

No. 692,571.

Patented Feb. 4, 1902.

F. W. WIEMAN.  
FIRE HOSE NOZZLE.

(Application filed July 20, 1901.)

(No Model.)

3 Sheets—Sheet 1.

FIG. 1.

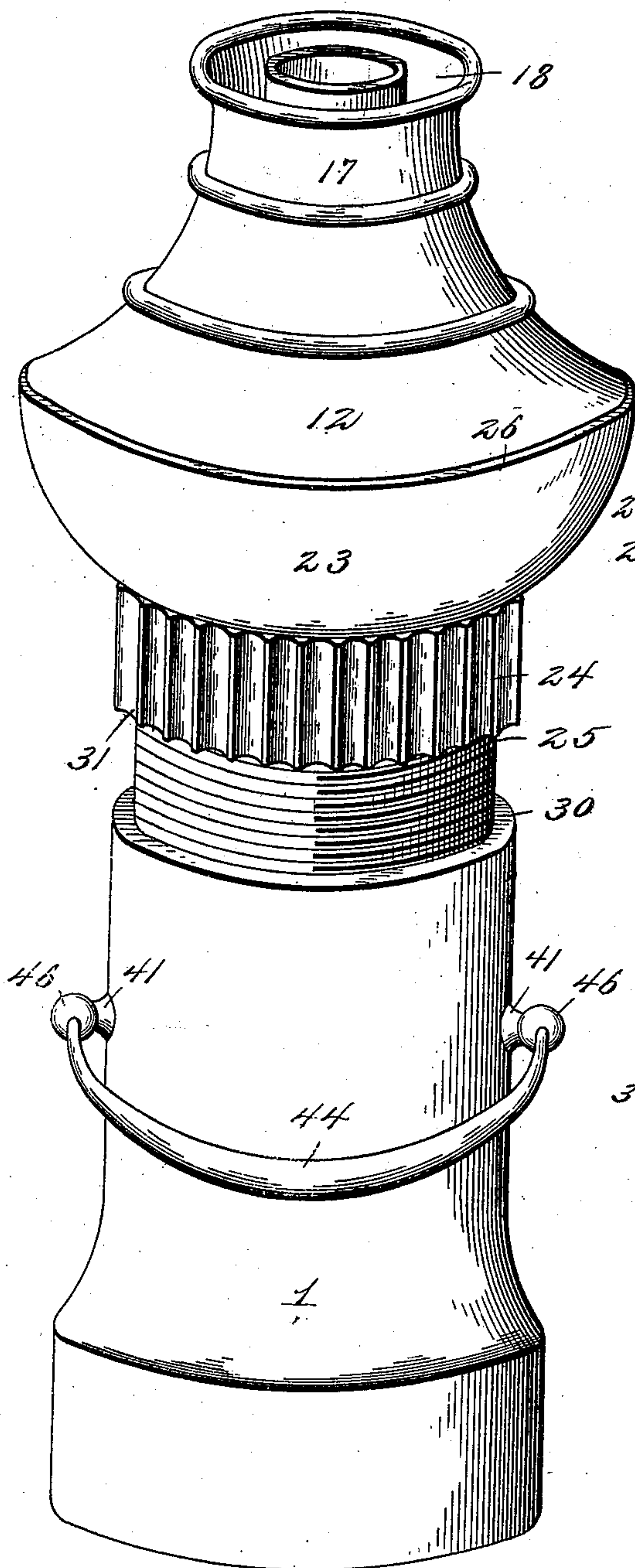
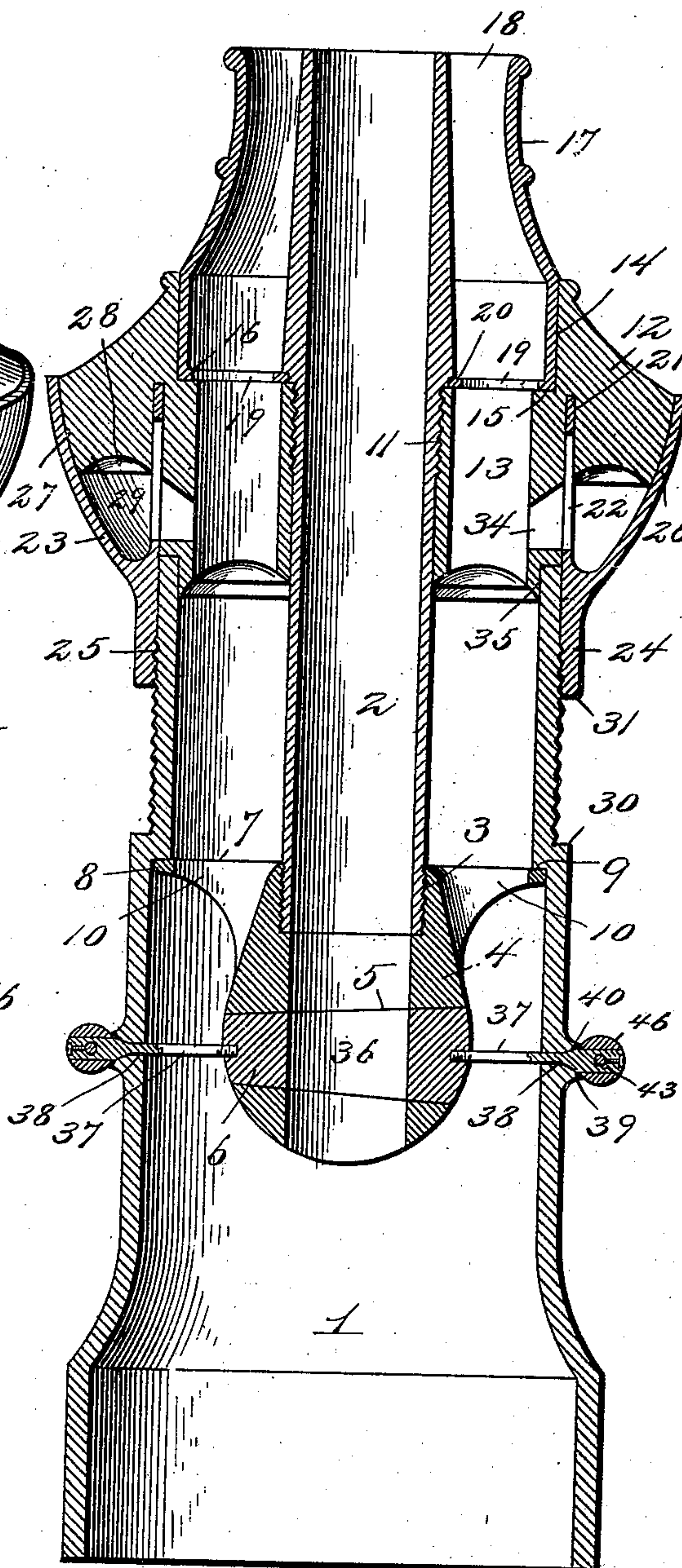


