

(No Model.)

2 Sheets—Sheet 1.

T. A. KNICKERBACKER & R. HUGHES.
FIRE HYDRANT OR PLUG.

No. 488,015.

Patented Dec. 13, 1892.

Fig. 1.

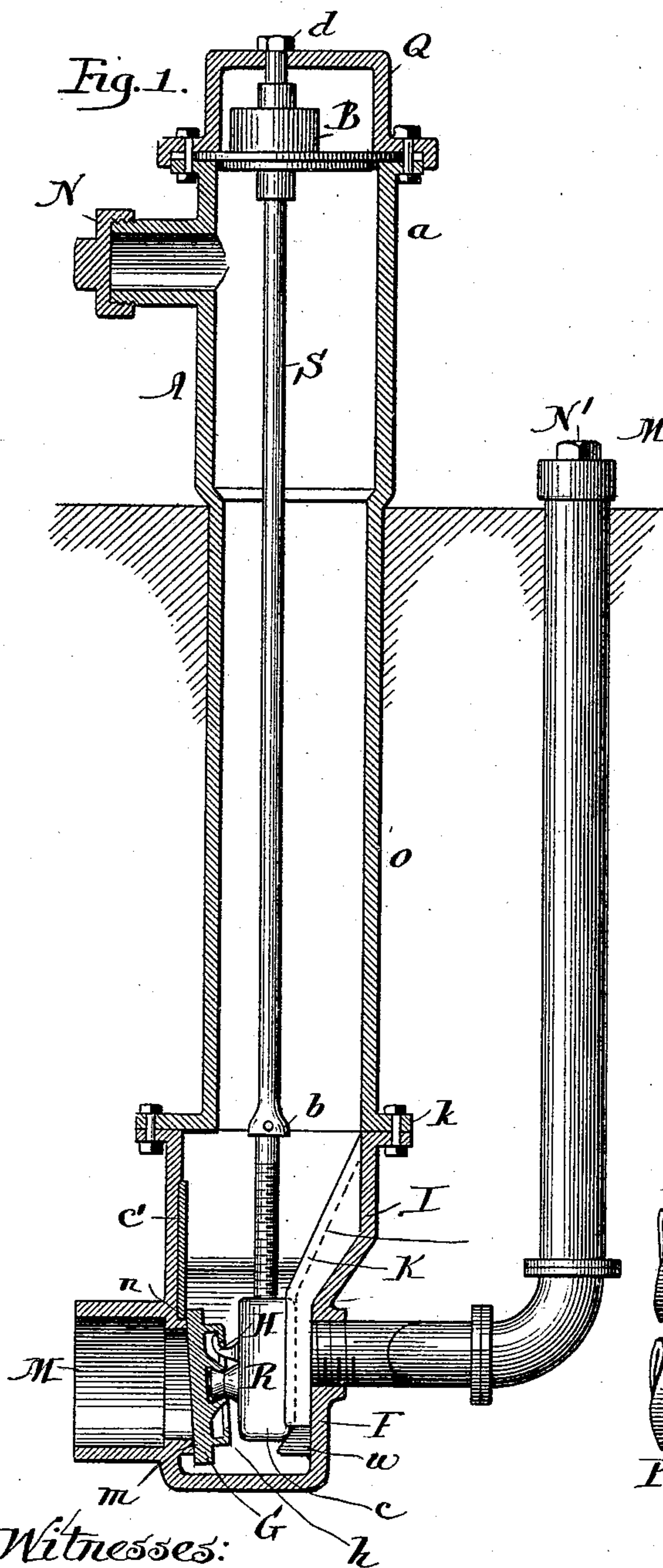


Fig. 2.

