

No. 794,190.

PATENTED JULY 11, 1905.

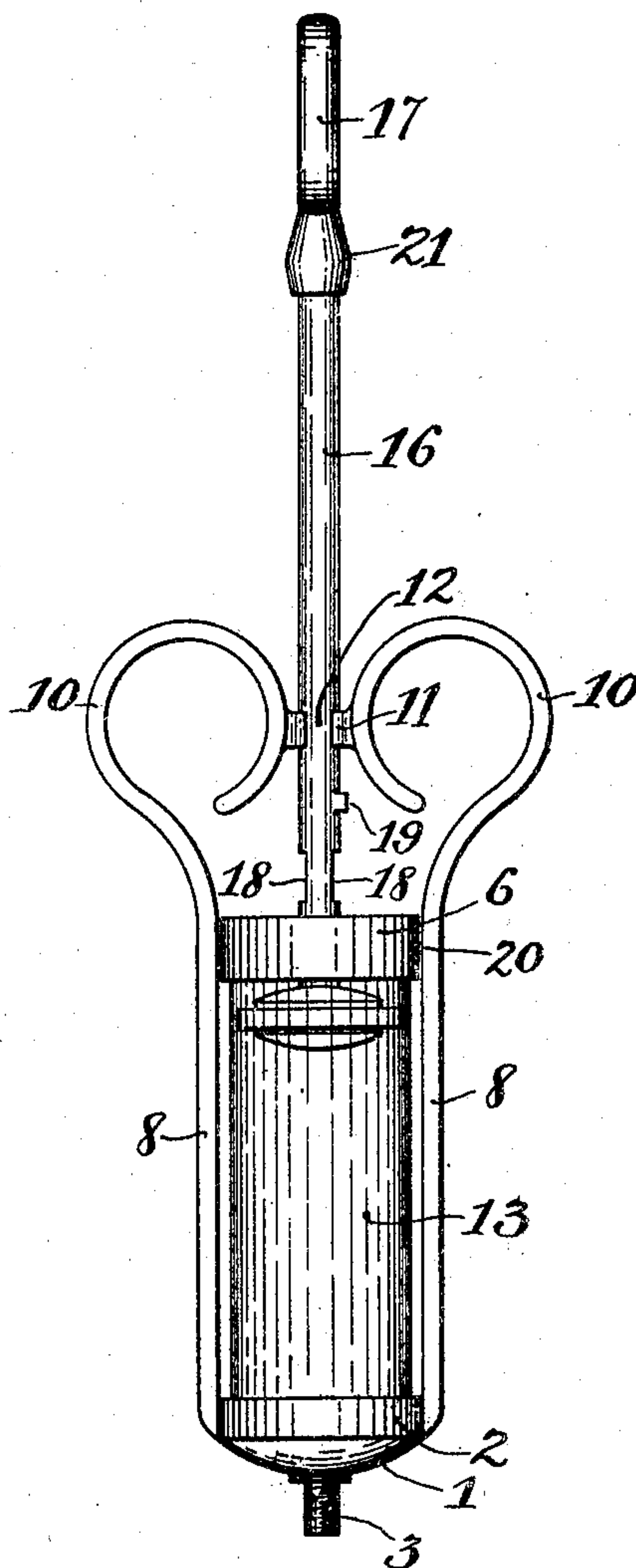
