

C. A. HOLLETT.
 APPARATUS FOR ADMINISTERING ANESTHETICS.
 APPLICATION FILED JUNE 1, 1909.

955,121.

Patented Apr. 12, 1910.

Fig. 1.

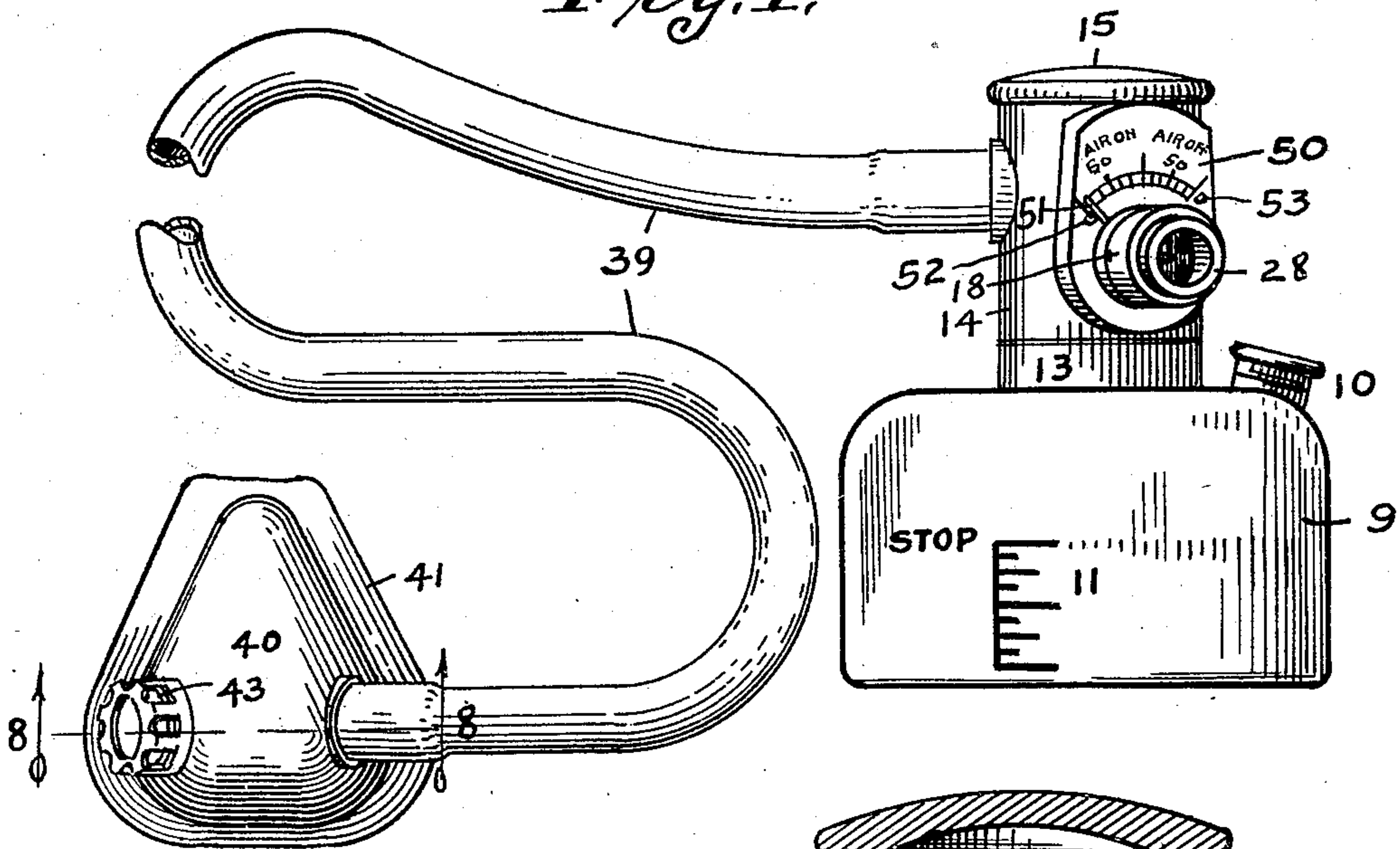


Fig. 2.

