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BOYD.

By Robert Boyd

MODERN

SURGICAL INSTRUMENTS,

CHIEFLY

OF FRANCE AND GERMANY

ILLUSTRATED.

LONDON:
HENRY RENSHAW, 356, STRAND.
1844.

TO THE MEDICAL PROFESSION.

During a visit to Paris some time since, by the Author, a variety of Surgical Instruments forced themselves upon his notice. Some of them were curious from their novelty in the ingenuity displayed in their construction, while the greater number recommended themselves chiefly as being the instruments used by those Surgeons of France and Germany who had acquired eminence in the treatment of special classes of Surgical diseases.

As most of them are comparatively unknown in this country, the Author has published the present Manual in the belief that a Work exhibiting their form, and explaining their use may be serviceable to the junior members of his profession.

Such a work will enable them to understand more easily the publications of many of the continental Surgeons, whether in the original or when quoted by English authors; and may at the same time be useful in throwing out hints for the improvement or alteration of Instruments suited to the circumstances of individual cases.

PLATE I.

1.—The common French sharp-pointed bistoury, showing the most approved method of fixing the blade when open, by means of a square tooth on the end of the spring fitting into a corresponding notch in the blade.

2.—A common hernia knife, showing another method of fixing the blade, by sliding the pin *a*, into the notch *c*, the knife is kept open, and kept closed when in the notch *b*.

3.—Lisfranc's forceps for cutting the superior maxillary bone.

4.—Tireballe for extracting deep-seated leaden bullets, to which Charrière has added the silver sheath, which being pressed firmly on the ball fixes it in the process of boring.

5.—Assalini's tenaculum forked in one of the bites to give it a more secure hold.

6.—Amussat's torsion forceps for closing the mouths of bleeding vessels. When the forceps is closed, the eye of the tooth *a*, being pressed through the hole *b*, receives the sliding wedge shaped pin *c*.

7.—Jules Cloquet's ligature forceps, the vessel being held fast by an elastic catch fixing in *a*, the branches of the fork are slided down by the pin *b*, and the ends of the ligature drawn tight through the notches in their extremities.

8.—Bone forceps having three bites for the better crushing the bone.

9.—Saw modified by Charrière, by conical teeth in the end of the blade at *c*, fitting into corresponding notches in the handle *b*, and kept tight by the screw *a*, the saw may be kept in any position.

10.—Intestine scissars of Jules Cloquet used in post-mortem examinations.

11.—Charrière's double saw for opening the spinal column in post-mortem examinations; *a*, *b*, are two screws for regulating the distance of separation.

12.—Thompson's trephine, the instrument being fixed by two small screws passing through holes on each side of *d*, into the further of two steel plates which inclose the wheels in Fig. 14, the trephine is turned by the cog wheel *d*, working in one on the further end of the axle *i*; *e*, *f*, are two screws for fixing the centre pin and crown of the trephine, to be replaced at pleasure by one of another form at *g*.

13.—Dupuytren's double-edged bistoury used in lithotomy, avoiding the necessity of turning the edge of the knife to enlarge the incision after entering the point into the groove of the staff.

14.—Thompson and Charrière's scie à molette for removing portions of diseased bones. Between two steel plates are three single wheels, *a*, *b*, *c*, and a double one, *d*, united round the margin by ten small pins which work in the notches of the saw, *e*, the whole are turned by the handle *g*; on the circle *f*, is a sliding rest for steadying the saw during the operation. A larger or smaller saw may be substituted at pleasure by means of the screw fix on the slide at *k*.

15.—Dupuytren's instrument for dividing the sequestra of necrosed bones, having seized the bones with the bites *a*, *b*, the borer *d*, is turned by a bow working the pulley *e*.

16.—Petit's tourniquet used in the operation for aneurism, modified by Charrière.

17.—Jeffray's chain saw.

PLATE II.

1.—Taddini's cataract knife, used also in cutting the cornea in cases of artificial pupil, or hypopium, resembling much that of Wenzel.

2.—Beer's cataract knife-cutting near the point on both edges.

3.—Richter's ditto generally called Ware's.

4.—Guthrie's double ditto showing the smaller moveable blade which is glided forward during the operation to guard the iris.

5.—Jäger's double ditto similar to Beer's in shape, showing the smaller sliding steel blade for finishing the excision of the cornea.

6.—Single bistouri caché of Carron du Villard, used by him in the operation for cataract.

7.—Saunders's cataract needle, cutting at the point only.

8.—Beer's lance for destroying the posterior capsule after the lens is extracted.

9.—Scarpa's curved needle for destroying the lens by puncturing the sclerotic.

10.—Gräfe's instrument for cutting to pieces the lens in keratonyxis having a button on the stem to prevent its penetrating too deep.

11.—Langenbeck's curved lancet shaped two-edged needle, used in keratonyxis.

12.—The same seen on its flat surface.

13.—Blœmer's pince à double crochet, used in artifical pupil or where a cataract is solid, or incrusted with calcareous phosphate, it is difficult to extract.

14.—Kystito forceps of Carron du Villard, on which is a sliding branch *a*, moved by a button on its extremity *b*, for raising the edge of the pupil in seizing the capsule.

15.—Lentil-eyed forceps used in operations on the eye by Maunoir and Gräfe.

17.—Pellier's levator oculi, modified by Saunders.

18.—Luzardi's ditto.

19.—Kystitome and Curette of Boyer for removing fragments of the broken lens from the posterior chamber.

20.—Clemot de Rochefort's instrument for artificial pupil, seen on its concave side, the two blades *a*, *b*, (united, so as to form one small curved flattened needle by advancing with the thumb the button *c*, on the branch *b*,) are passed through the cornea, and then separated to be used as a forceps to seize the iris ; *d*, is a rest for the forefinger.

21.—Gräfe's coreonçion for artificial pupil, consisting of a gold hook cleft so as to form two, on drawing back a pin resting in the notches *e*, by the slide *d*; on entering the instrument into the eye, the hooks placed in apposition are sheathed by being drawn close down on the stem at *c*.

22.—Maunoir's scissars for cutting a triangular opening in the iris, through the cornea, in forming an artificial pupil.

23.—Assalini's aiguille pince, the instrument being introduced closed into the anterior chamber, the iris is pierced with the needle only, and held firm with the pince, is drawn through the wound, and cut off with David's scissars.

24.—Langenbeck's coreonçion, consisting of a small hook passing through a fine gold tube fixed in the handle, the hook sheathed by the tube on entering the eye, is projected by the slide *b*, and seizing the iris draws it through the wound previously made in the cornea.

25.—Jungken's coreonçion having a tooth *a*, which is slided up to the point of the hook after seizing the iris to prevent its escape.

26.—Embden's raphian kystron composed of a straight lance shaped moveable needle on which slides a hook, each regulated by a button at *c* and *d*; the needle having pierced the sclerotic or cornea, the hook is advanced and laying hold of the iris it is drawn through the wound, thus avoiding any previous incision.

27.—Beer's hook for drawing the iris through the wound in the cornea, in forming artificial pupil.

28.—Scissars for cutting the iris through an incision in the cornea, used by Janin and Maunoir.

29.—Forceps for entropion, used by Beer and Weller.

30.—Daviel's double curved scissars for enlarging incisions in the cornea.

31.—Lefaye's kystotome (being like Petits pharyngotome in miniature) for cutting the lenticular capsule in the extraction of a cataract.

32.—Reissenger's double hooked forceps, resembling Beer's hook, but opening by its elasticity into two longitudinal halves, the hooks being introduced closed, through the cornea, the iris is seized by them, separated, and again closed when drawn through the cornea.

PLATE III.

1.—Montain's trepan for boring the os unguis in fistula lachrymalis, but now little practised in consequence of the constant closing of the opening, causing a return of the complaint.

2.—Canula of Desault with his stylet for inserting it in the nasal canal, and the elastic blunt-pointed needle of Pamard, for the more easily passing a thread through the nostril to keep the passage open.

3.—Palette of Cabanis modified, formed of two plates sliding on each other, the upper one perforated, the lower one only to half its thickness. It is passed up one of the nostrils for the more easily seizing the fine stylet of Mejean passed down the lachrymal canal.

4.—Manec's sonde à dard, having an eye near the point *a*, for passing a seton from below upwards through the nasal duct.

5.—Canula of Mirault D'Angers, through which is passed Pamard's elastic needle.

6.—Bellocq's sonde, used in passing plugs up the posterior nares in cases of hemorrhage, or in operating on nasal polypi.

7.—Pellier's trochar for penetrating the os unguis or lachrymal sac.

8.—Desault's kystitome for opening the lachrymal sac.

