

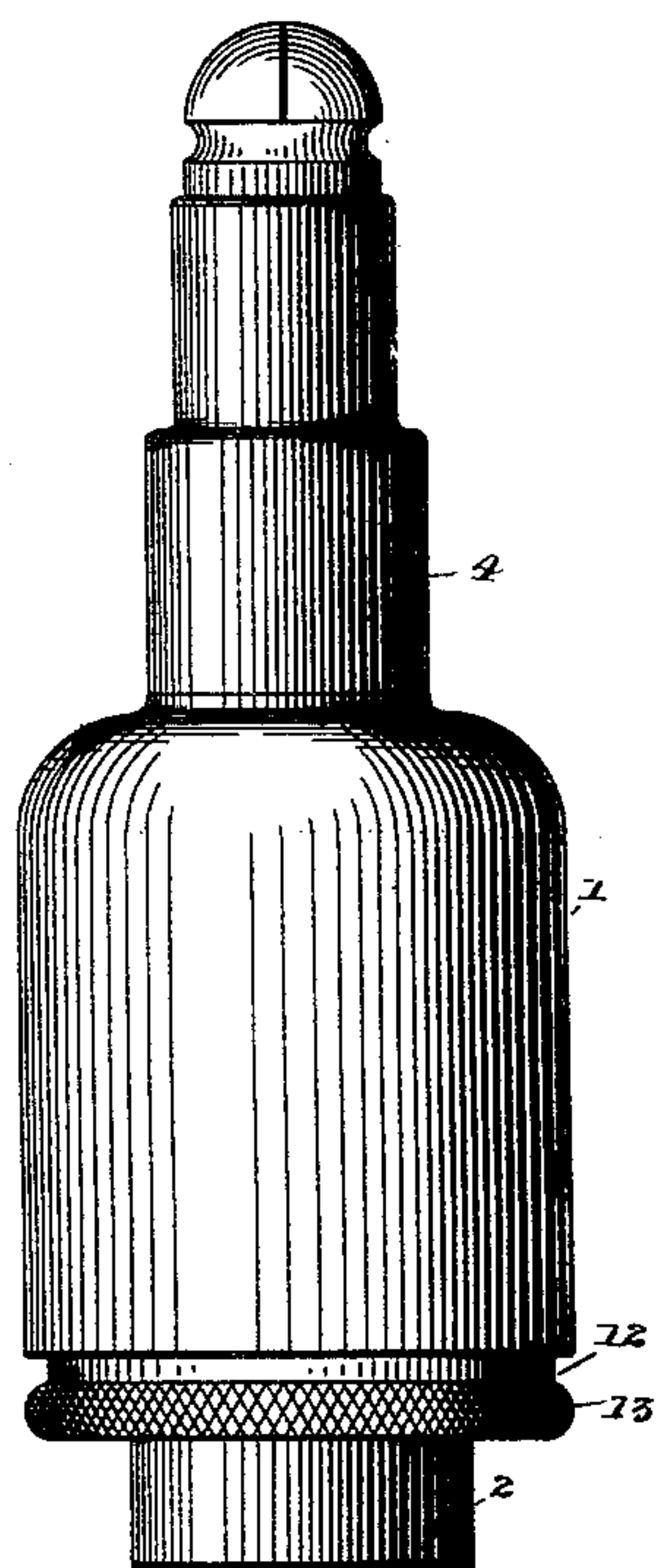
(No Model.)