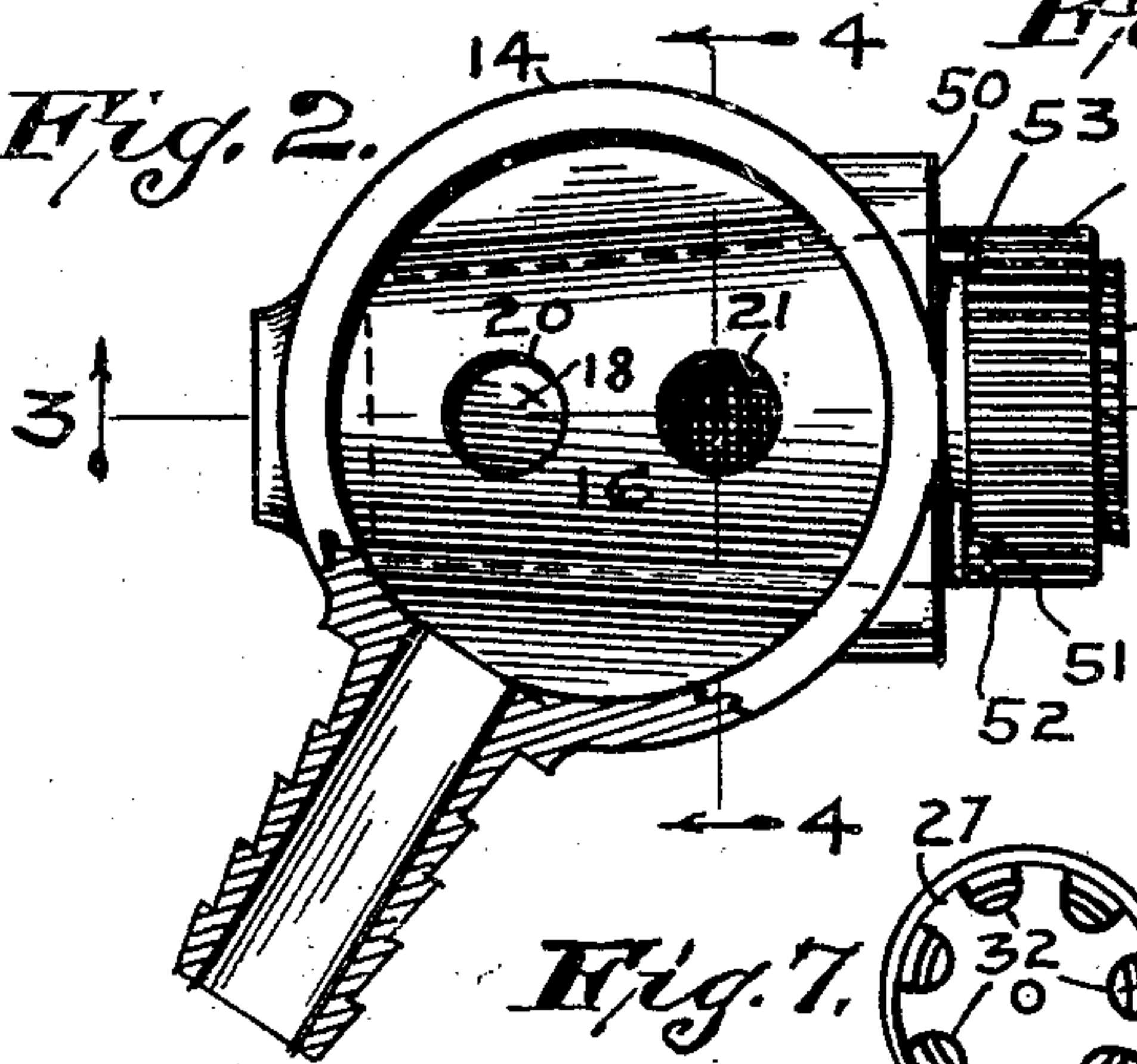


Fig. 3.