9.—Cruveilhier's scarificator, for the nasal or other mucus canals.

10.—Laforest's canula through which, when passed up the nasal duct, he injected fluids, the passage being previously cleared by passing a sonde.

11.—Gensoul's sonde for passing up the nasal duct, but more simple in the application from being much longer, and moulded to the form of the canal, by this the incision of the sac is avoided, and the stricture in the duct is cured by caustic.

12.—Protecting canula in cauterizing the os unguis.

13.—Dupuytren's stylet for conducting down the canula *b*, through the nasal duct.

14.—Dupuytren's cleft elastic stylet for withdrawing the canula, by means of a conical button on the extremity catching on a projection round the inner edge of the base of the tube.

15.—Jules Cloquet's elastic hook for ditto.

16.—F. Hatin's porte ligature round pharyngeal polypi, composed of a steel plate, betwixt which and another *f*, is slided by the handle *a*, a double hook *b b*; two plates *c c*, underlapping like winged feathers, serve to widen the instrument if necessary. The ends of the ligature being passed out of one of the nostrils by means of Bellocq's sonde, the noose passed through the hooks is slipped round the posterior part and sides of the polypus, when it is allowed to escape by projecting them beyond the extremity, the ligature to be then tightened by a serre nœud.

17.—Leroy's ditto, the ligature *c d* is retained in a curved cleft tube, by a corresponding blunt stylet needle *b*, which when pulled out by a line also wrongly marked *c*, allows the polypus ligature to escape when necessary.

18.—Mayor's (serre nœud en chapelet,) the ligature passing through wooden balls and a short canula, is tightened by a screw on its base.

19.—Charrière's polypus forceps.

20.—Gräfe's serre nœud modified by Dupuytren, the end of the ligatures are fastened to the slide *c*, which is moved up or down simply by turning the handle of the screw.

PLATE IV.

1.—Hunter's forceps, modified by adding a screw fix for regulating the movements of the elastic bites *a b*, in the tube.

2.—Itard's silver canula, used in injecting the Eustachian tube through the nostril.

3.—Deleau's graduated flexible canula with its conducting wire, on which is a sliding fix, used in ditto.

4.—Elastic wire nose pince, by which *fig.* 3, is kept in situ.

5.—Itard's speculum auris.

6.—Instrument for extracting hard bodies from the ear, being a fine steel screw sheathed in a silver tube *b*, which serves to fix the foreign body, and guard the meatus during the operation.

7.—Deleau's instrument for puncturing the tympanum, con-

sisting of a silver tube, *a e a*, inclosing at *e* a wire spring *f*, circling the middle of the perforator *c d;* by means of the end of the screw *g*, which is fixed in the hole *h*, working in the spiral groove round the perforator at *d*, the point of the perforator is advanced on turning the handle, about a line, when the screw slipping out of the groove, the perforator is instantly repelled by the action of the spring.

8.—Dupuytren's (bouton à demeure) of silver, used to keep open the duct in cases of ranula, termed by the French grenouillette.

9.—Roux's blunt pointed staphyloraphy scissars, for forming raw edges on the cleft palate, with the view of adhesion.

10.—Hruby's palatine forceps, the dark shaded bite overlapping the other, the stem of which is shorter.

11.—Colombat's speculum oris, the projections *b b*, and *a a*, pressing on the teeth of the upper and lower jaw, and the tongue depressed by the silver plate *d*, the jaws are kept open by closing the handles.

12.—Charrière's ditto, the part *b* (with its tongue plate) pressing on the lower jaw, the upper is raised by *d*, which is elevated by a screw in the extremity of *c*, seen better at *e*, and kept so by a fork *f*. In the event of any spasmodic action of the masseter muscles, the withdrawing the fork immediately allows the jaws to close.

13.—Musueux's forceps, modified by Marjolin and Ricord. The stem of the upper hook being made to travel by means of a double ring in a deep groove in the lower fixed limb *a c*.

14.—Jules Cloquet's scissars for excising the tonsils; to prevent the slipping of the tonsil, a small hook is fixed on each blade, to avoid the necessity of a tenaculum, and so allow the operator to see more clearly.

15.—Roux's porte aiguille and needle *b c*, for staphyloraphy; the needle is kept firmly in the bite *a*, by a travelling ring *d*, moved by a rod passing through the handle.

16.—Gräfe's ditto with needle *a*, which is fixed in the bite by a sliding ring *b*.

17.—Another of Gräfe's, preferred by Diffenbach, who uses a needle which, held firm in the bite by an elastic catch, has no eye but is hollowed at the heel for receiving the end of a metallic thread.

18.—Colombat's ditto with needle *h*. The threaded heel of the needle being fixed in *a*, the point is applied to the posterior side of the soft palate, and closing the forceps by pushing forward *d e*, the needle is forced through the hole *b*, and by means of a pin which is pushed across the opening under the shoulder of the needle by the slide *c*, the retraction of the needle is prevented.

19.—Guyot's fix knot in staphyloraphy, composed of a tube *a*, in which is a small metallic rod *c*, having a cleft at the further extremity which is made to gape by the pressure of the projection *d*, as seen at *b*, on the inner side of the tube, till pushed beyond its further opening by the handle *e*, when the mouth is closed by its own elasticity, and fixes firmly in the bite the noose of the ligature.

20.—Schwerdt's staphyloraphy needle modified from those of Doniges and Lesenberg, being a curved needle, with the eye near the point, divided longitudinally, so easily freeing the ligature by causing a separation in the two halves.

21.—Diffenbach's lancet-shaped bistoury for pairing the blunt edges

of the palatine fissure, the approximation of which is assisted by making on each side a perpendicular incision in the palate.

22.—Gräfe's curved forceps for fixing the sides of the palatine fissure whilst pairing the blunt edges of it with the view of procuring adhesion.

PLATE V.

1.—Charrière's syringe, having a continuous jet. The basin *a* being filled with fluid, it passes through small openings in the syringe *b*, and through its valve opening downwards into the glass reservoir *c*; on raising the piston the fluid is prevented re-entering the syringe by a small globular floating valve at *f*; by the increase of the pressure of air in *c*, the fluid is forced into the tube *g*.

2.—Charrière's ditto of another form. In the end of the syringe at *b*, is a small chamber containing a metallic ball, seen better in the centre of the circle at *c*, which on raising the piston, allows fluid to enter the syringe. When the piston is depressed, the fluid unable to escape is forced through a tube *d*, closed at its mouth by a metallic ball valve, into the encompassing glass globe *c c*, from which the fluid is ejected by the pressure of the contained air through the tube *f*.

3.—Charrière and Despruneaux's ditto, used also in cupping, but too complicated for general use.

4.—Double mouth-piece for placing on the end of a syringe, to avoid the necessity of withdrawing the tube during the operation; by turning the handle *a*, either mouth-piece is closed.

5.—Ricord's double syringe. The caustic fluid being injected from the small central syringe through the mouth *e;* throw in the mild injection through the double mouth *b* of the outer tube (as seen in screwing off the tube *c*) by pressing down the double piston-rod *d*.

6.—Sanson's speculum ani with Meslier's ebony stopper mouth-piece, *a*.

7.—Bistouri royale, modified so as to allow the separation of the silver wire conductor from the knife, as seen at *a* and *b*.

8.—Bistouri having a ring formed in the back of the apex at *a*, through which runs a fine silver wire conductor *b b*.

9.—Ebony gorget, introduced up the rectum in laying open a fistula in ano.

10.—Forceps for extracting foreign bodies from the æsophagus.

11.—Dupuytren's enterotome, used in cases of unnatural anus.

12.—Gräfe's whalebone probang and sponge with a double hook turning on a centre pin for removing foreign bodies from the æsophagous.

13.—Vaccas' instrument used in æsophagotomy. The enlargement of the cleft at each extremity *a b*, allows the escape of the elastic stylet *c* at *a*, so causing a prominent dilatation of the tube during the operation, and its withdrawal at *b* by the handle *d*.

14.—Chaussier's canula for passing into the glottis, the depth to which it may pass is regulated by a projecting ring near the curve.

15.—Bauchot's trochar for puncturing the trachea, being a short flattened trochar inclosed in a canula.

16.—Wire brush for clearing *fig.* 17 when in situ, from mucus, &c.

17.—Bretonneau's double tracheotomy canula, as used by Trousseau ; (seen also at *c d* and *e*;) allowing by one canula sliding within the other, the tube to be lengthened, and so displacement prevented by any swelling of the lips of the wound.

18.—Whalebone and sponge for cleaning Fig. 17.

19.—Trousseau's instrument for separating the walls of the incision on the introduction of Fig. 17.

PLATE VI.