W. D. HOUSE.  
VOLUMETRIC FLUID PRESSURE REGULATOR.

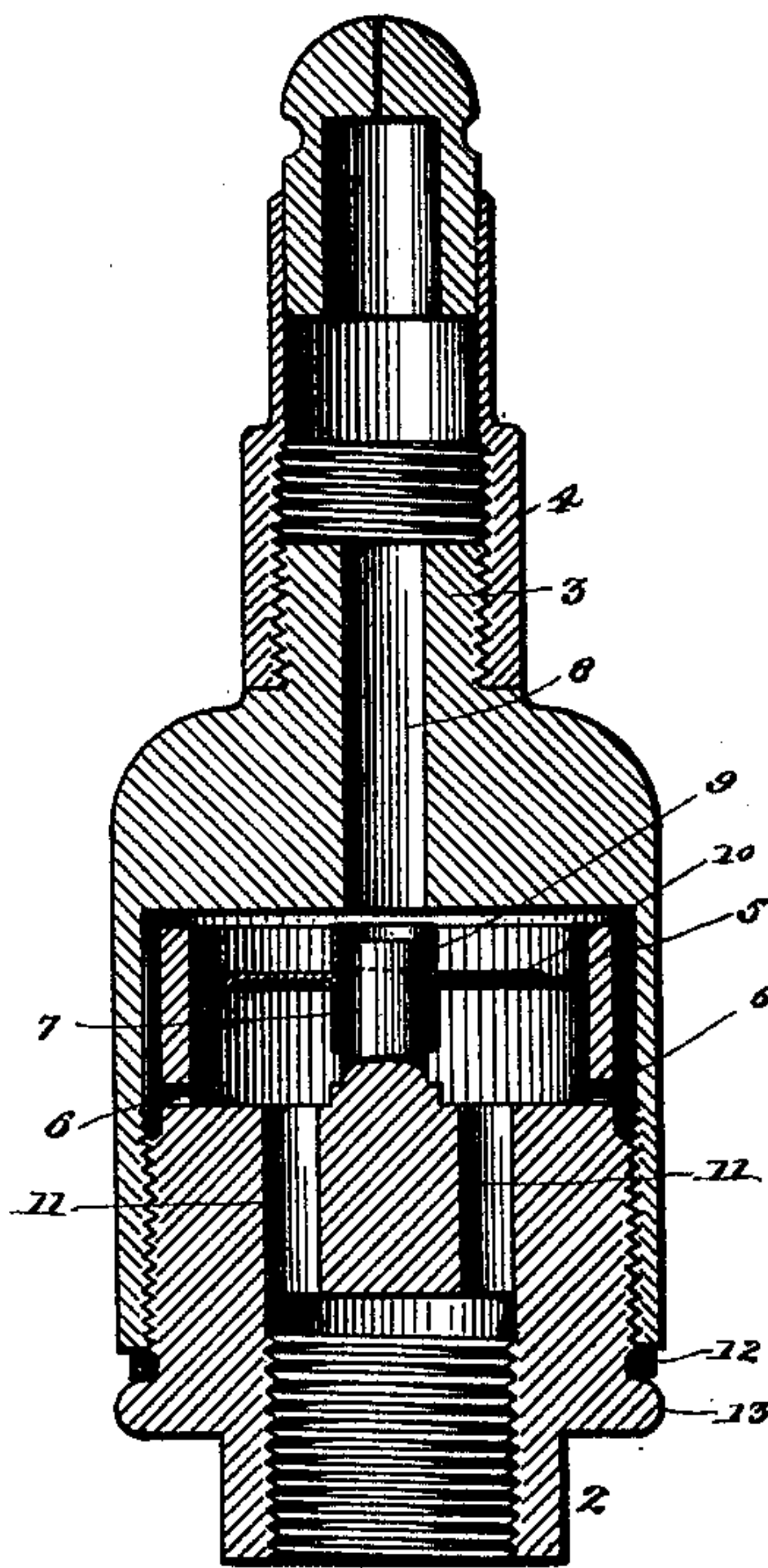
No. 415,203.

Patented Nov. 19, 1889.