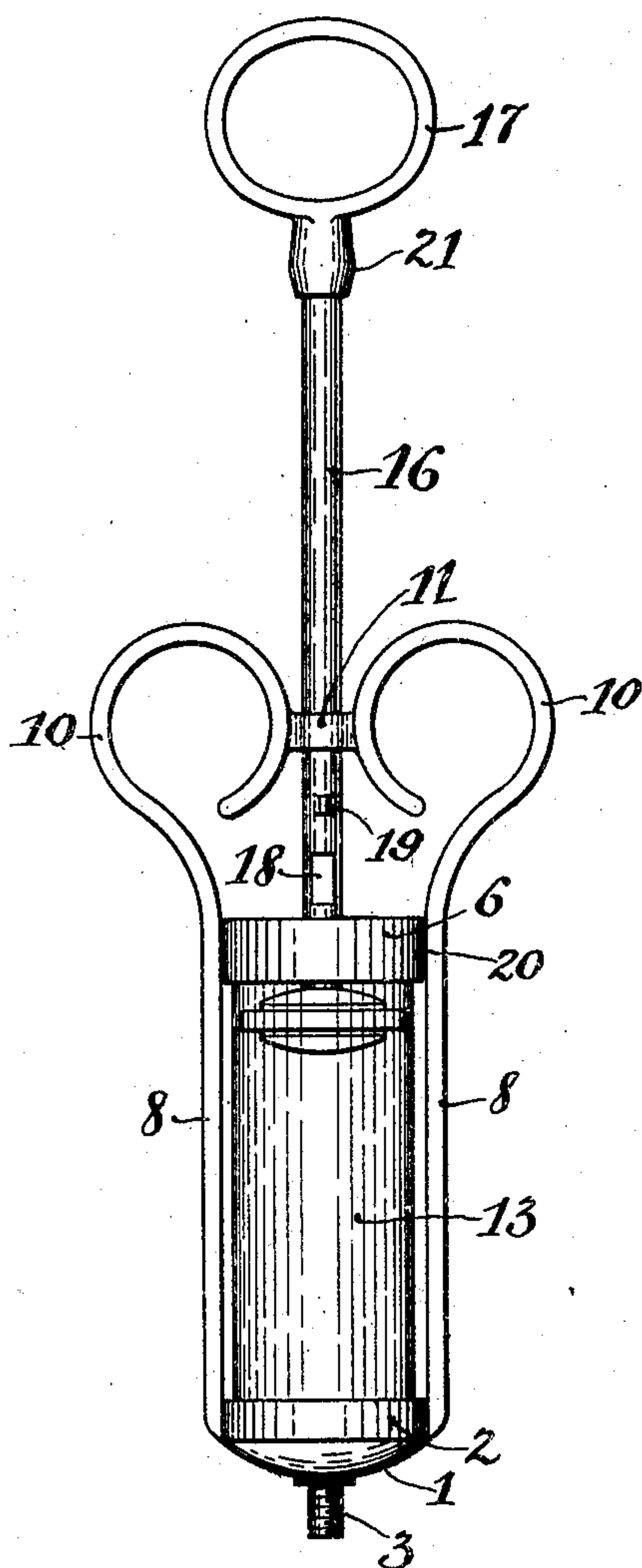
K. SCHNEYDER.
SYRINGE.