1.—Two varieties of forceps with urethral hook, united in one, as used by Civiale.

2.—Cloquet's double catheter for washing out the bladder by means of a continuous stream through it : *a b* are two openings on the opposite sides of the tube, which is divided longitudinally by a septum.

3.—Lallemand's platina, sonde à cauteriser, having a fix *a*, for regulating the depth of the canula, and another *b*, the porte caustique.

4.—Extremity of Amussat's porte caustique with its oval button and canula ; for the mode of application, see Fig. 7.

5.—Ducamp's graduated flexible porte caustique, the stylet of which is regulated by a screw fix in the canula.

6.—Tanchou's ditto, resembling Ducamp's, to which he has added a small wire of platina, terminating in a ball *c*, and passing through the back of the caustic reservoir and its stylet, is regulated by a fix *c;* for measuring the depth of the stricture, and acting as a conductor to the porte caustique.

7.—Amussat's ditto, to which Ricord has added an outer flexible canula ; the round porte caustique stylet being made to protrude nearer one side of the inner oval canula than the other ; when the stylet is turned, the projection of the button, which corresponds with the open surface of the caustic, catches on the inner edge of the stricture, thus allowing a more accurate application of it when the sheathing canula is withdrawn from the stricture.

8.—Segalas's porte caustique, modified from Lallemand's in adding an outer graduated flexible canula in which are two screw fixes, one regulating the movements of the inner platina canula *a a*, the other that of the stylet *b*.

9, 10.—Amussat's urethra scarificator. On the stylet terminating in a semibutton, seen better at Fig. 10, is a small semi-lunar scarificator, which is sheathed in a cleft on one side of the canula, the semibutton fitting into a notch in the other ; the instrument being passed into the stricture, its position is ascertained by the catching of the button on its inner edge.

11.—Jobert's double scarificator being a graduated tube, on which is a sliding fix *d*, the scarificators are gradually projected by means of the stylet on which is a fix *c*.

12.—Tanchou's ditto, being a graduated tube cleft in the end for receiving the scarificator *a*, which is slided forward along a globular-headed wire conductor *b b*, into the stricture.

13.—Segalas's uretrotome, formed of six or eight blades, projecting from a straight canula, a globe-headed stylet passing through the centre forms a conductor to them.

14.—Another form of ditto, the conductor and canula not shown.

15.—Extremity of Civiales' forceps for extracting calculi from the urethra; through it passes a stylet for altering the position of the calculus if necessary.

16.—Tanchou's conical swollen scarificator, being a silver canula swollen at *c*, (for sheathing the four blades *a*, when passing through the urethra,) beyond which it tapers to a point; four clefts cut in this portion, allow the blades to act on the stricture, the incision gradually deepening as they are advanced by the stylet *b*.

17.—Amussat's instrument for breaking and extracting calculi from the urethra; through a straight canula pass three jointed steel rods united at the extremity, each of which is straightened or relaxed separately by elevating or depressing the arms *a a a*. A stylet regulates the position of the calculus.

18.—Segalas's silver (stylet uretro cystique), which the operator should have of various dimensions for measuring the length and depth of strictures.

19.—Extremity of Amussat's hook for removing calculi from the urethra.

20.—Civiale's (uretrotome), being a bistouri caché, for cutting strictures near the glans penis, or removing calculi imbedded in the urethra, similar to one invented by Segalas. By a screw acting on the end of a sliding spring, the depth of the incision is regulated.

21.—The extremity of Dubouchet's porte caustique. The caustic reservoir and canula are each open on two sides, allowing the double application of the caustic at the same time, whilst the smallest rotation of the stylet serves to sheath it.

22.—Leroy d'Etiolle's, curette articulé, for removing urethral calculi: the wire *b b*, passing through the tube *a*, depresses or raises the curette *d* by turning the handle of the screw *c*, working in the tube *a*.

23.—Amussat's sonde à conducteur being a small silver catheter, in the end of which is screwed the stylet *b*, seen in position at *c*, so replacing it by a flexible catheter if required.

24.—Segalas's forceps for extracting foreign bodies from the bladder or urethra: the two bites *a b*, are closed by the action of the fly-screw *c* on the canula.

25.—Jules Cloquet's instrument for removing hard bodies from the urethra or meatus auditorius. The wire is attached to the end of a screw working in the tube *a a*, and tightened by a fly screw as in Fig. 24.

26.—Leroy's pince à trois branches for removing broken fragments of instruments, &c., from the bladder, having a blunt pointed stylet to alter the position of the bodies in the bites if necessary.

27.—Ducamp's urethra dilator, being a small pouch of cat-gut fixed on the end of a small silver canula, and supported by a stylet passing through it. When inserted in the stricture, it is inflated through the tube with stopcock *a*.

28.—Tanchou's ditto, composed of a fine steel canula divided at its further end into eight or ten longitudinal sections, which, united to the point of the stylet *a a*, are dilated on approximating the ends of the tube by the action of the screw *b*.

29.—Vergne and Peruning's dilator, composed of a silver canula, containing an elastic metallic dilator divided longitudinally into four portions, which is guided into the stricture by a fine wire conductor *a a*.

30.—Amussat's lithontriptor for calculi in the urethra.

31.—Leroy's instrument for measuring and scarifying urethral strictures. A silver canula *a*, is cleft in its conical extremity into four portions, to allow the projection of four conical blades by means of a ring handle on the slide *b*; the depth of the stricture is measured by passing a fine conducting tube through it, where a retrograde movement is prevented by the elevation of two elbows on advancing the wire stylet at *f*.

32.—Leroy's ditto, for cutting strictures from behind forwards, by a movement similar to that in the conducting tube, Fig. 31, the branches of the lozenge *a*, *a*, being sharp, instead of blunt.

33.—Ducamp's sonde exploratrice, being a flexible canula containing in its further end a silk brush, on which is placed a composition, such as equal parts of pitch and wax that will mould itself by the heat of the canal in the stricture.

PLATE VII.

1.—Pince à trois branches à gaine et à foret, invented by Leroy, and first used by Civiale; the stone in the bladder being firmly held in the three bites by the pressure of the steel margin of the silver canula *a*, on their elastic branches, and so fixed by a screw *f*, the drill, or foret is pressed against the stone by the spiral spring *k*, contained in tube *i*, and turned by a bow, Fig. 6, working in the pulley *f*.

2.—Fraise à tete, or drill, used in Fig. 1, by Civiale.

3.—Tanchou's foret à developement the two wings are moved by two wires passing down the hollow stem of the drill.

4.—Fraise of Mr. Pecchioli, the single wing is moved in a similar manner.

5.—Extremity of Leroy's pince à trois branches modified by Segalas, in adding a curved prolongation to the end of the canula, so as to pass in cases of enlarged prostate more easily into the bladder.

6.—Archet or bow for turning the drill in Fig. 1.

7.—Leroy's lithotriptor, remodified from those of Segalas and Heurteloup, Fig. 22, 25. To this instrument, combining like that of Segalas, the advantages of the screw and hammer, Leroy has added a clamp *c*, removeable at pleasure, connecting the circular projection on the end of the hollow screw *d*, with a similar one on the stem of the male branch by which the bites, if firmly embedded in the stone, can be easily separated; *e*, is the end of the male sliding branch which is struck with the hammer.

8.—Leroy's (fraise à deux ailes,) as seen open, the dotted lines mark the direction they take when closed.

9.—Amussat's modification of Heurteloup's Fig. 25, combining pressure and percussion; the instrument being held firmly in the bladder by the handle *c*, the male sliding branch is forced forwards by a rod lever, working alternately in notches of a crest *f f*, fixed along the upper and lower side, the fulcrum being *d e*.

10.—Amussat's modification of a lithotriptor, now given up.

11.—Jacobson's lithontriptor as altered by Amussat.

12.—Jacobson's (brise pierre articule) as altered by Leroy and

Charrière, the jointed branch *a*, is drawn back by a screw working on the fixed branch *b c*, so as to enclose and crush the stone; a tongue *d*, slided up and down by the handle *e*, removes the detritus which accumulates in the gutter formed in the intervals of the articulations; with a lithontriptor on this principle, there is no risk of any broken fragments remaining in the bladder, an advantage taken by Dupuytren in allowing him to increase the number of joints, so as to render the angles less prominent with power to seize a larger stone.

13.—Heurteloup's (sonde magazin) modified by Leroy, for removing fragments of calculi and detritus from the bladder, consisting of a curved canula with two large parallel eyes; the end *b*, (termed the magazin) Leroy, made to unscrew for more easily emptying the contents; by turning the handle of the screw stylet, (the first two-thirds of which is a solid straight stem, the last third of an articulated chain terminating in a toothed drill as seen at *d d*,) the larger fragments sticking in the eyes, are pushed up into the magazin and powdered, whilst the small fragments and detritus are washed out by injecting fluid through a tube (with stop-cock) opening into the canula.