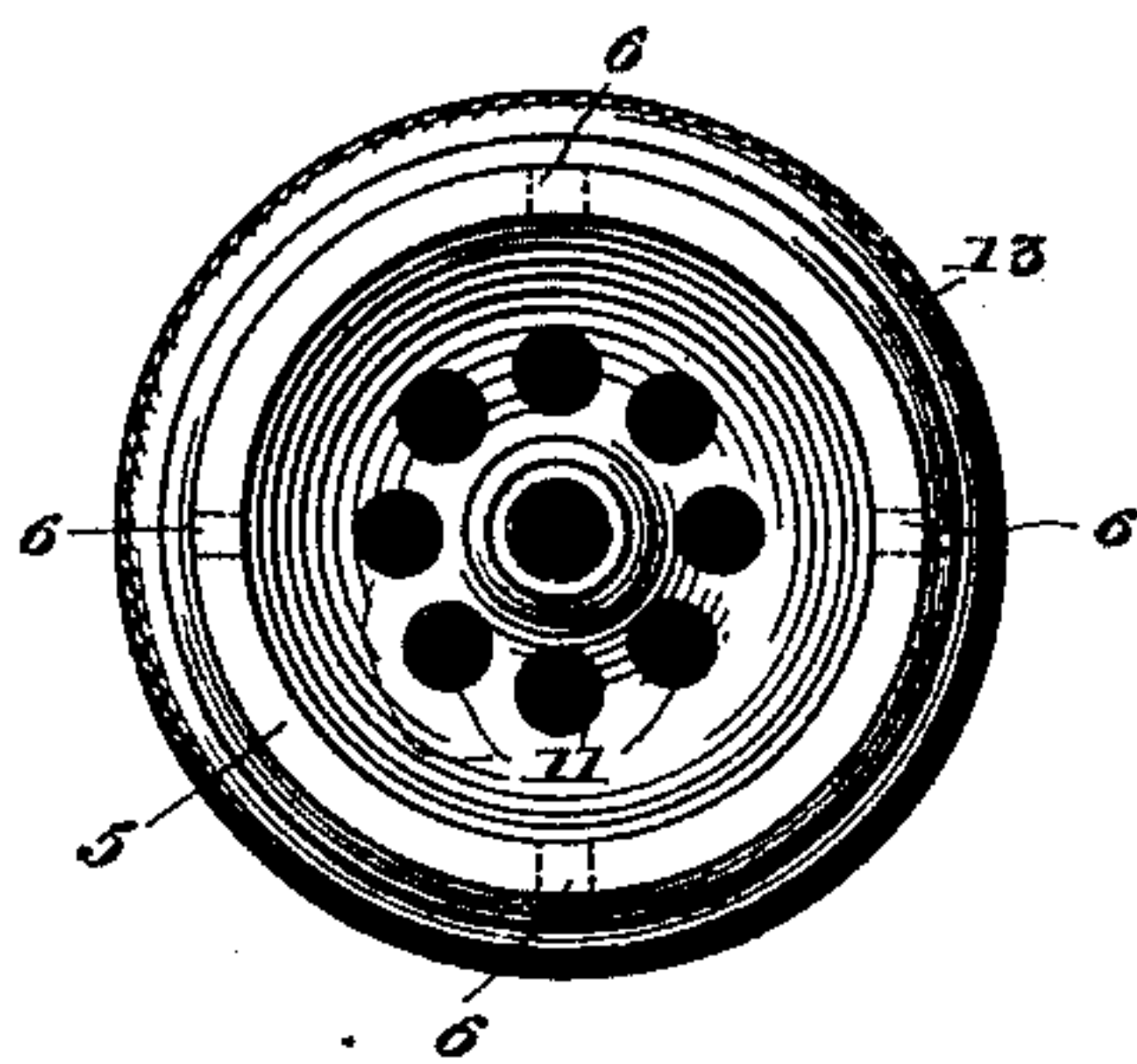
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses

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Inventor  
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By his

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# UNITED STATES PATENT OFFICE.

WARREN D. HOUSE, OF KANSAS CITY, MISSOURI.

