	0

WESTON'S IMPROVED FLASK.

FOR USE IN MAKING DENTURES OF WESTON'S METAL AND OTHER FUSIBLE ALLOYS.

A full description of the "Metallo-Plastic" Process will be found in Chapter XV. of "Harris's Principles and Practice of Dentistry."



This Flask consists of two rims without top or bottom, to permit rapid escape of moisture.

It is much longer than the ordinary flasks so as to allow room for the gate and reservoir posterior to the plate.

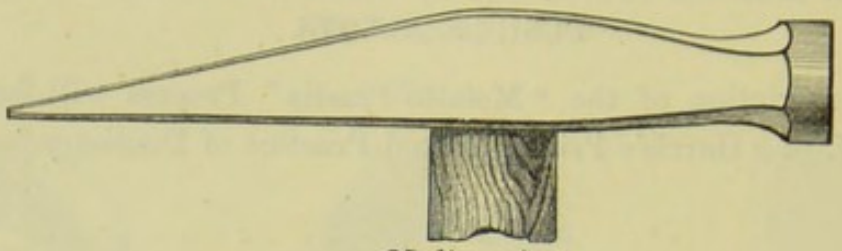
The Flask closes with two small bolts with nuts, and stands on feet.

	s.	d.
Price	4	0

	s.	d.
Weston's New Metal for Lower Dentures, in 2 oz. packets, per pkt.	4	0
„ Solder .. .. per oz.	4	0
Harris's "Principles and Practice of Dentistry," 11th Edition ..	31	6

TOOLS—VARIOUS.

RIVETING HAMMER, Fig. 78.



Medium size.

RIVETING HAMMER, Fig. 79.

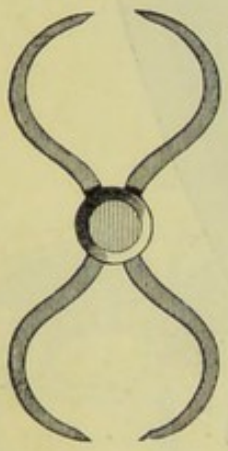


Medium size.

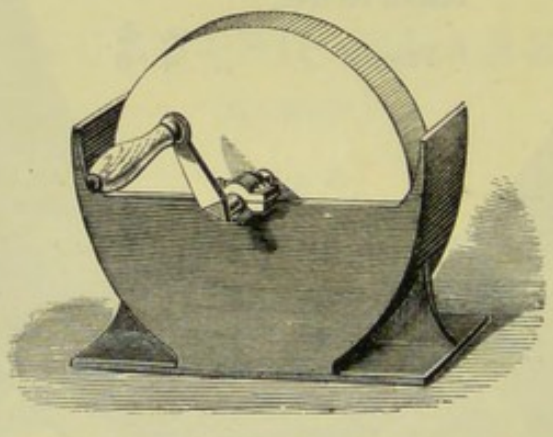
		s.	d.
Riveting Hammers, pointed or blunt, large, medium, small	each	1	6
„ „ one end pointed, the other blunt	„	1	9
Handles for Riveting Hammers	„	0	4

Hammers for striking up plates, and Anvils all sizes, supplied to order.

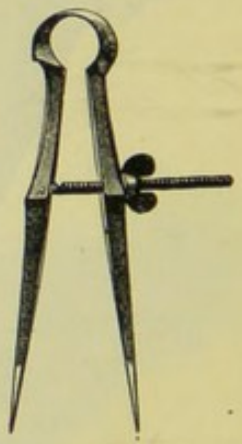
CALIPERS.



GRINDSTONE.



DIVIDERS.



		s.	d.
Calipers, bright Steel, for gauging plates, &c., 3½ in. long,	each	2	3
Dividers, spring Steel, with set screw, 4½ in. long	„	2	9
Grindstones, for Hand, in Trough, 6 to 12 in. in diameter	from	7	0
„ **for Lathes**, 3 in. diameter	each	2	0
„ „ 3½ in. „	„	2	3
„ „ 4 in. „	„	2	6

Other Grindstones obtained to order.

SCULPTORS.

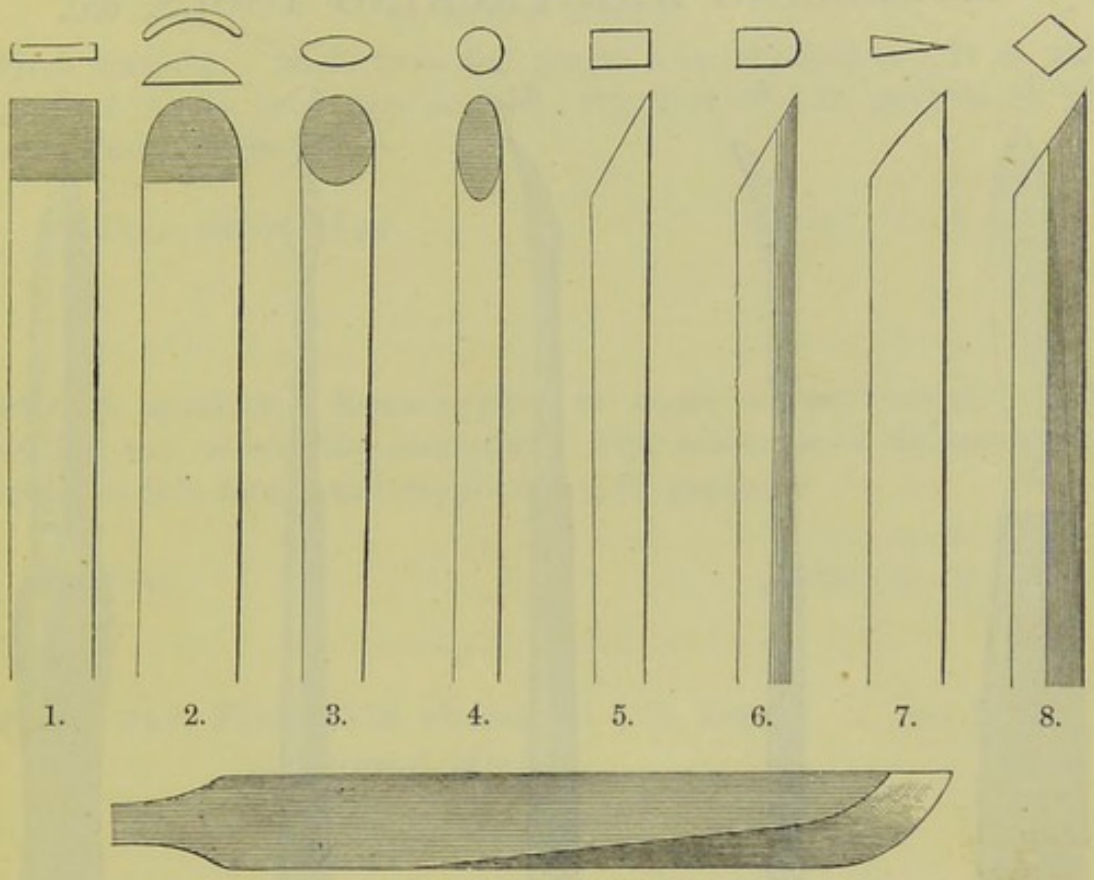
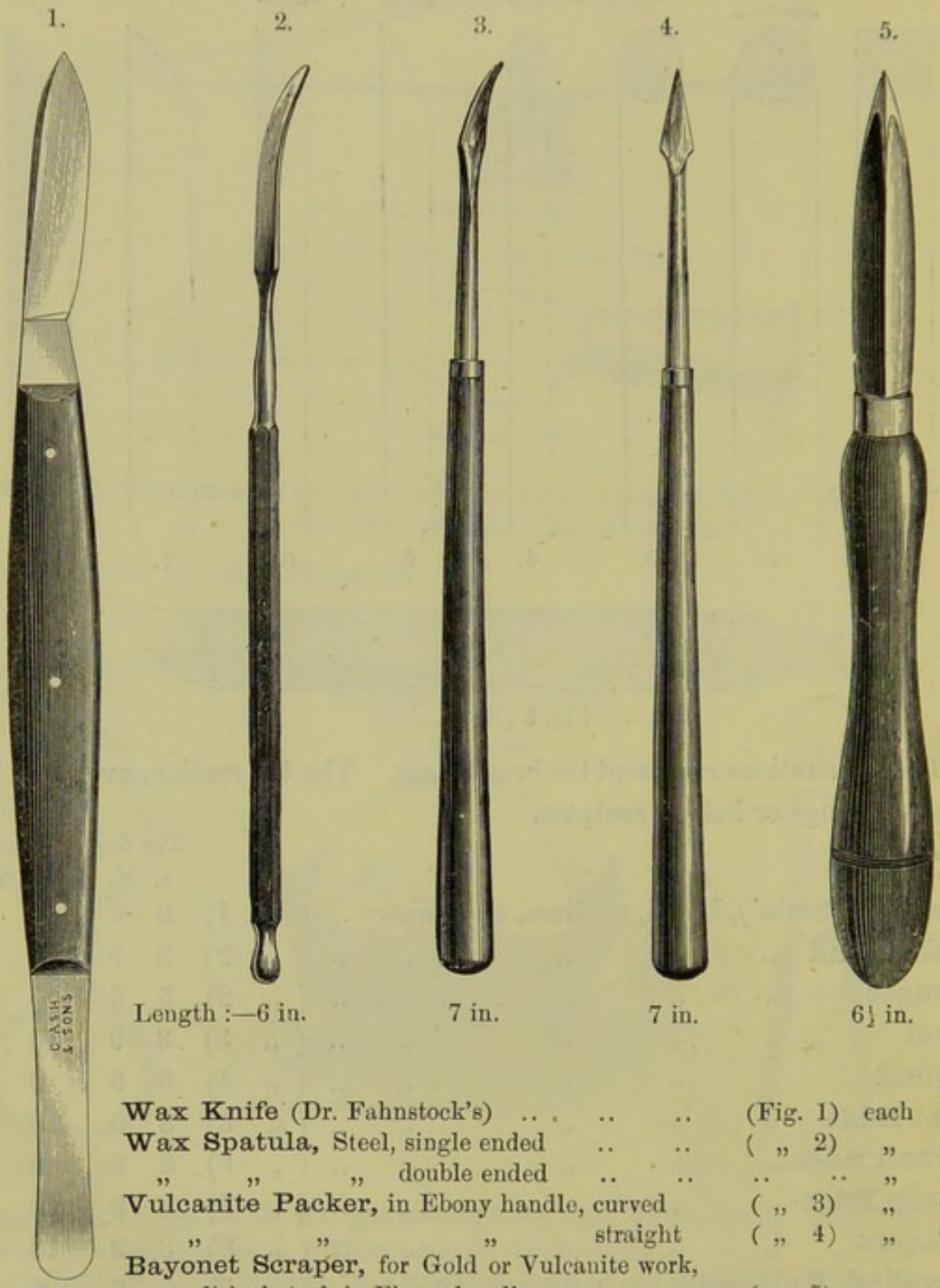


Fig. 9 (Right side).

The illustrations represent the broad sizes. The top section, over Fig. 2, shows a gouge or hollow sculptor.

		Per doz.		Each.	
		s.	*d.*	*s.*	*d.*
Flat (Stubs'), broad, medium, and narrow ..	(Fig. 1)	3	9	0	4
Half-round „ „ „ „ ..	(„ 2)	3	9	0	4
Gouges „ „ „ „ ..	(„ 2)	5	6	0	6
Oval „ „ „ „ ..	(„ 3)	3	9	0	4
Round „ „ „ „ ..	(„ 4)	3	9	0	4
Flat Edge „ „ „ „ ..	(„ 5)	3	9	0	4
Round Edge „ „ „ „ ..	(„ 6)	3	9	0	4
Sharp Edge „ „ „ „ ..	(„ 7)	3	9	0	4
Gravers „ „ „ „ ..	(„ 8)	3	9	0	4
Bevelled, Knife edge, in right and left sides ..	(„ 9)	5	6	0	6
Wooden Handles for Sculptors, round, half-round, and pear-shaped	per doz.	1	0		

MODELLING AND PACKING TOOLS, &c.



Length :—6 in. 7 in. 7 in. 6½ in.

7 in.

			s.	d.
Wax Knife (Dr. Fahnstock's)	(Fig. 1)	each	1	6
Wax Spatula, Steel, single ended	(„ 2)	„	1	0
„ „ „ double ended	.. ..	„	1	4
Vulcanite Packer, in Ebony handle, curved	(„ 3)	„	0	9
„ „ „ straight	(„ 4)	„	0	9
Bayonet Scraper, for Gold or Vulcanite work, polished steel, in Ebony handle	(„ 5)	„	2	0

MODELLING WAX.

(C. ASH & SONS'.)

First quality. Made from the purest wax obtainable. It is very tough, and makes good firm models. Supplied in ½ lb. packets, in two colours, Pink and Brown.

		s.	d.
Price, either colour	per lb.	5	0

Second quality. Recommended as equal to any second quality modelling wax before the profession. The colour is a delicate Pink. Prepared in thin sheets, and supplied in ½ lb. packets.

		s.	d.
Price	per lb.	3	0

		s.	d.
Paraffin wax, Pink, thin sheets, in ½ lb. boxes ..	per lb.	3	0
„ „ „ **round sticks** „ „ ..	„	3	0

GUTTA-PERCHA FOR BASE PLATES.

(AMERICAN.)

		s.	d.
In thin sheets, put up in one pound packets	per lb.	10	0

TOOTH HOLDER.

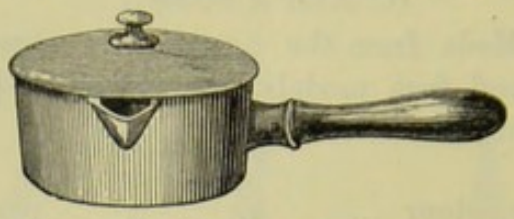


5 inches long.

For holding mineral teeth when grinding. It is equally useful for teeth with vertical or horizontal pins, the T-shape slot being designed to take both.

		s.	d.
In bright steel, wooden handle	each	1	0

ARTICLES—VARIOUS.



Porcelain Pan.

		s.	d.
Boiling Pans, Porcelain, 3½ in. diameter	each	2	9
,, **Copper, oval,** 6 in. by 3½ in.	,,	2	0
,, ,, **round,** 4 in. diameter ..	,,	2	0
Board or Bench Pins, beech wood	,,	0	3½
Buff Sticks, flat and round, for polishing	,,	0	1½
Buff Wheels, for Lathes, 3¼ in. diameter	,,	1	0
Camel Hair Pencils, large, medium, and small ..	per doz.	0	9
Casting Rings, Iron, 5½ in diameter	each	1	9
,, ,, 5 in. ,, ...	,,	1	6
,, ,, 4 in. ,, ...	,,	1	3
Casting Die Rings, Iron, 4½ in. diameter	,,	2	6
,, ,, 4 in. ,, ...	,,	2	3
Electro-gilding Battery (Scott's), for gilding Dental plates, consisting of charging powder, gilding solution, carbon, zinc, jar, &c. Enclosed in a neat cabinet, 7 in. by 8 in. by 10 in.	,,	18	0
Gum Enamel (Stent's), for coating plates	per pkt.	2	6
Gum Shellac	per lb.	4	3
Iron Wire, thin, for binding	per hank	0	2
,, medium, for pins; thick, for cramps ..	,,	0	1½
Oil Cans, Tin	each	0	4
Stones, circular, for Lathes, for polishing mineral teeth after grinding .. .. large	,,	1	0
,, ,, ,, ,, ,, small	,,	0	9
Vermilion	per oz.	0	8
Water of Ayr Stones, in slips, for polishing large and small	each	0	2½
Whitehouse's Apparatus, for duplicating plaster models	,,	10	6
Extra Composition for the same	per pkt.	3	6

METALS—VARIOUS.

		s.	d.
Aluminium, obtained to order at current price.			
Babbitt's Metal, for making Dies	per lb.	1	9
Bismuth, obtained to order at current price.			
Copper, fine	,,	2	6
Lead	per cwt., 24*s*. ,,	0	3
Lead in thin sheets, for patterns, &c.	,,	0	7
Mercury, chemically pure	,,	10	0
,, ,, ,, ...	per 3 oz. pkt.	2	3
,, **electrically purified, finest quality**	,, 3 oz. ,,	5	6
,, ,, ,, ,, ,,	,, 2 oz. ,,	3	10
,, ,, ,, ,, ,,	,, 1 oz. ,,	2	0
,, **common**, for Vulcanizers and Batteries	per lb.	3	0
Nickel, plate and wire, obtained to order.			
Silver, fine, in grain	per oz. troy	5	9
Soft Metal, for Vulcanite work	per lb.	2	9
Soft Solder	per piece	0	2
Spence's Metal, sulphate of iron, for models ..	per lb.	0	4
Tin, in Bars	,,	1	4
,, **in Grain**	,,	1	6
,, **in Foil, for Vulcanite work**	,,	3	6
,, ,, ,, ,, American, No. 60	per book	2	0
Weston's Metal, for Lower Dentures, in 2 oz. pkts.	per pkt.	4	0
,, **Solder**	per oz.	4	0
Zinc .. .. per cwt., 24*s*.	per lb.	0	3

Other Metals supplied to order.

SCALES AND WEIGHTS.

FOR WEIGHING PRECIOUS METALS, &c.

		s.	d.
Scales, with Pillar, Beam, &c., to fold and pack in the drawer of the mahogany stand ..	10 in. by 5 in.	19	6
,, ,, ,, ,,	8 in. by $4\frac{1}{4}$ in.	15	6
,, common, in Oak box	9 in. by $4\frac{1}{2}$ in.	10	0
Sets of Cup Weights, Troy	1 oz. to $\frac{1}{10}$ per set	2	0
,, ,, ,, ...	2 ozs. to $\frac{1}{10}$,,	3	0
,, ,, ,, ...	3 ozs. to $\frac{1}{10}$,,	4	6
,, ,, ,, ...	5 ozs. to $\frac{1}{10}$,,	6	0
,, ,, ,, ...	10 ozs to $\frac{1}{10}$,,	8	0
Sets of Weights, Decimals of the ounce troy	,,	4	0
,, ,, Drachms and scruples	,,	1	0

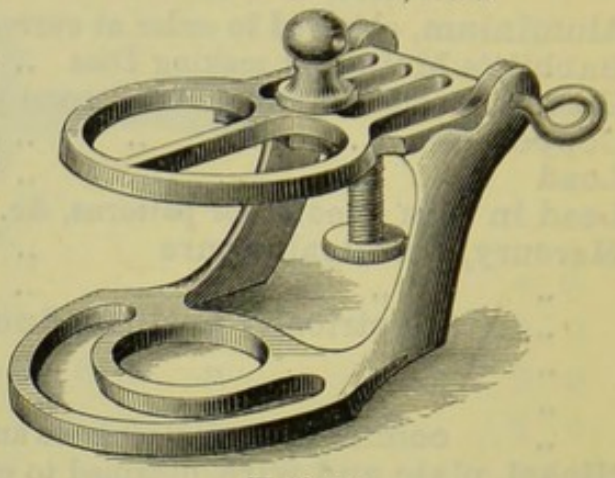
Other Scales and Weights obtained to order.

ARTICULATORS.

American Pattern, No. 2.

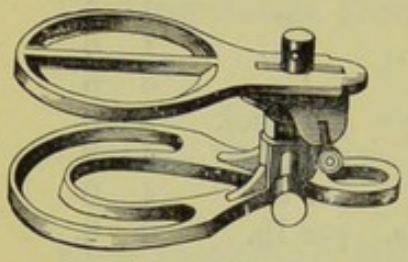
Articulator, American pattern, No. 2, in brass, lacquered, with screws for regulating the height and adjusting the bite. The two halves can be separated by withdrawing the brass pin at the back.

	s.	d.
Price	9	0



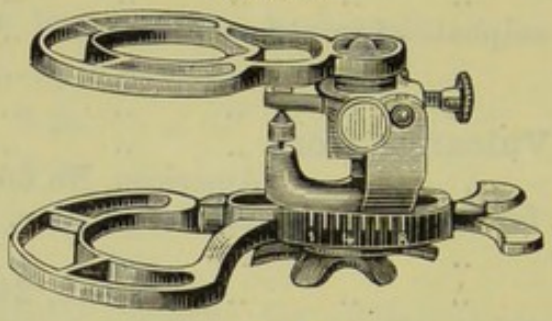
Half size.

Snow & Lewis's.



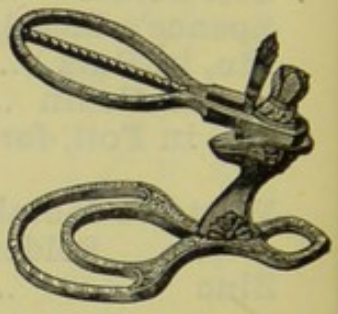
5 inches long.

Hayes'.



5 inches long.

Smith's.



4 inches long.

		s.	d.
Articulator (Snow & Lewis's) in brass, lacquered, with hollow pillar and set screw for regulating the height, &c. ..	each	8	0
Articulator (Dr. Hayes') in brass, lacquered, having all the motions of the jaws, and a hinge, so that the two halves when opened at right angles can be separated	„	10	0
Articulator (Mr. Smith's) in brass, lacquered, with screws for regulating the height	„	4	6

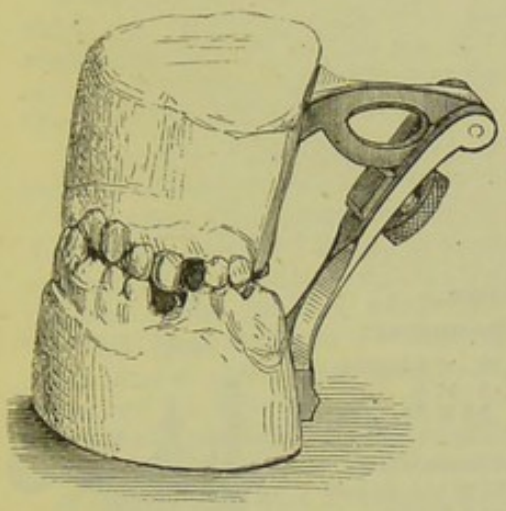
Articulators not illustrated.

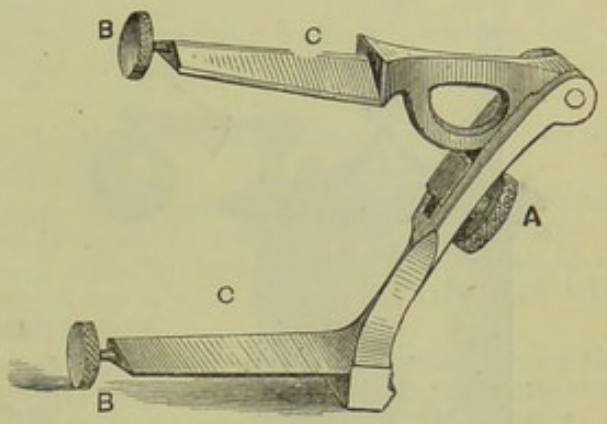
		s.	d.
In plain brass, lacquered, with simple movements	each	4	3
American Pattern, No. 3	„	9	0
„ „ „ 6	„	8	0
„ „ Plain line	„	3	9
McPherson's	„	12	0
Justi's, No. 3	„	10	0

Other Articulators supplied to order.

IMPROVED ARTICULATOR.

(Messrs. GRAHAM & WOOD'S.)





