

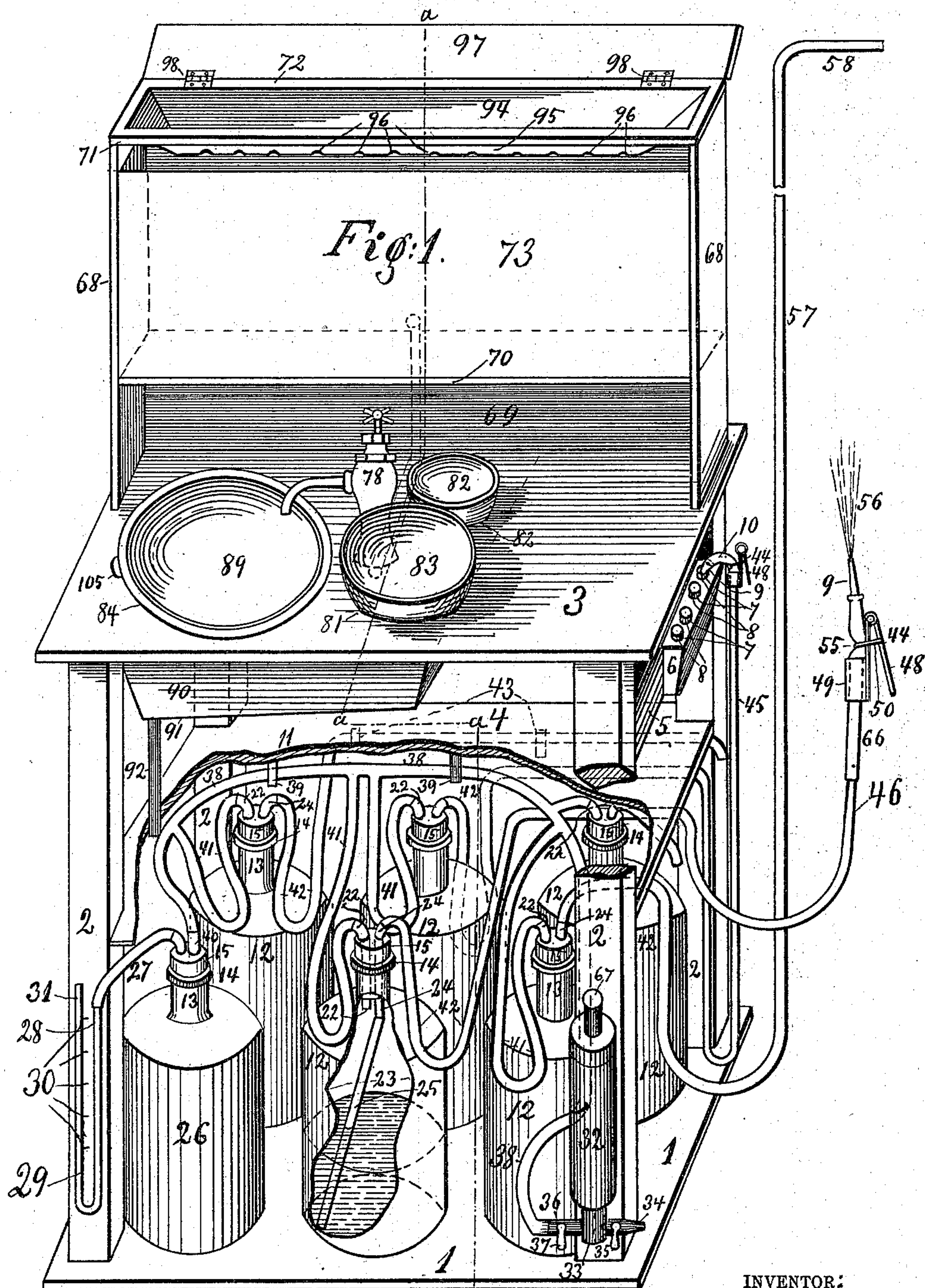
(No Model.)

2 Sheets—Sheet 1.

E. M. LUNDHOLM.
SURGICAL CABINET AND IRRIGATING DEVICE.

No. 528,232.

Patented Oct. 30, 1894.



WITNESSES:

O. Anderson.
C. C. Carlsen.

INVENTOR:

Erik M. Lundholm
BY his ATTORNEY:
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(No Model.)