14.—Heurteloup's hammer for lithotrity.

15.—Extremity of the calculus borer of Gruithuysen, composed of a large straight silver canula, against the open extremity of which the calculus was fixed by the noose of a wire, and the stone perforated by a drill, (either lance shaped, or like the crown of a trepan, Fig. 17,) which is worked by a bow and pulley.

16.—Extremity of one of Leroy's instruments first planned; between two concentric canulæ glide four watch-springs, each turning on the button *b*, but regulated by separate screws as seen Fig. 26; by revolving the springs separately, the stone becomes encircled, and acted on by a drill passing through the inner canula.

17.—See Fig. 15.

18.—Litholabe of Lucken's, cutler of Philadelphia, being an inner canula formed by the union of several elastic branches, which as soon as pushed beyond the outer canula, separate, allowing the stone to fall into the cavity produced, where it is held during the action of the drill on it.

19.—Leroy's fix for Fig. 7, which being held firm by the screw at *a*, is raised to a proper height by the slide *c*, the fix is secured to a table or bed by the bites *b*.

20.—Amussat's most approved fix, applied instead of that at *c*, Fig. 9.

21.—Heurteloup's bed in position for operation; the stone in the bladder being seized by the forceps, Fig. 25, the female branch is fixed in the vice *a*, which acts as a fulcrum when the sliding male branch is struck against the calculus; *b* is a strap to support the shoulders.

22.—Heurteloup's brise pierre à coulisse, to which Segalas has added a screw pressure; on the near end at *b* of the female branch *a a*, works a fly-screw, which forces forward the circular projection fixed on the graduated portion of the male branch *c*, after which percussion is used by striking its end *e*.

23.—Drill, termed lithotriteur à virgule, of Heurteloup, open; the wing is advanced or withdrawn into its case by the wire stylet *a*.

24.—Drill, termed evideur of Heurteloup, for hollowing out the centre of a calculus, and is elevated or inclined as in Fig. 23.

25.—Heurteloup's (brise pierre à coulisse), the stem being held by

the bites of the forceps, its female branch is fixed in the fulcrum *a*, Fig. 21, whilst the male branch, *c d*, is struck with the hammer, Fig. 14.

26.—Heurteloup's (brise pierre à quatre branches,) consisting of two straight, concentric canulæ, betwixt which are moved separately, and regulated each by a screw fix, the four branches *c c c d;* to guard the bladder during the action of the drill on the stone held by the pince *g h*, termed the pince servante.

27.—Amussat's brise pierre, his first invention, but can be used in cases only of small calculi which are broken by friction of the notched bites, their pressure being produced by forcing up the canula by the fly-wheel at *c*.

28, 29.—Brisecoque of Heurteloup, the two bites, seen better at Fig. 29, act on the stone by the movement of va et vient, produced by the alternate motion of the handle *c*, on the extremities of their branches *b b*, the instrument being held by the left hand at *d*.

30.—Rigal's brise pierre, having a ligature fixed to each blade for withdrawing it from the bladder if breaking in the operation.

31.—Charrière's brise pierre by the action of va et vient.

32.—Instrument of Meyrieu, improved by Tanchou, formed with the view of preventing fragments of the calculus, striking against the inner coat of the bladder when broken, falling into the urethra or remaining to form nuclei of other concretions. It is composed of an outer silver canula, and an inner one of steel *b*, which is divided longitudinally into ten elastic ribs, having eyes in their extremity *c c*, through which is passed a silk cord, having the ends fastened to a sliding rib *d*, which is regulated by a screw *e*, the one opposite acting on the inner canula. The stone thus held by the steel net is acted on by an articulated wing-drill, moved by the fingers at *h*, or bow and pulley *g*.

33.—Costello's lithontriptor.

34.—Pravaz's instrument for breaking fragments of calculi in the bladder by the movement of va et vient, produced by the alternate movements of the handle *c*, the bites being firmly applied to the fragments by the canula *a*.

35.—Pravaz's lithotribe, as improved by Leroy; the curve of the canula *a a*, forms a segment of a circle to allow the rotation in it of the articulated portion of the stem of the drill, as in Fig. 13, by a bow and pulley, whilst the instrument is supported by the handle *f;* the free rotation of the stem in the curve is secured by a partition *b*, in the further end of the canula, allowing only the passage of the pince branches and drill.

36.—Colombat's brise pierre, the two limbs *c d*, being united by a jointed link at *g*, and tightly held on the stone by the canula *a b*, the action of va et vient is produced by the alternate movements of the handle *f*.

PLATE VIII.

1.—Leroy's canula, inclosing a porte caustique for cauterizing the prostate.

2.—The instrument of ditto, for dilating the neck of the bladder, composed of two concentric, flexible canulæ, having attached to the

extremity of the inner one a cat-gut pouch inflated by wire ribs, the fixed ends of which are approximated by a supporting wire stylet running through the centre and terminating in an olive; a sliding screw-fix serves to regulate the dilatation.

3.—Ditto, for passing a ligature round an enlarged prostate, consisting of a straight canula, within which is a projecting, curved tube, cleft open along the curve, so as to allow the escape of the stylet sonde *b d*, when revolved on its axis; after entering the bladder, the ligature is held in situ during the application by being passed through an eye at *a*, and deep notch at *b*.

4.—Ditto, for dilating the urethra in the region of the prostate gland, the instrument being introduced into the bladder, the end of the wires attached to the divided portions of the outer cannula are approximated so as to dilate the sac, by means of a fixed stylet attached to the male screw on the inner tube, *f*.

5.—Ditto, for cutting off a portion of enlarged prostate, the catheter being introduced with its parts united into the bladder, the portion *b* is withdrawn, allowing the projection and separation of two fine steel ribbons by the advancement of the ring slide *c* to be again tightened by the screw *f*.

6.—Ditto, for rectifying the curve of the urethra; the flexible catheter, in which is a female screw at *a*, being passed into the bladder, the point of the rod is gradually advanced by the screw *b*.

7.—Another ditto, the instrument being introduced curved into the bladder, it is straightened by means of a wire passing at *d*, (in a groove along the outer curve of the jointed bougie attached to the end of the straight tube *a a*,) from the point where it is fixed to a ring slide moved by turning the screw *e*.

8.—Dupuytren's lithotomy sound, being broad at the curve with a corresponding groove which runs through its point; for stretching the walls of the urethra, so enabling the operator to enter the point of the double-edged bistoury, Pl. 1, Fig. 13, into the groove, previous to using the double bistouri caché.

9.—Trochar, used by Leroy for puncturing the bladder in the high operation, having a guard *a*, to limit the depth of penetration, and which acts as a conductor to Fig. 10.

10.—Belmas's bistoury modified, by which the incision is enlarged.

11.—Leroy's cleft canula, for raising the bladder in the high operation, (modified from Sir A. Cooper's forceps), seen opened by withdrawing the button *d* out of its socket by the handle *e*; *a* is a mouth by which fluid is thrown into the bladder.

12.—Leroy's trochar and double-blunt hook for supporting the bladder in the high operation, seen open in front; when closed, the extremities at *c d* lie in depressions on the sheath of the trochar which has a similar curve; the trochar being protruded through the bladder by the slide near *f*, and the hooks separated by depressing *g h*, the bistoury is passed along the groove on the trochar sheath.

13.—Leroy's sheathed kystotome *c*, and trochar *a*, moved by the sliding handle *b*; used in the high operation.

14.—Dupuytren's instrument for digging out diseased portions in the cavity of the uterus.

15.—Ditto, for cutting out a cancerous os tincæ.

16.—Lithotomy forceps of ditto, modified by Charrière, so as to open with parallel bites.

17.—Lithontriptor, used in cases where on cutting for the stone, it is found too large for extraction ; the central borer works in a female screw made through the pin connecting the blades.

18.—The sonde à dard of Frère Comb as modified by Belmas, in having added the outer canula, and made the curve shorter and sharper, allowing the point of it to be passed close up behind the pubis instead of towards the fundus of the bladder ; a button on the end of the inner canula supports the bladder, whilst the point of the bistoury is passed along a cleft in the concave side corresponding with a groove in the dart which is pushed through the bladder.

19.—Dupuytren's canula to be introduced into the wound after lithotomy.

20.—The double bistouri caché used by Dupuytren in lithotomy ; the extent to which the blade can be opened is regulated by advancing or withdrawing the conical handle on which the end of the spring at *d* is depressed.