The superiority of this Articulator over others consists in the very little trouble involved in first attaching the models to the frame. Once fixed, they can be removed as often as may be desired, and when done with, taken off the frame, tied back to back, and put away in some convenient place ready for use at any time. The models can always be replaced on the frame with perfect accuracy, should repairs be necessary, or a duplicate set of teeth required, by simply sliding them over the bars C, and securing them in position by the pins B. The engraving on the left-hand side shows the model attached to the Articulator.

It is simple in construction, easily worked, and very convenient, while the large sale which it has had is a gratifying proof of its utility.

Directions for Use.—Let the models be about one inch and a half in thickness with the under-sides roughened; fix them securely together on the bite; oil the slides C, and insert the pins B in the holes at the end.

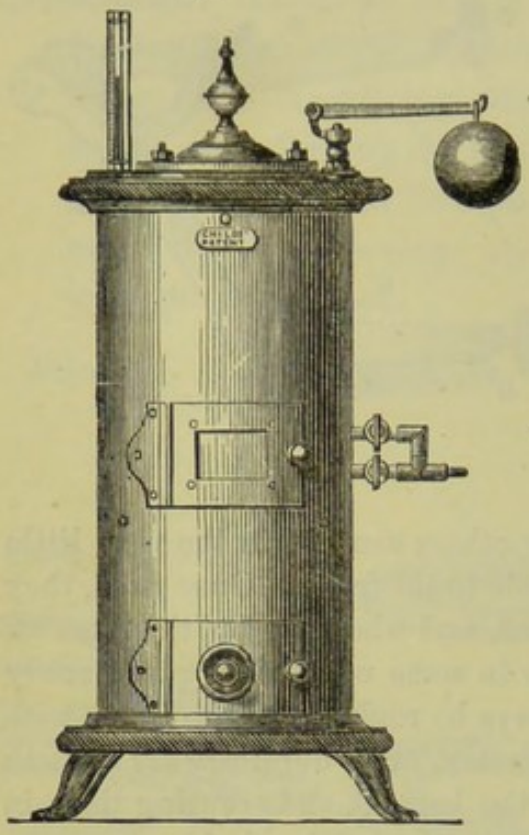
To secure the models to the frame: take a piece of glass sufficiently large for one slide to rest on; pour plaster on the glass high enough to cover the slide C; imbed the slide in the plaster, and place the models over it in proper position; then pour a little plaster on the upper model and close down the upper slide C. When the plaster has set, reverse the frame—being careful not to disturb the articulation—and mount the upper model in the manner already described for the lower.

	s.	*d.*
Price	8	0

CAST-IRON VULCANIZERS.

(C. ASH AND SONS'.)

85.



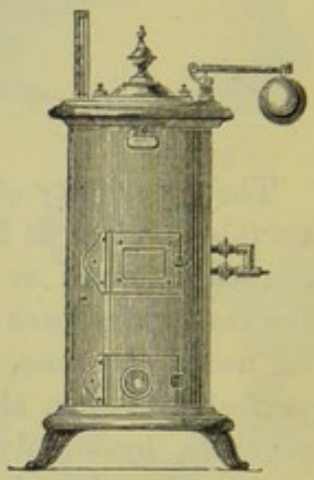
BOILER.

Inside Measurement:

Large size, 12 × 8 inches.
Medium ,, 9 × 6 ,,
Small ,, 9¼ × 5¼ ,,

Outside Dimensions:
Large size, 32 × 11¼, to hold from 6 to 8 Flasks.
Medium size, 26 × 8¼, to hold from 2 to 4 Flasks.
Small size, 22 × 7¼, to hold 2 or 3 Flasks.

86.



These Vulcanizers are fitted with graduated safety valves and fusible metal plugs, and can be used either for steam generated from free water or wet plaster.

They are tested before sent out far beyond the pressure required for vulcanizing (viz., to 300 pounds to the square inch), and are therefore perfectly safe so long as ordinary care is exercised; but no Vulcanizer, however strong, should be left in charge of *a careless or incompetent person.*

THE GRADUATED SAFETY VALVE.—By means of this valve the pressure of steam actually employed at any time is easily ascertained, by merely sliding the weight upon the lever of the valve, until the steam begins to escape. No india-rubber washer being required to keep it steam-tight, it is exempt from the danger of becoming so firmly fixed as to render it useless as a means of safety.

THE FUSIBLE METAL PLUG.—This plug is so placed in the cover that if, from negligence or any other cause, the heat should rise to 350° Fahrenheit, the metal will melt and the steam blow off. The plug can be renewed at any time by riveting in a piece of the metal wire supplied with each Vulcanizer.

NOTE.—As the chemical action of the sulphurous vapour upon the inner surface of Vulcanizers gradually reduces them in thickness, it is recommended that they be examined and tested from time to time.

CAST-IRON VULCANIZERS—*continued.*

DIRECTIONS FOR USE.

If wet plaster only is used for the generation of steam, the quantity contained in two flasks will be found sufficient; but if only one flask is put in, then a lump of wet plaster should also be put into the Vulcanizer. When free water is preferred, half a pint for the large, one-third of a pint for the medium, and a quarter of a pint for the small, will be sufficient.

The surface of the large india-rubber washer should be thoroughly chalked before the cover is screwed down, in order to prevent adhesion.

The safety-valve should be wiped each time with an oiled rag, as the least particle of dirt would allow the steam to escape, and so spoil the work. A very slight escape of steam is of no consequence, so long as there is sufficient retained to keep up the required pressure. The tube in which the thermometer is placed must be half filled with mercury, so as to obtain a correct register of the heat.

To Screw down the Cover.—So place the flasks in the Vulcanizer that neither the cover nor the tube attached to it presses upon them; then screw down the nuts with the thumb and finger, and afterwards tighten them, first one and then the other, so as to prevent any unequal strain upon the screws.

To Blow off the Steam.—When the vulcanization is completed, the steam can be blown off by sliding back the weight on the lever of the valve. This should be done gradually, and the screws of the cover should not be loosened while any pressure of steam remains in the Vulcanizer, in order to prevent an unequal strain upon them from the enormous pressure of the steam within.

Remarks on Steam Pressure.—Especial attention is called to the fact that whenever, from negligence, the temperature is allowed to rise above the degree required, the pressure of steam increases in a rapidly increasing ratio, as may be seen by the following Table, which shows proximately the pressure of ordinary steam at the several degrees of temperature :—

250°	Fahrenheit,	30	lbs.	pressure on the square inch.
275°	,,	45	,,	,,
300°	,,	67	,,	,,
325°	,,	94	,,	,,
350°	,,	130	,,	,,
375°	,,	175	,,	,,
400°	,,	240	,,	,,

The above shows that, while the increase of pressure for the first 250 is 15 lbs., the increase of the last 25° is 75 lbs.

PRICES:

	Large.		Medium.		Small.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Adapted for use with gas	120	0	95	0	75	0
,, for use with charcoal ..	120	0	95	0	—	—
,, for both gas and charcoal ..	130	0	105	0	—	—
,, for use with spirit	—	—	—	—	75	0
,, for both gas and spirit ..	—	—	—	—	85	0
Parts separately :—						
India-rubber Collars .. .. each	1	9	1	3	1	0
Thermometers .. .. .. ,,	7	6	7	6	7	6
Valve Plugs .. .. .. ,,	1	9	1	6	1	3
Valve Washers .. .. .. per box	1	6	1	3	1	0
Fusible Plugs, for any size .. .. per doz.					2	0

These prices include Safety-Valve, Thermometer, and Spanner. Flasks are charged extra.

PORTABLE WROUGHT-COPPER VULCANIZERS.

(C. ASH AND SONS'.)

In order to prevent, as far as possible, the recurrence of explosions, so dangerous to human life, C. Ash and Sons have for many years past been manufacturing Vulcanizers which are estimated to bear upwards of 1,000 lbs. pressure upon every square inch. These Vulcanizers are made under their most careful supervision, and are tested before leaving their manufactory to 600 lbs., or seven times the pressure required for perfect vulcanization. The chambers are made of **wrought copper,** nearly a quarter of an inch thick, and strengthened at the top with a strong copper band or ring.

The cover is held down by means of a centre screw and a strong **wrought-iron cramp,** which is made to clip the under part of the strong copper ring, which is securely fastened to the chamber; the cramp is made to turn back, in order to facilitate the removal of the cover and flasks.

The thermometer registers up to 350° Fahrenheit, and the small fusible metal plug inserted in each cover will only blow out when that degree of heat is exceeded.

When used with steam-gauge instead of thermometer, a pressure of from 85 to 95 lbs. will be found sufficient to vulcanize any rubber.

The india-rubber packing should be thoroughly chalked on the surface every time it is used, to prevent adhesion. It requires to be renewed occasionally, to keep the chamber steam-tight. The stands of the Vulcanizers are available for either a gas-burner or a spirit-lamp.

The tube in which the thermometer is placed should be half-filled with mercury, so as to surround the bulb, and thereby ensure a correct register of the heat.

If a safety valve is attached to the Vulcanizer, the valve and plug should be wiped each time with a clean oily rag, as the least particle of dirt would allow the steam to escape, and so spoil the work.

The Vulcanizers are made in three sizes, with the inside boiler measurements noted on the following page.

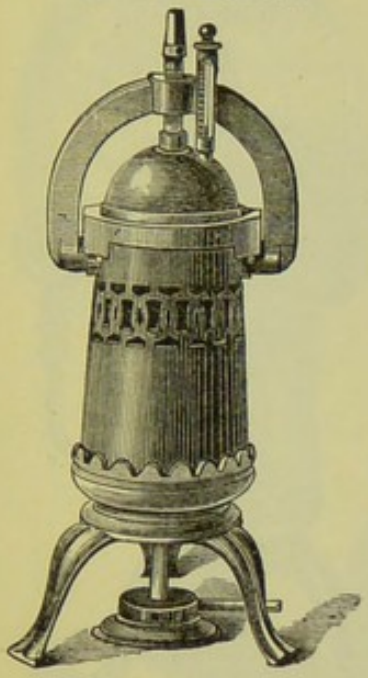
The small size will hold two large flasks, with bolts and nuts; the medium three and the large four.

Each Vulcanizer consists of Stand and Chamber as illustrated; Thermometer or Steam-Gauge; Gas-Burner or Spirit-Lamp; Spanner and Packing-remover, &c., but **Flasks are charged extra.**

Printed directions for using Gartrell's Patent Steam-Gauge will be found on page 391.

PORTABLE VULCANIZERS—*continued.*

With Thermometer.



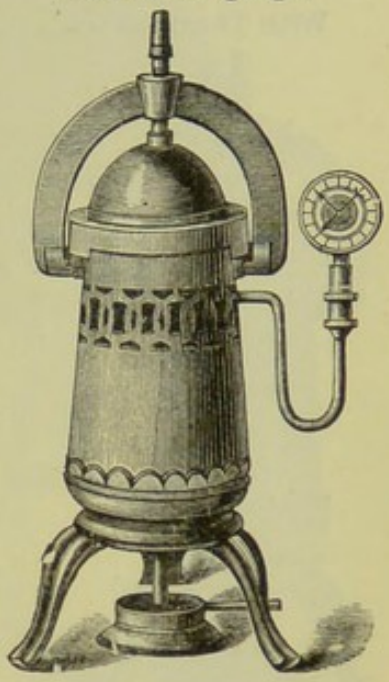
Boiler.
Inside Measurement:

	Deep.	Diameter.	
Small ..	$5\frac{1}{4}$	$4\frac{1}{4}$	inches.
Medium	8	$4\frac{1}{2}$	„
Large ..	$9\frac{1}{2}$	$4\frac{3}{4}$	„

Full Height of Vulcanizers:

Small	..	21 inches.
Medium	..	24 „
Large	..	27 „

With Steam-gauge.



	Small.		Medium.		Large.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
With Thermometer for Gas ..	105	0	110	0	130	0
„ „ for Spirit ..	105	0	110	0	130	0
„ simple Steam-gauge, for Gas	120	0	125	0	145	0
„ „ „ for Spirit	120	0	125	0	145	0
„ Gartrell's Gauge, for Gas only	140	0	145	0	165	0
Vulcanizers fitted with Tap for blowing off steam, extra each					7	6
„ „ fitted with Safety-valve „ „					17	6

Extra Parts:

		s.	*d.*
Thermometers	each	7	6
Tubes and Scales for Thermometers ..	„	4	0
India-rubber Collars	„	0	2
Fusible Plugs	per doz.	2	0

ONE-FLASK PORTABLE VULCANIZER.

Boiler, inside measurement, $3\frac{1}{2}$ inches deep, $4\frac{1}{2}$ inches diameter, height 15 inches, weight 18 lbs.

	s.	*d.*
Price complete, for Gas or Spirit	75	0

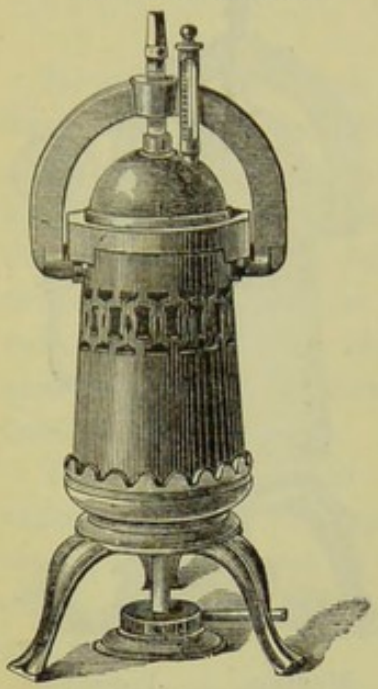
For Flasks suitable for these Vulcanizers, see pages 393–395.

EXTRA LARGE,

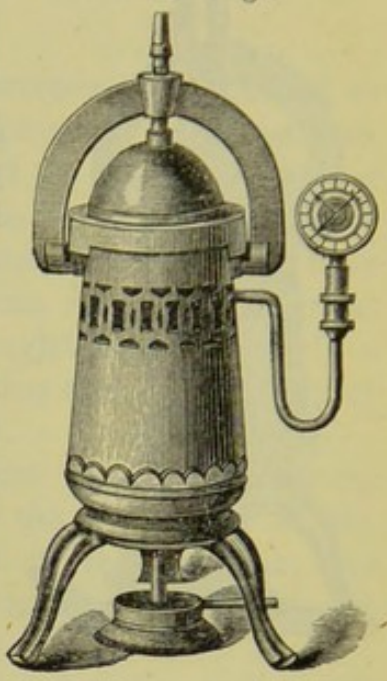
WROUGHT-COPPER VULCANIZER.

(C. ASH AND SONS'.)

With Thermometer.



With Gauge.



Boiler.

Inside Measurement:
$5\frac{3}{4}$ inches diameter.
$9\frac{1}{2}$ „ deep.

Full height of Vulcanizer:
29 inches.

This Vulcanizer is designed to hold **two of the largest Flasks with rings and thumb-screws**, or three of the largest, with bolts and nuts. Like C. Ash and Sons' well-known Portable Vulcanizers, the chamber is made of **wrought copper, tested to 600 lbs., but estimated to bear upwards of 1000 lbs. pressure to the square inch.**

The Fusible Plug, which is placed in the lid, blows out when the temperature exceeds 350° Fahrenheit.

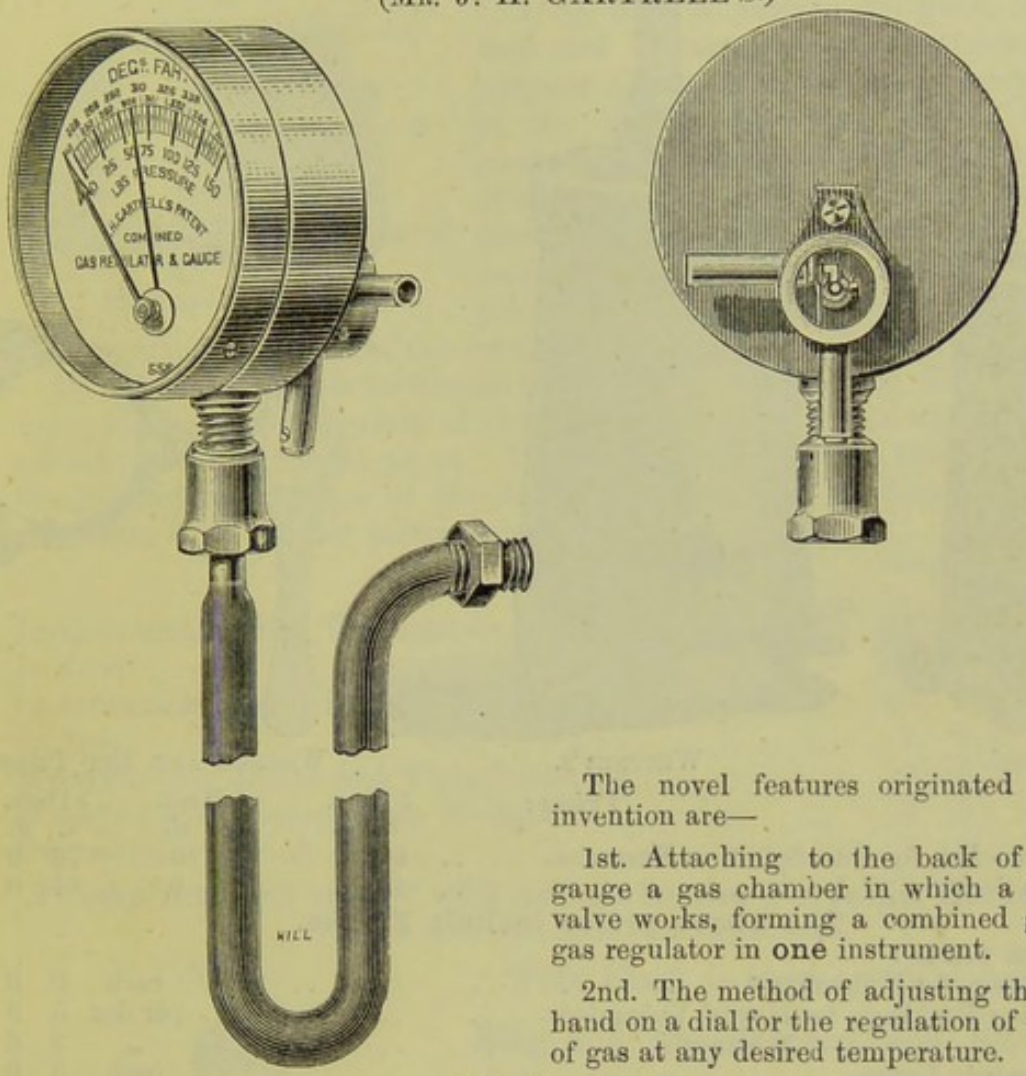
A **temperature** of from 310° to 320° Fahrenheit is sufficient to vulcanize any rubber when a Thermometer is used, and a **pressure** of from 85 to 95 lbs. when a Steam Gauge is used.

Prices:		*s.*	*d.*
With Thermometer, for use with gas or spirit		155	0
„ Simple Steam-gauge „ „		170	0
„ Gartrell's Patent Gauge, for use with gas only ..		190	0
„ Tap for blowing off steam	extra	7	6
„ Safety-valve	„	17	6
Extra parts:			
Thermometers	each	7	6
Tubes and Scales for Thermometers	„	4	0
Fusible Plugs	per doz.	2	0
India-rubber Collars	each	0	3

Flasks are charged extra.

PATENT STEAM PRESSURE AND GAS-REGULATING GAUGE.

(Mr. J. H. GARTRELL'S.)



The novel features originated with this invention are—

1st. Attaching to the back of a steam-gauge a gas chamber in which a regulating valve works, forming a combined gauge and gas regulator in **one** instrument.

2nd. The method of adjusting the valve by hand on a dial for the regulation of the supply of gas at any desired temperature.

Directions for Use :

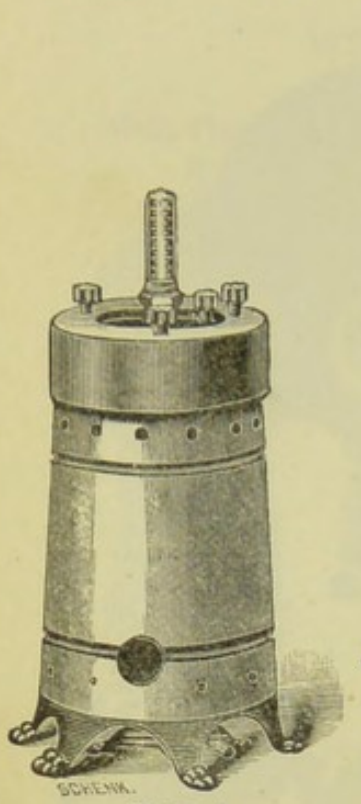
The Syphon secured to Vulcanizer is filled with water when first used, but is unnecessary afterwards. It should be seen also that sufficient water is in the Vulcanizer. The rubber tubes are attached to the two pipes to gas chamber at back of gauge. To set the gauge, the red hand is adjusted to the heat or pressure desired to work at, by turning round the gas chamber. When the blue hand has advanced till it is nearly over the red hand, the gas will be automatically regulated to maintain the heat at the set point. **The precaution should be observed, in setting the red hand when the gauge is at work, not to attempt to turn it to the left, or backwards past the blue hand, as this would force the blue hand backwards, and be liable to disarrange the working parts.**

For vulcanizing thick rubber pieces, the regulator or red hand may be set at 70 or 75 lbs. pressure, and the heat got up rapidly to that point. The red hand can then be set forward to 85 or 90 lbs. pressure, and the heat raised slowly to the vulcanizing point. This method will prevent the thickest pieces from becoming porous.

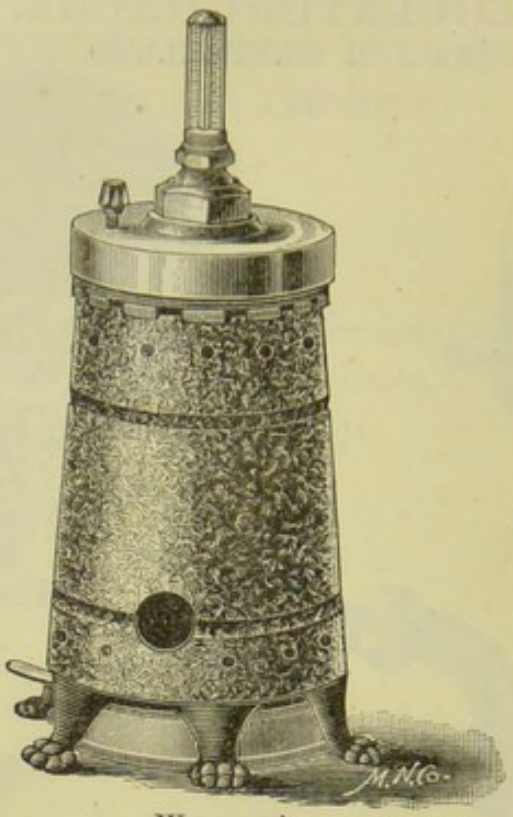
Prices :		s.	d.
Gartrell's Patent Steam-Pressure Gauges	each	42	0
Extra Syphons for do.	„	2	6
„ „ with Steam-cock	„	5	0
Simple Pressure Gauges	„	22	6
Extra Syphons for do.	„	2	6
Fitting either kind of Gauge to Vulcanizers now in use	extra	2	6
Alarm Clocks for use with Gartrell's Gauge	each	20	0

Other Gauges supplied to order.