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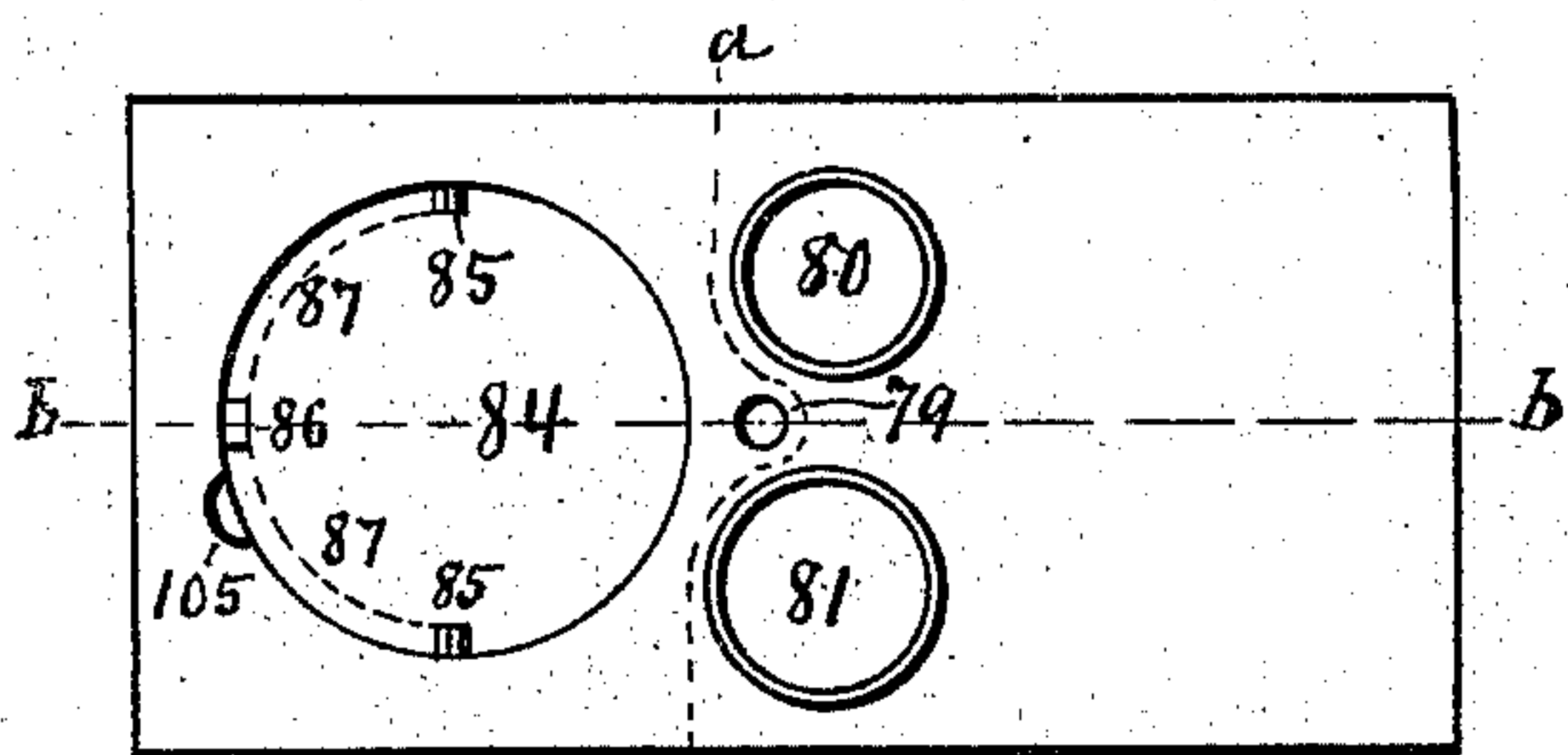


Fig. 3.