FIG. 2.



Witnesses

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Witness

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3 Sheets—Sheet 2.

FIG. 3.

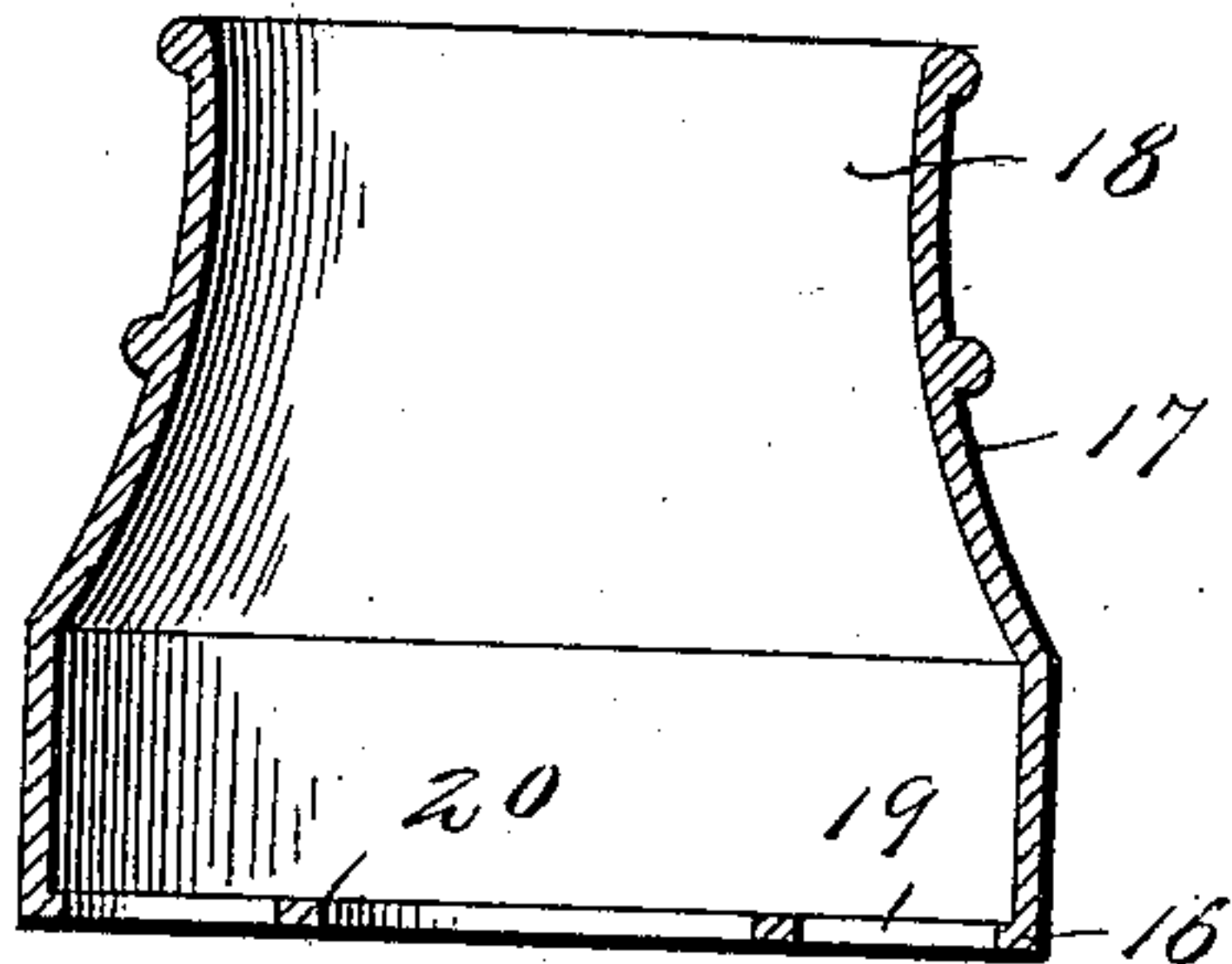


FIG. 4.