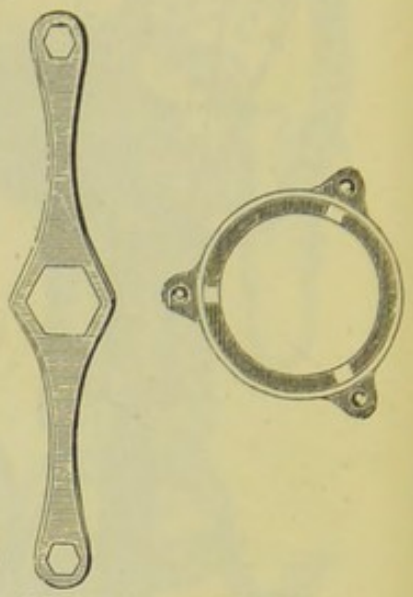
AMERICAN VULCANIZERS, &c.



HAYES'.



WHITNEY'S.



WRENCH AND BED PLATE.

Prices:	1 Flask. s.	d.	2 Flask. s.	d.	3 Flask. s.	d.
Hayes' Iron-clad, for Gas, Spirit, or Kerosene ..	60	0	68	0	76	0
Whitney's Copper, „ „ „ ..	48	0	56	0	64	0

The above prices include Flasks.

Extra parts:

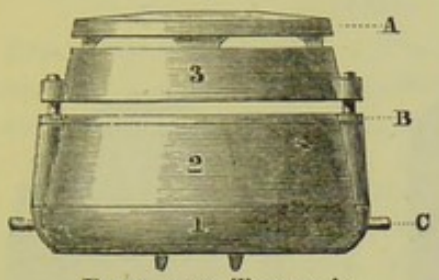
Alcohol Lamp, for Vulcanizers	each	3	0
India-rubber Packings, for Hayes' Vulcanizer	per doz	5	0
„ „ Whitney's „	„	2	6
Gas Laboratory Lamp	each	3	0
„ „ with Spider	„	4	0
Safety Discs, in packages of six, with washer	per pkt.	2	0
Thermometers, Nickel-plated	each	8	0
Tubes and Scales, for Thermometers	„	3	6
Union Kerosene Stove, for Whitney's Vulcanizer	„	5	0
„ „ „ for Hayes' „	„	6	0
Wrench for Hayes' or Whitney's Flasks	„	0	7½
„ for Whitney's Vulcanizer, double-ended	„	1	0
Wrench and Bed Plate for Whitney's Vulcanizer	„	4	0

The Bed Plate, shown in the engraving, is usually fastened on the work bench, in which a hole is cut for the Vulcanizer to pass through. Should it be thought undesirable to cut the bench, a **Raised Bed Plate on legs, deep enough to receive the Vulcanizer,** can he had, price 3*s*.

Note.—C. Ash and Sons desire it to be distinctly understood that, as they only test Vulcanizers of their own manufacture, they cannot hold themselves responsible for the strength and safety of any other which they may supply. This statement is made without prejudice.

FLASKS, FOR VULCANITE WORK.

Fig. 89.



Bell and Turner's.

This Flask is made in three sections (Nos. 1, 2, 3), after a pattern designed by Messrs. Bell and Turner, and is constructed for the purpose of avoiding the evil complained of in the old kinds—viz., that of leaving a stratum of vulcanite between the two halves of the mould, and thus altering the articulation of the piece; and not only this, but causing often a derangement of the arch or position of the teeth, through the difficulty of getting the two halves of the mould to shut down in their proper position.

By the use of the intervening plate B (the invention of Mr. Bennett), an exact facsimile of the palate of the patient can be produced upon the external surface of the vulcanite piece. It is considered by some that this improves the general appearance of the artificial piece, and enables the wearer to articulate with greater distinctness.

		Large.		Small.	
		s.	*d.*	*s.*	*d.*
In Gun-metal, with Wrought-iron Ring ..	each	11	0*	9	0*
In Iron " " " ..	"	8	0*	7	0*
In Gun-metal, with Iron Clamp and Wedge ..	"	10	6*	8	6
In Iron " " " ..	"	7	6	6	6
Wrought-iron Rings and Thumb-screws ..	"	2	6	2	6
Wrought-iron Clamps with Wedges	"	2	0	2	0
Gun-metal Plates B	"	1	0	1	0

Flasks marked thus * will not go in the Portable Vulcanizers.

Fig 90.



Ordinary form.

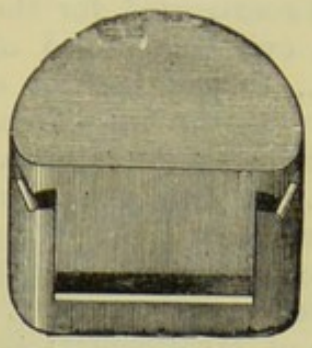
This Flask is shown with a wrought-iron Ring and Thumb-screw, and like Fig. 89, the sizes marked * will not go in the **Portable** Vulcanizers.

When ordering extra Flasks, it is always advisable either to give the name, or the inside diameter of the Vulcanizer for which they are intended.

		Large.		Small.	
		s.	*d.*	*s.*	*d.*
In Gun-metal, with wrought-iron Ring ..	each	8	0*	7	0*
In Iron " " " ..	"	7	0*	6	6*
In Gun-metal, with Iron Clamp and Wedge ..	"	7	6	6	6
In Iron " " " ..	"	6	6	6	0
Wrought-iron Rings and Thumb-screws ..	"	2	6	2	6
Wrought-iron Clamps with Wedges	"	2	0	2	0

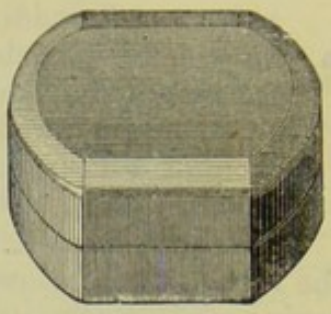
FLASKS, FOR VULCANITE WORK.

91.



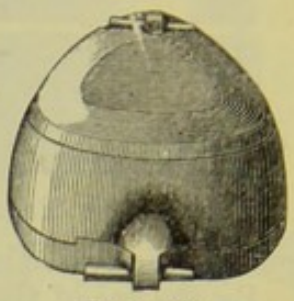
HATFIELD'S.

92.



BERLIN.

93.



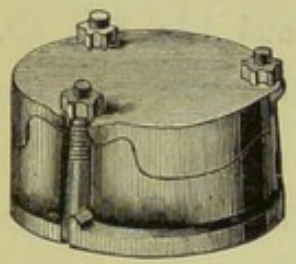
JORDAN'S.

Mr. Hatfield's and the Berlin Flasks are intended for use with clamps, &c. The Clamps are made with slots, and furnished with iron plates, which can be shifted from one slot to the other, thus admitting of one or more flasks being used in the same clamp.

Mr. Jordan's Flask is held together by means of metal pins.

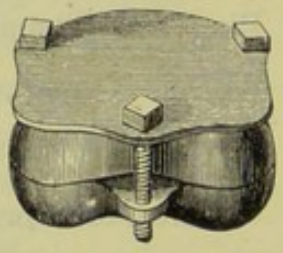
	Iron. s.	Iron. d.	Gun-metal. s.	Gun-metal. d.
Hatfield's, with Iron Clamp and Wedge .. .. .. each	6	0	9	0
Berlin „ „ „ .. .. .. „	7	0	9	0
„ „ „ „ .. .. Set of two	15	0	19	0
„ „ „ „ .. .. Set of three	20	0	26	0
Jordan's, with Metal Pins, large .. .. each	4	0	6	0
„ „ „ small .. .. „	3	6	5	6
Wrought-iron Clamps, with Wedges for one Flask .. .. „	2	0		
„ with Nut and Spanner for one „ .. .. „	3	3		
„ with Nut, Plate, and Spanner for two Flasks .. „	5	0		
„ with Nut, two Plates, and Spanner for 3 „ .. „	8	0		

94.



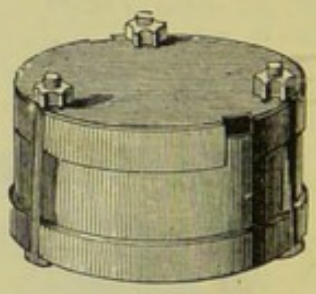
HAYES'.

95.



WHITNEY'S.

97.



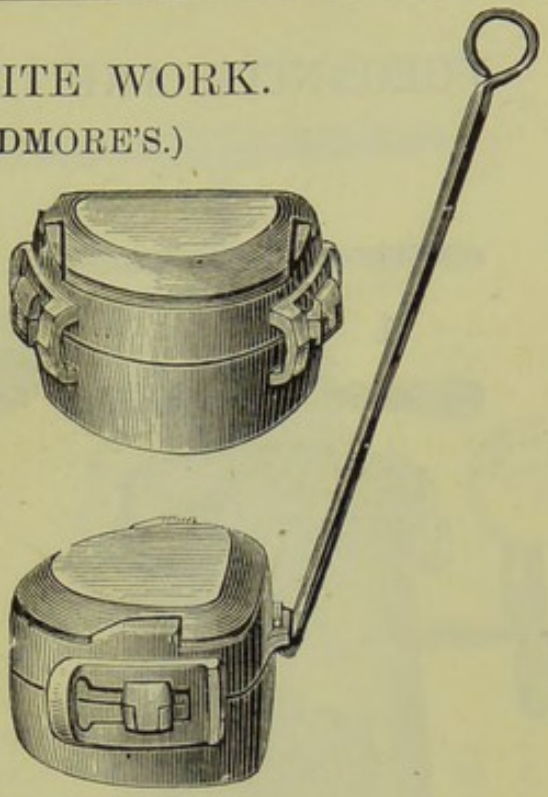
LEWIS'S.

	Iron. s.	Iron. d.	Gun-metal. s.	Gun-metal. d.
Hayes', complete, with Bolts and Nuts .. .. each	4	0	–	–
Whitney's „ „ „ .. .. „	4	0	6	0
Lewis's „ „ „ large .. .. .. „	5	3	8	6
„ „ „ „ small .. .. .. „	4	3	6	0
Bolts and and Nuts extra, Hayes' and Whitney's .. .. „	0	4		
„ „ „ Lewis's .. .. „	0	6		
Iron Plate, with three Bolts and Nuts, to hold one, two, or three Hayes' Flasks .. .. „	2	6		
Spanners for Flasks, double-ended .. .. „	0	7½		

All the Flasks on this page will fit C. Ash and Sons' Portable Vulcanizers.

FLASKS, FOR VULCANITE WORK.

(Mr. E. J. LADMORE'S.)

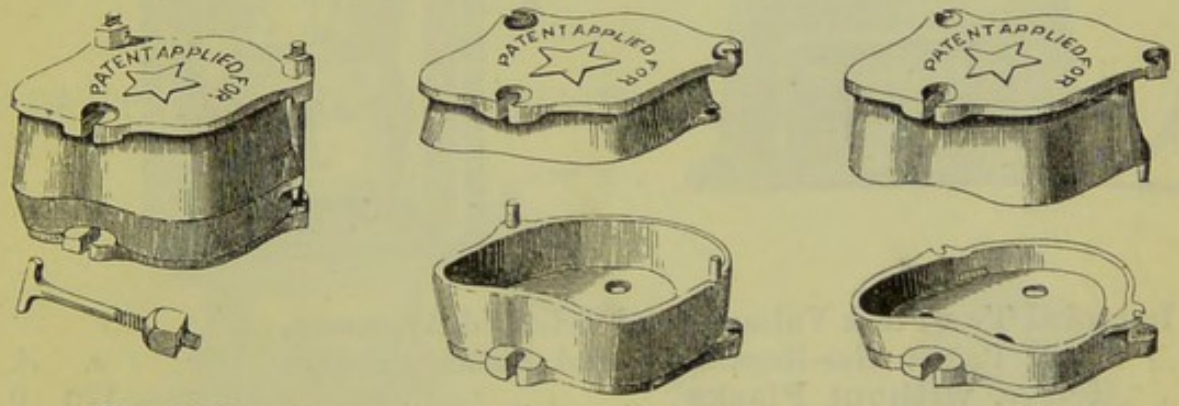


Consisting of three parts. The upper and lower sections are held together by side clamps, but these clamps are not intended for closing the Flask; they merely serve to keep the parts together after it has been closed in the press or vice. A few light taps with a wooden mallet will be found sufficient to drive them home. There are two projections on the top of the upper part, under which the lid slides and fixes itself.

The hook, shown in the illustration, is for lifting the Flask while hot.

		s.	d.
In Gun-metal, large	each	6	6
„ „ small	„	4	6
Hook, for lifting Flasks	„	0	6
Clamps extra	„	0	8

STAR REVERSIBLE FLASK.





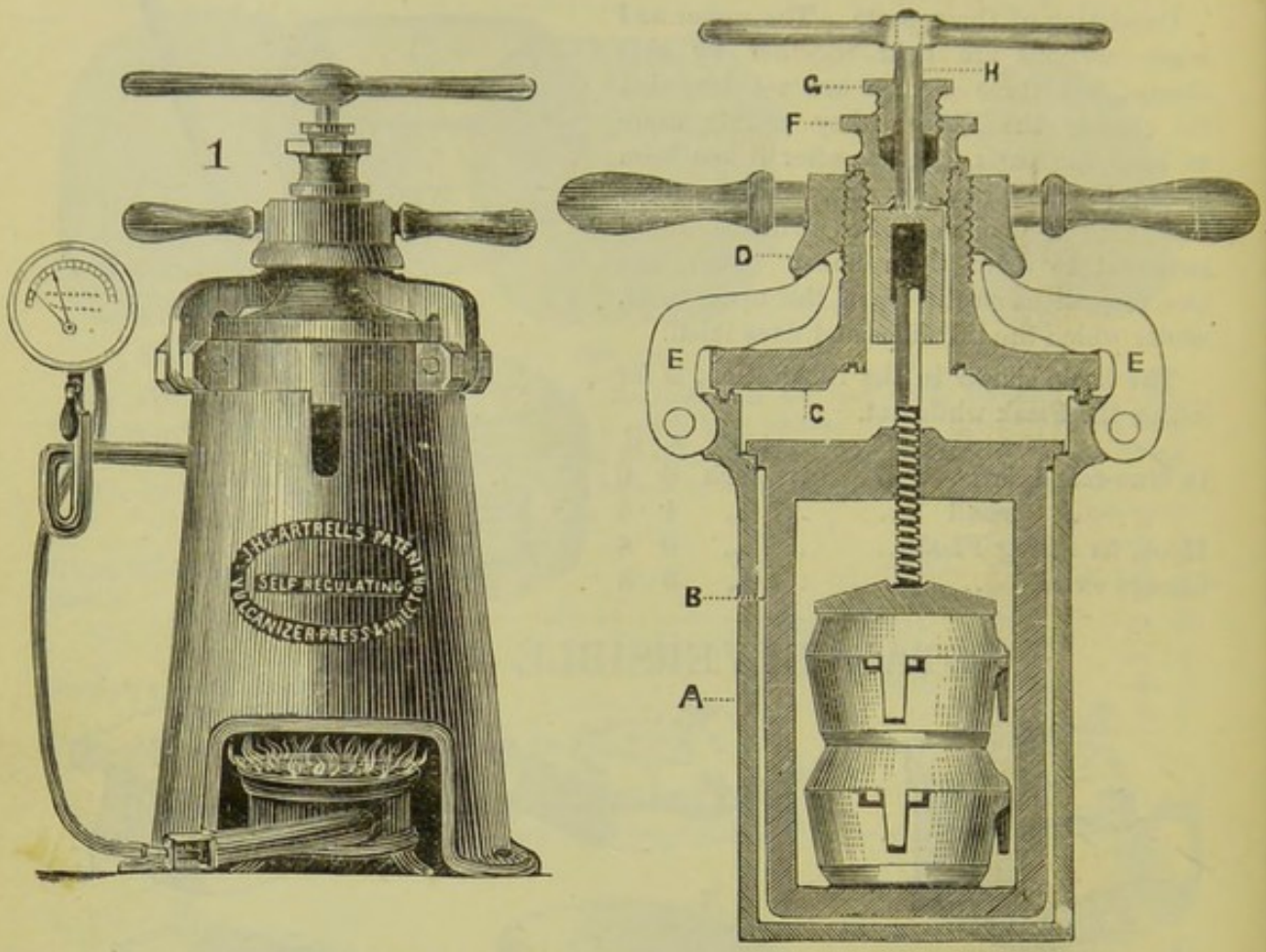
The Rings of this Flask are of different widths, either of them fitting the top or bottom accurately, as may be required. By using the wide Ring next to the bottom, an admirable Flask is obtained for deep cases and partial sets, or where the artificial gum rests on the natural. The narrow Ring is used next the bottom plate, for whole dentures, where the parting is at the rim of the Plate. The bottom has three counter-sunk holes, through which the plaster runs, which, when set, holds the accompanying Ring securely to it. The fastenings of the Flask are T-shaped at one end, and fit the slots in the bottom Plate; and, being free at both ends, are more easily adjusted than ordinary bolts. The Flask being in four pieces (two Rings and two Plates), the plaster is removed without the usual trouble. The cuts are faithful representations of the Flask in different positions.

		s.	d.
In Brass	each	8	0
In Iron	„	5	0
Extra Bolts and Nuts	„	0	5
Spanner for Flasks, double-ended	„	0	7½

All these Flasks will fit C. Ash and Sons' Portable Vulcanizers.

VULCANITE AND CELLULOID APPARATUS.

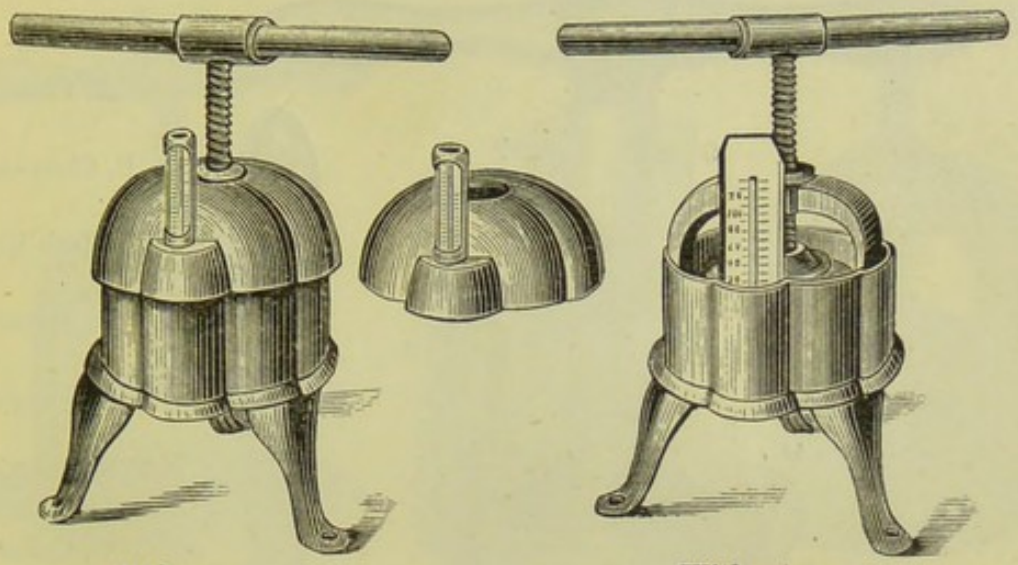
(Mr. GARTRELL'S.)



		s.	d.
Improved Two-Flask Vulcanite and Celluloid Apparatus, with Patent Gas-Regulating and Steam Pressure Gauge, **without Flasks**		170	0
Extras for do.:			
Flasks in Bronze	each	6	0
Asbestos Yarn Packing, in ¼-lb. balls	per ball	2	6
Thermometers	each	7	6
Pyroxylin for repairing Celluloid—two bottles of different solutions in wooden box, with directions for use ..	per box	5	0
Alarm Clocks for attaching to Vulcanizers	each	20	0

The Apparatus on pages 397 and 398 are shown for the convenience of those who desire to try Celluloid. It is only fair to state, however, that up to the present time it has been found unsuitable for dental purposes, by almost all who have tried it.

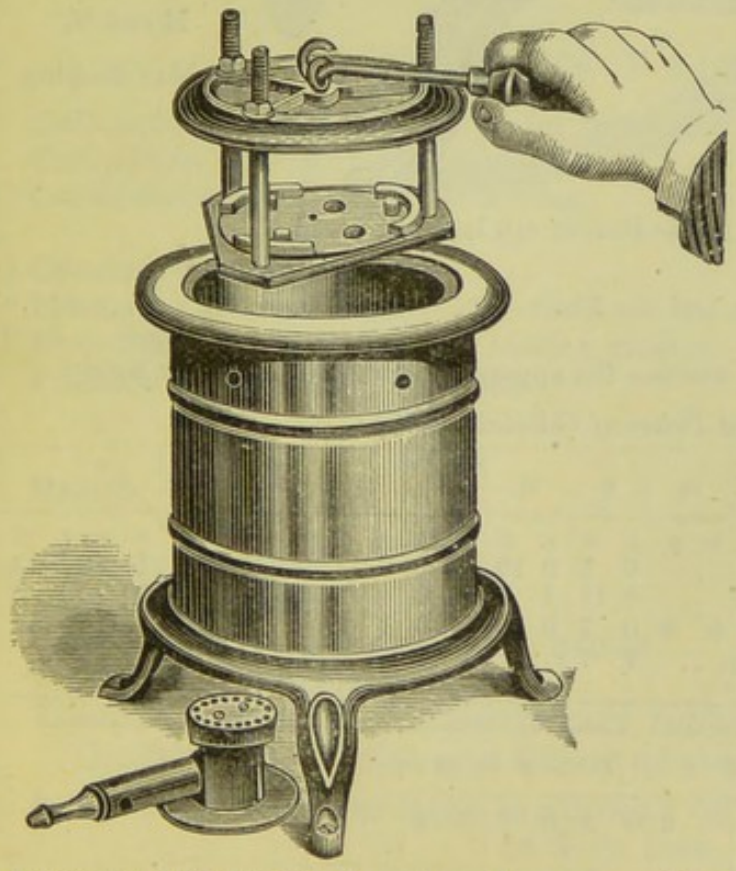
OIL OR GLYCERINE CELLULOID APPARATUS.



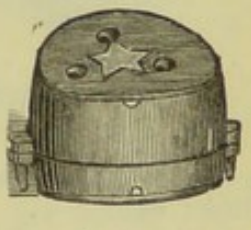
With cover. Without cover.

		s.	d.
Celluloid Apparatus, consisting of Tank and Flask Press.			
Price complete, with one Flask, Thermometer and Cover		24	0
" " " " without Cover ..		20	0
Flasks extra	each	4	0
Thermometers, either kind, as illustrated	"	4	9

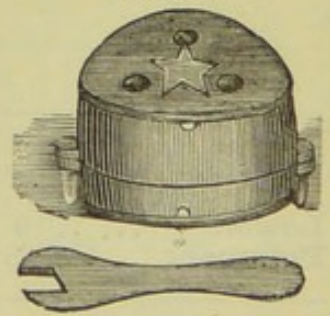
"BEST" HOT MOIST AIR CELLULOID APPARATUS.



Small.