## VOLUMETRIC FLUID-PRESSURE REGULATOR.

SPECIFICATION forming part of Letters Patent No. 415,203, dated November 19, 1889.

Application filed February 27, 1889. Serial No. 301,347. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN D. HOUSE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Volumetric Fluid-Pressure Regulators; and I do hereby 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.

My invention relates to certain new and useful improvements in volumetric fluid-pressure regulators, whose function is to furnish at the point of use in a given unit of time a predetermined quantity of fluid under a uniform pressure, regardless of variation of pressure in the main supply-conduit.

In the accompanying drawings I have illustrated my invention as applied to one of its uses—to wit, regulation of the pressure and quantity of gas to a burner-tip.

In the said drawings, Figure 1 represents in elevation a gas-burner tip provided with my invention. Fig. 2 represents the same in vertical section, and Fig. 3 represents a plan view of the lower part of the regulator with the float removed.

Similar numerals of reference indicate similar parts throughout the several views.

The regulator proper consists of two parts 1 2, the former constituting what I shall call the "shell" and the latter what I term the "base," relatively adjustable with respect to each other, preferably through the intermediacy of a screw-thread connection, as shown. The lower part 1 is adapted to be connected by means of a screw-thread or the like with the gas-supply pipe, and the upper part is provided with a screw-threaded extension 3 for the reception of the burner-tip sleeve 4, or other device to be supplied. The lower part 1 is provided with an annular flange projection 5 of an external diameter somewhat smaller than the internal diameter of the part 2, so as to leave an intervening space communicating with the interior of the said annular flange projection by means of the basal openings 6.

From the lower part of the regulator extends upwardly a central post or projection 7, said projection being in line with the opening 8 of the upper part of the regulator. Upon this central post is adapted to slide

the sleeve 9 of a light float, the main body portion 10 of said float fitting at its outer periphery the interior of the annular flange projection 5, and the sleeve of the float being so related to the opening 8 as to close said opening when the sleeve is at the upper limit of its play. About the central post 7 is arranged a series of openings 11, placing the float-chamber in communication with the gas-supply pipe, as shown.

The parts being constructed and arranged as described, the operation of my invention is as follows: When the current of gas is turned on from the supply-main, the gas enters the float-chamber through the openings 11, thereby forcing the float up to the top of its chamber and closing the opening 8. The gas also passes out through the opening 6 into the annular space between the flange projection 5 and the part 2 of the regulator. If the two parts of the regulator were screwed tightly together, so that the annular projection 5 abutted closely against the upper interior surface of the part 1, admission of gas to the top surface of the float would be prevented, and consequently the float would remain in the elevated position, closing the opening 8. In order now to lower the float to the position necessary for supplying to the burner the appropriate quantity of gas, the two parts of the regulator adjust relatively to each other by turning one or the other, as the case may be, so as to separate the upper edge of the flange projection 5 from the lower interior surface of the upper part 1. The gas accordingly passes over from the annular space and exerts its pressure upon the top surface of the float, counterbalancing the pressure upon the lower surface of the float, thereby permitting the latter to drop from its elevated position to a plane dependent upon the supply of gas coming over the edge of the annular flange projection 5. This gas accordingly passes up through the opening 8 to the burner-tip and is there ignited.

The parts 1 and 2 of the regulator are relatively adjusted with respect to each other, as described, until a flame of exactly the desired shape and dimensions issues from the burner-tip, which flame represents the capacity of the burner-tip for complete combustion. It is evident that in this manner, by raising or lowering part 1 of the regulator more or less, a proportionately larger or smaller quantity of



gas will pass over the top of the annular flange projection 5 into the uptake-opening 8, and that consequently by making the appropriate adjustment burner-tips of various capacities can be supplied with the exact quantity of gas which they are adapted to consume.