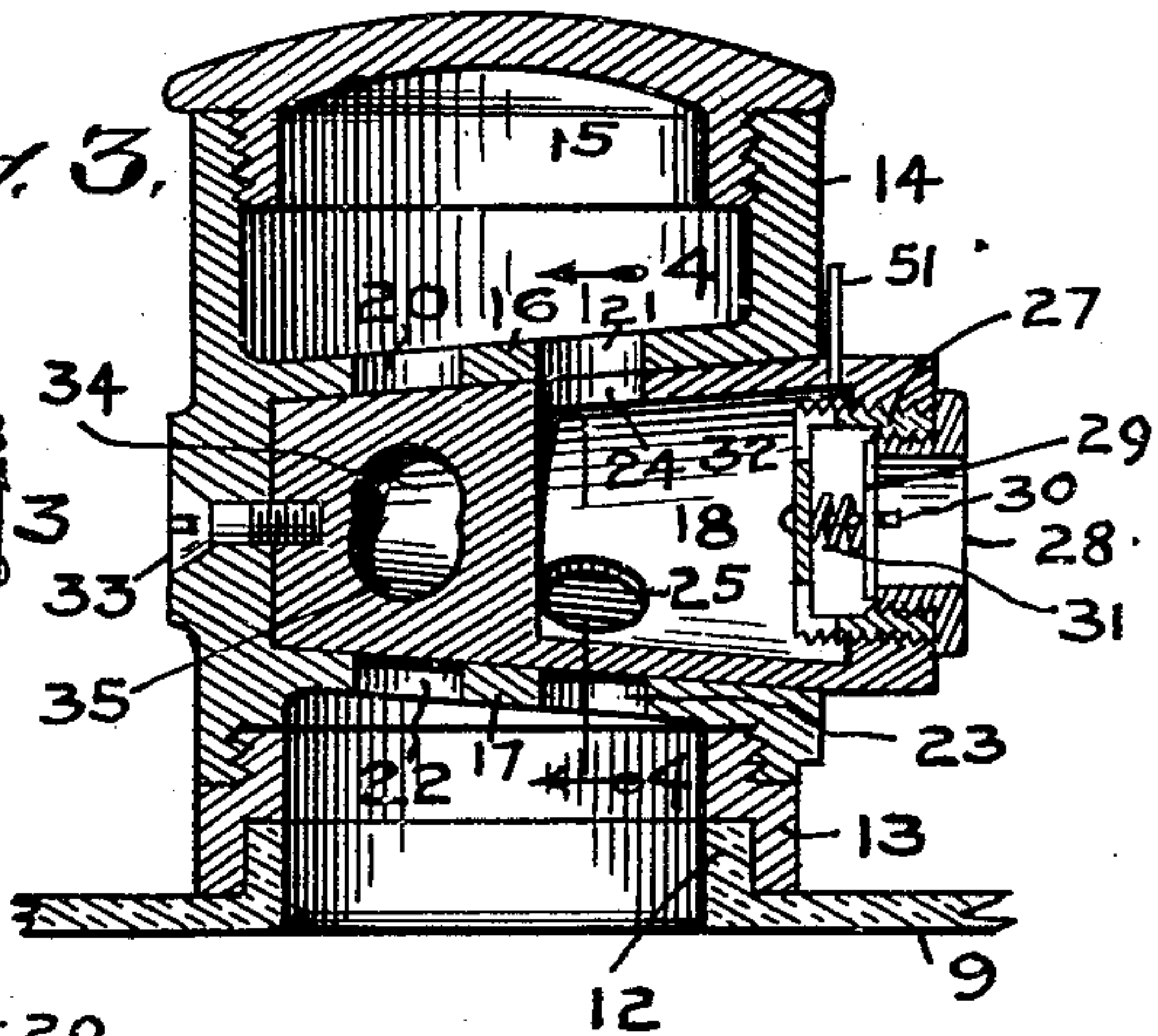


Fig. 7.

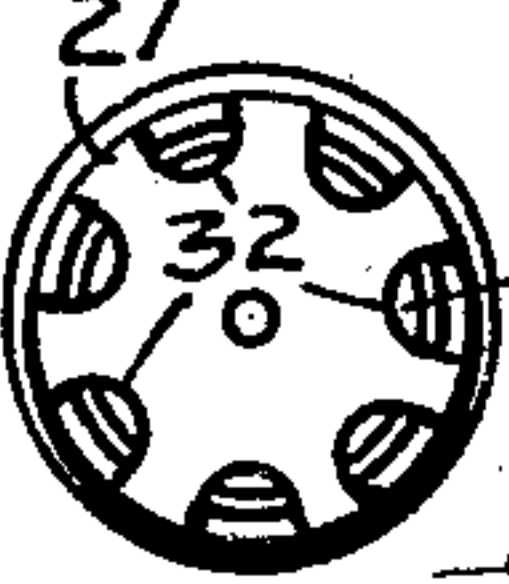


Fig. 4.