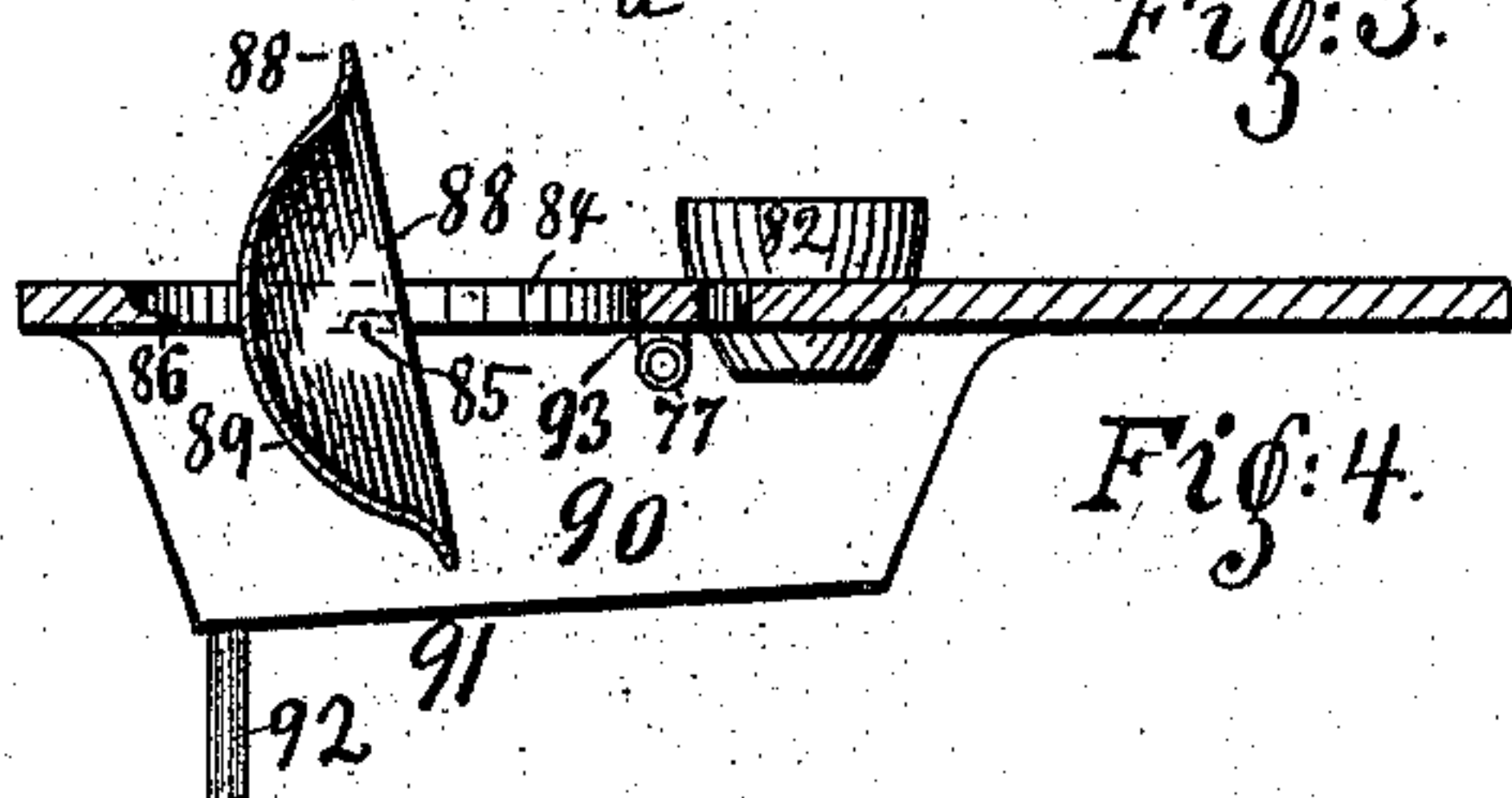


Fig. 4.

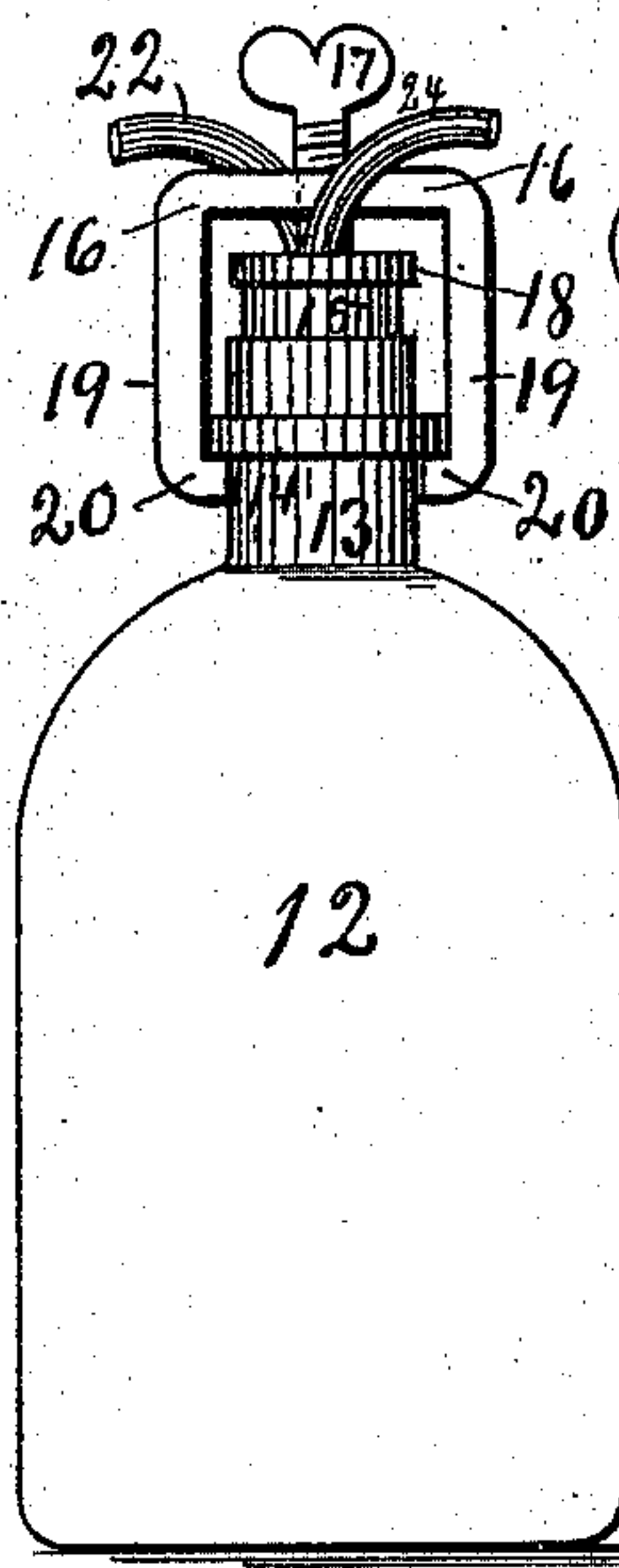


Fig. 5.