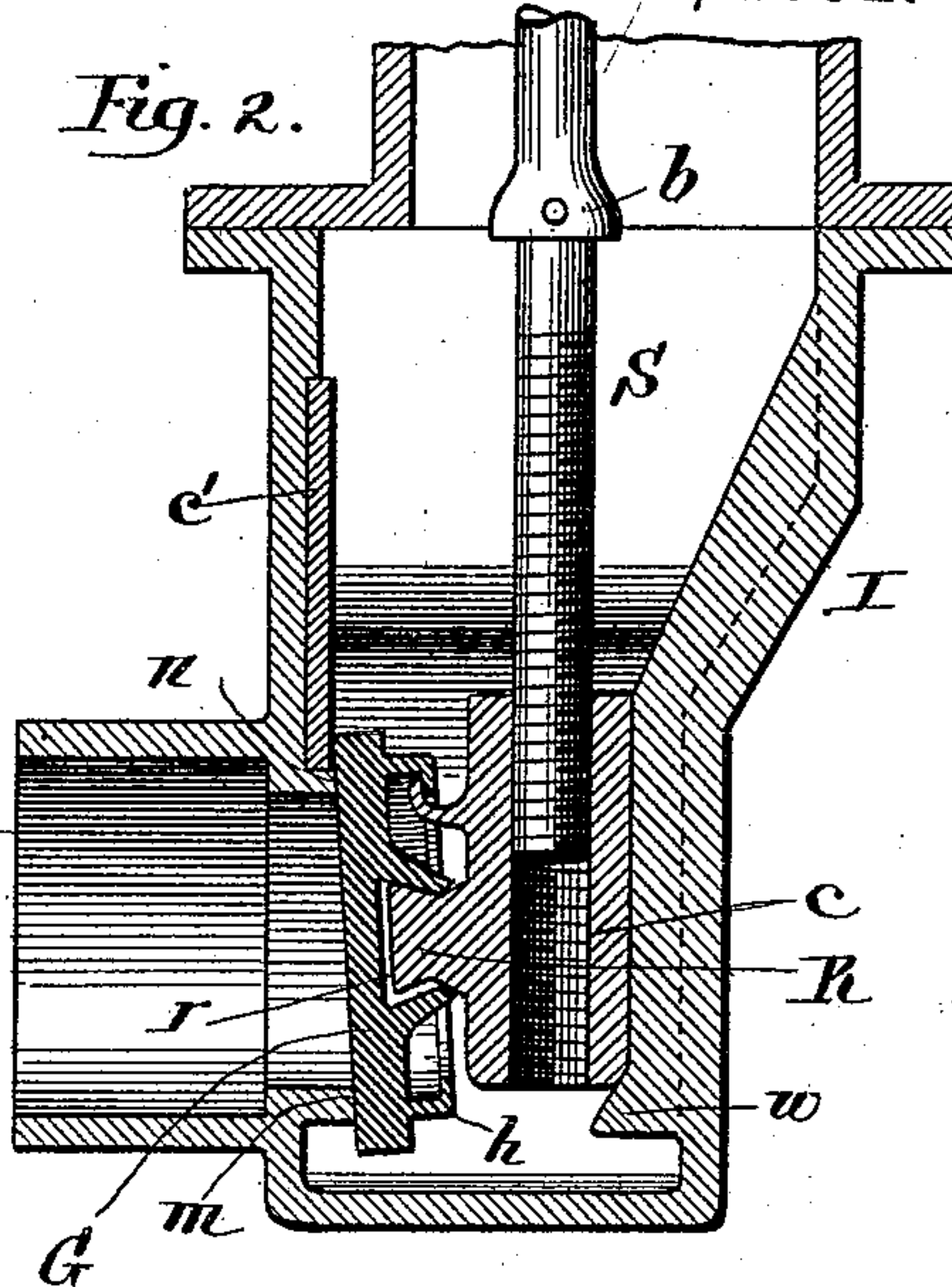