APPLICATION FILED APR. 18, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

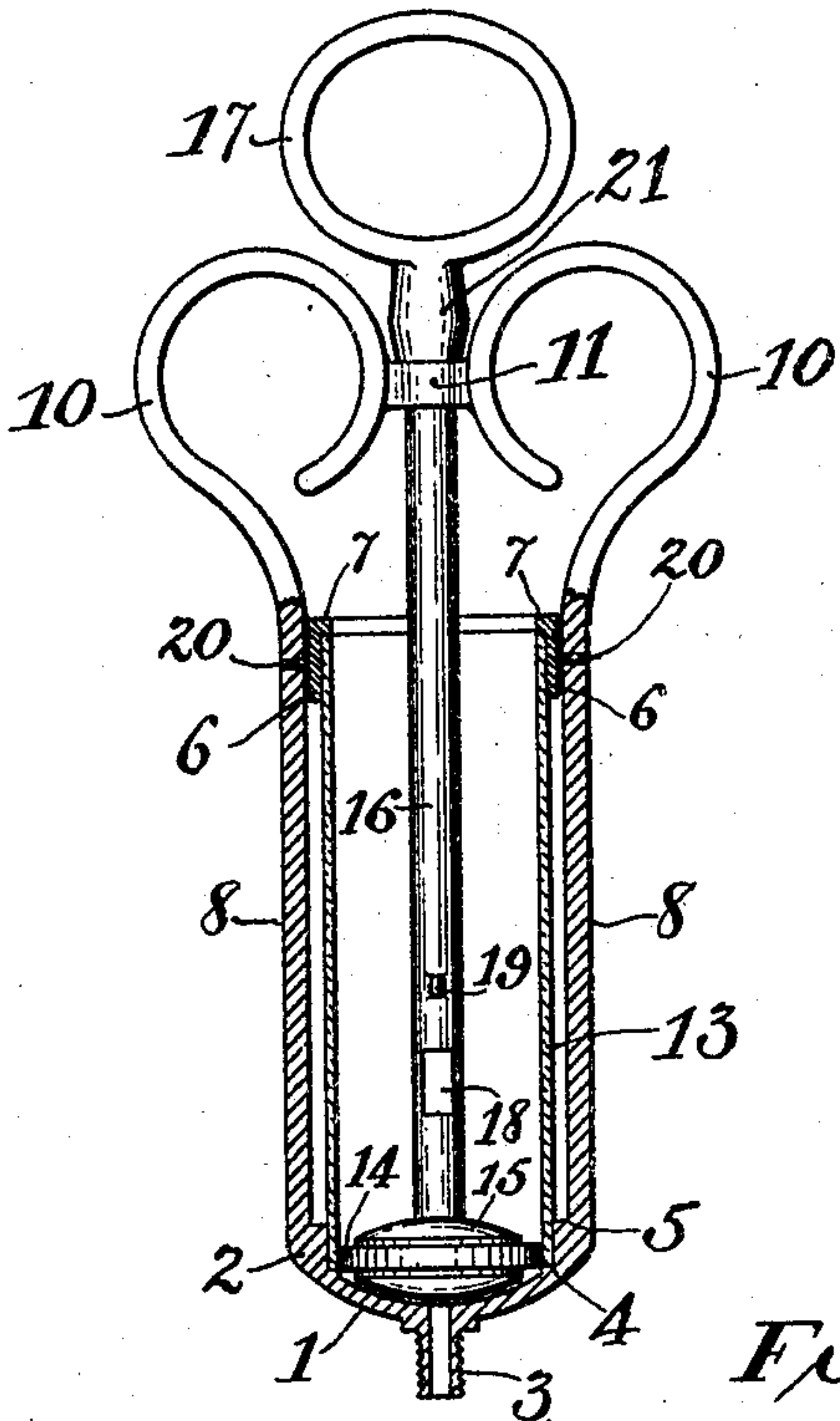


Fig. 4.