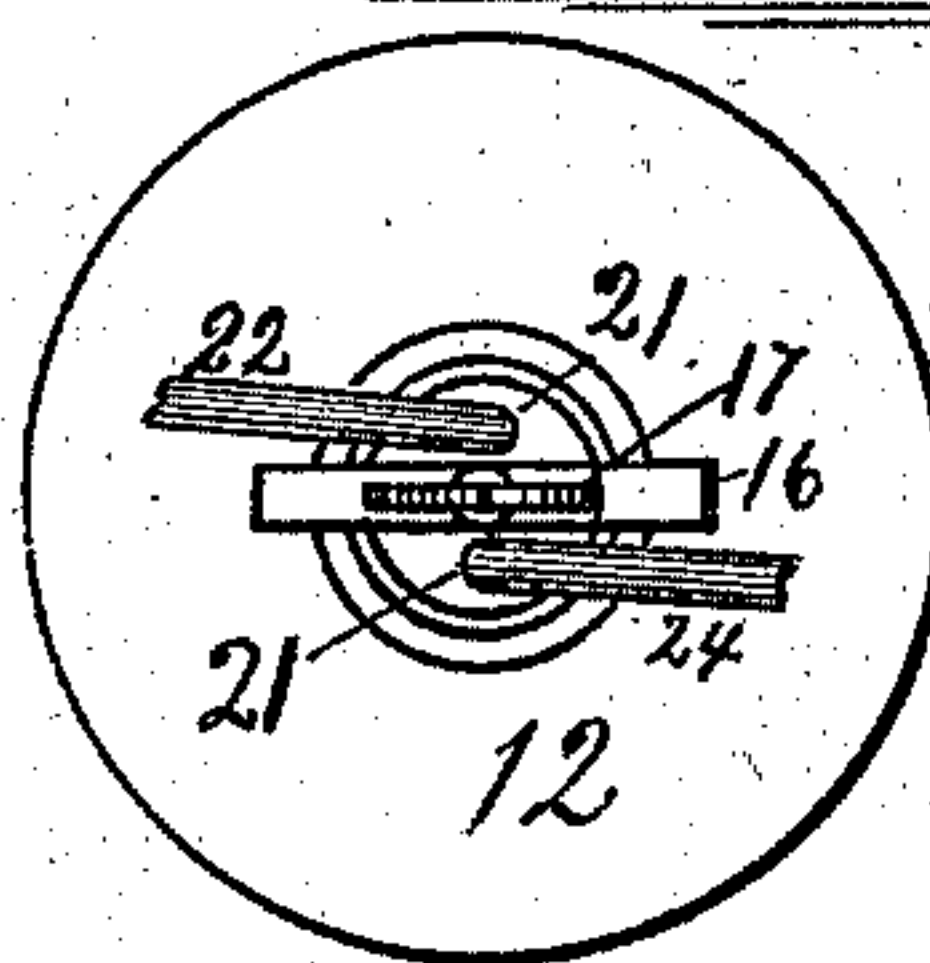


Fig. 6.

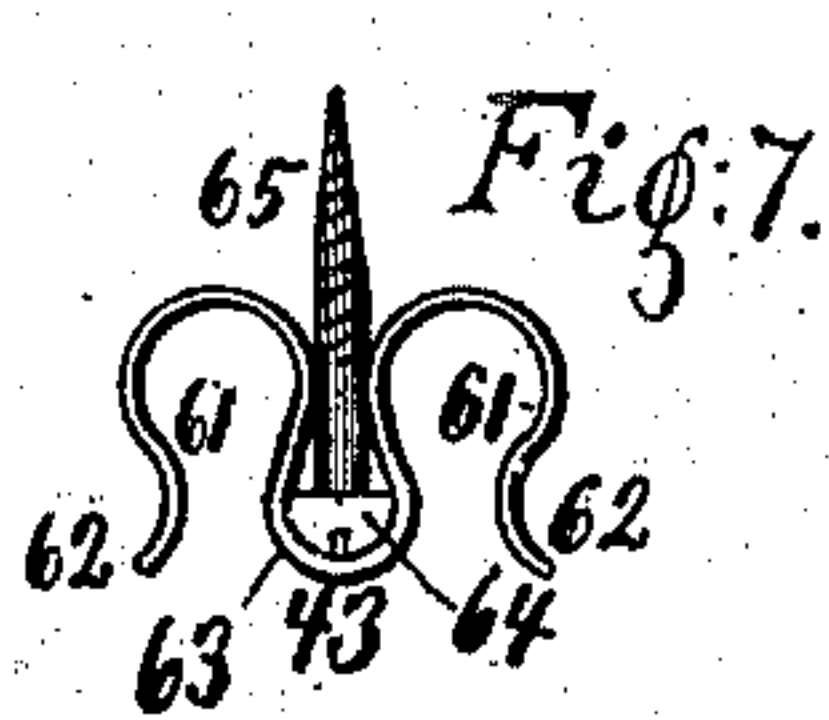


Fig. 7.

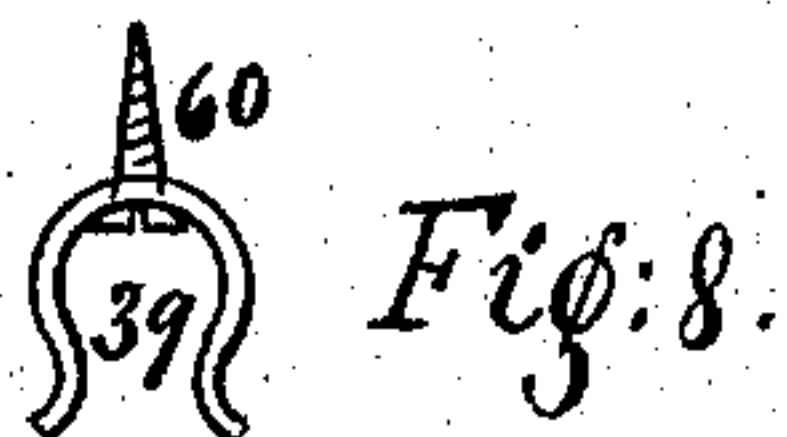


Fig. 8.