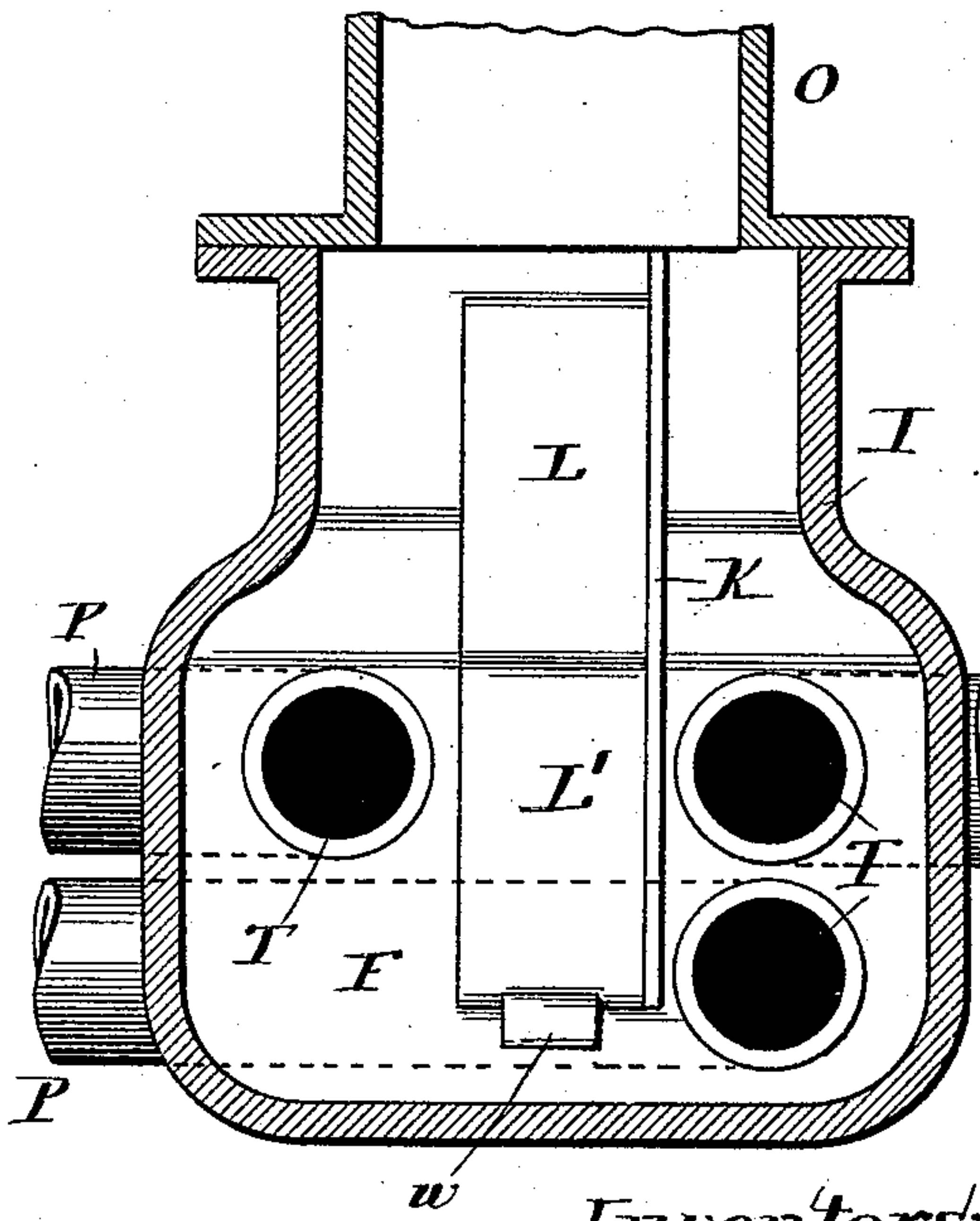