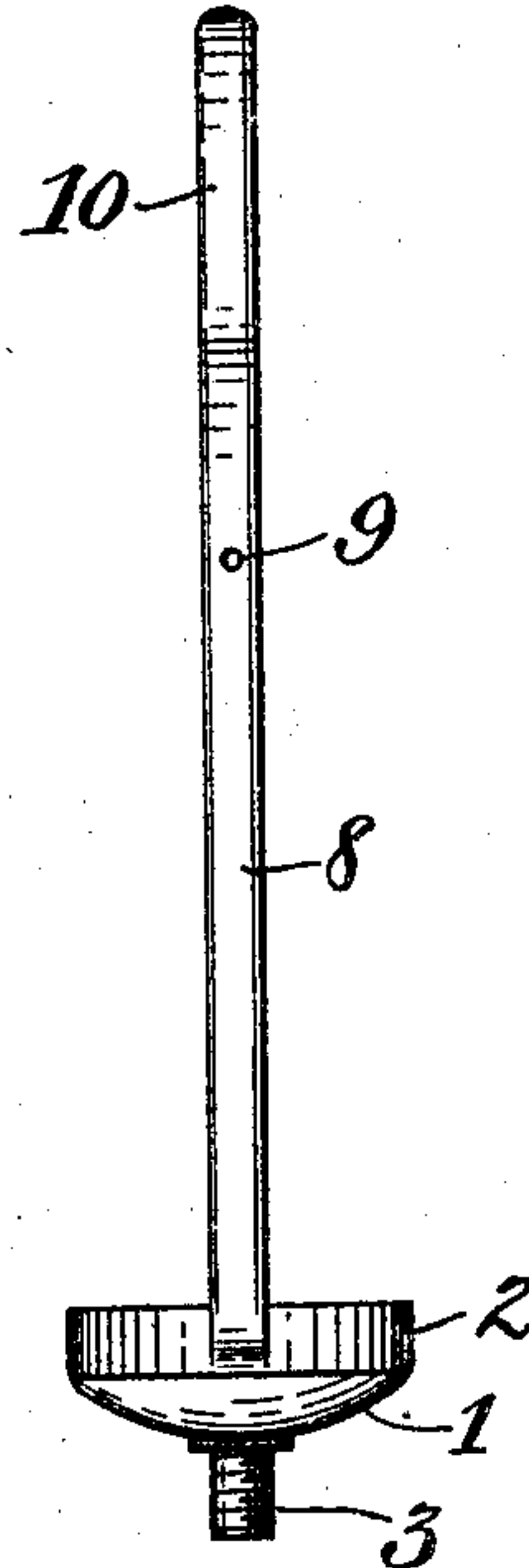


Fig. 6.

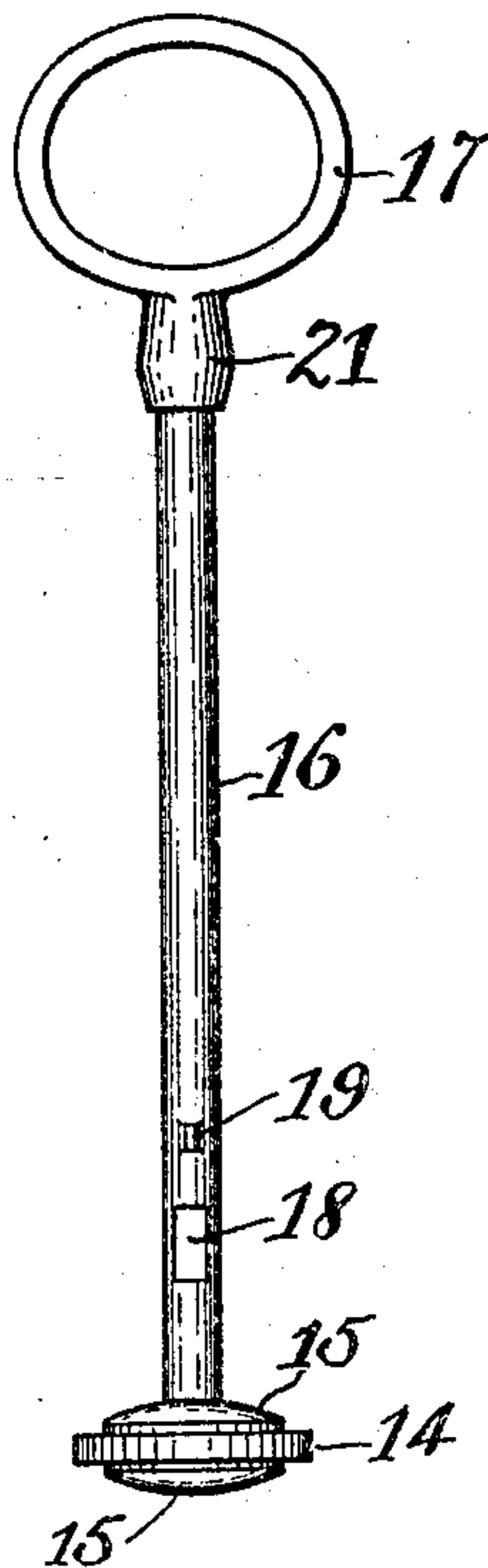


Fig. 5.