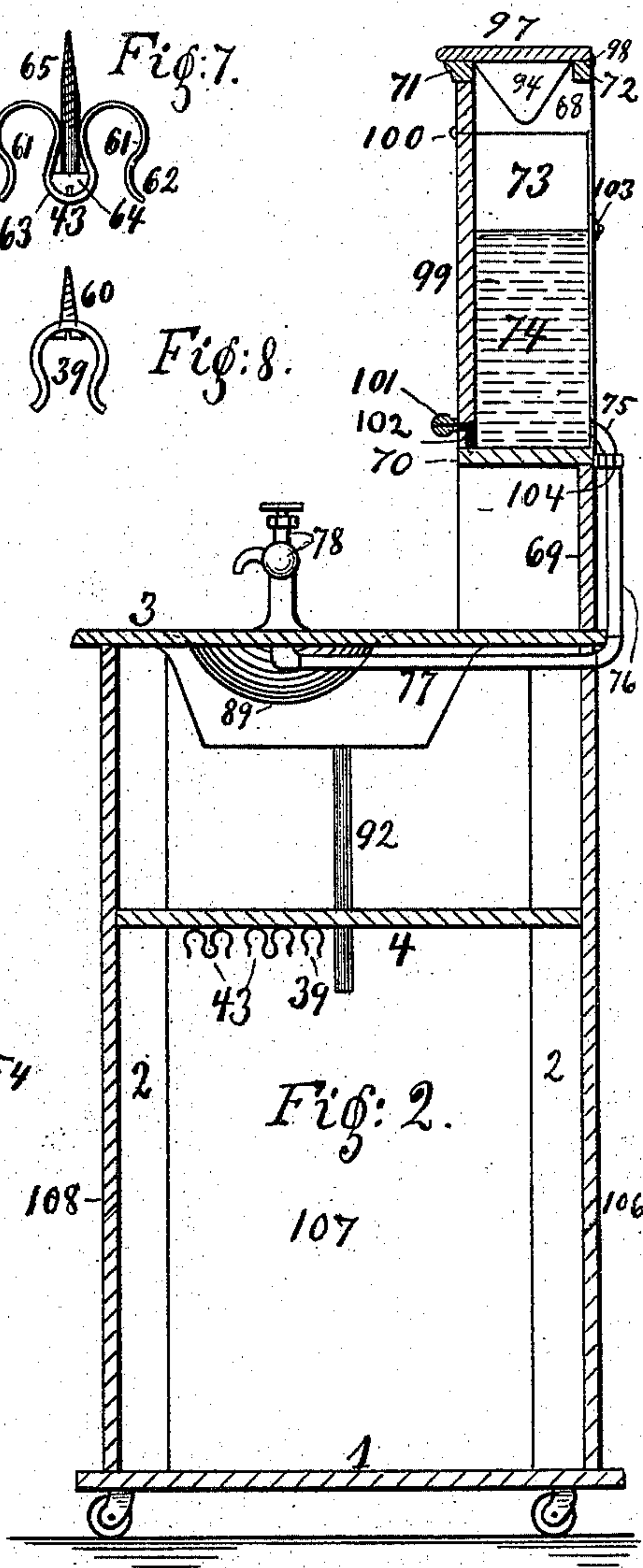


Fig. 2.

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UNITED STATES PATENT OFFICE.

ERIK M. LUNDHOLM, OF ST. PAUL, MINNESOTA.

SURGICAL CABINET AND IRRIGATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 528,232, dated October 30, 1894.

Application filed May 15, 1894. Serial No. 511,348. (No model.)

To all whom it may concern:

Be it known that I, ERIK M. LUNDHOLM, a subject of the King of Sweden and Norway, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Medical and Surgical Cabinets and Irrigating Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to medical and surgical cabinets or stands, and an improved syringe or irrigating apparatus combined therewith.

Heretofore the solutions used for irrigating wounds have either been prepared at the time when wanted, or if prepared in bulk for future use, they have been preserved in large bottles from which a quantity is taken into the syringe or irrigator when irrigations are to be made, or the bulk bottle itself is used as an irrigator, by elevating it and letting the solution flow through a rubber tube from it to a lower point where the irrigation takes place.

The general objects of my invention are to remedy the above described inconvenient and imperfect means and process of irrigation and at the same time combine in my apparatus such other elements as are very desirable and useful for a physician to have in his office or operating room and especially near or combined with an irrigating apparatus.

With the above and many other objects in view my invention consists in a stand or frame-work, having a base or bottom shelf supporting a series of closed vessels holding various kinds of solutions for medical irrigation, an air reservoir, a pressure gage and an air pump with a hose or tube communicating with all the vessels, the air reservoir and the pressure gage, so that a large quantity of air may be compressed with one pumping and be used by either one or more, or all of the

vessels. Each vessel has its special irrigating tube extending from the bottom of the vessel to any desired distance beyond the apparatus or cabinet.

It further consists in the combination with such irrigating apparatus of certain improved means for suspending and closing the irrigation tubes, and antiseptic solution vessels or vials in which the nozzles of the hose rest when not in use.

It still further consists in the combination with such irrigating apparatus of a table for instruments, a shelf for medicine bottles, a wash bowl, a sink, an elevated fresh water tank with water pipe and faucet, medical compounding vessels, and other minor items which will hereinafter be fully described and pointed out in the claims.

In the accompanying drawings, Figure 1, is a perspective view of my apparatus with a large portion of the upper shelf cut away so as to give a better view of the bottles or vessels on the bottom shelf; also the walls and doors which may or may not be used as an inclosure of the lower stand are in this view omitted. Fig. 2, is a vertical cross section as on the line *a, a*, in Figs. 1 and 3, with the doors and inclosing sides or box work added to it and shown in section. All bottles are removed. Fig. 3, is a top plan view of the table of the apparatus. Fig. 4, is a sectional view on the line *b, b*, in Fig. 3, with the sink, the wash bowl and one compounding vessel added to it. Fig. 5, is a side elevation of one of the vessels in which I hold the medicated irrigating fluid under air pressure, showing the means by which I secure the stoppers in the necks of the vessels against the force of the air pressure. Fig. 6, is a top view of Fig. 5. Figs. 7 and 8 are detail views of the spring clasps I use for securing the rubber hose of the apparatus to any desired part of the wood-work. Fig. 9, is an enlarged perspective view of the hose clamps I employ on the discharge hose or tubes of my apparatus for holding the hose normally and automatically closed when not in use.