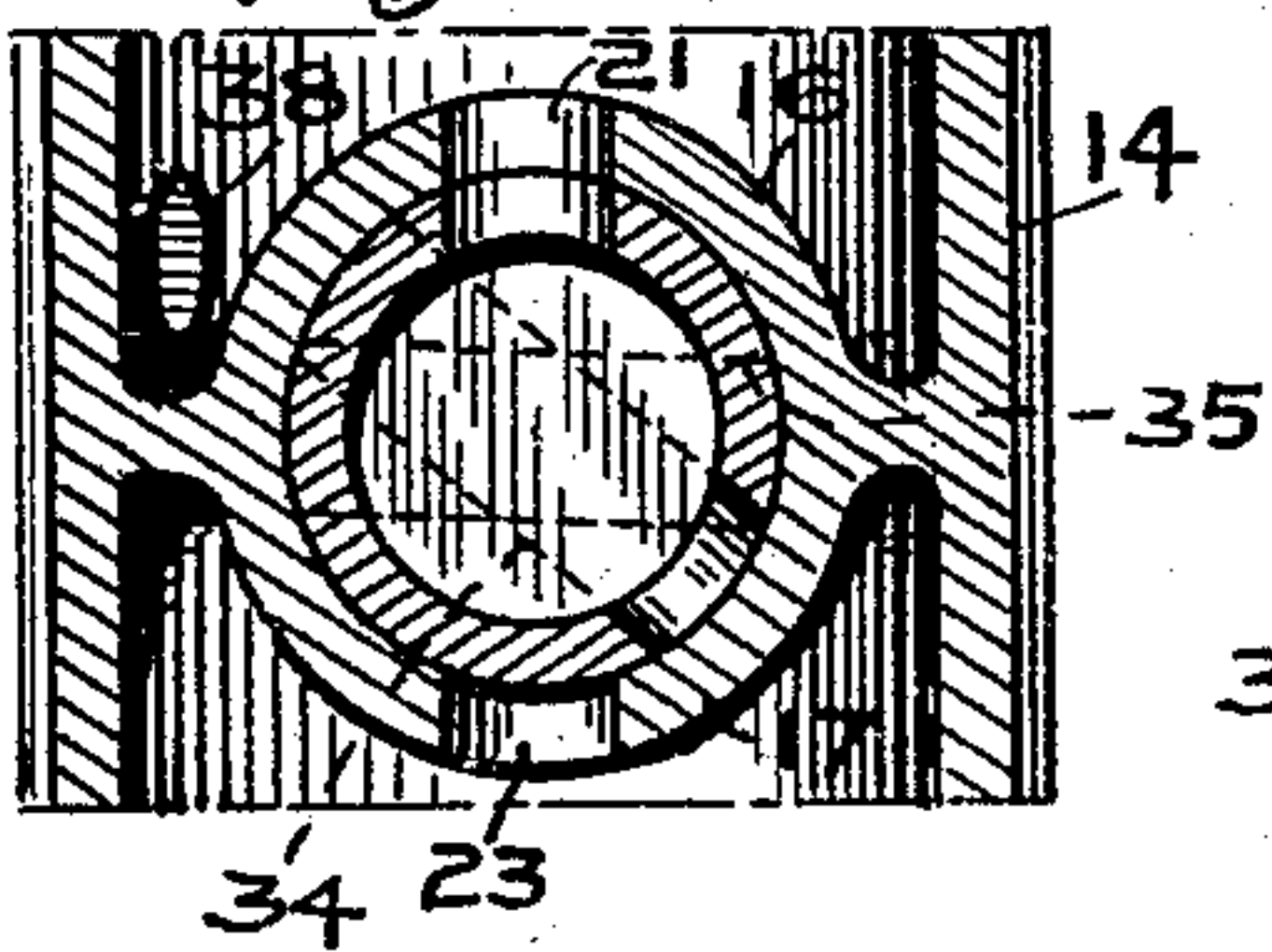


Fig. 5.