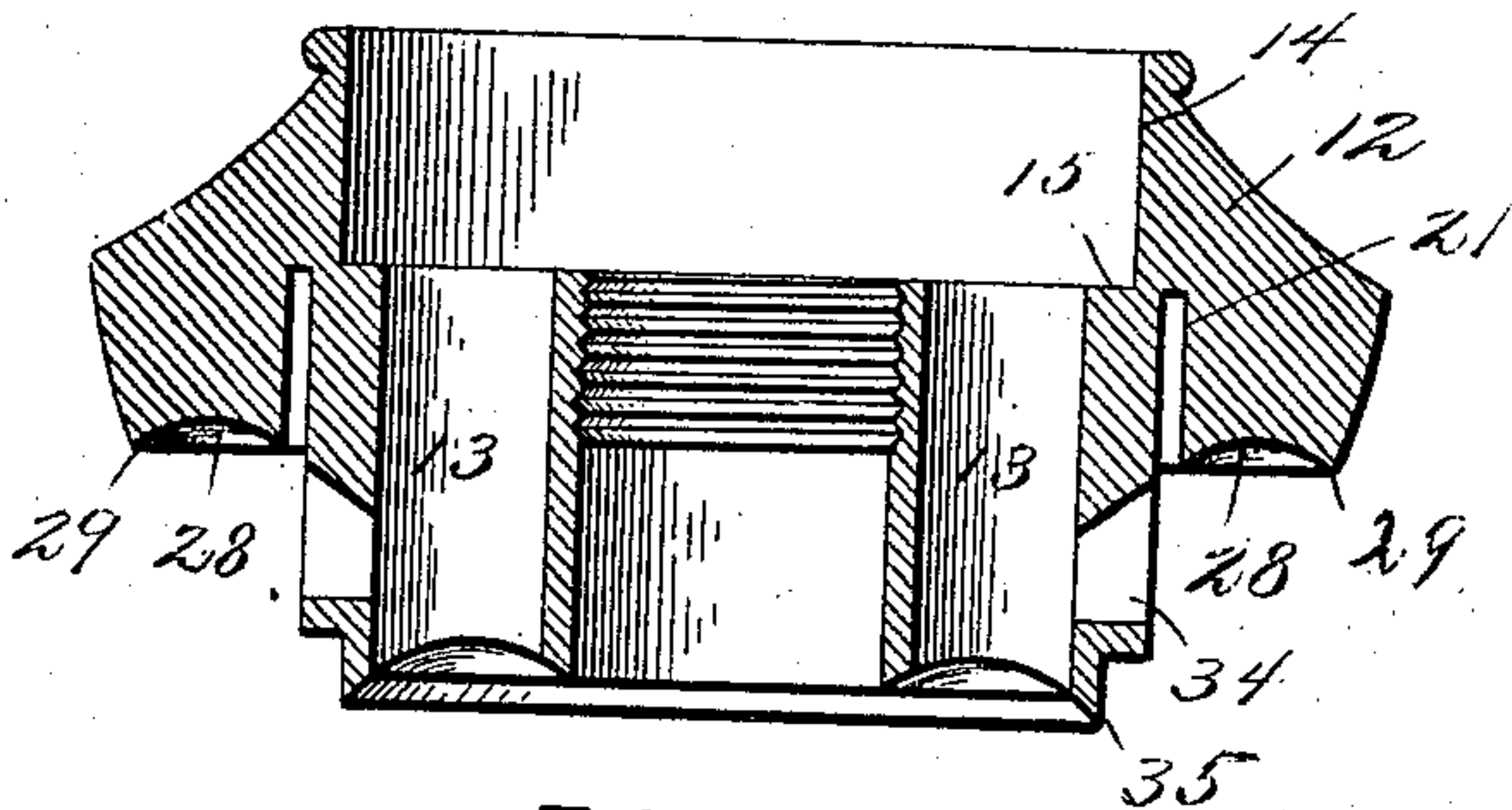


FIG. 5.