Referring to the drawings by reference

numerals, 1 is the bottom; 2 are the corner posts or uprights, and 3 is the table which together constitute the main frame of the stand.

4 is a shelf secured between the four standards 2, a suitable distance below the table 3.

5 is a girder or end board secured with both ends in the upper ends of the uprights 2. Such girders may be used all around the stand but in order to avoid obscurity they are not shown.

To the end board 5, I secure a block 6, provided in its upper side with holes or pockets 7, in which I place the vials 8, adapted to contain antiseptic solutions by which to keep clean and disinfected the nozzles 9, of the hose of the apparatus, by keeping them inserted in said vials whenever they are not in use, in the manner shown at 10, in Fig. 1.

As shown through the cutaway 11, in the shelf 4, I place upon the base or bottom 1, a series of vessels 12, which may be of any suitable materials and shape and in numbers to suit circumstances. In the present instance I use five and prefer glass vessels in the shape of a bottle having a neck as 13, with an annular collar as 14. One of said bottles 12, contains water only. The other bottles contain various solutions or medicated water adapted to be used for injecting, irrigating and washing of wounds and the like purposes.

15, are rubber stoppers held firmly in place in the necks of the bottles by screw clamps 16, (shown in Fig. 5) of which 16, is the body piece provided in its center with a thumb-screw 17, the point of which presses upon the metallic cap 18, with which the top end of the stopper 15 is provided. The ends 19, of the clamp body 16, are bent downward and provided with angular hooks 20, which take hold under the collar 14, and thus coact with the thumb-screw 17, in keeping the stopper in the neck of the bottle. Each one of the stoppers 15, is provided with two holes 21, (best shown in Fig. 6,) registering with similar holes in the caps 18 (when such caps are used, but where the bottles are small the metallic caps may be dispensed with).

In one of the holes 21, I secure the air-supplying tube 22, (best shown through the cutaway 23, in one of the bottles 12, in Fig. 1,) which reaches but slightly below the stopper. In the other hole in the stopper I secure the fluid-ejecting tube 24, which has the extension 25, reaching substantially to the bottom of the bottle.

26 is the air reservoir, which in the present instance is made about the same as the vessels 12, only that none of its tubes passing through the stopper reach any farther than just through the stopper. One of said tubes, namely, the tube or hose 27, is secured to the end 28, of a U-shaped glass tube 29, secured upon one of the posts 2, and is partly filled with mercury so as to form a pressure gage.

30, are marks provided upon the post 2, for indicating the air pressure in the reservoir by the raising of the mercury in the arm 31, of the gage.

32, is a hand-power air-pump secured to the frame of the apparatus. From the bottom portion 33, of said pump projects the spout 34, having the pet cock 35, by which the whole apparatus may be released from air pressure when so desired. From the bottom portion 33, also projects the tubular arm 36, having the stop-cock 37. To this arm 36, I secure the end of a rubber hose 38, which extends upward, is secured in the spring clasps 39, up under the shelf 4, and has its opposite end secured to the tube 40, which forms both the inlet and outlet for the air in the reservoir 26. The hose 38, is provided with branches 41, corresponding in number to the number of the bottles or vessels 12, to which they are connected by taking up into their ends the outer ends of the tubes 22, so that when the pump is operated the air pressure will reach all of the vessels 12, and also the reservoir 26, and the pressure gage 29.

From the outer ends of the tubes 24, in the stoppers 15, extend the rubber hose 42, which after being suitably suspended in spring clasps as 43, or 39, up under the shelf 4, extend out of one end of the stand where they may be of any desired length and provided with a nozzle as 9, and back of that with a shut-off clamp as 44, which normally keeps the hose squeezed flat and thus shut off. This hose clamp will be best understood from Fig. 9, and from the clamp shown on the hose 46, in Fig. 1, where it will be seen that the clamp consists of two metallic plates 47, and 48, of which one has a tubular portion 49, through which the hose passes as a guide and a safeguard for preventing the fingers from pressing on the hose in operating the clamp.

The plate 48, has secured to it a wire bail 50, which bears against the outer side of the plate 47, in front of the tube or guide 49. The ends of the bail 50, after being secured in the over-bent edge 51, of the plate 48, extend forward beyond the plate and are formed into springs as 52, of which the ends 53, are secured in the over-bent side edges 54, of the plate 47, which is thereby stiffened. The other plate 48, is correspondingly stiffened by the inlaid extra plate 59. The tendency of the springs 52, is at all times to throw the two plates 47, and 48, apart. Hence the hose is normally kept flat pressed between the plate 47, and the center bar 55, of the bail 50.

When the hose is to be used, the operator squeezes the two plates 47, and 48, toward each other against the resistance of the springs 52, so that the hose is more or less released from the pressure of the bail bar 55, as shown on hose 46, in Fig. 1, where the clamp is about half opened and the fluid 56, is streaming out.

All the hose or hose branches in the stand should preferably be of sufficient length hanging down in coils as shown, to allow the vessels 12, to be removed from the stand in order to clean or fill them and adjust their stoppers before placing them back in the stand. The usual length of the irrigating hose after

they reach outside the stand is such as to hang about down to the floor when their nozzles are placed in the antiseptic vials 8, as illustrated by the hose 45, in Fig. 1, which is a sufficient length for ordinary purposes. Where it is desired to use the same stand for several operating chairs the apparatus is provided with some long hose, which like the hose 57—58, in Fig. 1, is carried upward suspended along the wall or ceiling of the room with its nozzle reaching to any place desired.