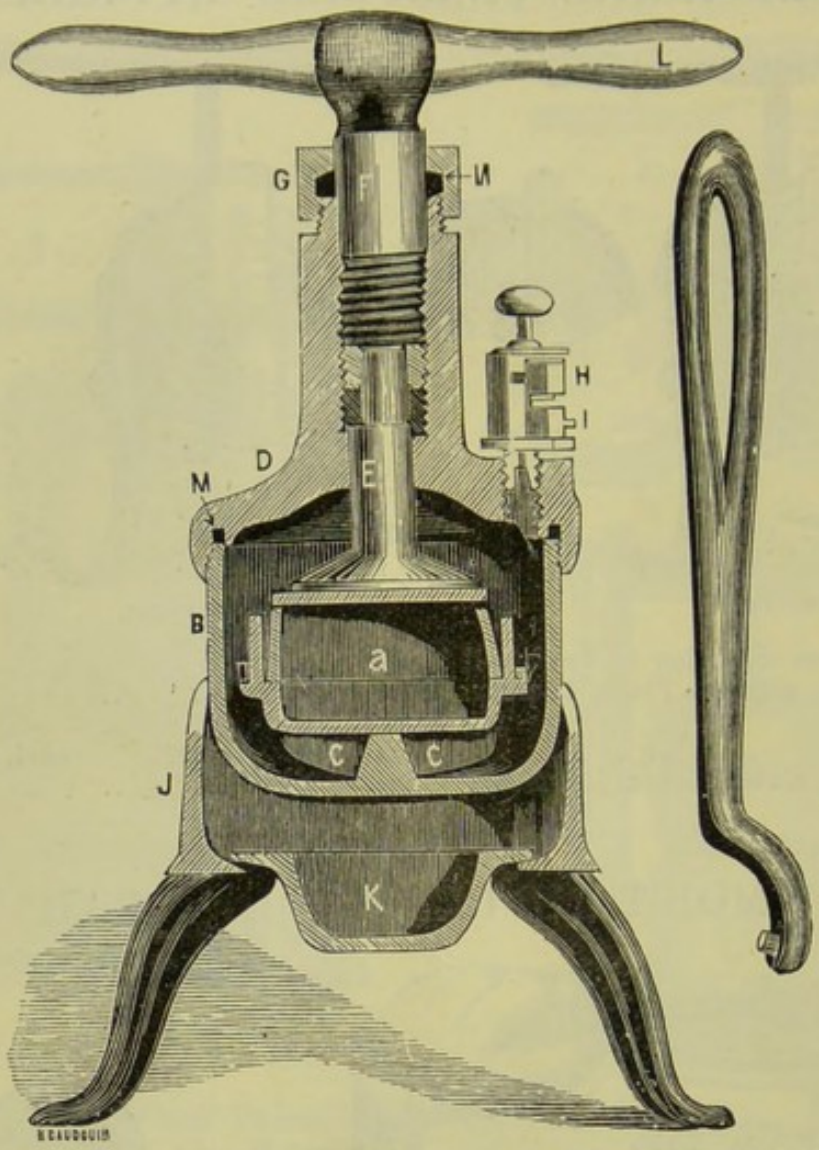


Large.



		s.	d.
Apparatus, with two Flasks and gas burner, or spirit lamp		44	0
" " and Kerosene stove		56	0
Iron Flasks, large or small, tinned, extra	each	5	0

STEAM CELLULOID APPARATUS.



A, Flask;

B, Chamber;

C, Flask Rest;

D, Cover;

E, Plunger;

F, Screw Press;

G, Collar;

H I, Steam tap;

J, Stand;

K, Spirit Holder;*

L, Press Handle;

M and N, Rubber Packing.

* When desired, a Gas-Burner can be had instead of K.

	s.	d.
In Malleable Iron, with Spanner, and one Flask	44	0
Flasks extra .. .. each	5	0

When ordering, please state whether the apparatus is wanted for Gas or Spirit.

Present Prices of Celluloid Plates:

Sizes.	1½	2	2½	3	3½	4	4½	5	5½	6	6½
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d	s. d.	s. d	s. d.
Uppers	..	..	..	0 8	0 10	0 9	0 11	0 11	1 0	1 1	1 2
" "A" ..	..	..	..	0 11	1 0	1 0	1 2	1 3	1 3	1 7	1 9
Lowers	0 6	0 6	0 8	0 7	0 10	0 10	1 1	..	..	..	..
Plumpers	..	..	..	1 1	..	1 6	..	1 9	..	1 5	..

Sizes.	5	6	7	8	9	10
Partials	0 4	0 5	0 6	0 8	0 7	0 9

FLASK PRESSES.

Fig. 1.

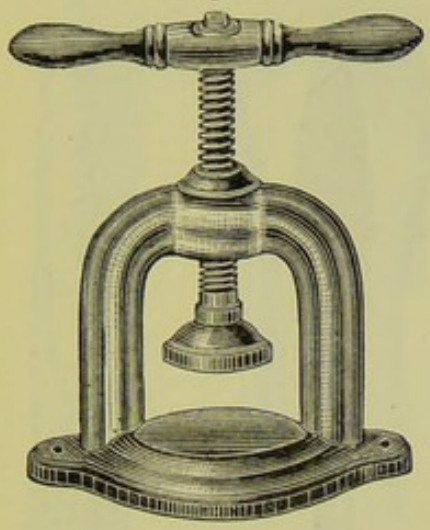


Fig. 2.

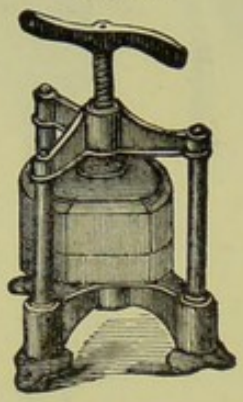
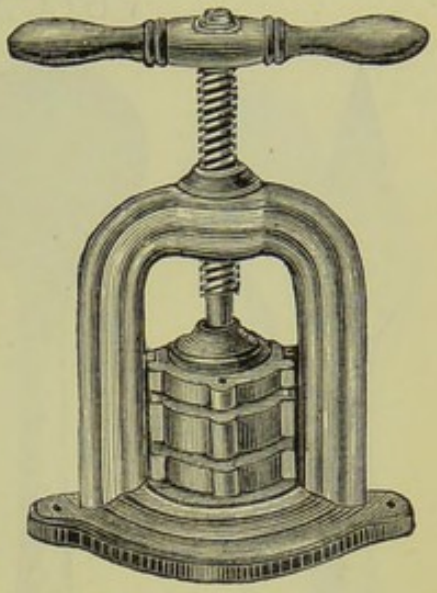


Fig. 3.



		s.	d.
Iron Press for closing Flasks, with bolts and nuts for fastening to bench	(Fig. 1)	16	0
Handy Flask Press, American, without Flask ..	(Fig. 2)	12	0
Swaging Press, for swaging metal plates, on models that are made of Spence's metal, &c., complete, as illustrated, with Flask	(Fig. 3)	50	0
Flasks for this Press, extra	each	15	0
Spence's Metal.—Sulphate of Iron	per lb.	0	4

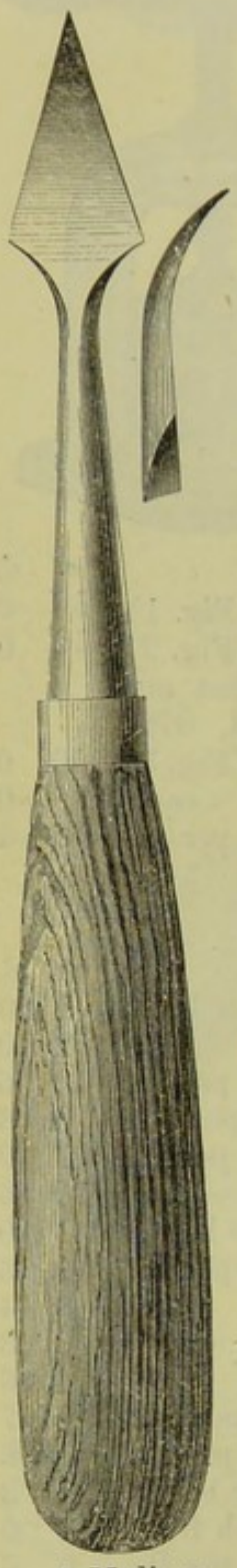
ARTICLES VARIOUS.

		s.	d.
Celluloid Liquid, American, for repairs ..	per bottle	1	0
Collodion, for coating models	„	2	0
Corundum Powder, for polishing	.. per lb.	3	6
„ „ „	.. per box	0	6
Crocus, for polishing	.. per lb.	1	0
French Chalk, for polishing	.. „	0	6
Non-adhesive Liquid, for coating models ..	per bottle	1	0
Pumice in Powder, superfine	.. per lb.	0	6
„ „ fine	.. „	0	4
„ „ coarse	.. „	0	3
Rouge	.. „	4	6
„	.. per box	0	7
Silex in Powder	.. per lb.	1	6
„ **in Liquid**	per bottle	1	3
Thermometers repaired, all kinds	each from	4	0
Tripoli, for polishing	.. per lb.	0	6
Vulcanite Cement, for temporary repairs	per stick	0	6

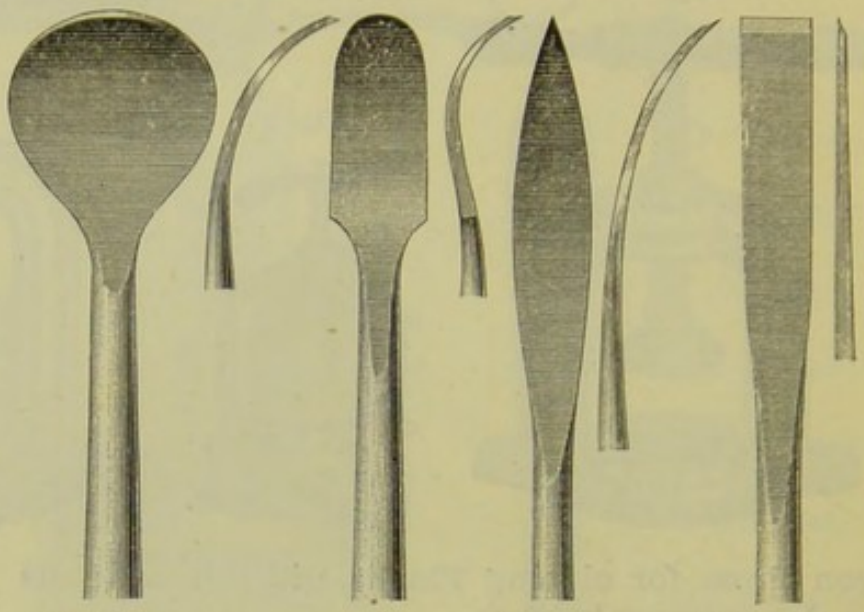
Celluloid Pamphlet and Chart of sizes sent on application.

A discount of 10 per cent. is allowed off Pumice when purchased in 7-lb. lots.

VULCANITE SCRAPERS.



1, Medium.



2, Medium. 3. 4, Curved. 5, Straight.

Fig. 1 is made in large, medium, and small.
„ 2 is made in „ „ „
„ 3 only in one size, as illustrated.
„ 4 is made curved, straight, and right and left.
„ 5 is made straight, and right and left.

		s.	d.
Price, any size or kind	each	1	0

GLASS CLOTH.

No. 0	Extra superfine.
„ 1	Superfine.
„ $1\frac{1}{2}$	Fine.
„ F/2	Medium.
„ M/2	Coarse.
„ S/2	Extra coarse.

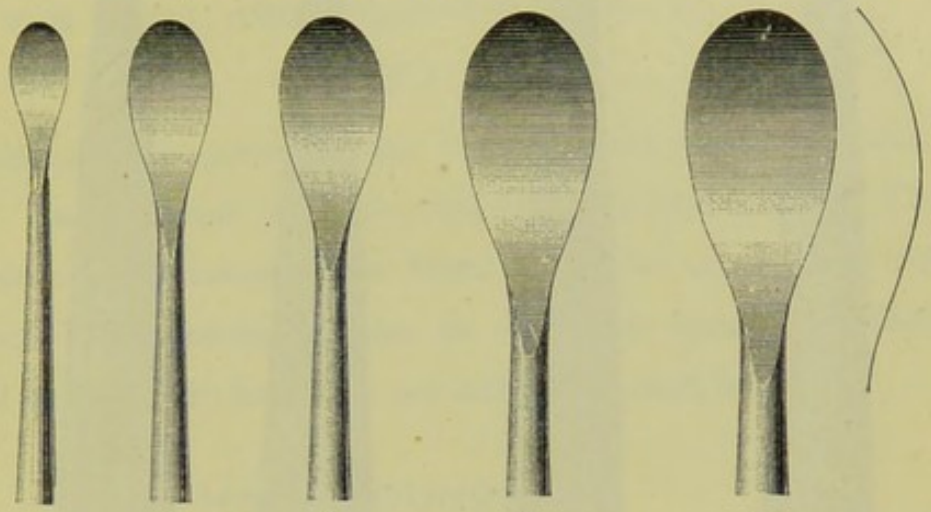
		s.	d.
Price, any grade	per quire	1	9



1.

VULCANITE FINISHERS.

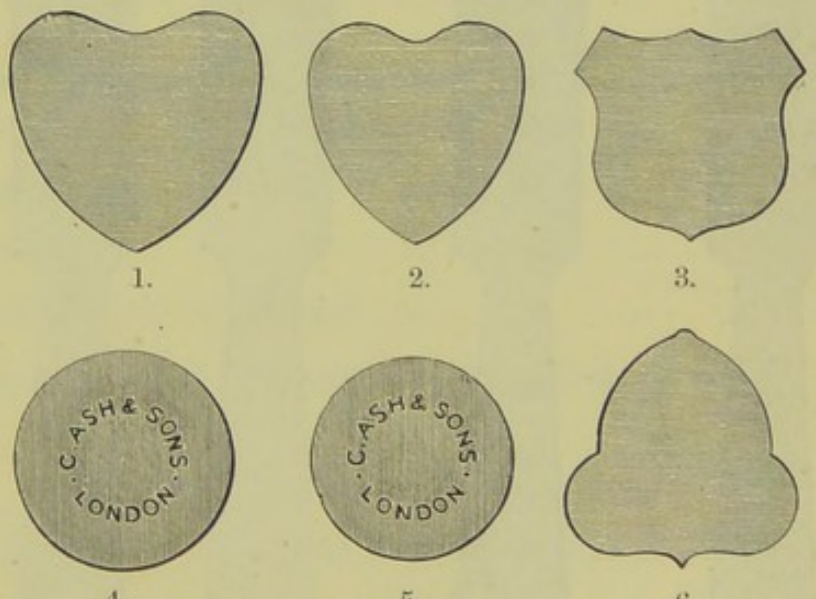
(Dr. KINGSLEY'S.)


2. 3. 4. 5. 6.

The illustrations show the full size of each blade; Fig. 1 shows the full length of each with handle; and the outline on the side of Fig. 6 shows the curve of the blade.

	s.	d.
In polished Steel with Wooden handles .. .. each	1	0

METAL PATTERNS.

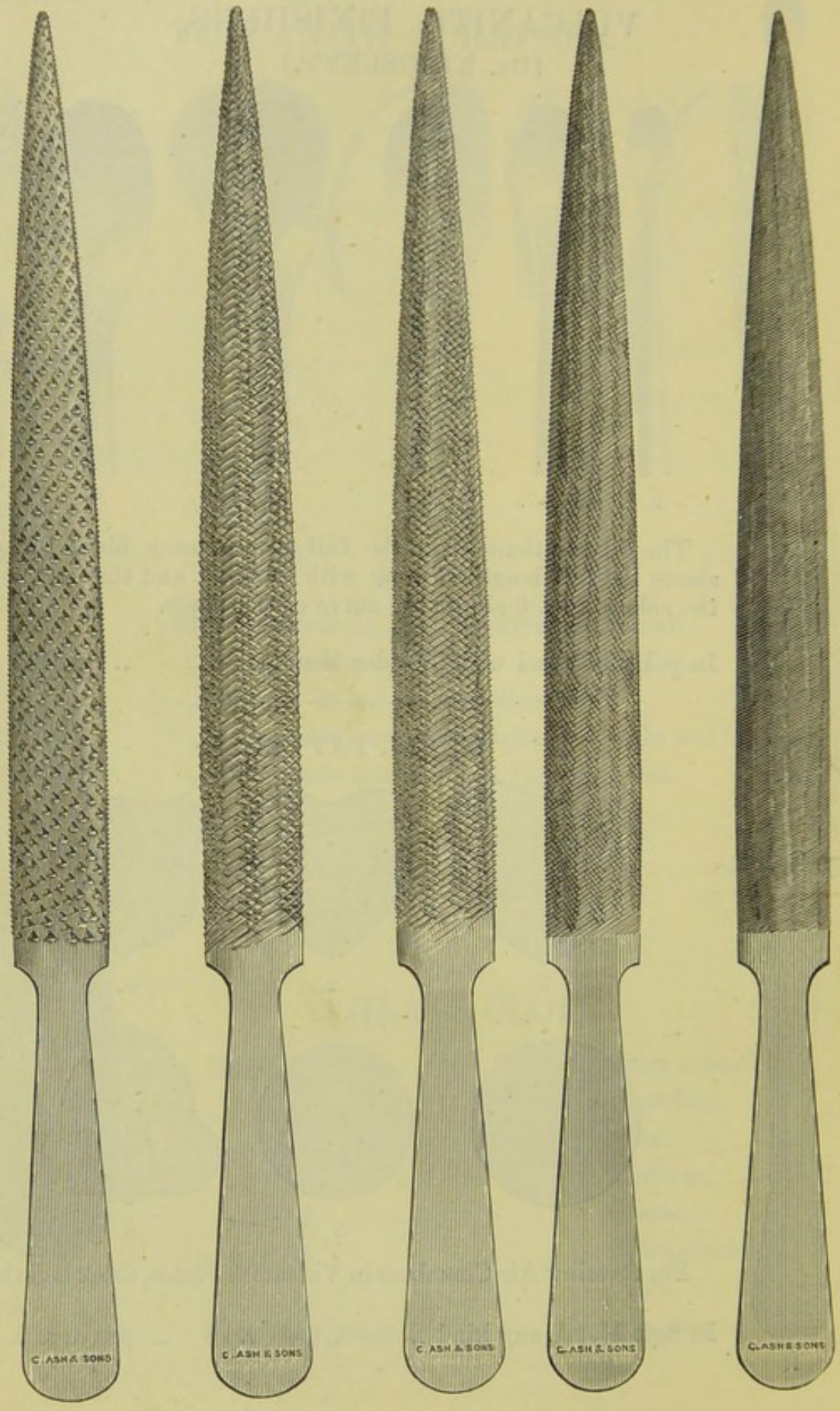


1. 2. 3. 4. 5. 6.

For forming Air Chambers in Vulcanite Plates, thick and thin.

	s.	d.
In Soft Metal, any kind .. .. per doz.	1	0

Rasp. Extra rough. Rough. Bastard. Smooth.



FILES,

FOR METAL AND VULCANITE WORK, &c.

(STUBS'.)

The illustrations on the previous page show different styles of $4\frac{1}{2}$-inch Files full size. In the larger sizes the cuts run somewhat coarser. The Bastard and Smooth are intended for Metal work, the other kinds for Vulcanite work. When ordering, please be careful to state which kind is required, and in giving the length do not include the steel handle.

HALF ROUND.

		s.	d.
Files and Rasps, with Steel handles, 4 inches long, any kind ..	each	0	8
,, ,, ,, ,, $4\frac{1}{2}$,, ,, ,, ,,	,,	0	9
,, ,, ,, ,, 5 ,, ,, ,, ,,	,,	0	10
,, ,, ,, ,, 6 ,, ,, ,, ,,	,,	1	0
The above Files with Tang to fit into wooden handle, less	,,	0	1

---

		s.	d.
Files, thin oval, double-ended, one end rough, the other extra rough, very useful for Vulcanite work ..	each	1	3
Tube Files, English	per doz.	1	6
,, ,, **French**	,,	2	9
Needle ,, German, pointed or blunt	,,	0	6

Other Files of every description supplied to order.

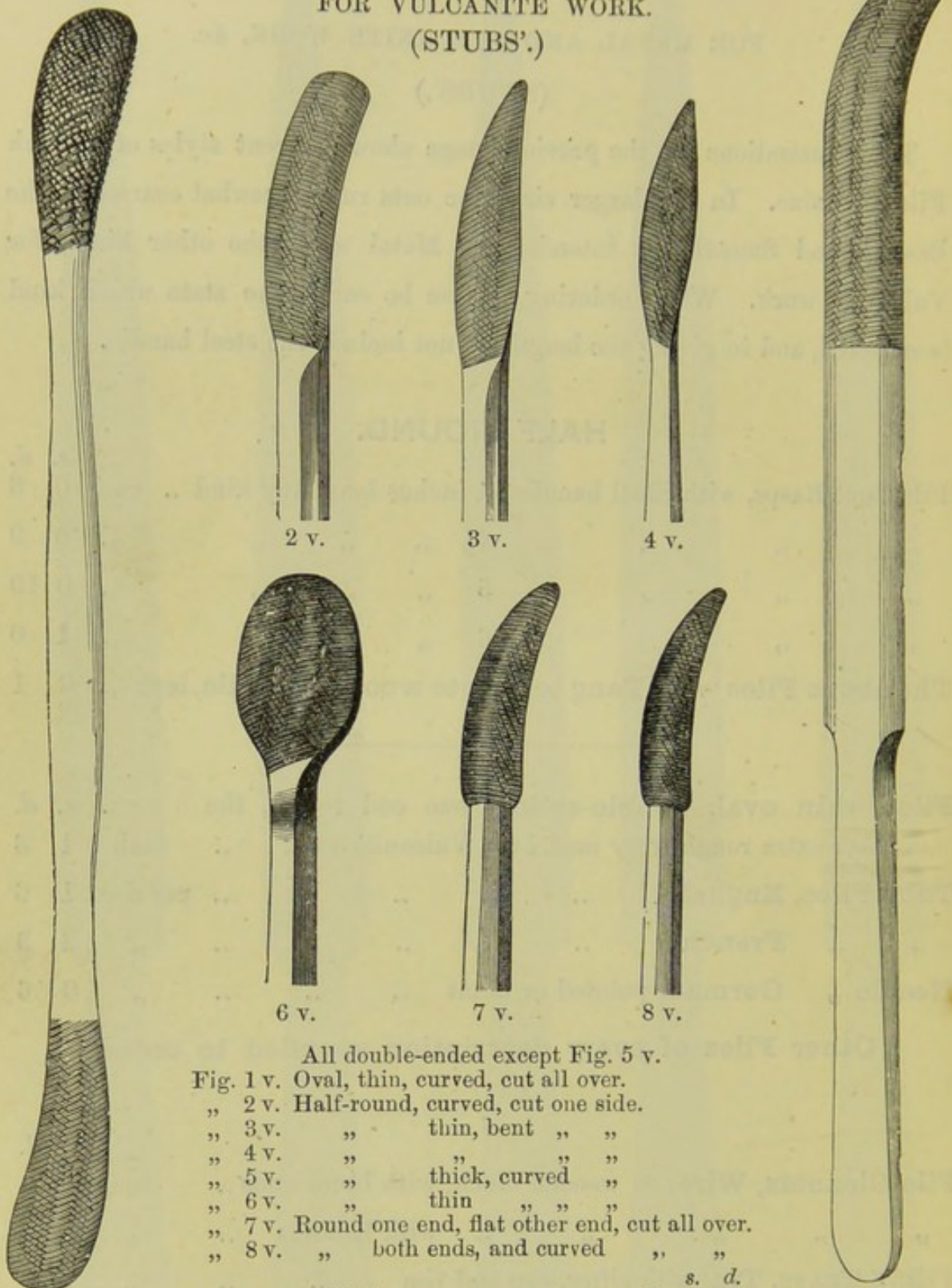
---

		s.	d.
File Cleaners, Wire, on wooden block, with blunt ends ..	each	0	6
,, ,, ,, ,, ,, with handles ..	,,	0	6
Filing Trays, Tin, with sifter, cap and rim	,,	3	9
Wooden Handles for Tang Files ..	each from $1\frac{1}{2}$*d.* to	0	3

RIFFLERS.