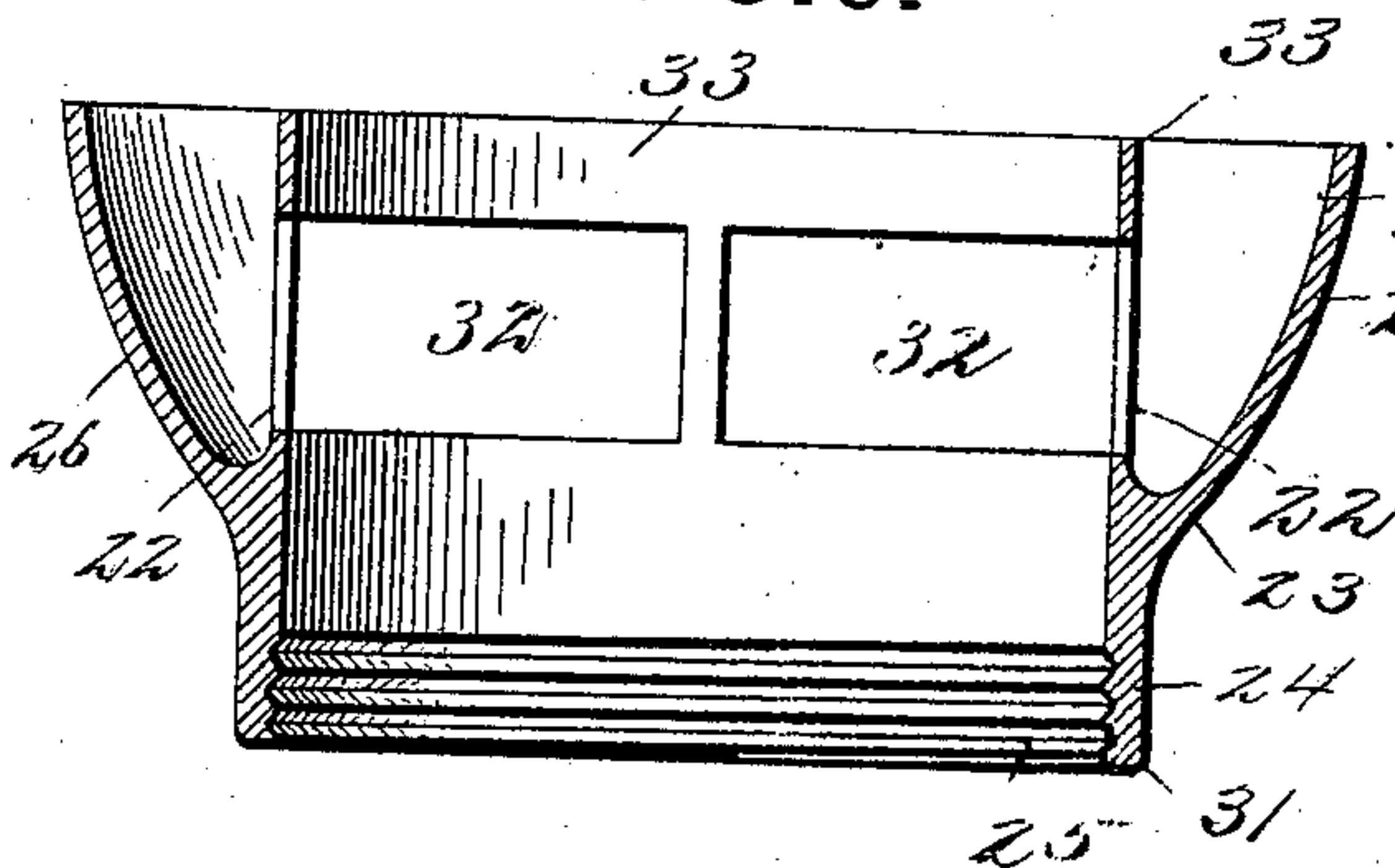


FIG. 6.

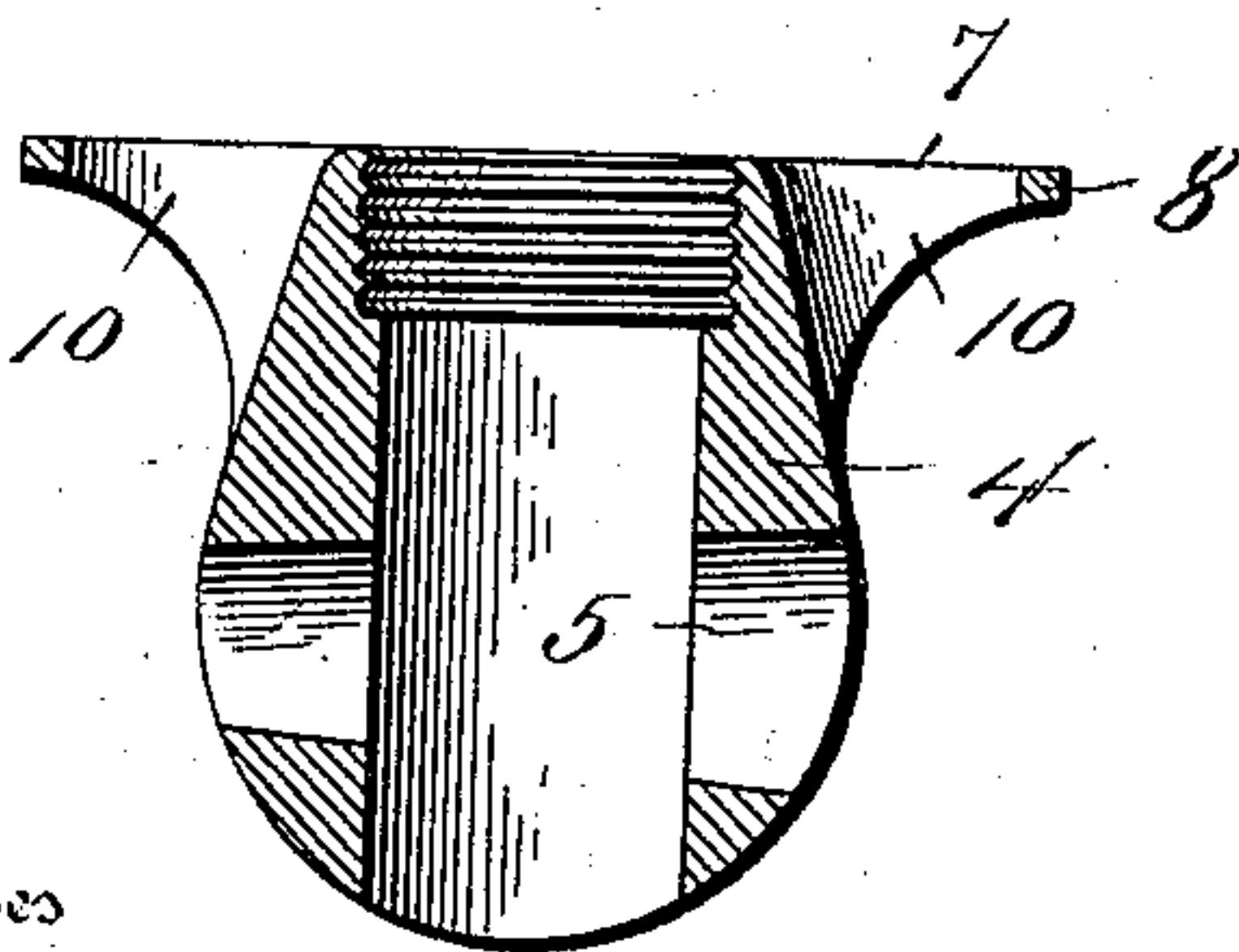


FIG. 8.