In Figs. 2, 7 and 8, is illustrated the shape of hose clasps or hangers I employ for suspending or securing the rubber tube or hose to any desired points of the stand. 39 is a single horseshoe-shaped flat spring clasp with its ends flaring slightly outward so as to facilitate the insertion of the hose sidewise into it. It is provided in the middle with a hole and a wood-screw 60, by which the clasp is secured to the wood-work. 43 is a double clasp having two hose-holdingspring arms 61, with flared ends 62. In the center portion or loop 63, I insert and secure by soldering the head 64, of a wood-screw 65, which may readily and without the use of tools be screwed into any place of the wood-work and form supports for two hose.

As it is not necessary that the considerable amount of hose used in this apparatus should be of first class expensive rubber, while it is very desirable and proper to employ the best grade of rubber where the hose or tubes pass through the shut-off clamps near the nozzles, I splice onto each irrigating hose a piece of extra strong, flexible and durable rubber hose, which in Fig. 1, is shown as 66, passing through the shut-off clamp 44—49, and having one end spliced onto the common quality hose 46, while its other end holds the glass nozzle 9. 67 is the handle of the air pump, which may be of any suitable construction.

Upon the rear corners of the table 3, I secure two uprights 68, which are secured together by the rear girder-board 69, the shelf 70, and the top bars 71, and 72.

73 is an elongated fresh water tank placed upon the shelf 70. In Fig. 2, 74, designates the water in the said tank. From the rear and lower edge of said tank extends the water pipe 75, downward as 76, and forward as 79, to the middle of the table 3, where it projects upward and is provided with the faucet 78, which is secured upon the table. The table 3, is provided with several apertures or holes as best shown in Fig. 3, of which the hole 79, is for the connection of the water pipe below and the faucet above the table. The holes 80 and 81, which may be of any desired number, partly receive and thus keep steady the compounding bowls 82 and 83. The large hole 84, is provided in its inner edges with three supporting pegs 85 and 86, which may if so preferred in the manufacture, be made in one solid rib as indicated by the dotted lines 87 (in Fig. 3). Upon these pegs I support the outwardly flaring brim 88 of the wash-bowl 89,

in such a manner that the bowl may be tilted over the pegs 85, for emptying it into the sink 90, which is secured beneath the table and is provided with a slanting bottom 91, and a waste water pipe 92, below which may be placed a pail or other waste water receptacle, or such receptacle may be placed outside the stand and the waste water conveyed into it by means of a hose extending from the pipe 92. It will be observed also that the compounding bowls 82 and 83, are located over the sink 90 so that in emptying and cleaning them the waste water may be thrown down through the hole in the table which the bowl otherwise occupies. 93 is a notch in the rear side of the sink to allow the pipe 77 to pass forward under the table.

Between the top bars 71 and 72 I secure an elongated or trough-shaped funnel 94, having a V-shaped bottom 95, provided with a series of holes 96. 97 is a lid or cover hinged at 98 to the rear bar 72 and serves to keep dust and dirt away from the funnel as well as from the water tank below it.

In Fig. 2 is shown in section a door or lid 99, hinged at 100, and having a knob as 101, with a locking latch 102. 103 are thumb latches pivotally secured to the rear edges of the standards 68, for keeping the tank 73, from moving rearwardly upon the shelf 70. 104 is a pipe union, by means of which and of the thumb buttons 103, the water tank may readily be removed from the stand when so desired for cleaning or other purposes. 105 is a notch in the table close by the wash bowl for admitting the finger-points of the operator to get hold of the edge of the bowl in tilting it. In Fig. 2, 106 represents the rear wall, 107 one of the end walls, and 108 the front wall or doors of the panel-work by which the stand may be inclosed and finished, and when such inclosure is used the posts 2 may be very light or even dispensed with.

In operation the lid 97, is opened as in Fig. 1, and the water tank 73, supplied with fresh water through the funnel 94, into which the water may be poured very fast from a pail, as the great number of the holes 96 will rapidly convey it into the tank below, when the tank is sufficiently filled, which can be found out by opening the door 99 and knocking on the front side of the tank or by looking into it. The lid 97 is closed and the faucet 78, when opened will draw fresh water from the tank into the wash bowl 89 or any other vessel placed under the stream. When the wash bowl is emptied by tilting it on the pegs 85, it will by its own weight resume its normal position, as in Fig. 1. The waste pipe 92, of the sink 90, will, as already stated, carry the waste water away from the sink and into any place with which it may be connected by a hose or pipe. The desired solutions are prepared and put in their respective bottles or vessels 12, and the stoppers and hose adjusted as described. The vials 8 are supplied with an antiseptic solution and placed in the holding rack 6. The

air pump 32, is then operated by its handle 67, until the pressure gage 29, indicates the desired air pressure and the apparatus is ready for use. The stop cock 37, may be shut off so as to prevent air from leaking back through the pump. The shut-off clamps 44, are marked with initials or words indicating the solution to which they are the keys, as for instance in Fig. 9, where the letters C. A. S. upon the plate 59, indicate that carbolic acid solution is contained in the hose and vessel connected with said shut-off clamp, and so on with all the clamps. The operation of the said clamp has already been described.