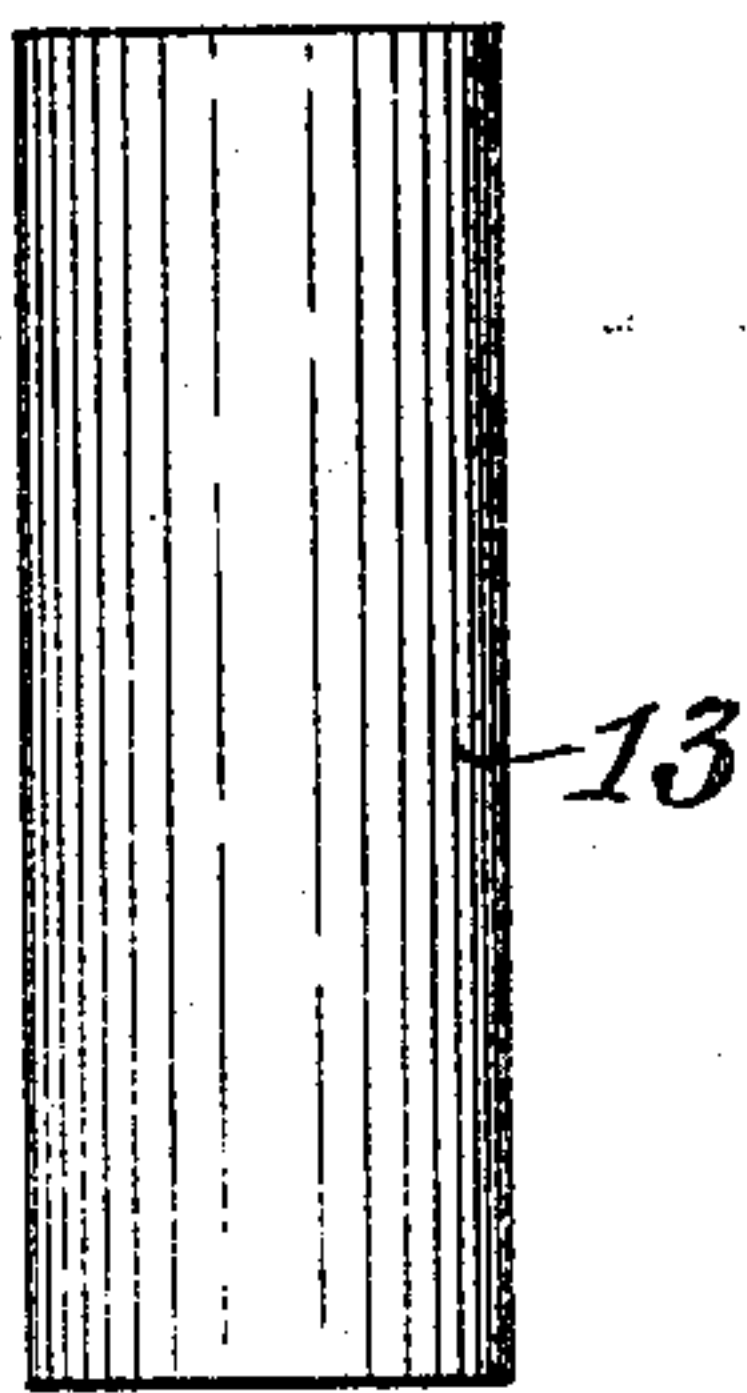
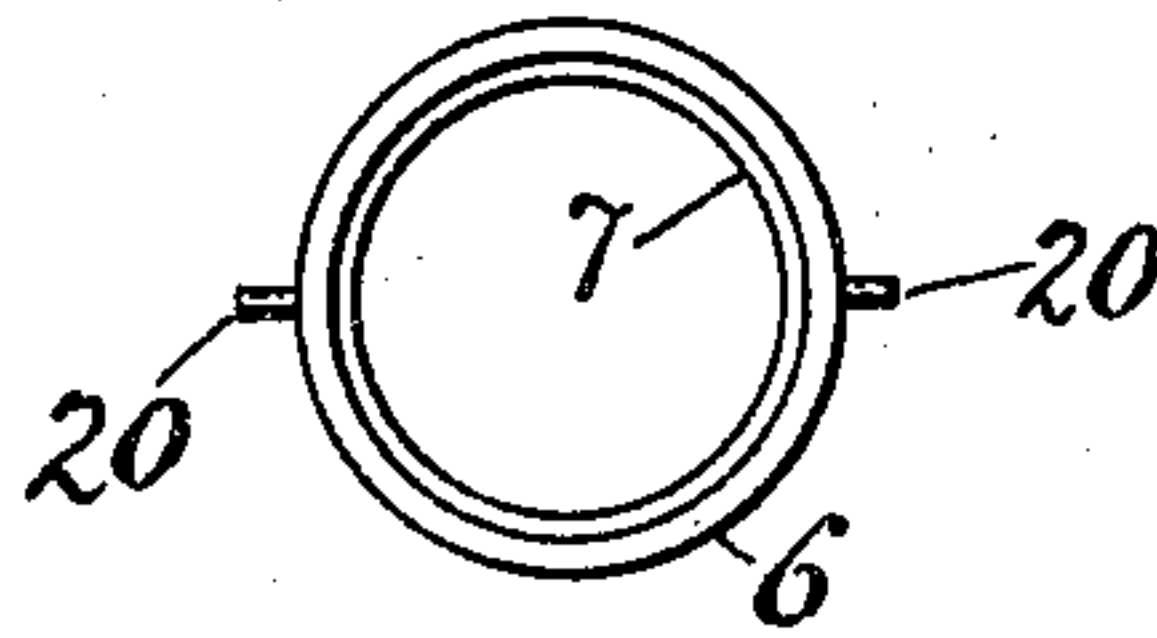