21.—Another of ditto in which the blades act as a sheath to each other.

22.—Dupuytren's amadou forceps, composed of two flat steel blades sheathed in amadou or German tinder ; in cases of hemorrhage after lithotomy, the forceps is entered into the wound closed, and hemorrhage checked by the spongy texture of the amadou, combined with the pressure of the blades on the mouths of the vessels.

23.—Frère Comb's scoop and forceps conductor *a*, used in lithotomy.

24.—Lallemand's sonde erigne used in vesico vaginal fistula, the edges of the fistula being previously touched with caustic, the straight silver canula is introduced into the bladder, and the double hook *b*, projected from the tube by the screw *c*, fixes the further transverse edge of the fistula, whilst the nearer one is approximated by the plate fixed on the top of a spiral spring pressing on the orifice of the urethra.

25.—Nægele's curved canula in which is an elastic needle *a*, regulated by the handle *b* ; for passing a thread from the bladder into the vagina on each side of the fistula when the ends are tied, and then used as a conductor for the better applying two small square plates, such as in Fig. 27, but without teeth, which keep the edges of the fistula, previously cut, in apposition.

26.—Dupuytren's scoop used in lithotomy.

27.—Laugier's erigne vaginal for transverse vesicovaginal fistula, the instrument being introduced into the vagina instead of the bladder, is less liable to cause urinary abscesses ; the teeth *c c*, are raised or depressed by turning the screws *b b*, with the handle *a*.

28.—Dupuytren's button-pointed knife, for excision of tumours in the cavity of the uterus.

29.—Ricord's scissars curved in the flat, for cutting off fungous granulations on the parts of generation.

30.—Strong scissars bent on the flat, used by Dupuytren in opera tions on the uterus.

31.—Jules Cloquet's knife curved on the flat used in ditto.

32.—Dupuytren's cautery used in ditto

33.—Levret's double canula and silver wire ligature for removing uterine polypi, the two rings are for fixing the tightened ends of the ligature.

34.—Serre nœud of Desault.

35.—Sheathed pinchers of Hale, used by Desault as a porte ligature. The noose of the ligature being passed through the tube of the serre nœud, one end is held in it fixed, whilst the other is carried round the neck of the polypus by the pinchers, and then both made fast to the noeud rings at the base of the tube.

36.—Ricord's speculum vaginæ, shown in detached parts as being more portable.

37.—Lisfranc's ditto.

38.—Jobert's ditto.

39.—Thompson's ditto, with its accompaniments, one of which seen *d*, is used in tightening polypi ligatures: *f*, as a speculum auris; *g* is a key for removing the branches fixed in sockets by pins at *a b*.

40.—Dupuytren's double edged knife, used in operations on the neck of the uterus.

41.—Ricord's ditto.

42.—Serre nœud.

43.—Musueux's curved forceps for removing polypi.

44.—Dubois's accouchement forceps.

45.—Madame Boivin's intro-pelvimètre: the inner diameter of the pelvis may be ascertained by resting the point of the branch *b* in the rectum upon the coccyx, and the point of *c* on the inner symphyses of the pubis by introducing it up the vagina, or by applying the same externally, and deducting the thickness of the sacrum and symphysis pubis from the measurement which is ascertained by the branch *a*.

46.—Ricord's speculum, to which Charrière has added the two valves *a a*, which are each attached at pleasure by two hooks passing through eyes in those of Ricord.

47.—Nauche's metroscope which is passed up the vagina to ascertain the state of the pulsations of the fœtus in utero.

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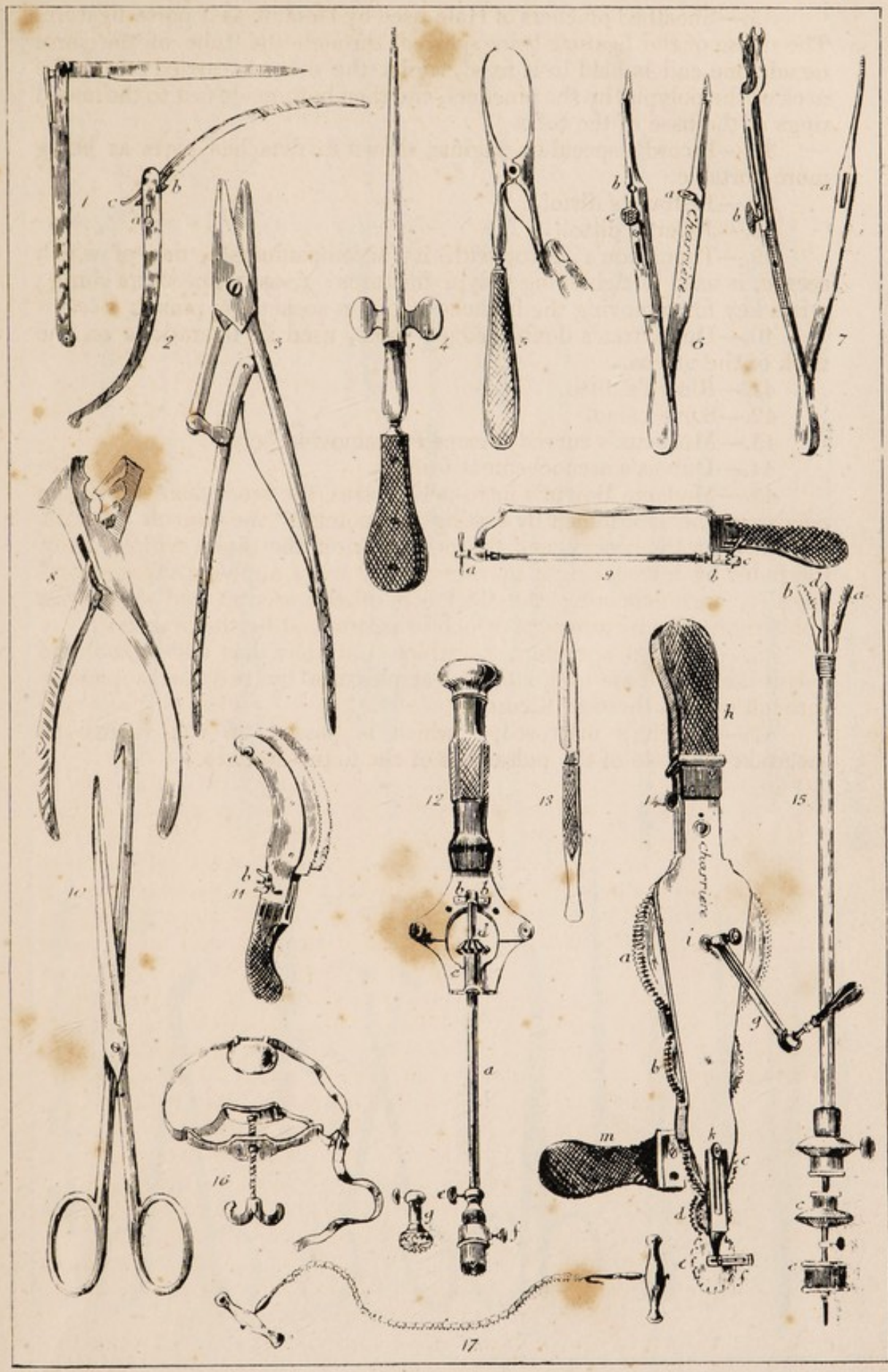
PL. I