FOR VULCANITE WORK.

(STUBS'.)



All double-ended except Fig. 5 v.

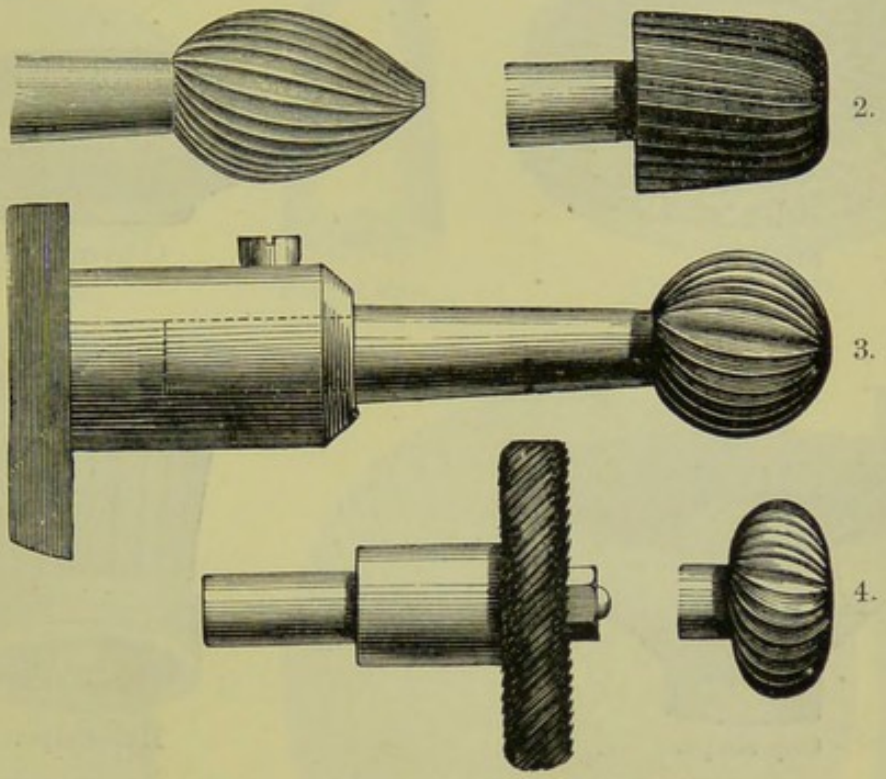
Fig. 1 v. Oval, thin, curved, cut all over.
„ 2 v. Half-round, curved, cut one side.
„ 3 v. „ thin, bent „ „
„ 4 v. „ „ „ „
„ 5 v. „ thick, curved „
„ 6 v. „ thin „ „ „
„ 7 v. Round one end, flat other end, cut all over.
„ 8 v. „ both ends, and curved „ „

		s.	d.
Price, any kind	each	0	7½

Other forms of Stubs', and all kinds of French Rifflers supplied to order.

CUTTING BURS AND WHEELS.

FOR VULCANITE WORK, &c.



These Burs and Wheels are useful for cutting Vulcanite or Bone. They are made of the best Steel and finished in a superior manner, and will fit chuck suitable for Lathes, and Lathe-heads, pages 332 and 333.

Smaller sizes, with suitable Chuck, for the Operating Room Lathes, shown on page 64, supplied, to order, at the prices quoted below.

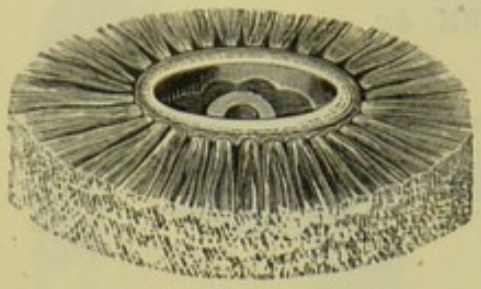
Steel Burs and Wheels to fit Chucks of other Lathes, made to order.

American Steel Burs and Wheels obtained to order.

			s.	d.
Steel Burs	the exact size and form of (Fig. 1)	each	4	0
,, ...	,, ,, ,,	(,, 2) ,,	4	0
,, ...	,, ,, ,,	(,, 3) ,,	4	0
,, ...	,, ,, ,,	(,, 4) ,,	4	0
Steel Wheels, $1\frac{1}{4}$ in. diameter	,, ,, ,,	(,, 5) ,,	4	0
,, $1\frac{1}{2}$ in.	,, ...	(,, 5) ,,	4	6
,, 2 in.	,, ...	(,, 5) ,,	5	0
Chucks, Steel, to carry the above		,,	6	6

LATHE BRUSHES.

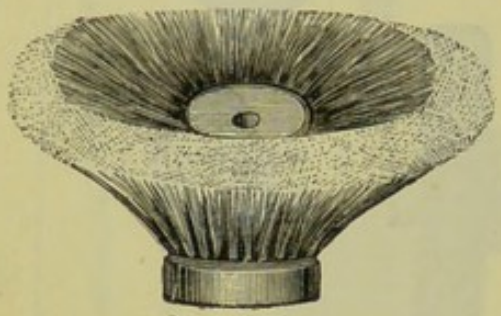
FOR POLISHING.



Straight.



Converging.



Cup-shape.



Hub-shape.

	Straight or converging. s.	d.
Rows of bristles in each Brush:—		
Two Rows 2 in. diameter Hard or Soft .. .. each	0	7
Two „ 3 in. „ „ „ .. .. „	0	7
Three „ 2½ in. „ „ „ .. .. „	0	9
Three „ 3 in. „ „ „ .. .. „	0	9
Four „ 3 in. „ „ „ .. .. „	1	0
Five „ 3 in. „ „ „ .. .. „	1	0
Six „ 3 in. „ „ „ .. .. „	1	6
Six „ 3½ in. „ „ „ .. .. „	1	6
Six „ 4 in. „ „ „ .. .. „	2	0
Cup Shape, two Rows, 2½ in. diameter .. .. „	1	3
„ three „ 2⅜ in., 3 in., 3¼ in. diameter .. .. .. „	1	6
Hub Shape, 1¼ in. diameter .. .. „	1	3
„ 1½ in. „ .. .. „	1	6
Goat's Hair Lathe Brushes, 2 in. and 3 in. diameter per row	**0**	**5**

Lathe Brushes of other sizes made to order by the dozen.

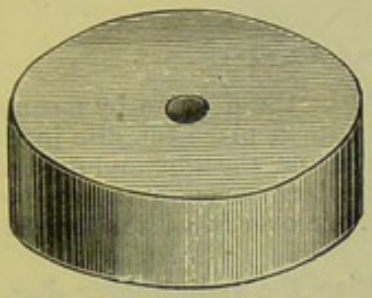
A discount of 10 per cent. is allowed when Lathe Brushes are bought by the dozen.

HAND BRUSHES FOR POLISHING.

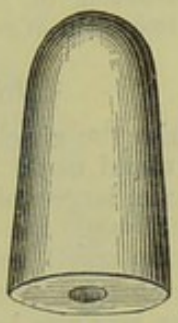
HARD OR SOFT.

	s.	d.
With Bone handles, 4 rows, brush 5¼ in. long by ⅝ in. deep .. .. .. each	1	3
„ „ 6 „ „ 4 in. „ by ⅝ in. „ .. .. .. „	1	6

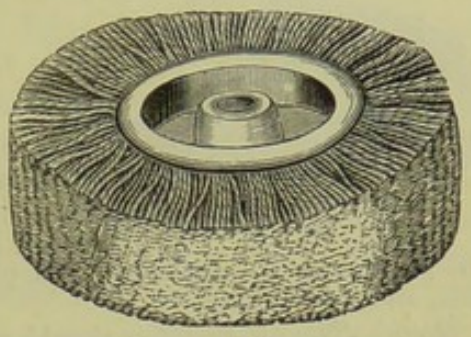
POLISHING WHEELS AND CONES.



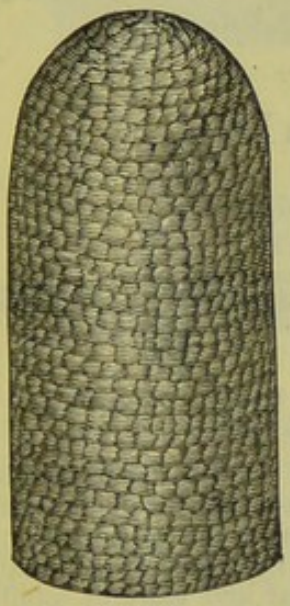
FELT WHEEL.



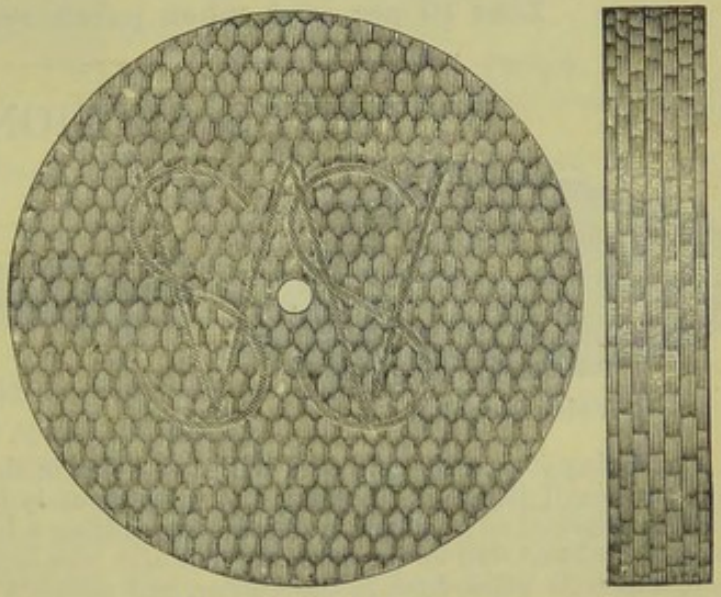
FELT CONE.



COTTON WHEEL.



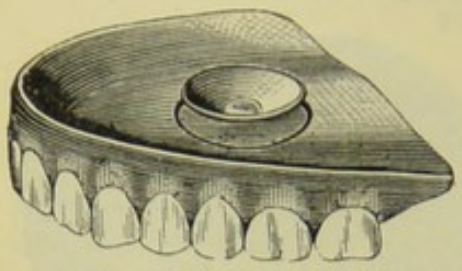
COTTON-DUCK CONE.



COTTON-DUCK WHEEL.

		s.	d.
Felt Wheels, $1\frac{1}{8}$ in. and $1\frac{5}{8}$ in. diameter	each	0	10
,, $2\frac{1}{4}$ in. and $2\frac{1}{2}$ in. ,, ...	,,	1	8
Felt Cones, $\frac{3}{4}$ in. diameter, $1\frac{1}{2}$ in. long	,,	0	10
,, 1 in. ,, $1\frac{3}{4}$ in. ,, ...	,,	1	8
Cotton Wheel, $3\frac{3}{4}$ in. diameter	,,	1	3
Cotton-duck Wheels, $1\frac{1}{8}$ in. diameter	,,	0	5
,, ,, $1\frac{5}{8}$ in. ,, ...	,,	0	10
,, ,, $2\frac{1}{4}$ in. ,, ...	,,	1	3
,, ,, $2\frac{1}{2}$ in. ,, ...	,,	1	8
,, **Cones**, 1 in. ,, 2 in. long	,,	1	8
India-rubber Wheels, $1\frac{1}{8}$ in. and $1\frac{5}{8}$ in. diameter	,,	0	$7\frac{1}{2}$
,, ,, $2\frac{1}{4}$ in. and $2\frac{1}{2}$ in. ,, ...	,,	1	3
,, **Cones**, 1 in. diameter, $1\frac{3}{4}$ in. long ..	,,	0	10
Buff Wheels, $3\frac{1}{2}$ in. diameter	,,	1	0

HALLS' SUCTION DISC.



Consisting of India-rubber Disc, Platinum Pin, and two Gold Washers.

Directions for use:

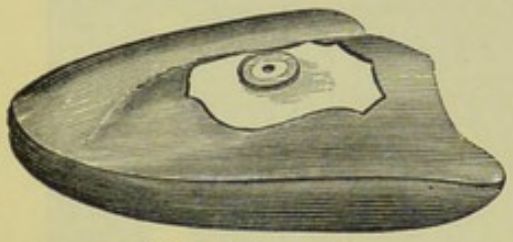
Make the air-chamber in the denture by means of a round metal pattern, then place the disc in it with the large gold washer on the top, and drill a hole through the denture large enough to receive the platinum pin. Insert the pin, place the small gold washer over it, on the lingual side, and rivet in position.

NOTE.—The air-chamber should always be a size larger than the India-rubber disc, and the plain side of the disc should be put uppermost.

	s.	d.
Supplied in three sizes, Large, Medium, and Small .. .. each	2	6

Less 10 per cent. when purchased by the dozen.

DOWSETT'S SUCTION VALVE.



Valve Mounted.



Drilling Tool.

Consisting of a small gold stud with two holes in the stem. On the upper disc there are two small flanges for holding the valve securely in the air-chamber. The original form is attached to a vulcanite denture by drilling a hole through the rubber after the piece is finished, but an improved form is also now supplied, with a gold or dental alloy cup, which is vulcanized in the rubber, and makes a very neat and efficient addition to the valve.

Prices:		s.	d.
Suction Valve, original pattern, with rubber washers		3	6
„ improved „ „		3	6
Cups in 16-carat Gold, for use with the Improved Valve	each	3	0
„ in Dental Alloy „ „ „	„	1	6
Tool for drilling hole in palate for the original Pattern	„	3	6

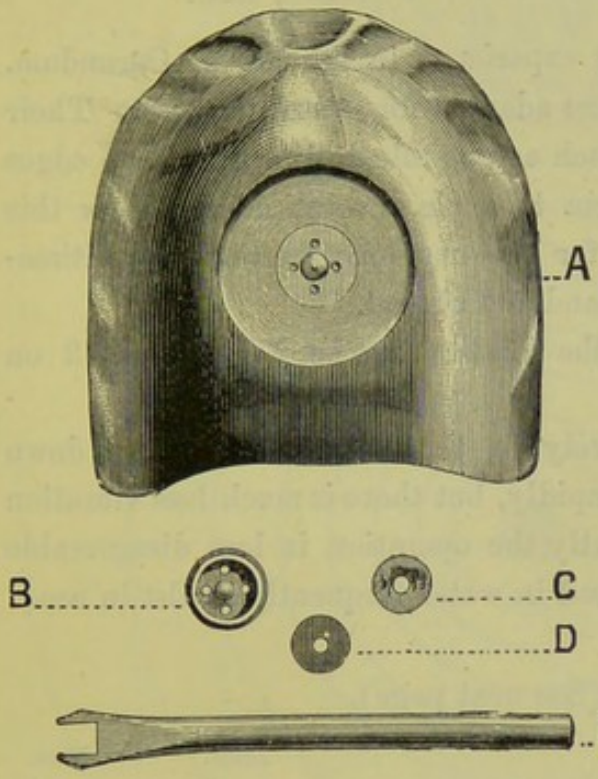
LEMAN'S SUCTION VALVE.

This Valve is guaranteed never to fail in keeping the heaviest and most difficult denture **firmly** in position. Numerous letters of commendation, and testimonials, from many of the leading Dental Practitioners as to its simplicity and reliability, have been received.

Prices:	s.	d.
In 18-carat Gold	6	6
„ Platinum	4	6
„ Dental Alloy	3	6

Illustration and description sent on application.

BROWNLIE'S SUCTION VALVE.



This Valve can be attached to either a metal plate or a vulcanite piece. It is simple in construction, not liable to get out of order, will hold the heaviest denture in position, and is very cleanly, comfortable, and efficient in use.

Description:

A. Valve mounted in Vulcanite.
B. Valve unmounted.
C. Screw-head.
D. India-rubber washer.
E. Key for adjusting screw-head.

Directions for use:

For Metal Dentures.—Make the usual air-chamber in the plate, let in the valve, sufficiently for the flange to rest upon the floor of the chamber, and solder it in position. Place the rubber washer in the centre, on the lingual side, and adjust the screw-head by means of the key.

For Vulcanite Dentures.—Place a metal pattern on the plaster model, to form an air-chamber; drill two holes through the metal pattern and the model; put the flanged end of the valve on the metal pattern, and firmly secure it there with binding wire. A piece of plate or thick wire should be laid between the holes, on the under side of the model, before twisting up, to prevent the wire cutting through the plaster. When the valve is thus fixed on the model, fill the interior of it with plaster to keep out the rubber during the vulcanizing process. After the piece is packed and vulcanized, thoroughly clear the centre of the valve, place the rubber washer in it, and adjust the screw-head with the key.

Only screw up the head sufficiently to allow air to be forced through the valve from the lingual side.

After the valve has been adapted to either a Metal or Vulcanite Denture, grind off the end of the screw in the centre with a small corundum wheel, to make it flat and smooth to the tongue.

Prices:

	s.	d.
In 16-carat Gold	5	6
In Dental Alloy	3	6
Key for adjusting screw-head in position	0	6

A discount of 10 per cent. is allowed when one dozen Valves are purchased.

CORUNDUM WHEELS, FILES, &c.

C. Ash and Sons, from their long experience in the use of Corundum, always select the kind and quality best adapted for dental purposes. Their method of crushing it prevents as much as possible dulling the sharp edges of the particles while reducing them to their several grits. It is this cutting quality which has obtained for this manufacture the high estimation in which it is held both in England and abroad.

The Wheels are adapted to fit the Lathe Chucks Figs. 1 and 3 on page 334.

The Files are used very extensively in the mouth for cutting down stumps, &c. Not only do they cut rapidly, but there is much less vibration than with a steel file, and consequently the operation is less disagreeable to the patient. They should be dipped in water frequently whilst in use.

WHEELS:—(See next page).

Size.		Diameter.		Thick. s.	Thick. d.		Thin. s.	Thin. d.
No.	1	$\frac{1}{2}$ inch	each	0	2	each	0	$1\frac{1}{2}$
,,	2	$\frac{3}{4}$,,	,,	0	3	,,	0	2
,,	3	1 ,,	,,	0	4	,,	0	3
,,	4	$1\frac{1}{2}$,,	,,	0	6	,,	0	5
,,	5	2 ,,	,,	0	8	,,	0	7
,,	6	$2\frac{1}{4}$,,	,,	0	11	,,	0	9
,,	7	3 ,,	,,	1	9	,,	1	0
,,	8	$3\frac{3}{4}$,,	,,	3	0	,,	2	0
,,	9	$4\frac{1}{2}$,,	,,	4	6	,,	4	0
,,	10 square edge	$1\frac{1}{8}$,,	,,	0	6	,,	0	5
,,	11 ,, ,,	1 ,,	,,	0	5	,,	0	4

No. 7 is also made in medium thickness, price 1*s.* 6*d.*

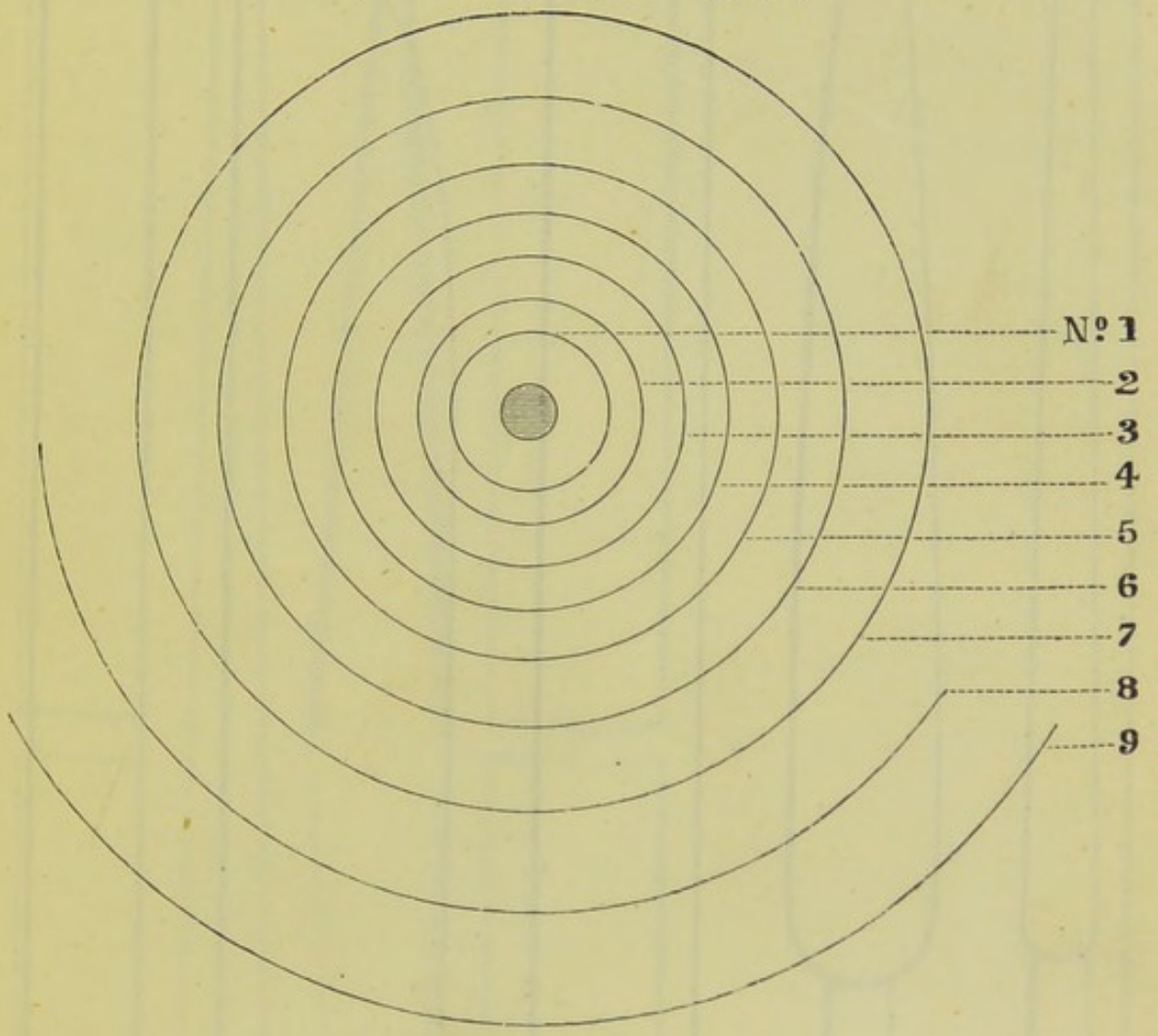
All the above Wheels are supplied in three grits, known as fine, medium, and coarse, therefore, when ordering, please be careful to state which grit is required.

A discount of 10 per cent. is allowed when Corundum Wheels and Files are purchased to the value of 10s.