Fig. 7.



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UNITED STATES PATENT OFFICE.

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SYRINGE.

SPECIFICATION forming part of Letters Patent No. 794,190, dated July 11, 1905.

Application filed April 18, 1905. Serial No. 256,217.

To all whom it may concern:

Be it known that I, KARL SCHNEYDER, a citizen of the Empire of Germany, residing in the city of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Syringes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates generally to syringes, and specifically to those composed of removable and replaceable elements, and particularly adapted to syringes composed of glass combined with metal, which are employed most generally in hospital work, where sterilization of the instrument is desirable, if not essential.

The object of my invention is primarily the production of a syringe of such construction of elements as will be particularly useful in such devices when composed of glass and metal, the constituent elements being of such character of construction that will enable the parts to be readily assembled and dissociated and replacement of the glass part, if broken, to be easily effected. The removability and facility of replacement of the barrel are not, however, dependent upon the material of which it is composed, as for these purposes it may be made of thin and stiff metal, if preferred.

A further object is to make the device light in weight, capable of being easily cleaned, in boiling water, if required, and of the least possible number of parts.

A further object of the invention is to provide a construction and arrangement of the relatively movable and fixed elements that the former—the piston and its rod—may not only be guided but have an independent bearing outside the cylinder to maintain the piston against wobbling movement therein.

To these ends as the principal objects my invention consists of the syringe constructed as hereinafter fully described, the novel features of which, both elementary and in combination, will be pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a front elevation;

Fig. 2, an elevation from the opposite or rear side of the supporting-frame and with the piston-rod partly rotated. Fig. 3 is a vertical section, partly in elevation, of the device as shown in Fig. 1. Fig. 4 is a side elevation of the piston-rod and piston; Fig. 5, an elevation of the glass cylinder detached; Fig. 6, a front elevation of the piston and rod detached, and Fig. 7 a plan view from the under side of the upper ring constituting a detachable part of the metal frame for the glass cylinder.