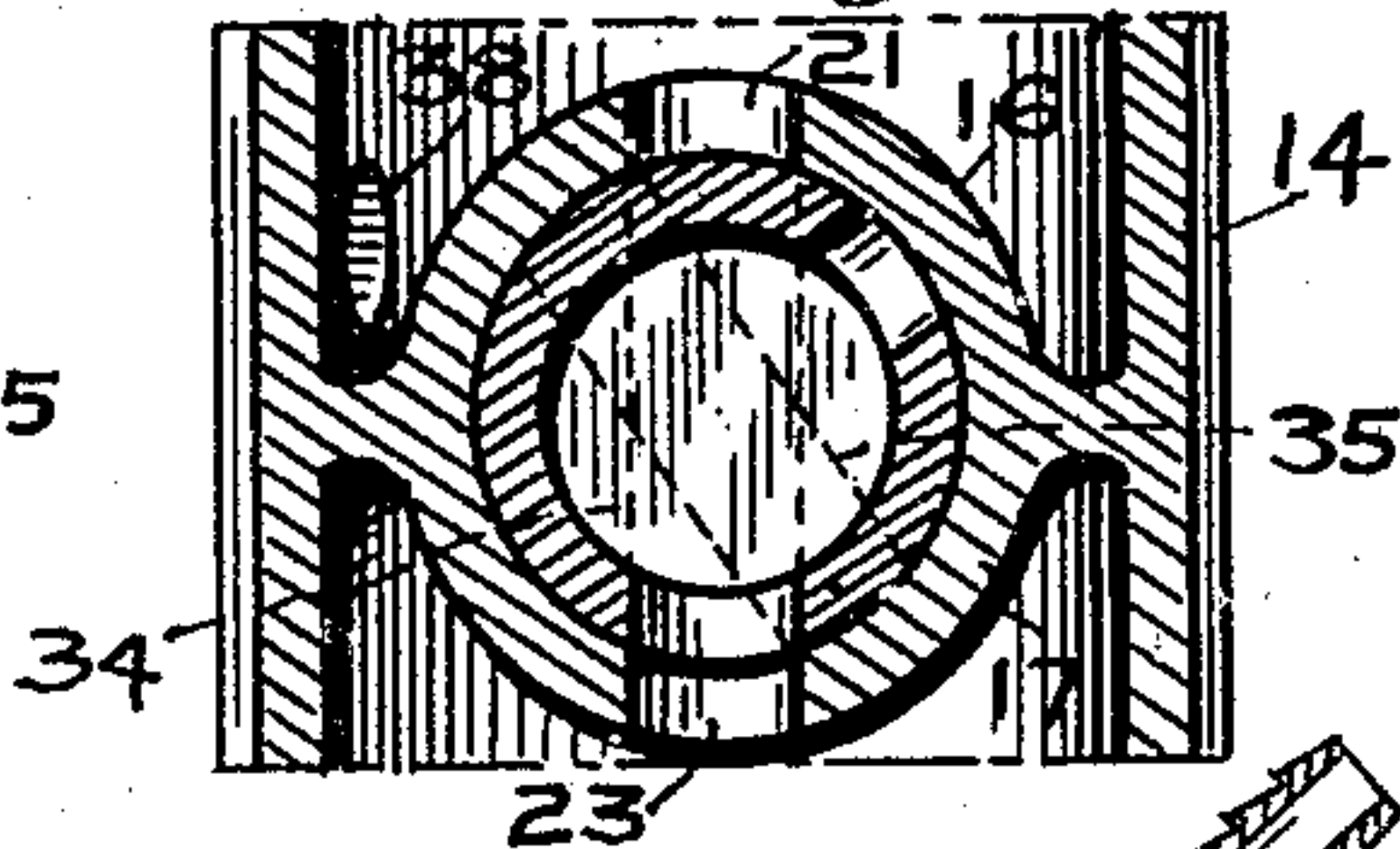
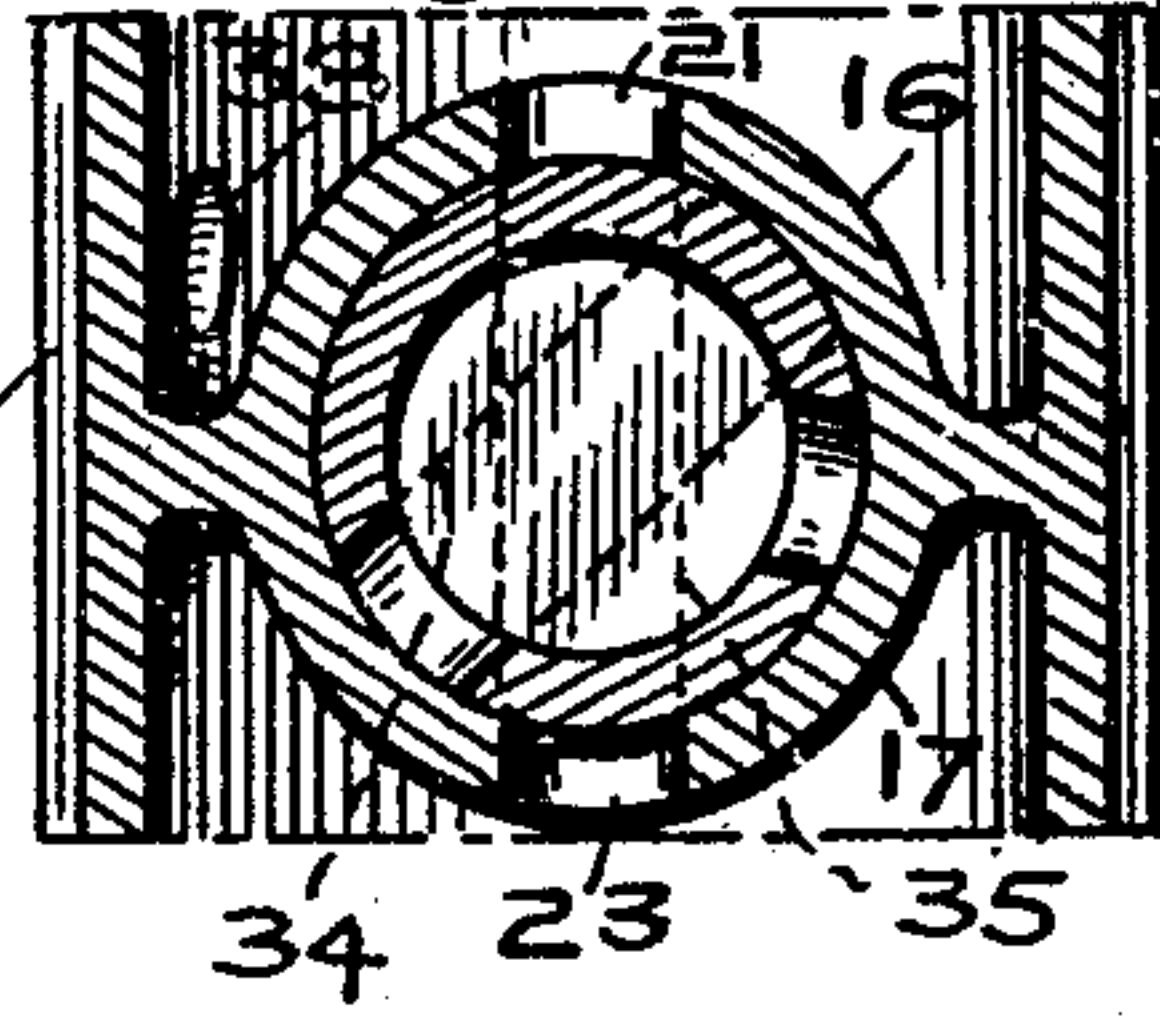