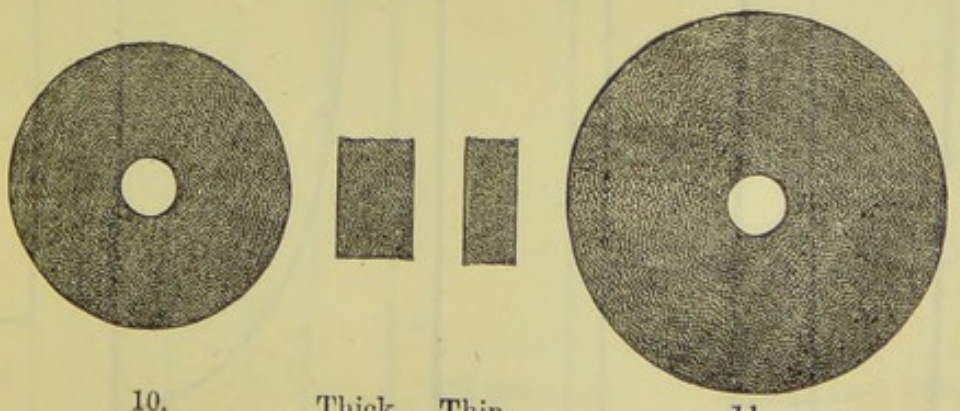
C. ASH AND SONS'

CORUNDUM WHEELS.

(For Prices, see previous page.)



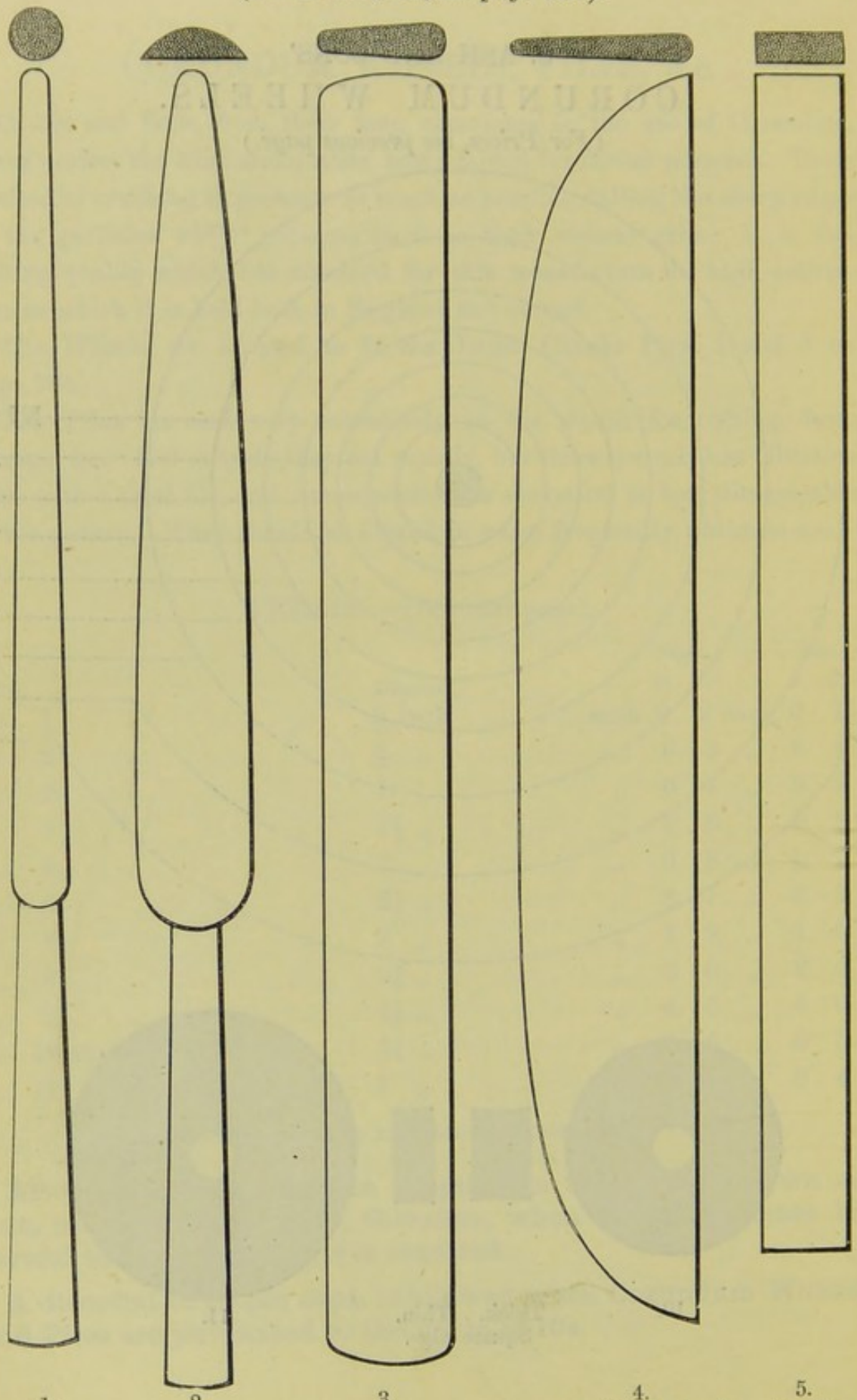
Nos 1—7 1/16 to ¼ in. thick } Round Edges.
„ 8&9 ¼ to ½ in. „ }



10. Thick. Thin. Square edge. 11.

C. ASH AND SONS' CORUNDUM FILES.

(*For Prices, &c., see page* 414).

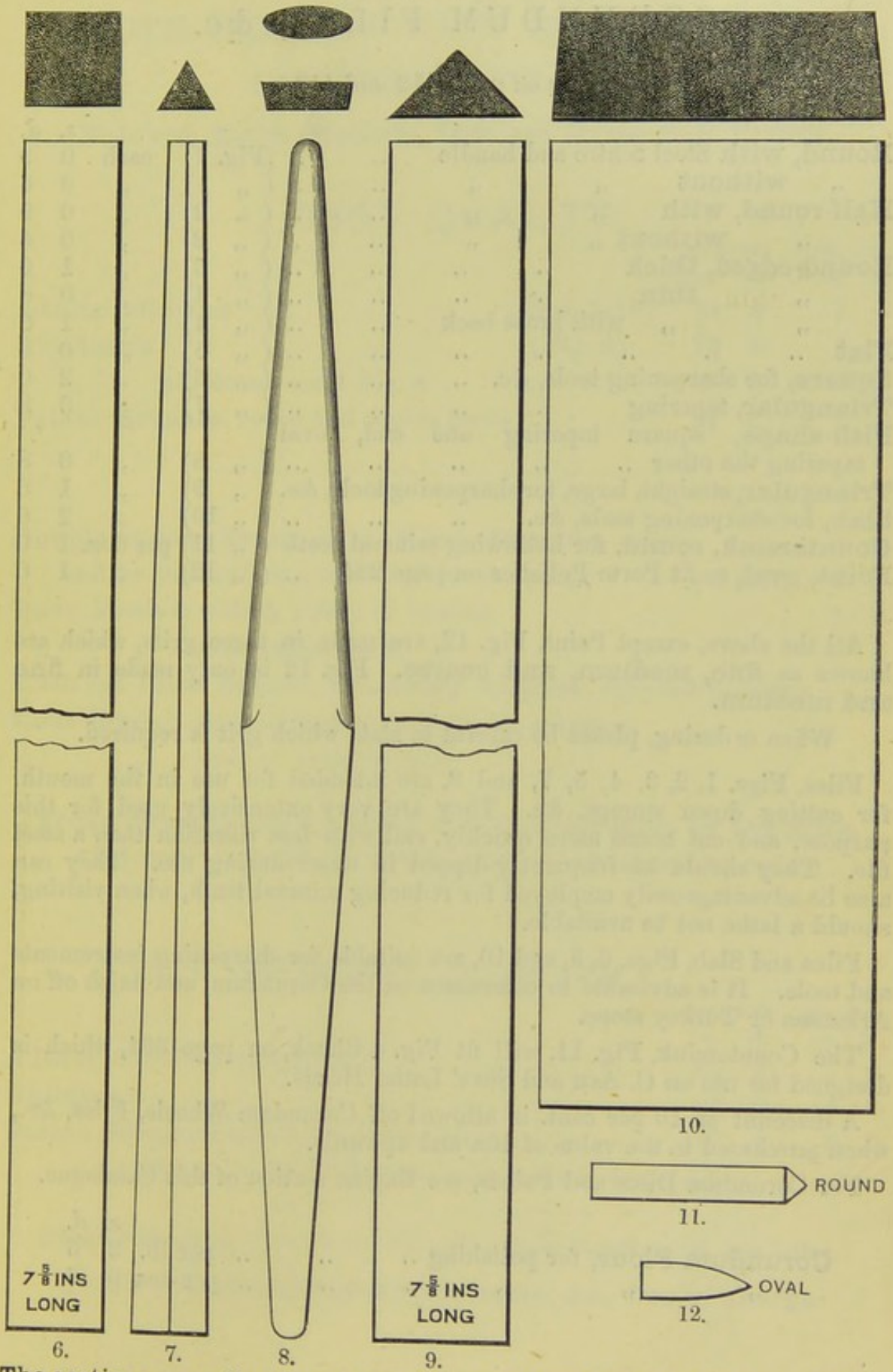


1. 2. 3. 4. 5.

The sections over the top of the outlines show the middle of each File.

C. ASH AND SONS' CORUNDUM FILES.

(*For Prices, &c., see next page.*)



6. 7. 8. 9. 10. 11. 12.

The sections over the top of the outlines show the middle of each File.

CORUNDUM FILES, &c.

(*Shown on pages* 412 *and* 413.)

			s.	d.
Round, with Steel centre and handle	(Fig. 1)	each	0	9
,, without ,, ,, ...	(,, 1)	,,	0	6
Half-round, with ,, ,, ...	(,, 2)	,,	0	9
,, without ,, ,, ...	(,, 2)	,,	0	6
Round-edged, thick	(,, 3)	,,	1	0
,, thin	(,, 4)	,,	0	8
,, ,, with brass back	(,, 4)	,,	1	0
Flat	(,, 5)	,,	0	8
Square, for sharpening tools, &c.	(,, 6)	,,	2	0
Triangular, tapering	(,, 7)	,,	0	8
Fish-shape, square tapering one end, oval tapering the other	(,, 8)	,,	0	8
Triangular, straight, large, for sharpening tools, &c.	(,, 9)	,,	1	6
Slab, for sharpening tools, &c.	(,, 10)	,,	2	6
Countersink, round, for hollowing mineral teeth	(,, 11)	per doz.	1	0
Point, oval, to fit Porte Polisher on page 224 ..	(,, 12)	,,	1	0

All the above, except Point, Fig. 12, are made in three grits, which are known as **fine, medium, and coarse.** Fig. 12 is only made in **fine and medium.**

When ordering, please be careful to state which grit is required.

Files, Figs. 1, 2, 3, 4, 5, 7, and 8, are intended for use in the mouth, for cutting down stumps, &c. They are very extensively used for this purpose, and cut much more quickly, and with less vibration than a steel file. They should be frequently dipped in water during use. They can also be advantageously employed for reducing mineral teeth, when visiting, should a lathe not be available.

Files and Slab, Figs. 6, 9, and 10, are suitable for sharpening instruments and tools. It is advisable to commence on the Corundum, and finish off on Arkansas or Turkey stone.

The Countersink, Fig. 11, will fit Fig. 4 Chuck, on page 334, which is designed for use on C. Ash and Sons' Lathe Heads.

A discount of 10 per cent. is allowed off Corundum Wheels, Files, &c., when purchased to the value of 10*s.* and upwards.

For Corundum Discs and Points, see Engine section of this Catalogue.

		s.	d.
Corundum Flour, for polishing	per lb.	3	6
,, ,, ,, ...	per box	0	6

TOOTH BRUSHES WITH BONE HANDLES.

(AS SHOWN ON PAGES 416-419.)

Made with **Hard, Medium, Soft** and **Extra Soft** Bristles.

FIRST QUALITY.

		per gross.		per doz.	
		s.	*d.*	*s.*	*d.*
Adults', all forms	(Figs. 1–16)	84	0	7	6
Children's	(Fig. 4)	72	0	6	6
„ all forms except Fig. 4		57	0	5	3
Palate Brushes, round and square forms		84	0	7	6

		s.	*d.*
Double-ended Brushes in Horn Handles, one end for the teeth, the other end for the palate ..	per doz.	8	6
Tooth Brushes, with **5 rows** of bristles	„	9	6
„ „ with **extra hard** „	„	8	6

Tooth and Palate Brushes, with **Ivory handles**, supplied to order.

Tooth Brushes, made of **Badger's hair**, for solutions „

„ „ made of **Goat's hair** „ „

Tooth Brushes made to Dentists' own patterns by the gross.

All forms of Tooth Brushes made or obtained to order.

SECOND QUALITY.

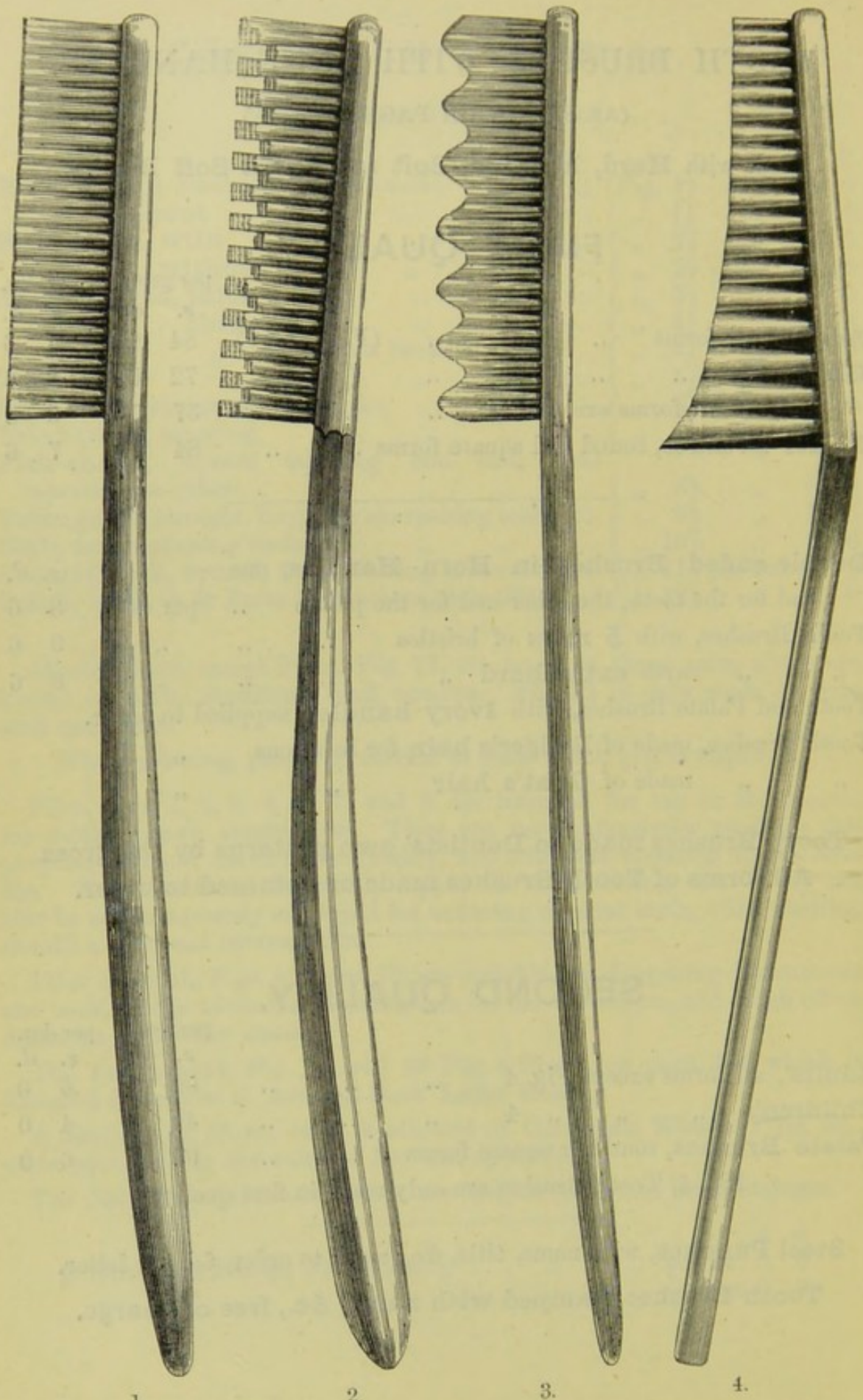
	per gross.		per doz.	
	s.	*d.*	*s.*	*d.*
Adults', all forms except Fig. 4	66	0	6	0
Children's „ „ „ 4	42	0	4	0
Palate Brushes, round or square forms	66	0	6	0

Fig. 4, Tooth Brushes are only made in first quality.

Steel Punches, with name, title, &c., made to order, 6*d.* per letter.

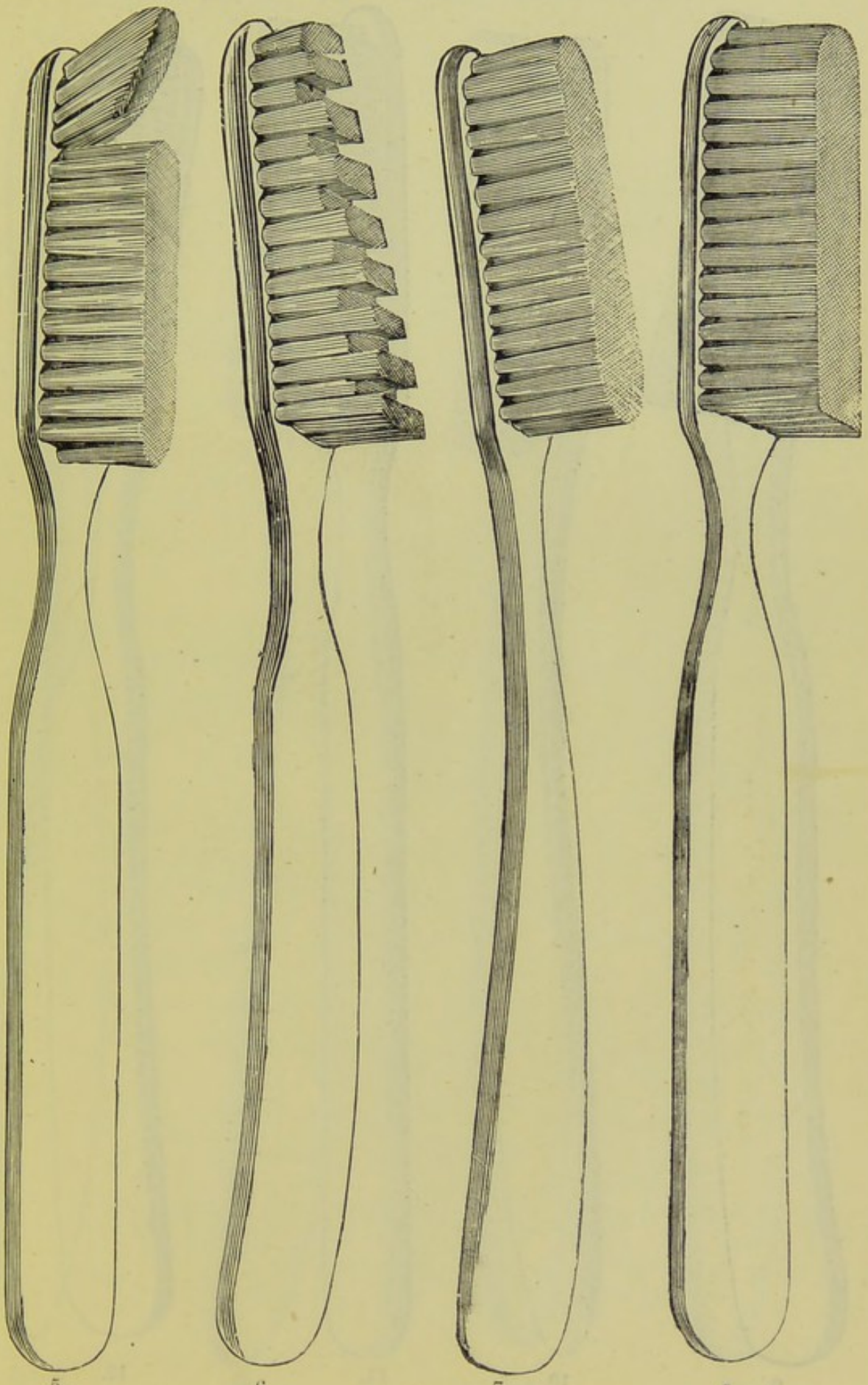
Tooth Brushes stamped with name, &c., free of charge.

FORMS OF TOOTH BRUSHES.



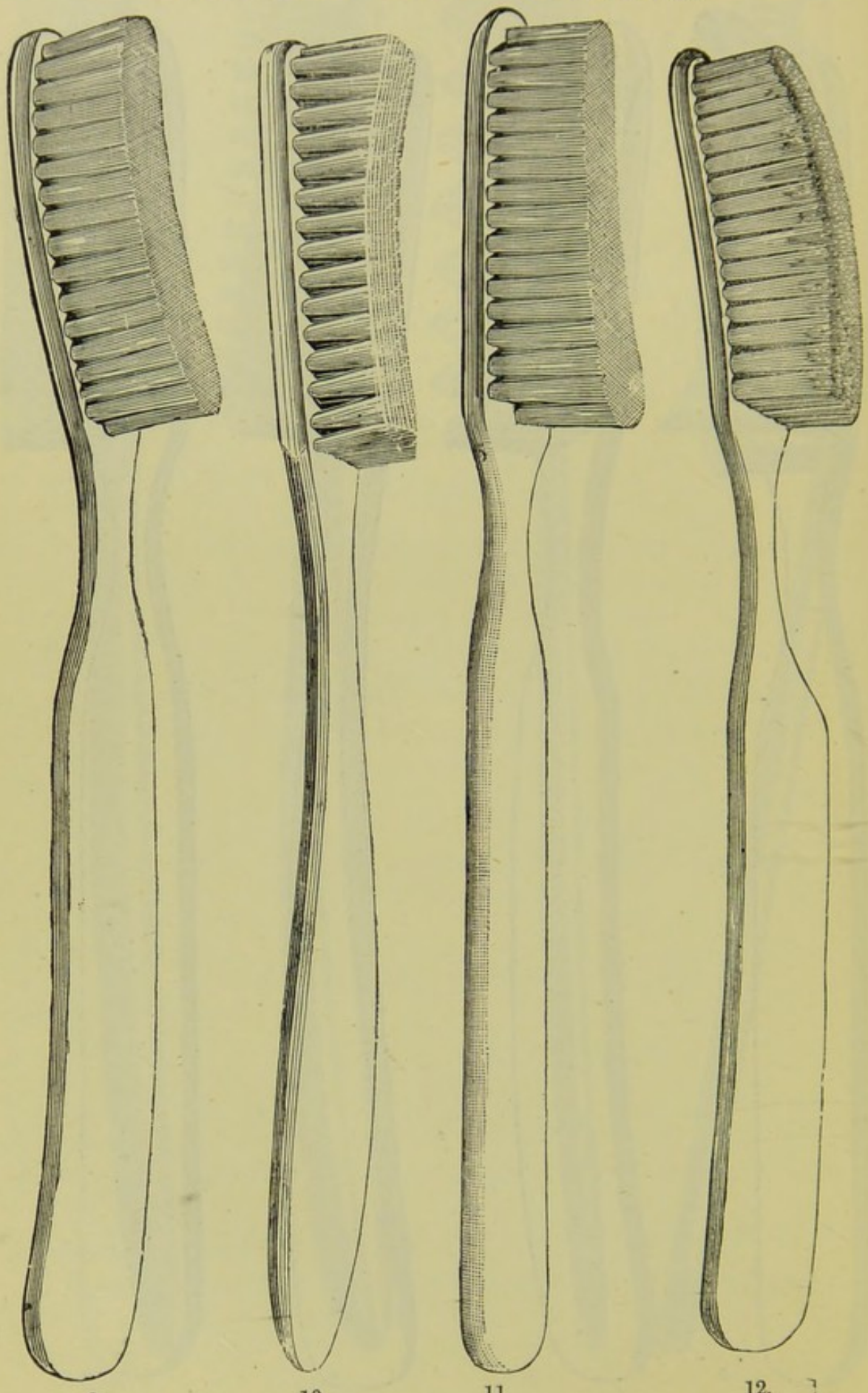
1. 2. 3. 4.