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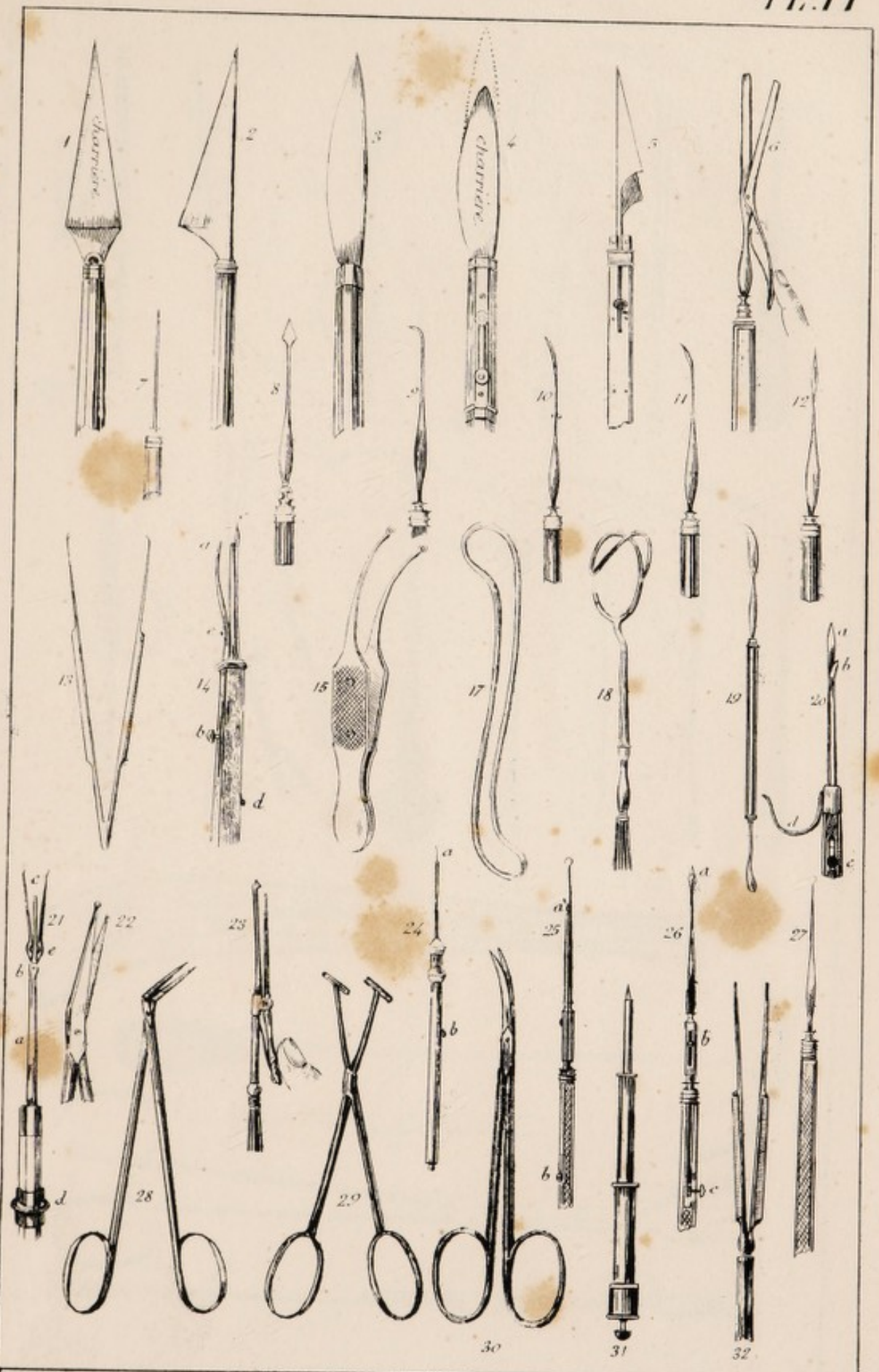

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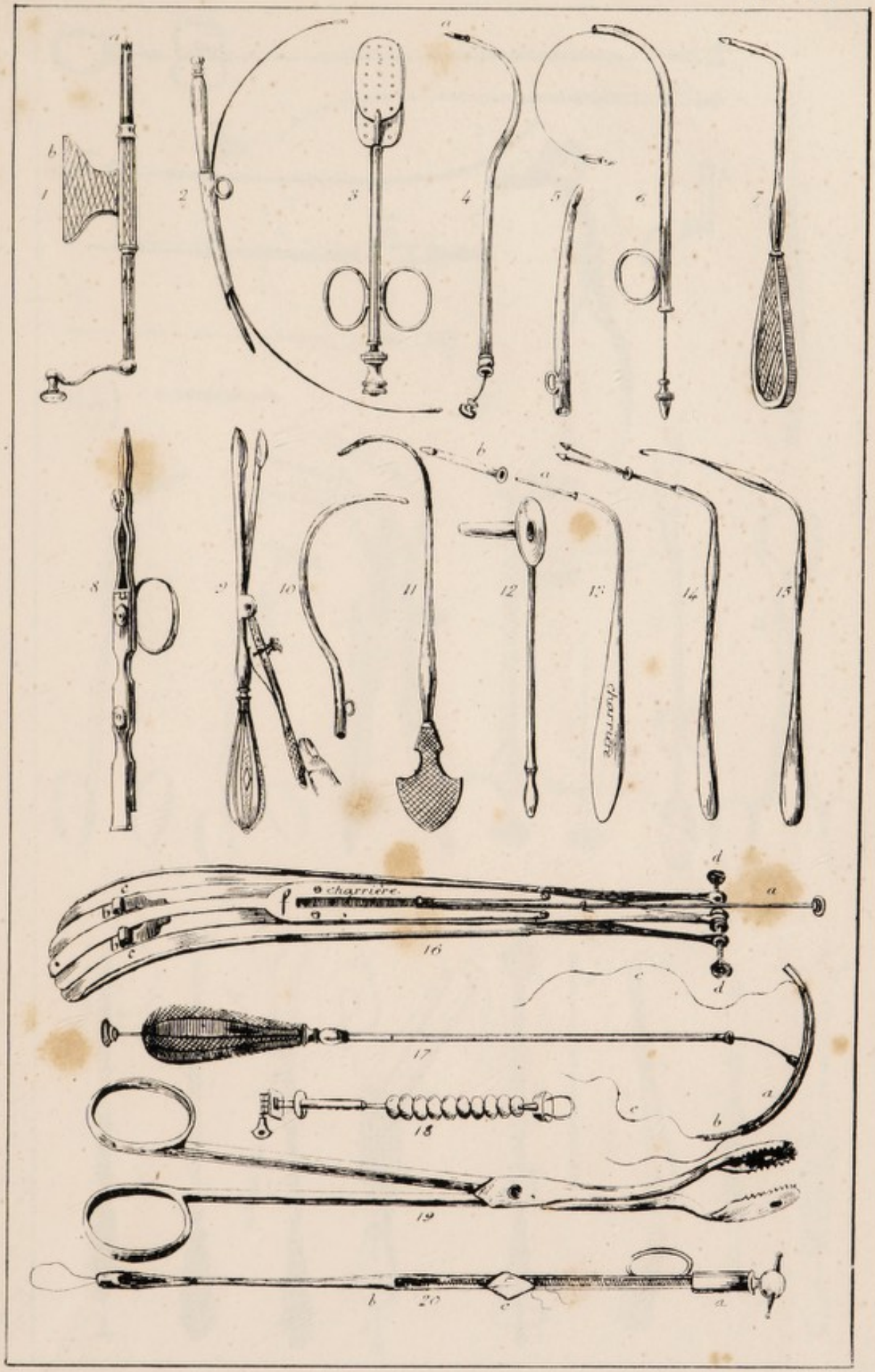

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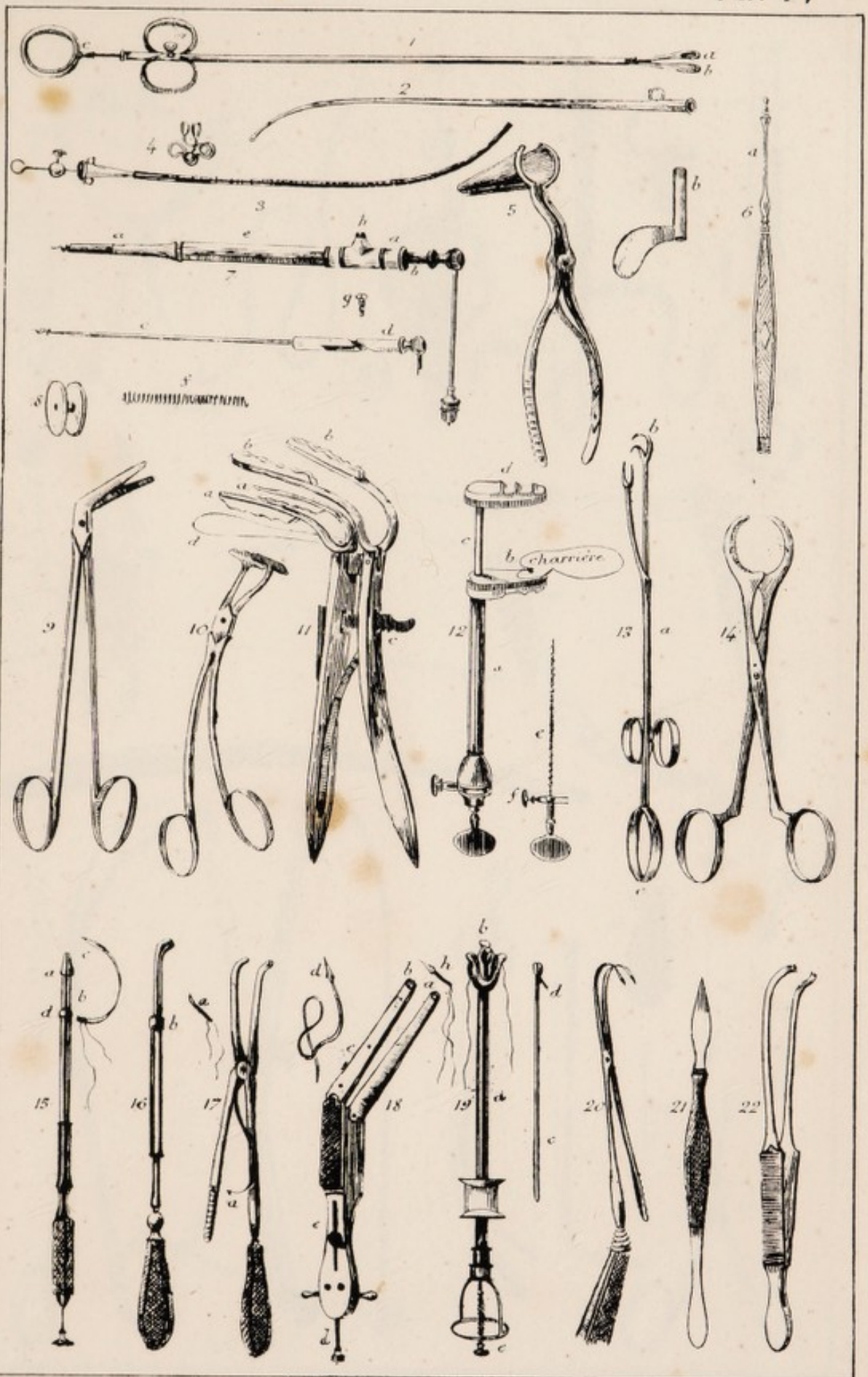