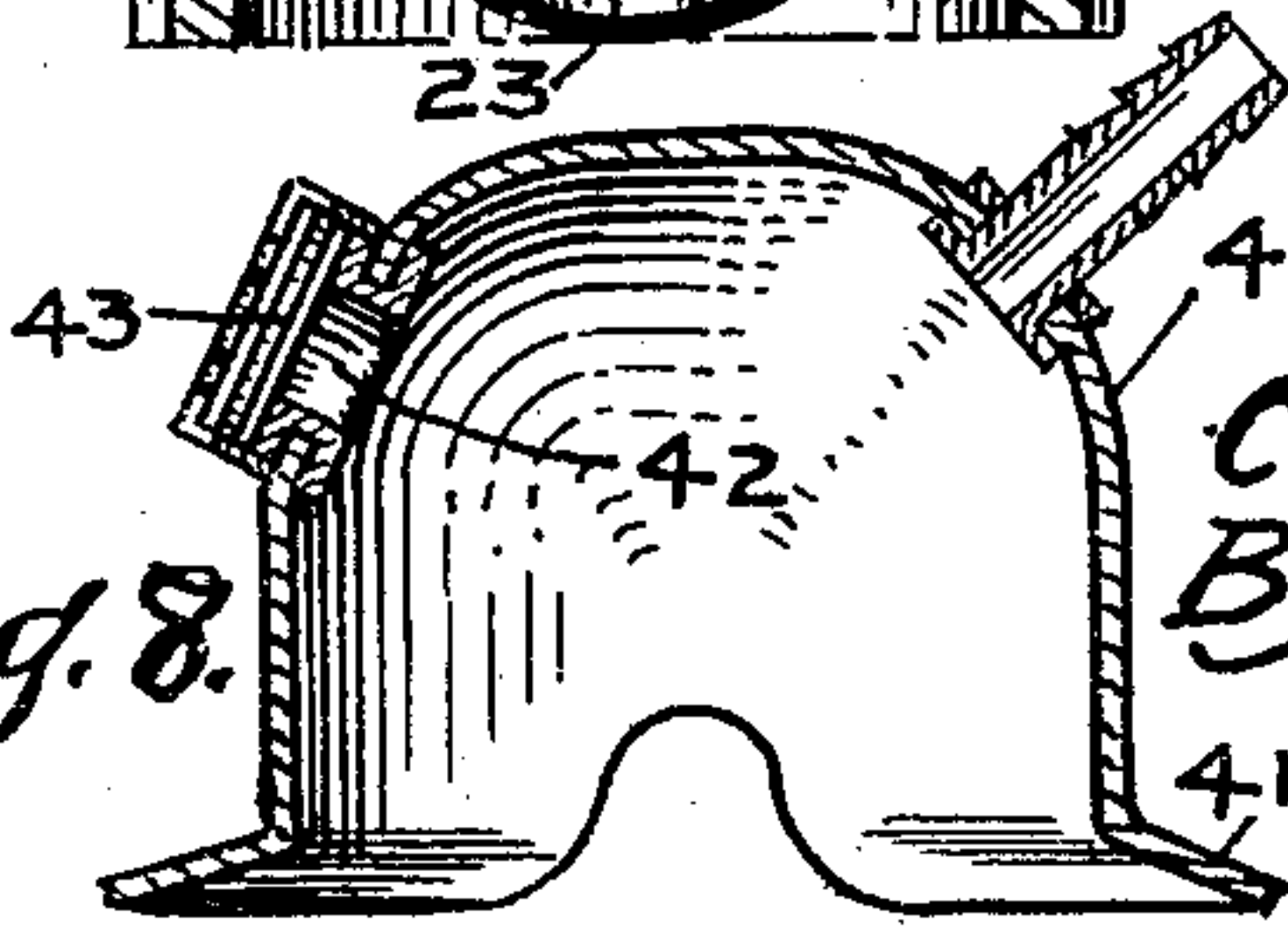