Referring now to the drawings, the supporting-frame for the basal edge of the glass cylinder is a circular plate 1, with upright annular flange 2. Preferably the base-plate 1 is an internally-concaved circular plate, and if of stamped-up sheet metal it is convex externally. From a central opening therein proceeds a hollow tube 3, externally screw-threaded to fasten thereon a discharging tip or tube or a needle or cannula of any kind, as is usual. This circular base-plate is annularly shouldered at 4 to receive and support the basal edge of the glass barrel or cylinder, and the flange 2 is similarly shouldered at 5 in order that the glass cylinder may align in perpendicularity, the top edge thereof being supported and held in a ring 6, having an inwardly-projecting annular bead 7, forming the top shouldered support therefor. The base-plate 1 is mounted on a pair of oppositely-disposed metallic arms 8 8, of narrow and flat metal, constituting a frame connecting the top and bottom rings supporting the cylinder. These frame-arms are preferably made integral with the annular flange 2 of the base-plate. An advantage of such construction is that the contents of the glass cylinder may always be seen and, if need be, may be marked with a graduating scale to denote the quantity of contents.

The connecting-arms 8 8, constituting the frame, are perforated near the top at 9 9 and extend upward in a full circular curve at 10 10 to form finger-holds. The arms 8 8 are connected at the inner bends of the finger-holds by a ring-like band 11, segmentally divided or cut away at 12. (See Fig. 2.) This

band 11 serves the purpose of fixedly holding the frame-arms 8 8 in parallelism and performs also an additional function hereinafter described. The upper ring 6 for the glass cylinder 13 (shown in plan view looking upward in Fig. 7) has an inwardly-projecting annular bead 7, forming a shoulder which rests on the top edge of the cylinder, and this ring is provided on its outer periphery with a pair of oppositely-disposed pins 20, which enter the perforations 9 (see Figs. 3 and 4) of the respective arms 8 8 of the frame.

The barrel 13 of the syringe is preferably of glass in order to effect an important object of my invention, as hereinbefore stated, and should be a perfect cylinder as nearly as possible, as shown in Fig. 5.

The piston and piston-rod are shown in detached elevation in Fig. 6. The former consists of a rubber piston proper, 14, preferably held between opposite washers 15 15, the lower at least of which is preferably convexed to coincide with the concaved base-plate 1 of the device. The piston 14 and washers 15 15 are secured to the end of the piston-rod in any suitable manner, preferably by screw-threaded perforations in the washers and screw-threading the end of the piston-rod, and this provides for expanding the rubber circumferentially by screwing the washers closer toward each other on the rod. The piston 14 should be made of a special rubber, commonly known, to enable it resist moist heat, oil, or antiseptic solutions. The basal end of the glass cylinder should be cemented with a heat and water proof cement to the metallic basal plate 1 of the device to make a perfect joint therewith, as it will not require removal therefrom unless broken.

The piston-rod 16 is a cylindrical shaft terminating at top in an integral or affixed operating-ring 17. Near its lower end it is cut away to form two opposite flat sides 18 18, and above the same on one side is a projection 19. Referring now to Fig. 1, it will be seen that the projection 19 operates solely as a stop in that it governs the length of the upward stroke of the piston by contacting with the ring-like band 11, connecting the arms 10 10 of the frame. The distance between the piston and the projection 19 on the piston-rod should therefore be proportioned accordingly.