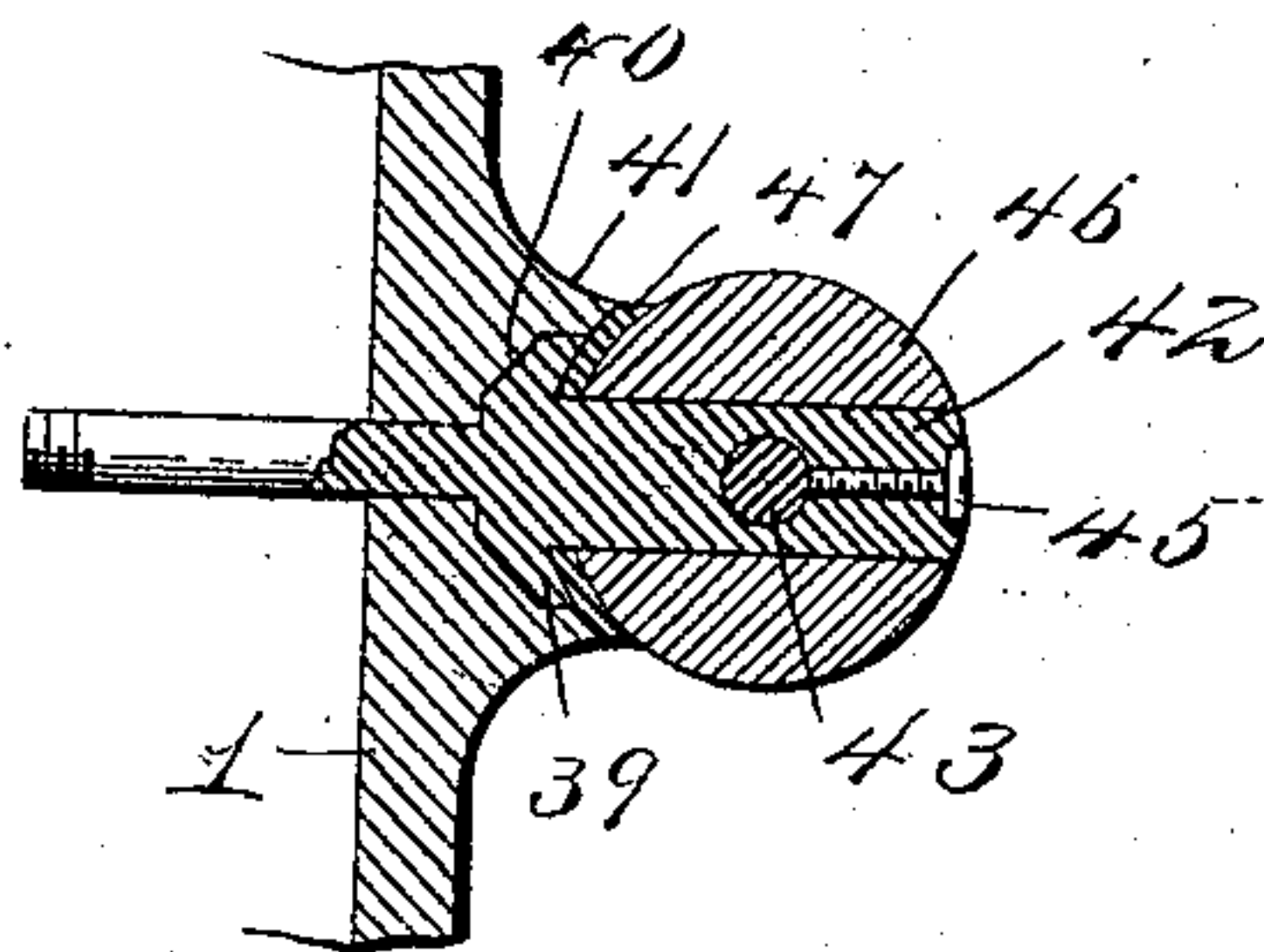
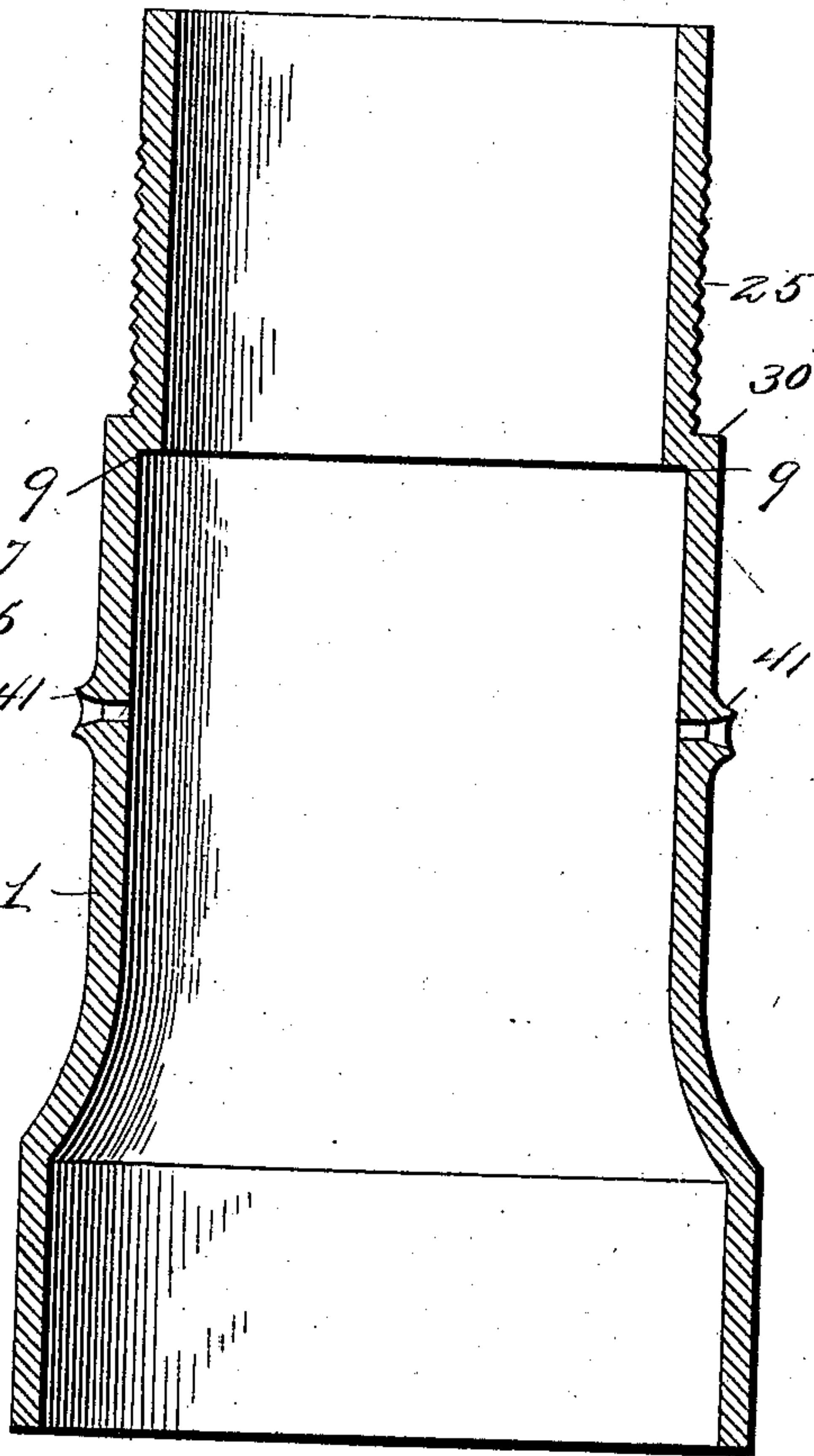