Fig. 6.



WITNESSES:
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Fig. 8.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR ADMINISTERING ANESTHETICS.

955,121.

Specification of Letters Patent.

Patented Apr. 12, 1910.

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To all whom it may concern:

Be it known that I, CHARLES A. HOLLETT, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Apparatus for Administering Anesthetics, of which the following is a specification.

This invention relates to improvements in apparatus for administering anesthetics, medicines and the like, to patients in vapor form through the lungs, it being well recognized that administrations in this way will reach the vital parts more rapidly than by any other means of administration, and the object of the invention is to provide means for measuring the quantity of ether or liquid medicine and air, and for varying the relative proportions of same at the will of the medical operator.

A further object of the invention is to provide a simple and inexpensive apparatus, and means for setting it at a given admixture which will prevent accidents and secure a uniform discharge of such admixture for any desired continuous period.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a perspective view of my complete apparatus, a portion of the tube which connects the nose mask with the vaporizer being broken away. Fig. 2 is a top plan view of the cylinder and valve mechanism with the cover removed and a portion of the discharge nozzle in horizontal section. Fig. 3 is a vertical section through the cylinder and valve on the line 3—3 of Fig. 2. Fig. 4 is a detail in vertical section on the line 4—4 of Figs. 2 and 3 showing the valve set in position to supply all air to the mask. Fig. 5 is a like section with the valve set to supply half air and ether to the mask. Fig. 6 is a like sectional view with the valve set to shut off the air supply and furnish all ether to the mask. Fig. 7 is a view in rear elevation of the valve-casing through which air is admitted to the main valve of the apparatus, and Fig. 8 is a section of the mask on the line 8—8 of Fig. 1.

Like characters of reference indicate like parts throughout the several views of the drawing.

9 is a bowl, preferably of glass, in which the supply of ether or medicated liquid will

be deposited, and to facilitate the filling of the bowl, I prefer to provide a port 10 which is screw-threaded to receive a correspondingly threaded cap which will be screwed thereon to make an air-tight fit. As I require a sufficient space within the bowl for the volatilization and admixture of air I prefer to fill the bowl only half full of liquid and to enable the operator to know when to stop filling I provide a scale 11, with the word "Stop" opposite the top mark or graduation of the scale to indicate that the bowl is not to be filled above that mark. In order to indicate the rate of volatilization or use of the liquid contents of the bowl, I provide a series of marks forming a graduated scale as shown in Fig. 1 which will indicate what per cent. of the liquid has been used and by this graduation and the use of a time piece the operator can know accurately the amount of liquid being delivered per each minute to his patient.

The top of the bowl 9 will be provided with a discharge opening surrounded by a flange 12 to which a metal ring 13 having an external screw-thread, will be fastened by the aid of plaster or cement, in the usual way. 14 is a metal cylinder having its lower end internally screw-threaded to screw upon the ring 13, and the upper end of the cylinder 14 is also internally screw-threaded to receive the cap 15 in a manner to secure an air-tight but removable closure for that end of the cylinder.

Formed on the inside of the cylinder 14 are the cylindrical walls 16 and 17 which make a conical seat for a truncated conical valve 18. The seat for the valve 18 divides the cylinder 14 into two compartments having communication through suitable ports which are opened and closed by the rotary movement of the valve 18. The upper cylindrical wall 16 has the ports 20 and 21 and the lower wall 17 has the ports 22 and 23 immediately under the respective upper ports 20 and 21. The truncated conical valve 18 is recessed at its larger or outer end as far in as the inner limits of the ports 21 and 23, and the walls surrounding this recess are provided with two port holes 24 and 25 which are adapted to be brought into register with ports 21 and 23 by a partial rotation of the valve. The ports 24 and 25 are in the same transverse plane and are about 135° apart. Air is admitted to the chamber

formed by this recess in the valve 18, through an opening in the outer end of the valve which is controlled by a second valve which is very sensitive in its action and is
 5 constructed of the following parts: the cup-shaped holder 27 having a screw-threaded outer wall to screw into a corresponding threaded opening in the outer end of sleeve 18; a sleeve 28 to screw into the threaded
 10 inner end of the holder 27, and a plate 29 centrally perforated for the passage through it of a post 30 mounted in the bottom of the holder 27 and acting as a guide for plate 29, and a spring 31 between plate 29 and bottom
 15 of holder 27 to press the plate 29 normally against the inner end of sleeve 28. Air passages 32 are formed in the cup-shaped holder 27 as shown in Figs. 3 and 7. Air admitted through the valve just described,
 20 to the chamber in the valve 18 may be discharged, depending upon the position of the port holes 24 and 25 with relation to port holes 21 and 23, into the upper chamber in the cylinder 14, or into the lower chamber
 25 in said cylinder, and it is obvious that the communication afforded by these port holes may be varied in extent from entirely closed to full open, and the air flow thereby regulated.

30 The valve 18 is retained in its seat by means of a screw 33 which passes through the wall of cylinder 14 and screws into a threaded hole in the inner end of the valve. The inner end of the valve 18 is solid with
 35 the exception of two port holes 34 and 35 in the same transverse plane as holes 20 and 22 in the valve seat. The port holes 34 and 35 are of the same diameter as ports 20 and 22, and they extend diametrically through
 40 the valve 18. The hole 34 is in substantially the same plane, diametrically and longitudinally of valve 18 as the port hole 25, as shown in Figs. 4 to 6 inclusive. The port 35 is drilled in the same transverse plane as
 45 hole 34 and in such relation to it that the ports cross each other at the center of the valve and their mouths at both ends overlap sufficiently to cause the two port holes to communicate throughout their lengths.
 50 This increases the extension of the opening through the inner end of valve 18 in the direction to permit of a greater rotation of the valve 18 without shutting off communication through this small end of the valve
 55 than would be possible with a single hole of the same diameter as ports 20 and 22.