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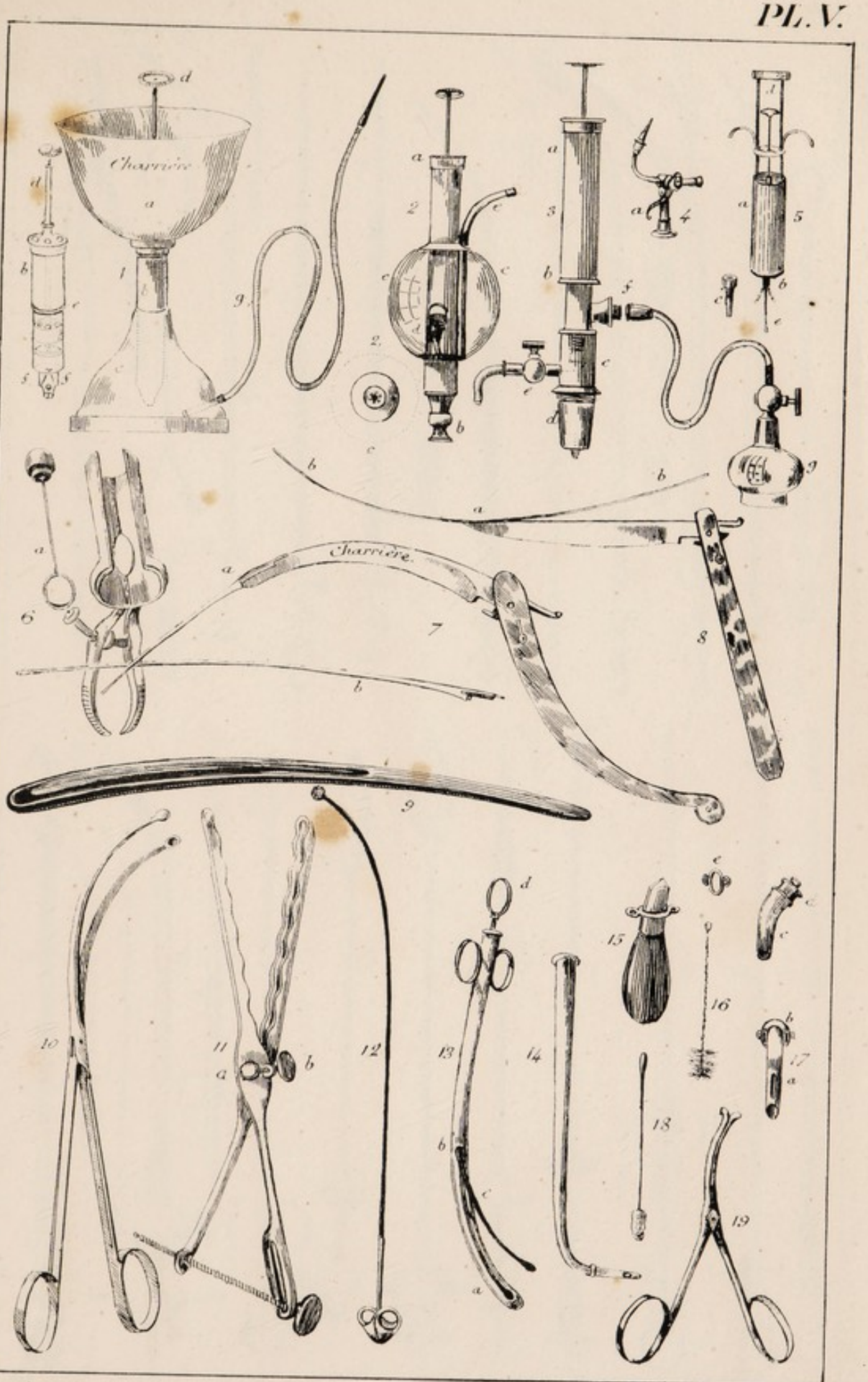

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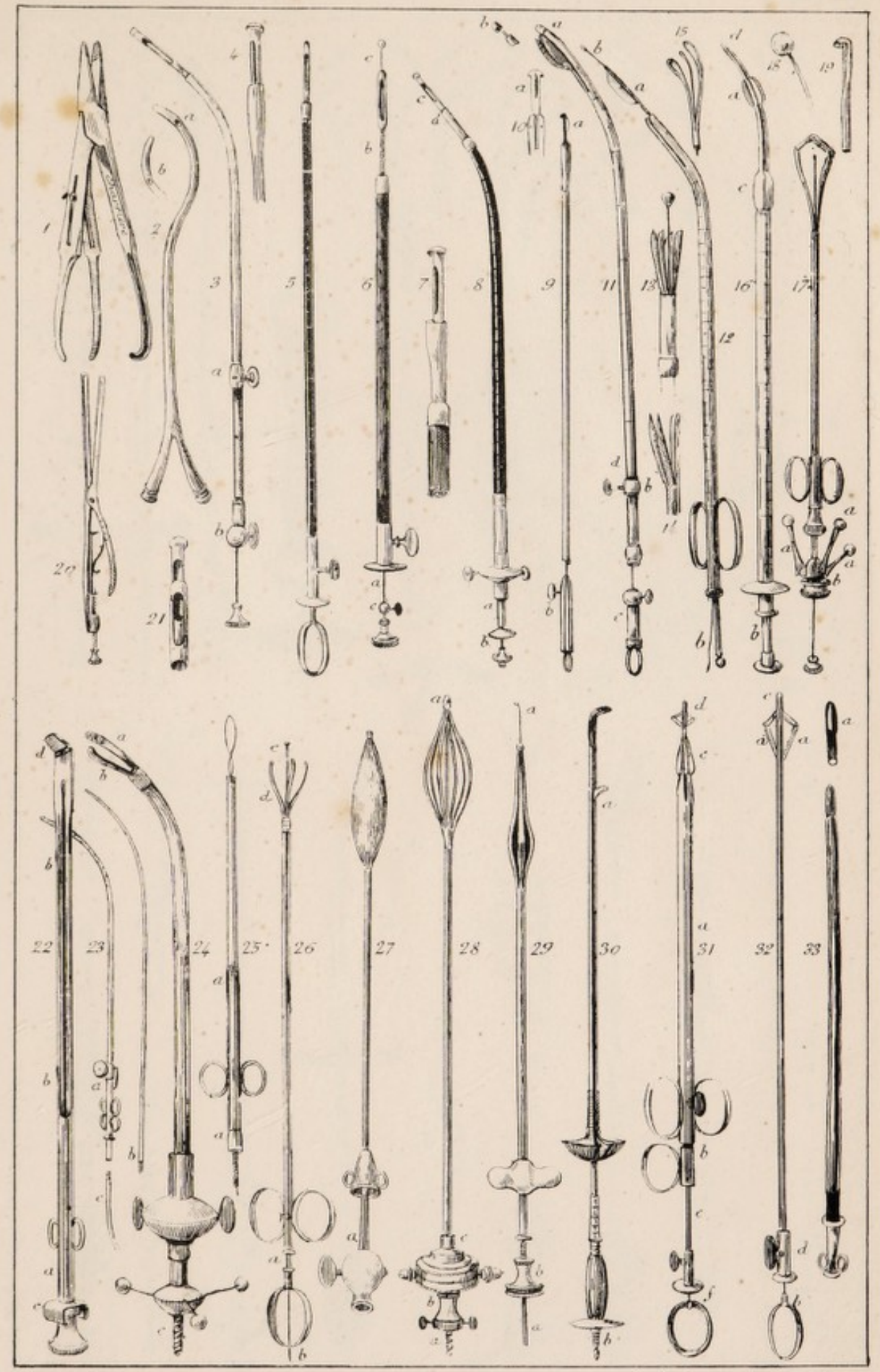