The operative position of the parts is as shown in Fig. 1. To remove the piston and its rod from the cylinder and from the frame, the rod is given a quarter-turn to the position shown in Fig. 2, with the result that with a direct upward pull of the piston-rod the segmental opening 12 in the ring-like connecting-band 11 will allow the stop or projection 19 to pass through it and bring the flattened portions 18 18 of the piston-rod into coincidence with the ring 11. Then by giving a lateral movement to the rod it may be withdrawn

through the segmental opening 12 aforesaid. The piston-rod is provided below the operating-ring 17 with a swell 21, which operates as a stop to limit the downward stroke of the piston and is so located on the piston-rod that the under face of the piston will not strike the base-plate 1 of the barrel, as seen in Fig. 3. Thus it will be seen that the piston and its rod may be easily removed for cleaning and sterilization. If the glass cylinder be broken or if desired to remove it for cleaning, there is sufficient resiliency in the thin arms 8 8 of the frame to withdraw the pins 20 from the perforation 9 in the arms 8 to enable the upper retaining-ring 6 to be removed. The parts may be assembled again with equal facility, as is obvious from the description of them already given.

The concrete device is exceedingly light in weight, presents no crevices or corners to collect foreign matter, may be sterilized through out by insertion in boiling water or otherwise, is compact and easily constructed, while thoroughly durable. A no less important advantage is that the cylinder is supported in alinement by the top and bottom rings, while the piston-rod is not only guided but supported against wobbling movement by the segmentally-slotted band 11, connecting the arms 8 8 of the frame at the top thereof, the steadying being aided by the two opposite finger-pieces 10 10 in the same lateral plane with the guiding-ring 11 aforesaid.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A syringe composed of removable and replaceable elements, comprising a cylindrical barrel, and a metallic frame therefor consisting of annularly-shouldered supports for the opposite ends of the cylinder, a perforated base-plate forming part of one of said supports, a pair of oppositely-disposed arms connecting said shouldered supports for the cylinder, and terminating in finger-holds for the concrete device, a connecting-band between said frame-arms, and a piston-rod supported and guided in said connecting-band.

2. In a device of the class recited, the combination with a cylindrical barrel, of a pair of interiorly-shouldered annular supports therefor, a metallic barrel-head forming part of the lower of said supports, and having a central discharge-opening, an open metallic frame removably connecting said opposite annular supports for the barrel, and means, forming part of said frame, operating as a bearing for the piston-rod.

3. In a device of the class recited, the combination with a cylindrical barrel, and oppositely-disposed annular supports, interiorly shouldered, within which said barrel is removably held; of a metallic frame consisting of a pair of longitudinally-disposed arms, adapted to operatively connect said barrel-

supports and maintain them in alinement, and means arranged in a plane above the barrel, operating to connect the members of said frame and also afford a bearing for the piston-rod.

4. A syringe of the class recited comprising a metallic frame composed of a pair of oppositely-disposed thin and narrow arms terminating in finger-holds, said arms united by a segmentally-opened connecting-ring, a pair of annularly-shouldered cylinder-supports, mounted on and between said frame-arms, a centrally-perforated base-plate forming part of the lower of said cylinder-supports, a piston, and a piston-rod provided with an operating finger-hold, and having a stop-pin adapted to contact with the connecting-band between the frame-arms on the terminus of the upward stroke of the piston.

5. A syringe of the class recited comprising a removable cylinder, annularly-shouldered

metallic supports for the opposite ends thereof, a centrally-perforated base-plate forming part of one of said supports, a pair of oppositely-disposed arms connecting said cylinder-supports, perforated near the top and extended to form finger-holds, pins on the upper shouldered support registering with said perforations in the frame-arms, a segmentally-divided ring connecting said frame-arms above the plane of the upper shouldered support for the cylinder, and a piston-rod having a stop-pin thereon near its upper end and a flattened section below the same and contiguous thereto.

In testimony whereof I have hereunto affixed my signature this 17th day of April, A. D. 1905.

KARL SCHNEYDER.

Witnesses:

CHAS. W. MILLER,
A. M. BIDDLE.