The purpose of the valve 18 and the various port holes through it and the walls of its seat is to afford means for regulating the
 60 proportions of air and ether admitted to the upper chamber in the cylinder 14. This upper chamber discharges through a hole 38 into a rubber tube 39 which tube discharges into a mask 40, preferably of rubber, which
 65 is adapted to fit over the nose of the patient

and cause him to breathe into his lungs the mixture thus produced. The mask 40 has a rim 41 to fit down close against the face, and it also has a discharge opening 42 covered on the outside by a valve plate 43 which
 70 permits egress but prevents ingress through said opening 42. The patient is thereby enabled to expel the used-up vapors from the mask but cannot draw air into it through said opening and must inhale from the gen-
 75 erator through tube 39. The relation of the ports in valve 18 at various positions of said valve, to the ports in its seat 15 and 16 is best illustrated in Figs. 4 to 6 inclusive, wherein the port holes 34 and 35 are shown
 80 in dotted lines. The positions of the parts as shown in Fig. 4 will cause pure air to be discharged into the upper chamber in cylinder 14 and thence unmixed or undiluted through hole 38 to the patient. The
 85 positions of the same parts illustrated in Fig. 5 show a maximum air opening from the chamber in the outer end of valve 18 downwardly into the lower chamber in cylinder 14, and thence of course into bowl 9,
 90 and from the latter and said lower chamber through the inner end of the valve 18 to the chamber in the upper end of cylinder 14 and thence through hole 38 to the tube and patient. A maximum port-opening ob-
 95 tains from the lower to the upper chamber of cylinder 14 through said valve with the result that an equal, or "half-and-half" mixture of air and gas or ether is delivered to the patient. In the positions of said parts
 100 as shown in Fig. 6, the air is entirely excluded and a maximum port opening for the discharge of unmixed gases from the bowl to the patient is provided.

It is obvious that many gradations from
 105 all air as shown in Fig. 4, to all ether as shown in Fig. 6, are possible. These gradations may be indicated on a suitable dial such as I have shown in Fig. 1. A face plate 50 is formed on the outer wall of cylinder
 110 14. The projecting end of valve 18 is provided with an index pin 51, and the plate 50 has pins 52 and 53 to mark the positions of all air and all ether, of the valve and a graduated scale engraved on the face of the
 115 plate 50, as shown in Fig. 1, which may be appropriately numbered and lettered, will indicate to the operator the various intermediate adjustments of the valve between said all air and all ether limits.
 120

While I have shown and described the preferred embodiment of my invention, it will be understood that I do not wish to be limited to the precise construction herein set forth, since various changes in the form,
 125 proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus fully described my invention, 130

what I claim as new and wish to secure by Letters Patent, is—

1. In an apparatus for administering anesthetics and the like, a bowl to contain the liquid to be administered, an outlet at the top of the bowl discharging into a cylinder, a transverse valve seat in said cylinder dividing it into an upper and a lower compartment, a plug valve in said seat having therein a chamber with an end opening in the plug to the atmosphere for the admission of air to said chamber, a valve to regulate said air opening in the plug-valve, port holes in the valve and valve seat adapted at certain adjustments of the valve to discharge from said chamber in the valve into the upper or lower or both chambers of said cylinder and other port holes in the valve to register with other holes in the valve seat which are also adapted at certain adjustments of the valve to discharge from the lower to the upper chambers of said cylinder, said upper chamber having a discharge outlet, a hood to be applied to the patient, and a tube connecting the discharge outlet from the cylinder with said hood.

2. In an apparatus for administering anesthetics and the like, a bowl to contain the liquid to be administered having a top outlet, a cylinder into which the bowl discharges said cylinder having a transverse valve seat dividing the cylinder into upper and lower compartments, the upper and

lower walls of said valve seat each having a pair of port holes arranged longitudinally of said valve seat, a truncated conical valve in said seat having a recess in its outer portion forming a chamber, said chamber having an opening to the atmosphere and a pair of port holes less than 180° apart adapted to be brought separately into register with the adjacent upper and lower port holes in the valve seat by the rocking of the valve, the inner or solid end of the valve having a pair of communicating diametrically formed port holes adapted to be brought into register with the upper and lower inner port holes of said valve seat, the outer face of the cylinder having a flat surface with graduations and the said valve being extended beyond the cylinder and having an index pin to work in conjunction with said graduations, a valve in the air opening to the first valve, a hood to be applied to the patient said hood having a valve-closed outlet permitting egress but not ingress, and a tube connecting the hood with the upper chamber of said cylinder.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this 21st day of May, A. D. one thousand nine hundred and nine.

CHARLES A. HOLLETT. [L. s.]

Witnesses:

F. W. WOERNER,
L. B. WOERNER.