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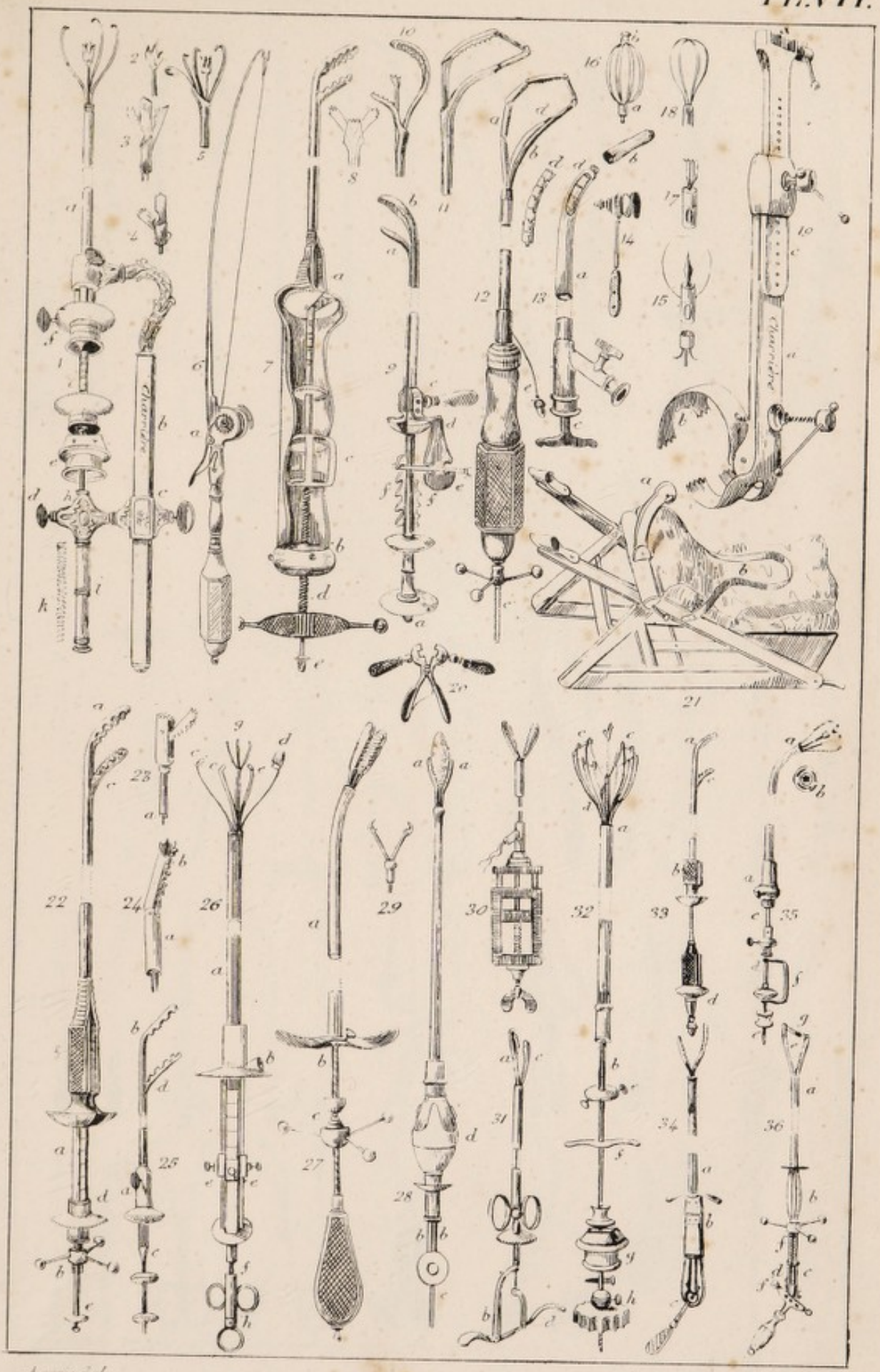

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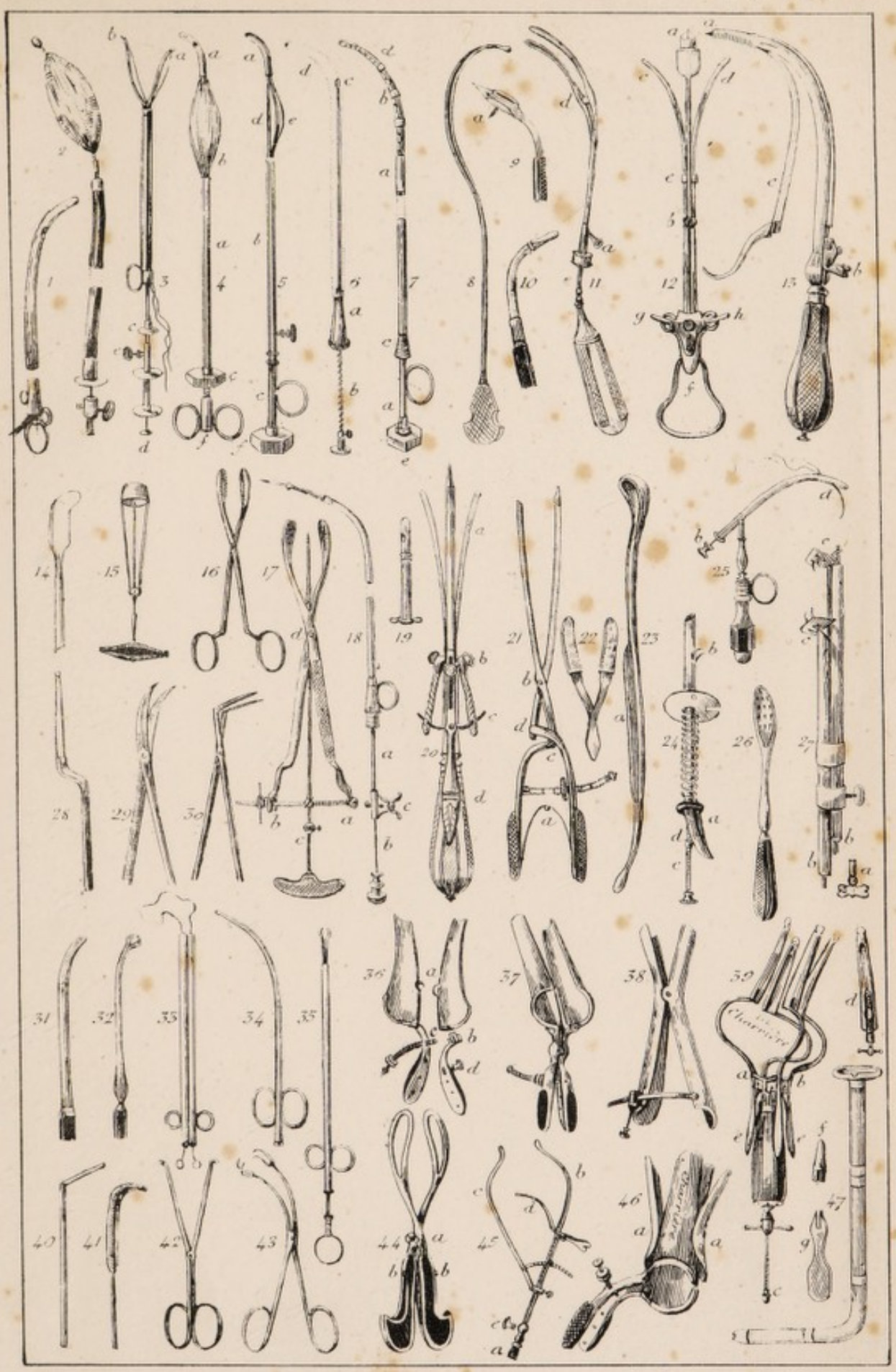

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