FIG. 7.



Witnesses

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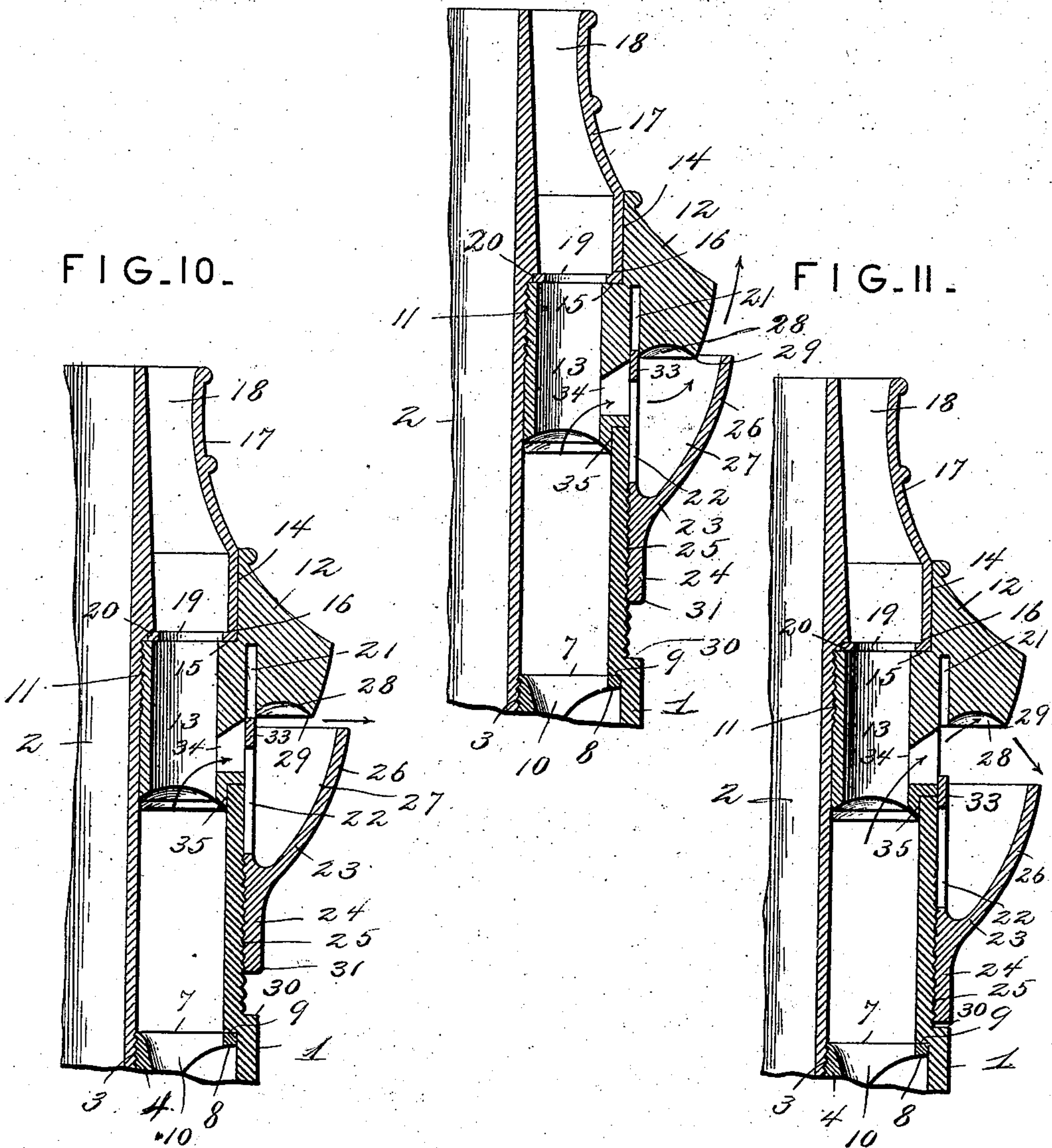
(No Model.)

3 Sheets—Sheet 3.

FIG. 9.

FIG. 10.

FIG. 11.



Inventor

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# UNITED STATES PATENT OFFICE.

FRED W. WIEMAN, OF LAWRENCE, KANSAS.

## FIRE-HOSE NOZZLE.

SPECIFICATION forming part of Letters Patent No. 692,571, dated February 4, 1902.

Application filed July 20, 1901. Serial No. 69,119. (No model.)

*To all whom it may concern:*

Be it known that I, FRED W. WIEMAN, a citizen of the United States, residing at Lawrence, in the county of Douglas and State of Kansas, have invented new and useful Improvements in Fire-Hose Nozzles, of which the following is a specification.