The adjustment suitable for a burner consuming normally a certain number of feet of gas in a given time having been made, as above described, I preferably insert a washer 12 between the milled edge 13 of the part 2 of the regulator and the lower edge of the part 1, said washer being of the exact width to correspond to the adjustment made. I then white-lead the screw-thread connection between the two parts of the regulator, in this manner fixing the parts so that they will be gas-tight at the screw-thread joint, and so that the adjustment may not be accidentally disturbed. The regulator in this fixed adjustment of the parts 1 and 2 is adapted to supply to the burner-tip within a given unit of time, regardless of any variation in the pressure in the supply-pipe, exactly the same quantity of gas, said quantity being the normal amount which the burner will consume with perfect combustion. An increase of pressure in the gas-supply pipe will cause the float to rise so as to diminish the outlet into the uptake 8, and, conversely, a decrease of pressure in the gas-supply pipe will cause the float to sink, thereby increasing the outlet leading into the uptake 8, so that in either case the ultimate amount of gas passing into said uptake within a given unit of time will be the same.

In an application of even date herewith, Serial No. 301,348, filed by me, I show a construction in many respects like that described herein; but this form of pressure-regulator differs from that in the other case, among other things, in the following respects: The float herein has an open-ended guide-sleeve sliding upon a solid post, instead of a closed cap sliding on a hollow post. The float-chamber herein consists of an annular flange closed at the top by the float, which receives the pressure of the gas only on its main body portion, and the gas passes from the supply into the float chamber, and thence by basal openings to the annular chamber, instead of directly from the supply to the annular chamber, as in the other case.

Having thus described my invention, what I claim is—

1. A fluid-regulator of the kind described, consisting of the shell 1 and base 2, relatively adjustable with respect to each other, the shell having a gas-outlet 8, leading to the point of use, and the base 2 having a gas-inlet adapted to be connected with the supply-pipe, an annular flange projecting from the base within the shell and constituting a float-chamber, an intervening space between said chamber and the shell, said space communicating with the float-chamber below the float,

a central post, and a float sliding upon said post within the chamber, substantially as described.

2. A fluid-regulator of the kind described, consisting of the shell 1 and the base 2, relatively adjustable with respect to each other, the shell having a gas-outlet 8, leading to the point of use, and the base 2 having openings 11, communicating with the gas-supply pipe, an annular flange projecting from the base and forming a float-chamber within the shell, an intervening space between the shell and the chamber communicating with the latter by the openings 6, a solid central guide-post, and a float having a sleeve sliding upon said post and within the float-chamber, substantially as described.

3. A fluid-regulator of the kind described, consisting of the shell 1 and the base 2, relatively adjustable with respect to each other, the shell having a central gas-outlet 8, leading to the point of use, and the base having a gas-inlet adapted to be connected with the supply-pipe, an annular flange projecting from the base and forming a float-chamber within the shell, an intervening space between the shell and chamber, said space communicating with the gas-supply pipe through the openings 11 and 6, a central post, a float sliding upon said post within the float-chamber, and an external washer 12, substantially as described.

4. A fluid-regulator consisting of the shell 1 and base 2, having a screw-thread connection, the shell 1 being provided with a central uptake 8, and the base 2 having an annular flange projecting from the base to near the top of the shell and forming a float-chamber within the shell, said chamber provided with side openings 6, leading to the annular space from below the float, and bottom openings 11, communicating directly with the supply, an intervening annular space between the float-chamber and the shell, a central post 7, and a float sliding upon said post and fitting the interior of the chamber, substantially as described.

5. A fluid-regulator consisting of the base 2, having an external screw-thread, and the shell 1, having an internal thread, the shell having a central uptake 8, and the base having the annular flange 5, projecting up to near the top of the shell and forming a float-chamber in the base within the shell, an annular space between the chamber and the shell-wall, a central guide-post in the base, and a float sliding upon the post and fitting the chamber, said chamber communicating directly with the supply and also with the annular space both above and below the float, substantially as described.

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

WARREN D. HOUSE.

Witnesses:

JOHN C. PENNIE,  
HERBERT W. ELMORE.