From the above description it will be seen that I provide a very handy, efficient and serviceable surgical cabinet of an inexpensive construction and containing in a comparatively small space a great number of the principal conveniences which it is desirable to have contained in such an apparatus. Especially is it desirable to have a variety of solutions held in readiness prepared and under air pressure produced by a single one-hand pump and all of the air spaces in said vessels connected together and with an air reservoir and pressure gage. Also the vials with antiseptic solutions and the improved and marked shut-off clamps lend to the efficiency of the apparatus as any of the solutions may be applied without mistake or delay by simply grasping the clamp with the right mark on it.

The water tank, wash bowl, sink and faucet, 78, are all very handy for physicians in the country or in towns where there are no water works from which water pipes can be taken into a doctor's office, but where the apparatus is not intended for use in such country towns, the sink, faucet, wash bowl, water tank and upper stand holding the water tank, and even the holes in the table 3, may all be dispensed with.

I am aware that the frame-work of the cabinet or stand may be made of various materials and of various styles, more or less open or inclosed, &c., so I do not wish to confine myself in regard thereto.

I am also aware that prior to my invention fluids have been expelled from vessels by means of air pressure, produced by a rubber bulb or other pump, either for some trivial medical purposes or in machinery or appliances so foreign to the medical profession that the latter could receive no proper benefit from it, until inventive skill improved and applied it in the medical field, which it has been my aim to do in the present invention.

I therefore do not claim broadly the use of air pressure on fluids or liquids, nor the devices in general based on that principle, but

What I claim, and desire to secure by Letters Patent, is—

1. In a surgical and medical cabinet the combination of a stand having a base plate or shelf as 1, a table as 3, secured together by suitable frame work, of a series of closed vessels or bottles placed upon the bottom shelf

and being adapted to contain various medical solutions, a tube extending from the bottom of each vessel through a hole in the stopper and being connected with a rubber tube extending beyond the frame work and being provided with a nozzle and a self-closing clamp for shutting off the flow of the fluid through the hose when the latter is not in use; an air pump for compressing air in the vessels, a pressure gage adapted to indicate the air pressure and a hose or tube communicating with the said pump and pressure gage, and having branches communicating with the air spaces in the several vessels, substantially as and for the purpose set forth.

2. In a medical and surgical cabinet, the combination of a stand having a base plate or shelf as 1, a table as 3, secured together by suitable frame work, of a series of vessels or bottles placed upon the bottom shelf and adapted to contain various medical solutions, a tube extending from the bottom of each vessel through a hole in the stopper and being connected with a rubber tube extending beyond the frame work and being provided with nozzles and a self-closing clamp for shutting off the fluid from flowing through the hose when the latter is not in use; the hand-power air-pump 32, having the handle 67, the pressure gage 29, the air reservoir 26, and the hose or rubber tube 38, communicating with the said air pump and air reservoir and having branches communicating with the air spaces in the several vessels, the said pressure gage being connected by a special tube as 27, to the reservoir so as to prevent the jerks of the pump from having a disturbing effect on the pressure gage, substantially as shown and described.

3. In a medical and surgical cabinet and irrigating apparatus, the combination with a stand containing a series of vessels or bottles adapted to hold under air pressure different kinds of medical solutions, each bottle having a tube extending from the bottom of its interior and up through the stoppers, the rubber tubes or hose extending from said tubes in the stoppers and a sufficient distance beyond the stand to have its stream applied to patients in a surgical chair or on an operating table, said hose having glass nozzles and suitable stop cocks or shut-off clamps and said stand having a rack or block as 6, provided with holes or pockets as 7, the vials 8, snugly inserted in said holes, adapted to receive the glass nozzles, and to contain antiseptic solution, substantially as and for the purpose set forth.

4. In a medical and surgical cabinet and irrigating apparatus and in a hose having a nozzle and a shut-off clamp adapted to close the hose by squeezing it flat, the combination of a cheap common grade of hose with a very flexible strong hose portion passing through the shut-off clamp, substantially as and for the purpose set forth.

5. In a medical and surgical cabinet and

irrigating apparatus, the combination with
the lower stand having the legs or posts 2, the
table 3, the storing and hose-supporting shelf
4, the base or floor 1, and the irrigating ap-
5 paratus arranged in and secured to said stand
as shown, of the upper stand, consisting of
the standards 68, the shelf 70 secured to said
standards a considerable distance above the
table 3, the elongated fresh water tank 73, sit-
10 uated on said shelf, the elongated funnel or
trough 94, having the V-shaped bottom with
the holes 96, the hinged lid 97, for covering
the funnel, the door 99, in front of the tank,
the water pipes 75, 76, 77, having the union
15 104 and the faucet 78, said table 3, having the
holes 80, 81 and 84 and the notch 105, the
bowls 82 and 83, the wash-bowl 89, the sink
90, having the sloping bottom 91, and the
waste water pipe 92, adapted to convey the

water from the sink, directly or indirectly 20
through a hose into a suitable waste water
receptacle; said hole 84, in the table 3, being
provided with three pegs or supporting points,
as 85 and 86, upon which the under side of
the brim of the wash bowl rests and may be 25
easily tilted over the two pegs so as to empty
its contents down into the sink, said water
tank 73, being held by the pipe union 104 and
the thumb latches 103, may readily be re-
moved from the stand for cleaning or repair, 30
substantially as shown and described, and
for the purpose set forth.

In testimony whereof I affix my signature in
presence of two witnesses.

ERIK M. LUNDHOLM.

Witnesses:

A. M. CARLSEN,
J. P. ALLEN.