This invention relates to nozzles, being especially designed with reference to the needs of firemen, the object of the invention being to provide a nozzle of such construction as to admit of ready and quick adjustment, whereby a fireman may direct the entire flow of water in a single stream of variable size or in connection with the main stream throw into operation an annular spray, the nozzle also having provision whereby such annular spray may be directed forward toward the fire or laterally, so as to form a fire-shield between the conflagration and the fireman, or backward, so as to keep the clothing and face and hands of the fireman saturated with water, thereby protecting such fireman from the injurious effects of the intense heat, flame, and firebrands.

The parts whereby the various adjustments are effected are conveniently arranged, so as to be under the immediate control of the fireman, and the several adjustments may be effected entirely without the use of wrenches, tools, or other implements.

With the above and other objects in view, the nature of which will more fully appear as the description proceeds, the invention consists in the novel construction, combination, and arrangement of parts hereinafter fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a fire-hose nozzle embodying the present invention. Fig. 2 is a central longitudinal section through the same. Fig. 3 is a sectional view of the outer nozzle-tube. Fig. 4 is a diametrical section through the head forming the deflecting agent. Fig. 5 is a similar view taken through the conical hood. Fig. 6 is a central section taken through the valve-seat. Fig. 7 is a central longitudinal section through the casing or body of the nozzle. Fig. 8 is a detail section showing the connections between the valve-stem and valve-operating handle. Figs. 9, 10, and 11 are detail fragmentary sec-

tions illustrating different adjustments of the conical hood for directing the annular spray forward, laterally, and backward.

Like numerals of reference designate like parts in all the views.

The nozzle contemplated in this invention comprises, essentially, a tubular body or casing 1, which may be of any desired diameter, the same being usually of approximately the size of the ordinary fire-hose in common use at the present time. Any suitable provision may be made for coupling the nozzle to the hose.

In carrying out the present invention I employ a center tube 2, which constitutes the main stream-pipe of the nozzle, said pipe being arranged centrally within the nozzle and extending throughout the greater part of the length thereof. The inner end of the stream-pipe 2 is exteriorly threaded, as at 3, and screwed into an internally-threaded socket formed in the adjacent end of the valve-casing 4, which is arranged in the inner portion of the casing 1 and provided with a tapered valve-seat 5, in which is rotatably mounted a plug-valve 6, the means for operating which will be hereinafter described. The valve-seat is provided at its outer end with a disk-shaped head 7, the outer portion or periphery of which constitutes a rim 8, which is brought to bear and permanently seated against an internal annular shoulder 9 within the casing 1. The head 7 is also provided with a radial series of ports or openings 10, so as to admit water to the annular space intervening between the outer surface of the stream-pipe 2 and the inner wall of the outer casing or body 1 of the nozzle.

The stream-pipe 2 at a point intermediate its end is exteriorly screw-threaded, as at 11, to receive a head 12, which is screwed thereon, as clearly illustrated in Fig. 2, and provided with ports or passage-ways 13, permitting the escape of the water, such passage-ways or ports 13 being arranged in an annular series corresponding with the similar ports 10 in the valve-casing. The outer portion of the head 12 is internally recessed, as at 14, and provided with an annular shoulder 15, against which is seated the inner end or head 16 of what I term the "outer nozzle-tube" 17, which surrounds the outer extremity of the stream-



pipe 2, leaving an annular space 18, through which the water finds its exit.

The head or inner end of the outer nozzle-tube 17 is provided with a circular series of ports 19, adapted to register with the ports or passage-ways 13 in the head 12, and said parts are so mounted as to admit of a sufficient amount of relative rotative movement to bring the ports 13 and 19 into and out of alignment with each other for the purpose of cutting off the stream which passes through the space 18 or giving exit to such stream, which thereby combines with the stream passing outward through the center pipe 2 and forms a large stream well adapted for use when the fire is close at hand.

The head 16 is provided with a central opening, through which the stream-pipe 2 passes, and the pipe 2 is provided exteriorly with an annular shoulder 20, which bears against the head 16 and holds the outer nozzle-tube 17 firmly in place, while admitting of the necessary amount of rotative movement thereof to bring the ports 19 into and out of register with the passage-ways 13 in the head 12. The head 12 is further provided with an annular groove or seat 21 for the reception of the inner annular flange 22 of a conical head 23. The head 23 comprises an exteriorly milled or corrugated sleeve 24, having a screw-threaded engagement, as at 25, with the casing 1, whereby by rotating said sleeve the latter may be adjusted back and forth on the casing 1 for a purpose which will hereinafter appear. Extending outward from the sleeve 24 are the concentric annular flanges 22 and 26, the flange 22, as previously stated, being received in the annular seat or groove 21 in the head 12, while the outer flange 26 extends around the inclined outer wall or periphery 27 of the head 12, as clearly illustrated in Fig. 2. The flange 26 of the conical hood serves to cut off the spray when adjusted into close relation to the head 12, as illustrated in Fig. 2, and when moved away from the head it acts as a deflector for causing the water passing between it and the head to escape in an annular spray in a forward direction or away from the fireman. The inner portion of the head is recessed to form an annular gutter 28, having a backwardly-extending annular lip or edge 29, which when the hood has been moved backward to its full extent serves to direct an annular spray backward for the purpose of saturating the clothes of the fireman and protecting him from the injurious effects of the fire. The backward or inward adjustment of the hood is limited by means of an annular shoulder 30, formed on the outside of the casing 1, against which the inner end 31 of the sleeve 24 is adapted to abut.

The flange 22 is provided with side ports 32, through which the water may escape into the gutter 28 and space within the flange 26.

When the hood is adjusted inward to the full extent, as shown in Fig. 11, the outer rim

portion 33 of the flange 22 is withdrawn far enough to allow the water to pass over it as it flows outward through other ports or side openings 34 in the head 12. The head 12 is further provided with a rabbet 35 to receive the outer end of the shell or casing 1, as illustrated in Fig. 2.