FORMS OF TOOTH BRUSHES.



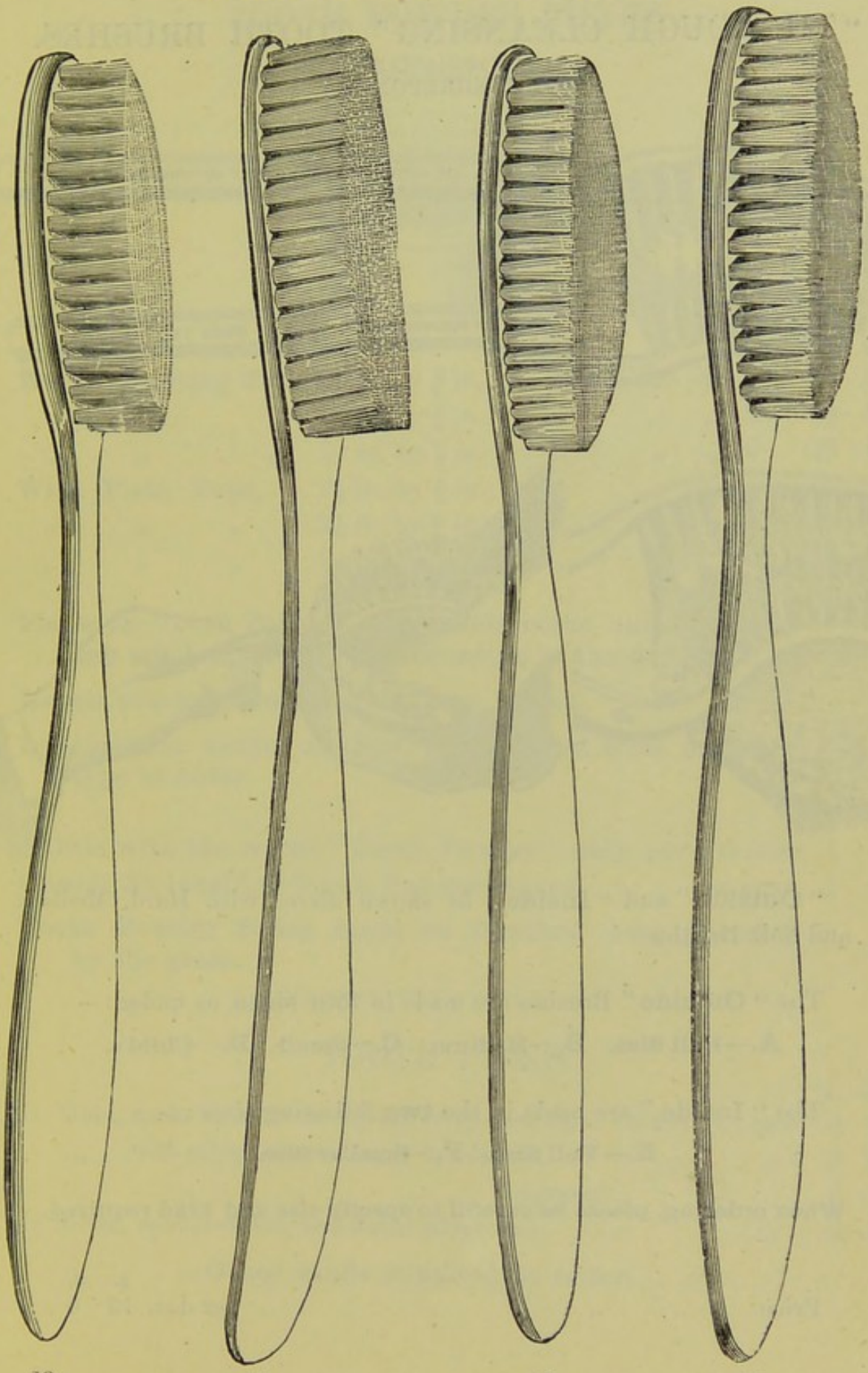
5. 6. 7. 8.

FORMS OF TOOTH BRUSHES.



9. 10. 11. 12.

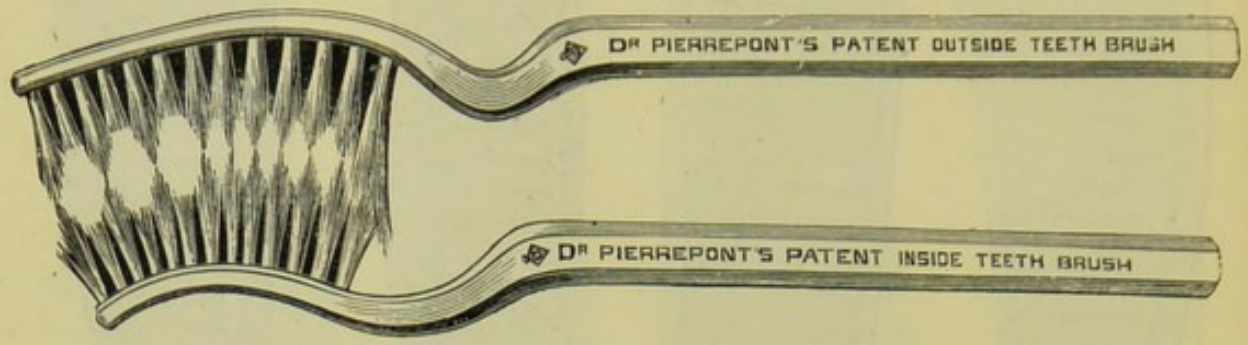
FORMS OF TOOTH BRUSHES.

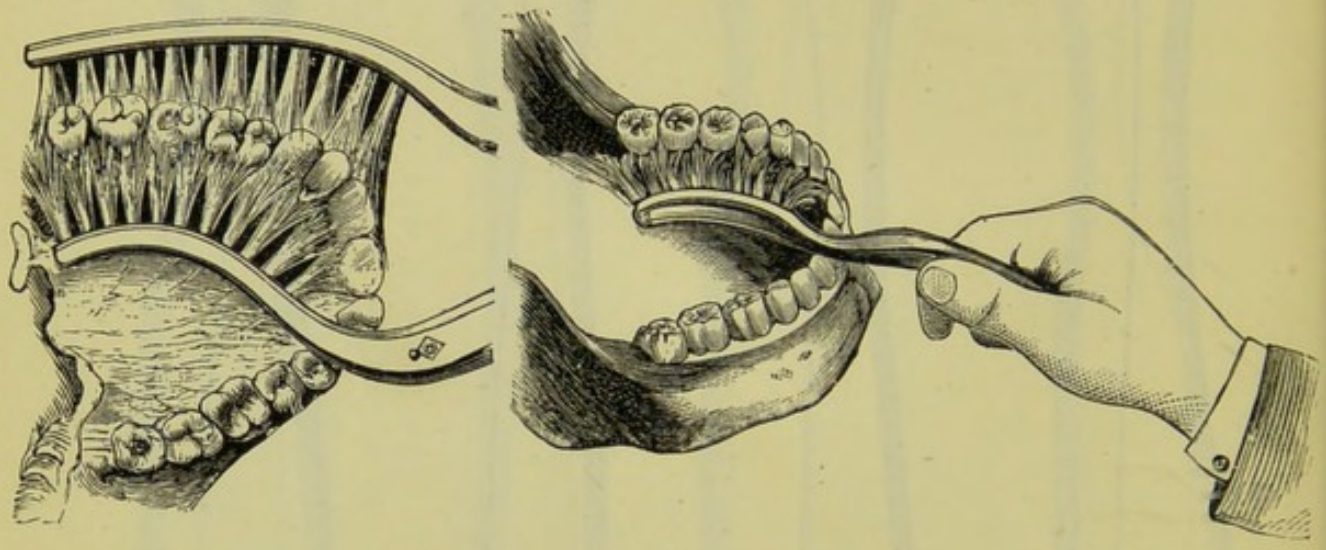


13. 14. 15. 16.

"THOROUGH CLEANSING" TOOTH BRUSHES.

(Dr. PIERREPONT'S.)





"**Outside**" and "**Inside**" as shown above, with Hard, Medium and Soft Bristles.

The "**Outside**" Brushes are made in **four sizes**, as under :—

A.—Full Size. **B.**—Medium. **C.**—Small. **D.**—Child's.

The "**Inside**" are made in the **two** following sizes :—

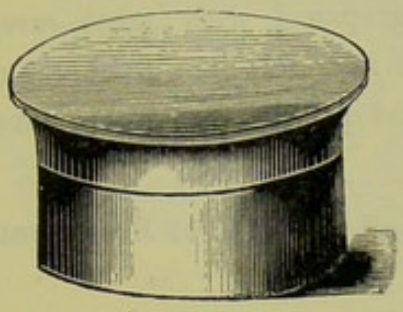
E.—Full Size. **F.**—Smaller Size.

When ordering, please be careful to specify size and kind required.

		s.	*d.*
Price	per doz.	12	0

TOOTH POWDER BOXES.

VARNISHED.



		Per gross.	
		s.	*d.*
With Projecting Tops,	$2\frac{1}{2}$ in. by $\frac{3}{4}$ in. deep inside, size No. 1	25	0
,, ,, ,,	$2\frac{1}{4}$ in. by $\frac{3}{4}$ in. ,, ,, ,, 2	20	0
,, ,, ,,	2 in. by $\frac{3}{4}$ in. ,, ,, ,, 3	16	0
With Plain Tops,	$2\frac{1}{2}$ in. by $\frac{3}{4}$ in. ,, ,, ,, 1	25	0
,, ,, ,,	$2\frac{1}{4}$ in. by $\frac{3}{4}$ in. ,, ,, ,, 2	20	0
,, ,, ,,	2 in. by $\frac{3}{4}$ in. ,, ,, ,, 3	16	0

Plates for Tooth Powder Box Labels made and engraved any style, price varying according to the design.

Labels printed from Dentists' own Plates.

Labels with name, address, &c., printed from ordinary type to order.

		s.	*d.*
Labels with the words "Tooth Powder" only	per 100 from	1	6
Charge for labelling Tooth Powder Boxes ..	per gross	1	0

Tooth Powder Boxes made to Dentists' own patterns by the gross.

TOOTH PICKS.

		s.	*d.*
In Gold, made to slide in square ivory case (Mr. Palmer's)	each	5	0
,, with silver cap and ivory handle	,,	3	3
,, ,, ,, ,, engraved	,,	5	3
In Silver, double-ended, and fluted silver case	,,	2	6

Other kinds supplied to order.

TOOTH POWDERS.

(C. ASH AND SONS'.)

These Powders are prepared with great care, the ingredients being thoroughly well ground and mixed. The materials of which they are composed are of the purest quality, and such as are generally recommended by the best authorities.

No. 1, Fine, Scented with Oil of Bergamot.
,, 2, Medium ,, ,, and Otto of Roses.
,, 3, Coarse ,, ,,

		s.	d.
Supplied in 1 lb. Tins	per lb.	4	0

A discount of 5 per cent. is allowed off 5 lbs.

---

		s.	d.
Tooth Powder, S. S. White's, No. 1	per lb.	6	0
,, ,, ,, ,, 2	,,	4	0
,, **Tablets,** Dr. Lyons', in boxes	per doz.	18	0
Cuttle-Fish Powder	per lb.	2	0
Orris Root	,,	1	6
Precipitated Chalk	,,	0	6
Prepared ,, ...	,,	0	3

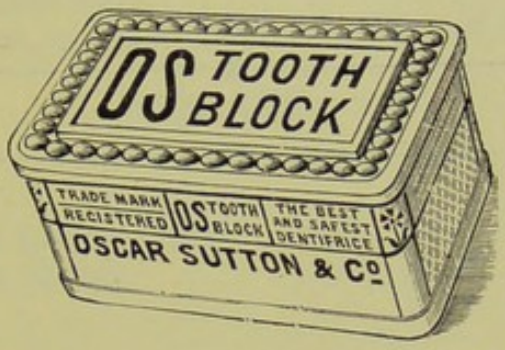
MOUTH WASHES, &c.

	Per doz. s.	Per doz. d.	Each. s.	Each. d.
Astringent Mouth Wash, in 3 oz. bottles	15	0	1	6
Condy's Ozonized Water, in 2 oz. ,, ...	9	0	0	10
,, ,, ,, in 4 oz. ,, ...	14	0	1	3
Oralina Mouth Wash, in bottles	16	0	1	8
Salicylic Acid ,, ,, ...	26	0	3	0
Saponaceous ,, in 4 oz. bottles	15	0	1	6
Myrrh Tincture	per 8 oz. bottle		2	9
,, ,, ...	,, 16 ,, ,,		5	0
Myrrh Gum	per lb.		3	6

Tooth Powders, &c., prepared to Dentists' own recipes.

O.S. TOOTH BLOCKS.

(OSCAR SUTTON'S.)



		s.	d.		s.	d.
In glass boxes	each	2	0	per doz.	18	0
In metal „		..	..	„	7	0

ORALINE PASTE.

(S. S. WHITE'S.)



		s.	d.		s.	d.
In soft metal tubes	per tube	1	8	per doz.	16	0

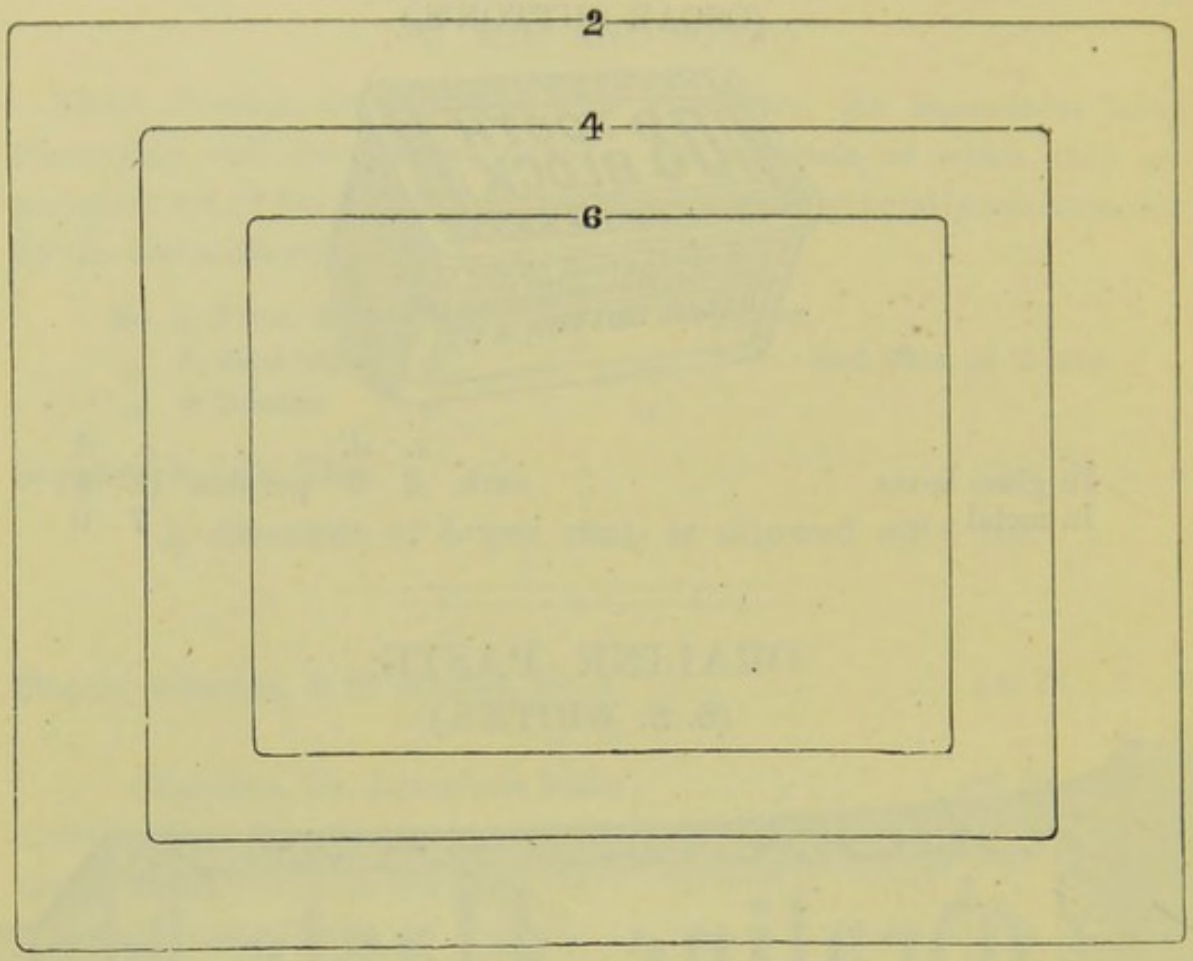
TOOTH SOAP.

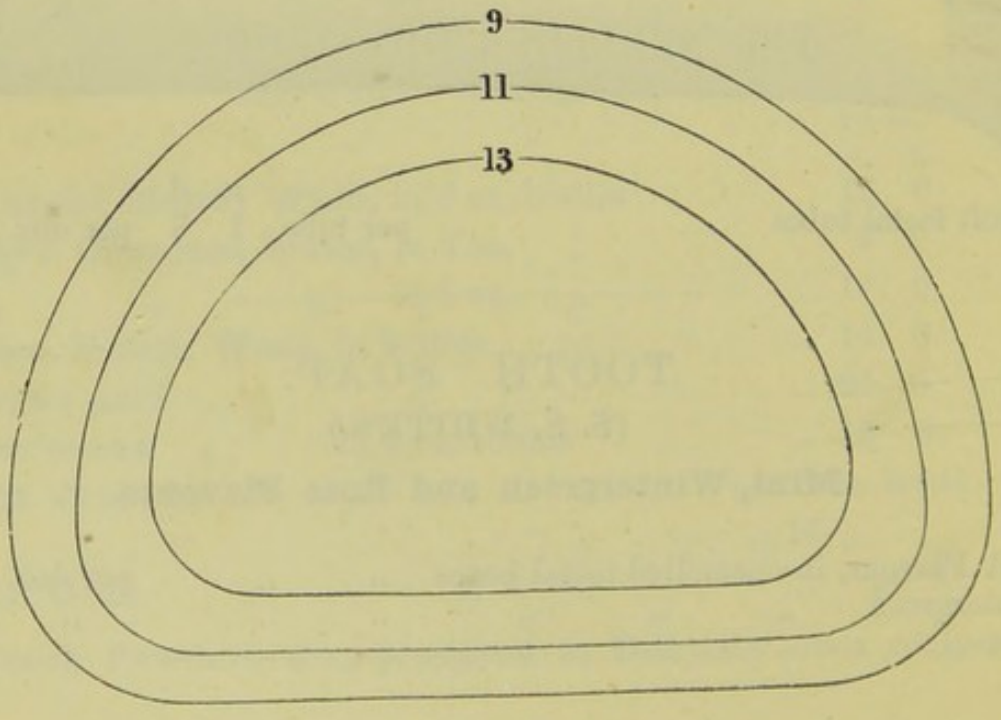
(S. S. WHITE'S.)

Mint, Wintergreen and Rose Flavours.

	s.	d.
Mint Flavour, in enamelled metal boxes	per doz.	8 0
Wintergreen „ „ „	„	8 0
Rose „ „ „	„	10 0

SIZES OF CASES.





LEATHER CASES.

The sizes on the opposite page represent the **outside** dimensions of each case. The **inside** measurements are, roughly speaking, about an eighth of an inch less each way.

Names, addresses, &c., printed inside the lids of the **first quality** to order.

SQUARE.

Sizes—		2		4		6	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*
First quality, with Lock and Key	each	5	0	3	3	—	
„ „ with Spring ..	„	2	3	1	9	1	3
Second „ „ „ ..	„	1	10	1	6	1	1

HALF-OVAL.

For Lower pieces.

Sizes—		9		11		13	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*
First quality, with Spring ..	each	1	6	1	4	1	1
Second „ „ „ ..	„	1	2	1	1	1	0

Other sizes supplied to order.

A discount of 10 per cent. is allowed when Leather Cases are purchased by the dozen.

SHOULDERED WOOD BOXES.

For holding artificial dentures. They are very strong, and may be sent through the post without fear of being broken.

		s.	*d.*
Plain: For full sets	each	0	4
„ half sets	„	0	3
„ partial sets	„	0	2
Covered with morocco paper:			
For full sets	„	0	5
„ half sets	„	0	4
„ partial sets	„	0	3

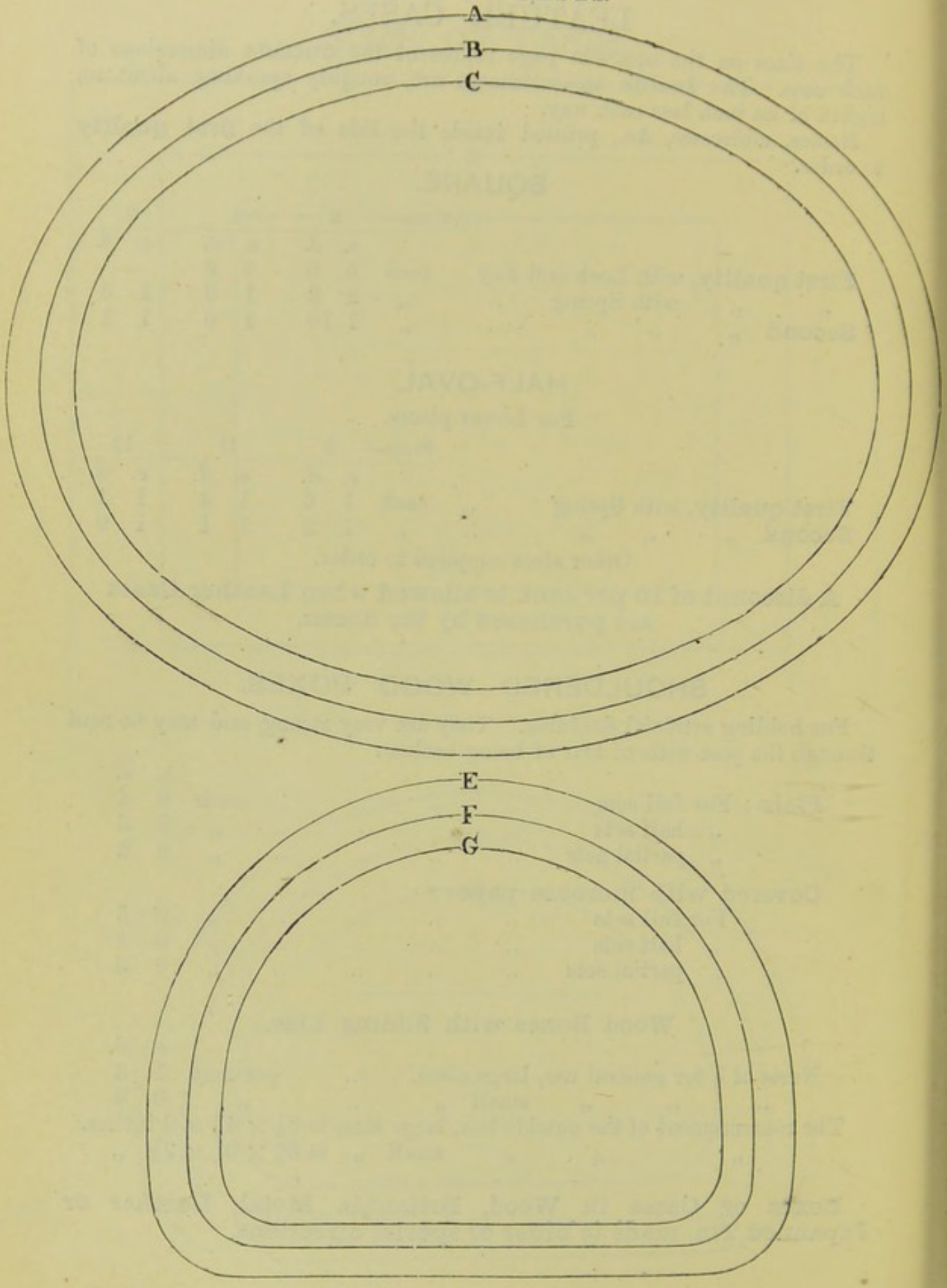
Wood Boxes with Sliding Lids.

		s.	*d.*
Nests of 5 for general use, large sizes ..	per nest	1	3
„ „ „ small „ ..	„	0	8

The measurement of the outside box, large size, is $6\frac{1}{4} \times 4\frac{3}{4} \times 3$ inches.
„ „ „ small „ is $3\frac{7}{8} \times 3\frac{1}{8} \times 2\frac{1}{4}$ „

Boxes or Cases in Wood, Britannia Metal, Leather or Japanned Tin, made to order or special directions.

SIZES OF CASES.



LEATHER CASES.

The sizes on the opposite page represent the **outside** dimensions of each case. The **inside** measurements are, roughly speaking, about $\frac{1}{8}$ of an inch less each way.

Names, addresses, &c., printed inside the lids of **first quality** cases to order.

OVAL.

	Sizes	A.		B.		C.	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*
First Quality with Spring ..	each	2	6	2	0	2	0
Second „ „ ..	„	2	0	1	9	1	7

HALF-OVAL.

	Sizes	E.		F.		G.	
		s.	*d.*	*s.*	*d.*	*s.*	*d.*
First Quality with Spring ..	each	1	9	1	7	1	3
Second „ „ ..	„	1	3	1	1	1	0

Other sizes supplied to order.

A discount of 10 per cent. is allowed when Leather Cases are purchased by the dozen.

CARD BOXES.

For holding artificial dentures, &c.

Sizes as on page 424. Nos.	2.		4.		6.	
	s.	*d.*	*s.*	*d.*	*s.*	*d.*
Drab, with red edges .. per doz.	5	0	3	0	2	0

JAPANNED AND LEATHER CASES.

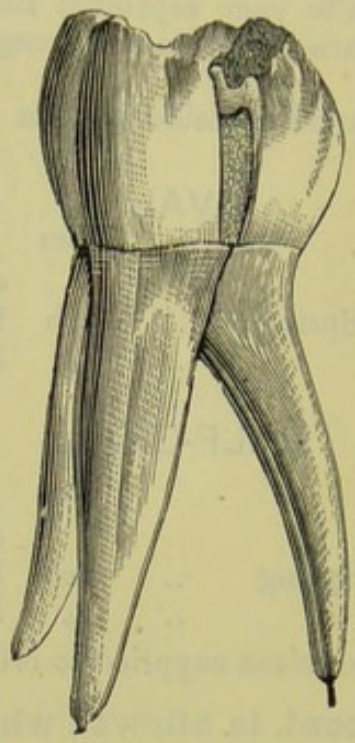
For holding mineral teeth.

		s.	*d.*
Japanned, with lock and key to hold 5000	each	28	0
„ „ „ „ 3000	„	25	0
„ „ „ „ 2000	„	21	0
Leather, with hooks and loops „ 1000	„	15	0
„ „ „ „ 600	„	9	0
„ „ „ „ 300	„	6	9

Cases or Boxes in Card, Wood, Leather, Britannia Metal, or Japanned Tin, made to order or special directions.

MAGNIFIED HUMAN MOLAR.

(By Dr. F. G. Lemercier.)



One-fifth size.

DESCRIPTION.

(*From the French.*)

First upper molar iconographically stratified, that is to say, in superposed illustrations.

The Tooth is shown 14 inches long, divided into four superposed layers, cut vertically from the centre, through the crown, neck and roots, for the purpose of illustrating to their full extent the enamel, dentine, cement, pulp, membranes, vessels, and nerves.

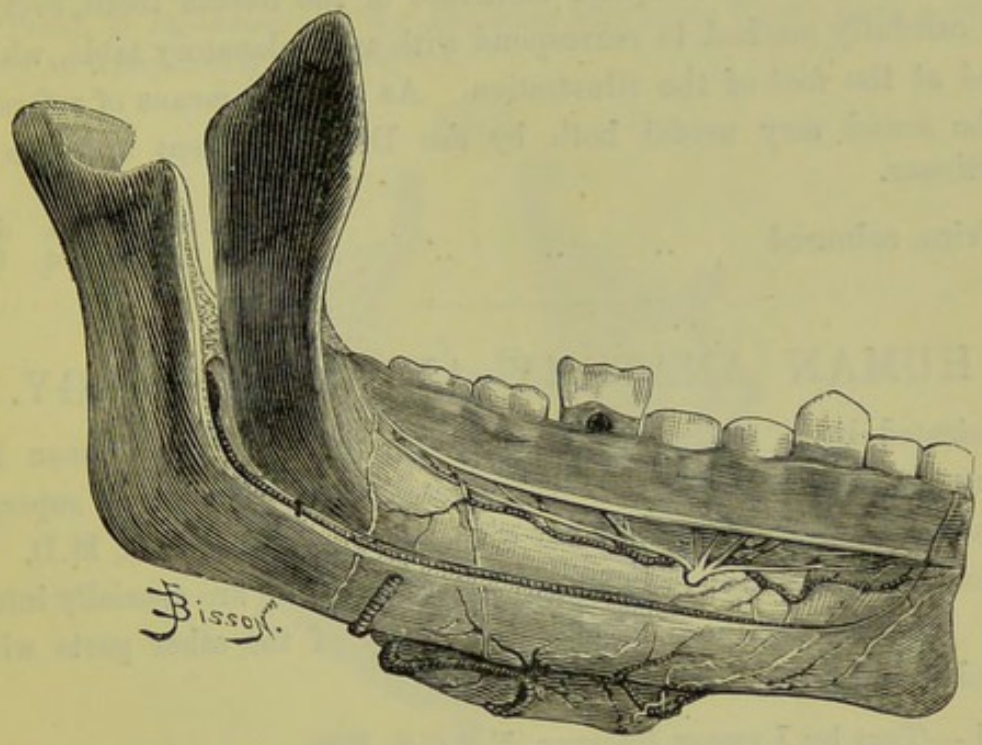
It was first prepared from the natural organs seen through the microscope, and, according to the works of the best authorities, it shows histologically, layer by layer, the complete structure of the human tooth.

It is chromo-lithographed, and carefully mounted on stout cardboard, the various parts being numbered for ready reference to the explanatory table which is printed opposite the illustrations.

	s.	*d.*
Price complete	16	0

ENLARGED MODEL OF THE LOWER JAW, TEETH, NERVES, &c.

(By Dr. F. G. LEMERCIER.)



About half-size.

So constructed as to admit of all the essential scientific details connected with the dental organs being rapidly studied with practical results, from an anatomical, physiological, and even pathological point of view.

The model represents half the right side of the lower jaw with all the Teeth and connections.

It is divided into two parts, and the two teeth raised above the others can be lifted out of their sockets, thus serving to exhibit—

1. The general structure of the teeth.
2. The nerve canals.
3. The gum and the alveolo-dental periosteum.
4. In the raised first molar the continuation of the periosteum around the ridges of the tooth and roots.
5. In the raised canine, which is divided vertically, its structure, and a full view of the pulp with the canals and nerves.
6. The sub-maxillary and sub-lingual glands with their excretory saliva ducts.
7. The lymphatic vessels of the gums and the ganglions to which they correspond.

	s.	*d.*
Model mounted on Stand, with Synoptical Table	56	0

DIAGRAM OF INCISOR TOOTH.

Size 13 inches long by 9½ wide.

Published by request of the Dental Society of the State of New York. Designed to show the complete structure of the human tooth, every part being carefully marked to correspond with an explanatory table, which is printed at the foot of the illustration. As a ready means of reference it will be found very useful both by the Dental Student and the busy Practitioner.

	s.	*d.*
Price, coloured	4	0

HUMAN ANATOMY AND PHYSIOLOGY.

Illustrated by a series of ten movable atlases of the Human Body, showing the relative positions of the several parts by means of superposed coloured plates, from the designs of Professor G. J. Witowski, M.D.

As each part is complete in itself, only those which are specially interesting to Dentists are here enumerated. Any of the other parts will be obtained to order.

Part II.—Text by Lennox Browne, F.R.C.S. Edin.
Throat and Tongue, showing the Mechanism of Voice, Speech, and Taste.

Part IV.—Text by Henry Power, F.R.C.S., Senior Ophthalmic Surgeon to St. Bartholomew's Hospital.
The Eye and the Apparatus of Vision.

Part V.—Text of the Ear by Lennox Browne, F.R.C.S. Edin.
Text of the Teeth by Henry Sewill, M.R.C.S., &c.
The Ear and the Teeth: the Mechanism of Hearing and of Mastication.

Part VI.—Text by T. Stretch Dowse, M.D., F.R.C.P. Edin., &c.
The Brain and the Skull (Cerebrum, Cerebellum, and Medulla Oblongata).

Part VIII.—Text by A. T. Norton, F.R.C.S., &c.
The Skeleton and its Articulations, showing the Bones and Ligaments of the Human Body and Limbs.

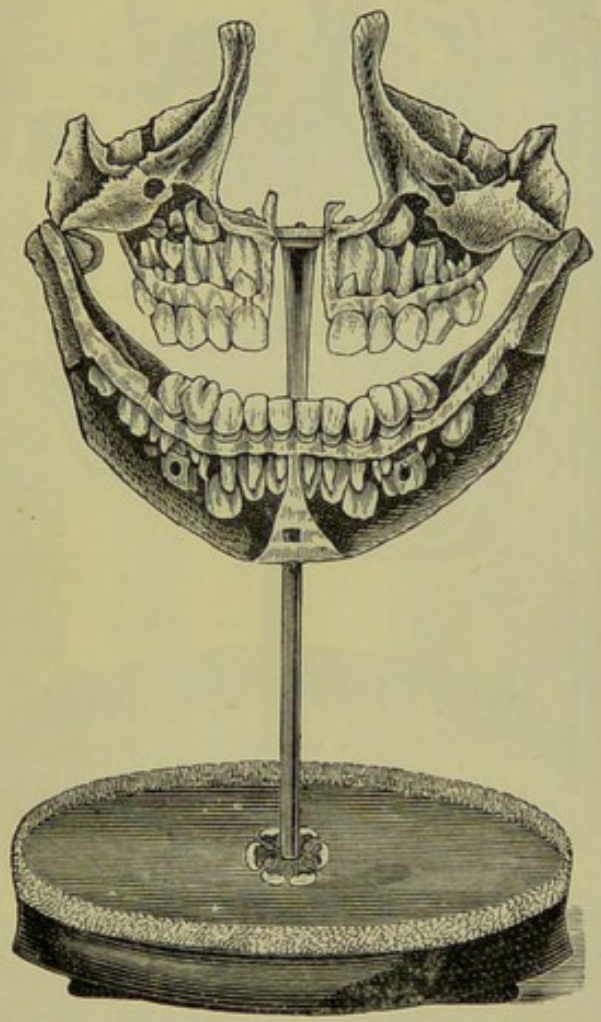
	s.	*d.*
Price, any part .. .. each	7	6

ANATOMICAL PREPARATIONS.

FIRST AND SECOND DENTITION.

These preparations are not only instructive to the Dental Student, but useful to the Dentist for explaining to Patients the causes of irregularities in the Teeth of children, and for showing why some Teeth have a greater tendency to irregularity than others.

Fig. 1.



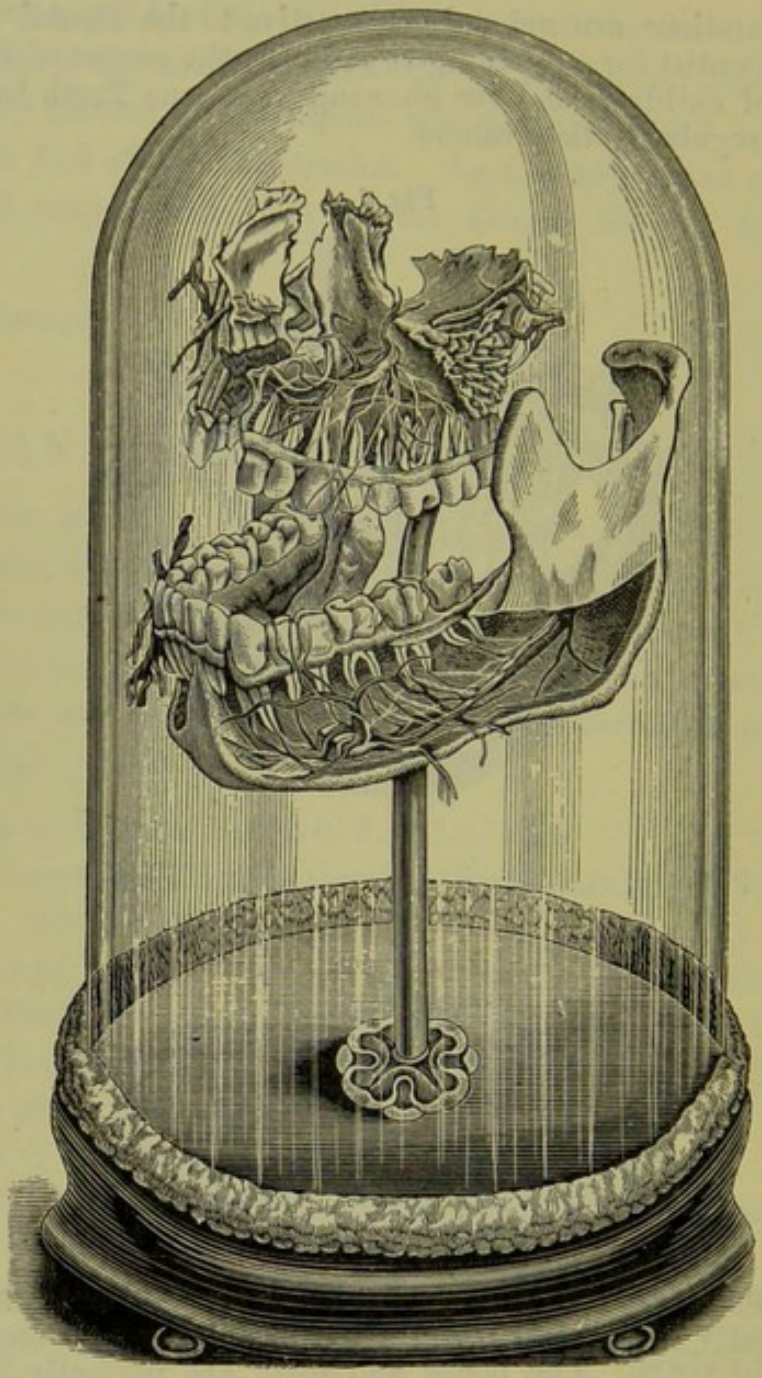
This is supplied in two kinds; one showing the dentition of children between the ages of six and seven years, the other between the ages of seven and eight years. The bones and teeth are perfectly bleached, and mounted on pillar and stand covered with a glass shade.

		s.	*d.*
Price	(Fig. 1)	52	0

Children's Skulls, showing First and Second Dentition, mounted or unmounted, supplied to order.

SECOND DENTITION.

Fig. 2.



The Second Dentition is useful to the Dentist for describing to Patients the ramifications of the nerves of the face and jaws, and thus accounting for the pain which is often felt at a considerable distance from the tooth which is the cause of it.

SECOND DENTITION—*continued.*

Fig. 2 shows the Nerves, Arteries, and Veins in the upper and lower jaws, portions of which and of the teeth are cut away for the purpose. The nerves are exhibited on one side, and the arteries and veins on the other.

The bones and teeth are perfectly bleached, and are mounted on pillar and stand covered with glass shade, as shown in the illustration.

		s.	*d.*
Price	(Fig. 2)	70	0
Skulls, Articulated, for Students	each	35	0
„ **Disarticulated** „	„	55	0

Other kinds of Anatomical Preparations supplied to order.

ANATOMY OF THE FIFTH PAIR OF NERVES

AND THE

MICROSCOPICAL ANATOMY OF THE TEETH.

With Coloured Plate, 27 by 21 inches, by H. A. Daniels, M.D.
Descriptive Text by Harrison Allen, M.D., Professor of Anatomy.

	s.	*d.*
Price complete	4	0

DIAGRAMS OF THE NERVES OF THE HUMAN BODY

By William H. Flower, F.R.C.S., F.R.S., &c.

Exhibiting their Origin, Divisions, and Connections, with their Distribution to the various Regions of the Cutaneous Surface, and to all the Muscles.

	s.	*d.*
Third edition, with 6 Plates. Royal 4to. ..	12	0

THE ERUPTION OF THE TEETH.

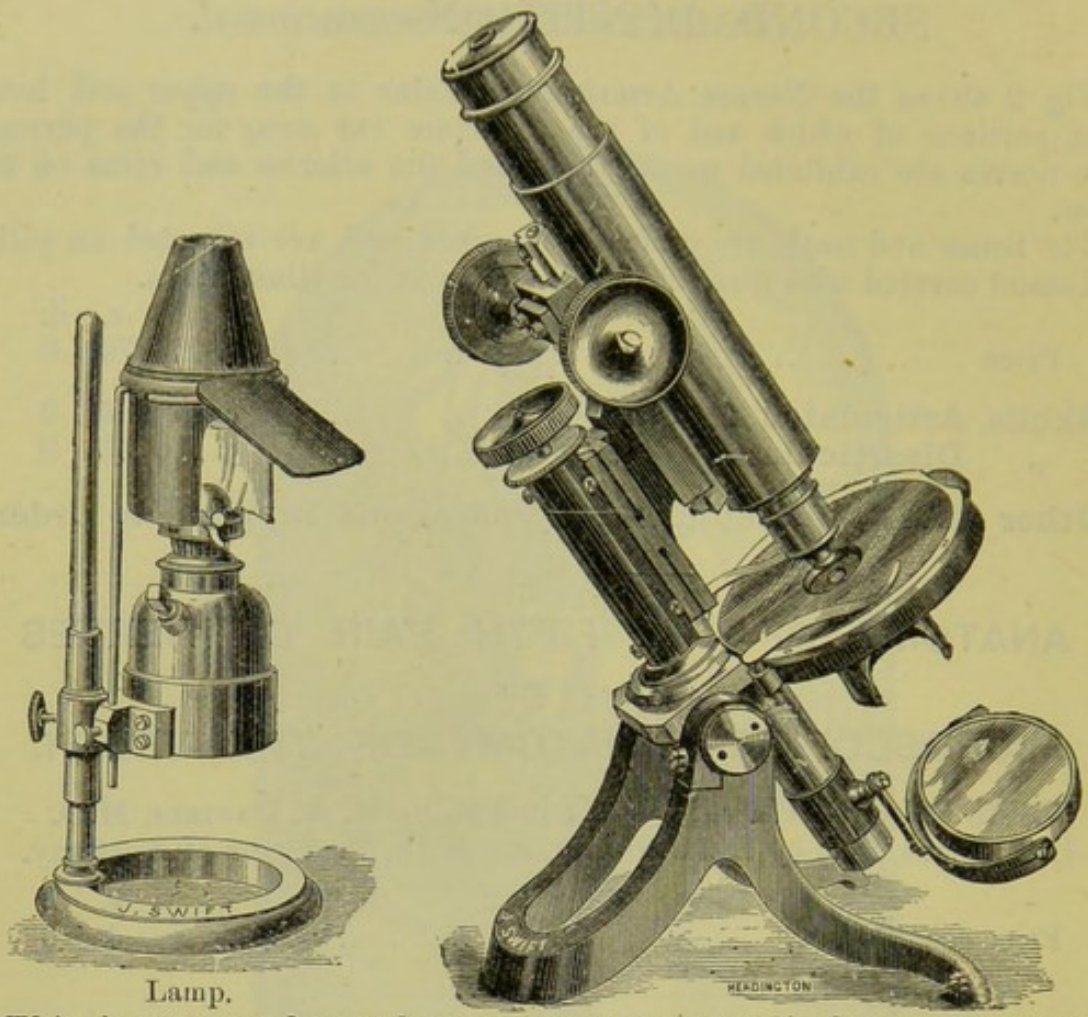
By Dr. J. N. Farrar, of New York.

A Diagram, 13 by 10 inches, designed to illustrate the relation of the sixth-year molar to the permanent set.

	s.	*d.*
On Bristol Board, eyeleted for hanging on the wall ..	1	0

Other Anatomical Atlases and Plates supplied to order.

COLLEGE MICROSCOPE.



Lamp.

This instrument has a glass surface to stage, a diaphragm of apertures revolving immediately under it, which can be used in conjunction with any supplementary under-stage microscope apparatus. The fine adjustment has recently been constructed so as to render it indestructible and impossible to get out of order either by wear or rough usage.

		s.	*d.*
Microscope, with eye-piece 1 inch or $\frac{1}{2}$ inch, and $\frac{1}{6}$ inch—or, if preferred, Ziess's single D. in place of the $\frac{1}{6}$ inch—needle points, glass sides, thin glass covers, &c. Fitted with patent spiral rack and pinion coarse adjustment, crank arm to mirror, and round glass stage. In case complete		135	0
Lamp, as illustrated	with peak, 13*s.*, without peak	12	0
„ in pine case	extra	3	6
Stand Condensers, various sizes	each from 25*s.* to	38	0
Achromatic Condenser		25	0
Polariscope, with Selenite		24	0
Spot Lens		6	0

Microscopes and apparatus of every description supplied to order.

		s.	*d.*
Microscopic Slides, best quality, showing transverse and vertical sections of human teeth	each	3	0
Teeth, recent and fossil, transverse and vertical sections ..	from	1	6

Mineral, Entomological, Vegetable, and Fossil Objects supplied to order.

DENTAL AND OTHER BOOKS.

Books priced at 5*s.* and upwards are subject to a discount of 15 per cent.; below 5*s.* to 5 per cent.

These terms are applicable to all in the following list, excepting **Account Books, Dental Journals, The Dentist's Register, The Medical Directory,** and **Webb's Notes on Operative Dentistry,** the prices quoted for which are net.

New Books, relating to Dentistry, are advertised, as they are published, in C. ASH & SONS' Quarterly Circular, which can be had by any member of the Profession, post free, on application.

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