The plug-valve 6 is provided with the usual opening or passage-way 36 and has connected therewith oppositely-extending stems 37 in line with the axis of movement of the plug and extending outward through openings 38 in the casing 1. Each of the stems is provided with an enlargement or collar 39, which is received in a corresponding recess 40, formed in an outward extension 41 of the casing, as clearly illustrated in Fig. 8. The outer portion 42 of each stem is enlarged and provided with a transverse opening or socket 43 for the reception of one of the extremities of a bail-shaped valve-operating handle 44, (illustrated in Fig. 1,) held in place within the opening 43 by means of a set-screw 45. The portion 42 of the stem is surrounded by a ball 46, and a packing-washer 47 is interposed between the ball 46 and the casing 1, so as to form a water-tight joint and provide the necessary frictional resistance for holding the valve in its adjusted position after it has been operated by the handle 44.

By means of the valve 5 water may be admitted to or shut off from the center tube or stream-pipe 2, and by means of the outer nozzle-tube 17 the water may be cut off from or admitted to the annular space between the stream-pipe and casing 1. In this way a single central stream of great velocity may be obtained, or a large annular stream, or both combined. By moving the conical hood 23 inward a short distance, as illustrated in Fig. 9, an annular stream or spray of widely-diverging area may be directed through the space between the outer flange 26 of the hood and the periphery 27 of the head, the direction of the annular stream being illustrated by the arrows in Fig. 9. By adjusting the hood still farther inward to the position illustrated in Fig. 10 the annular spray is directed straight outward laterally or in a radial direction, as indicated by the arrow in said figure.

By moving the hood inward to its limit, as illustrated in Fig. 11, the water enters the gutter in the inner side of the head and is thereby diverted or deflected and caused to spray rearward, as indicated by the arrows in said figure, thus saturating the clothes of the fireman for the purpose previously stated.

It will thus be seen that various adjustments may be obtained and streams or sprays of various forms and characters obtained. Further, all of the adjustments necessary to obtain the said streams or sprays can be effected readily and quickly by the fireman without resort to wrenches or other tools. The invention is susceptible of various changes in the form, proportion, and the minor details of construction, which may accordingly be re-



sorted to without departing from the principle or sacrificing any of the advantages of the invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a nozzle, the combination with the outer casing; of a centrally-arranged stream-pipe mounted therein to leave a surrounding annular space, means for controlling the passage of water through said annular space, and a valve for controlling the stream-pipe, the casing of said valve being held in place by the stream-pipe and provided with a rim abutting against an internal shoulder within the casing.

2. In a nozzle, the combination with the outer tubular casing; of a centrally-arranged stream-pipe mounted therein, a valve-casing connected with the inner end of the stream-pipe, a valve in said casing having oppositely-projecting stems, and a bail-shaped handle having its extremities connected with the valve-stems and adapted to open and close the valve.

3. In a nozzle, the combination with the outer casing provided with an internal annular shoulder; of a valve-casing mounted within said outer casing and provided with an apertured head comprising a rim which is seated against the internal shoulder, a centrally-arranged stream-pipe having a threaded engagement with the valve-stem, a valve mounted in the valve-casing, stems projecting in opposite directions from the valve through the outer casing and having handle-sockets, and a bail-shaped valve-operating handle having its extremities inserted in said sockets, and held by set-screws.

4. In a nozzle, the combination with the outer casing and a centrally-arranged stream-pipe mounted therein; of a valve-casing having a threaded engagement with the inner end of the stream-pipe and comprising a rim seated against an internal shoulder within the outer casing, a valve mounted in the valve-casing and having oppositely-projecting stems which pass through the outer casing, balls mounted upon the outer extremities of said stems and together with the stems provided with openings or sockets, and a bail-shaped valve-operating handle having its extremities inserted in said sockets and held, substantially as and for the purpose specified.

5. In a nozzle, the combination with the outer casing; of a centrally-arranged stream-pipe mounted therein to leave a surrounding annular space, a head having a circular series

of openings communicating with said annular space, a rotatable outer nozzle-tube provided in its inner end with ports adapted to move into and out of alinement with the passage-ways in the head, and an adjustable hood mounted on the outer casing and provided with a flange which encircles the head.

6. In a nozzle, the combination with the outer casing and a stream-pipe arranged centrally therein to leave a surrounding annular water-space; of a valve controlling the stream-pipe, an outer rotatable nozzle controlling the annular space, a head extending around the stream-pipe and serving as a deflector, and a conical hood adjustably mounted on the outer casing and comprising a flange which encircles the deflecting-head.

7. In a nozzle, the combination with the outer casing and the stream-pipe arranged centrally therein; of a valve controlling said stream-pipe, a head surrounding the stream-pipe and constituting means for deflecting the water, and a conical hood adjustably mounted on the outer casing and comprising concentric flanges one of which is received in a groove or seat in the head and provided with side openings for the passage of the water, and the other of which encircles the head.

8. In a nozzle, the combination with the outer casing and a centrally-arranged stream-pipe therein, provided with a shoulder; of a head screwed upon said stream-pipe, an outer nozzle-tube surrounding the stream-pipe and rotatably mounted in the head and held in place by the shoulder on the stream-pipe, said outer nozzle-tube and the head being provided with ports adapted to be thrown into and out of alinement with each other, for the purpose specified.

9. In a nozzle, the combination with the outer casing and a stream-pipe mounted centrally therein; of a head mounted upon the stream-pipe and provided with side ports and an annular groove in its inner face, and a hood adjustably mounted on the outer casing and comprising inner and outer concentric flanges, the inner flange working in the groove in the head and being provided with side openings which register with the openings in the head, and the outer flange encircling the periphery of the head and being adjustable toward and away from the same.

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

FRED W. WIEMAN.

Witnesses:

GEORGE F. DINGELSTEDT,  
K. KETELS.