Fig. 3.



Witnesses:
Fred Gerlach
Alberta Adamick.

Inventors:
Thomas A. Knickerbacker
Robert Hughes
By Wm. Fisher
Attorneys.

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Fig. 4.

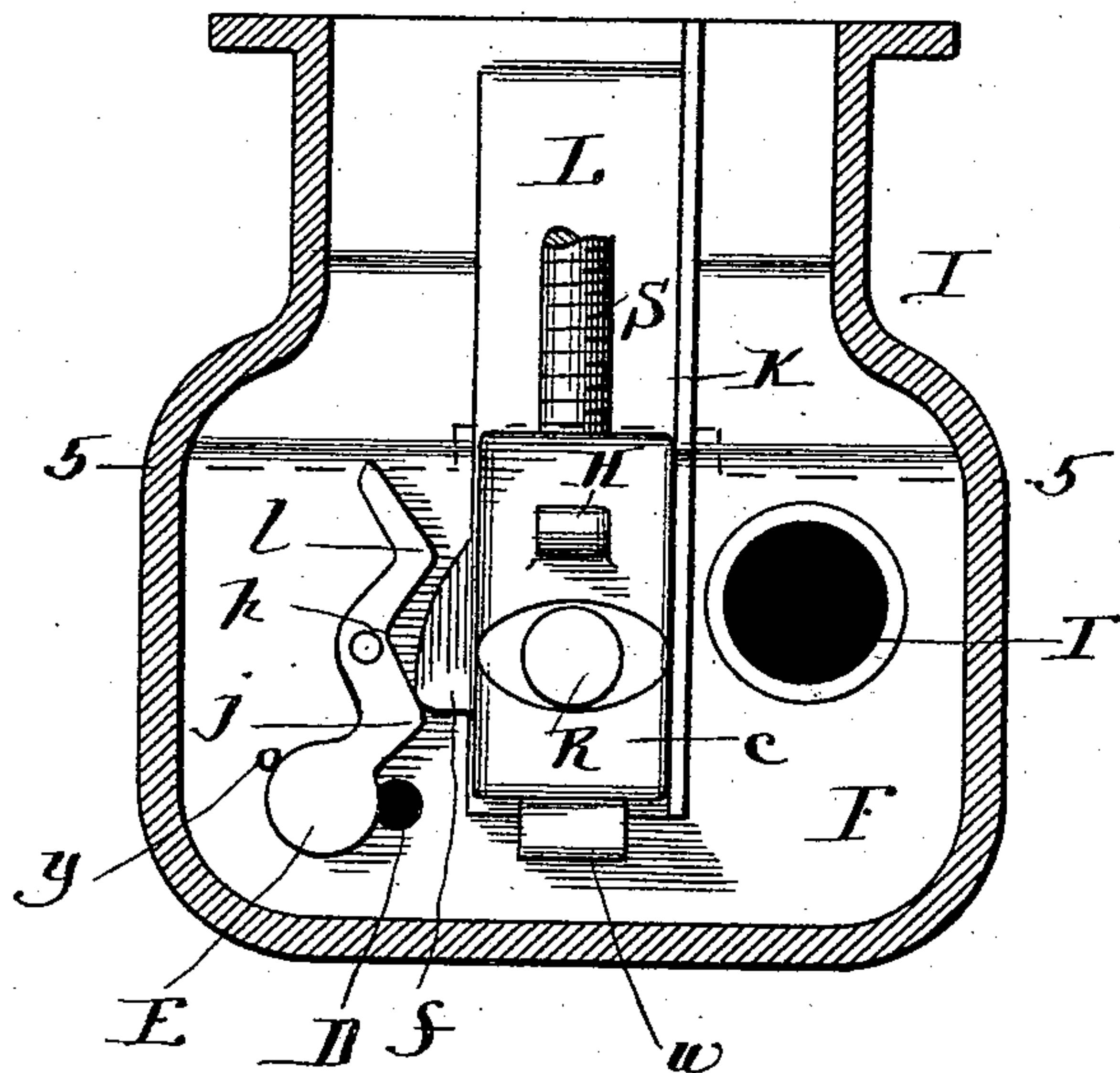


Fig. 6.

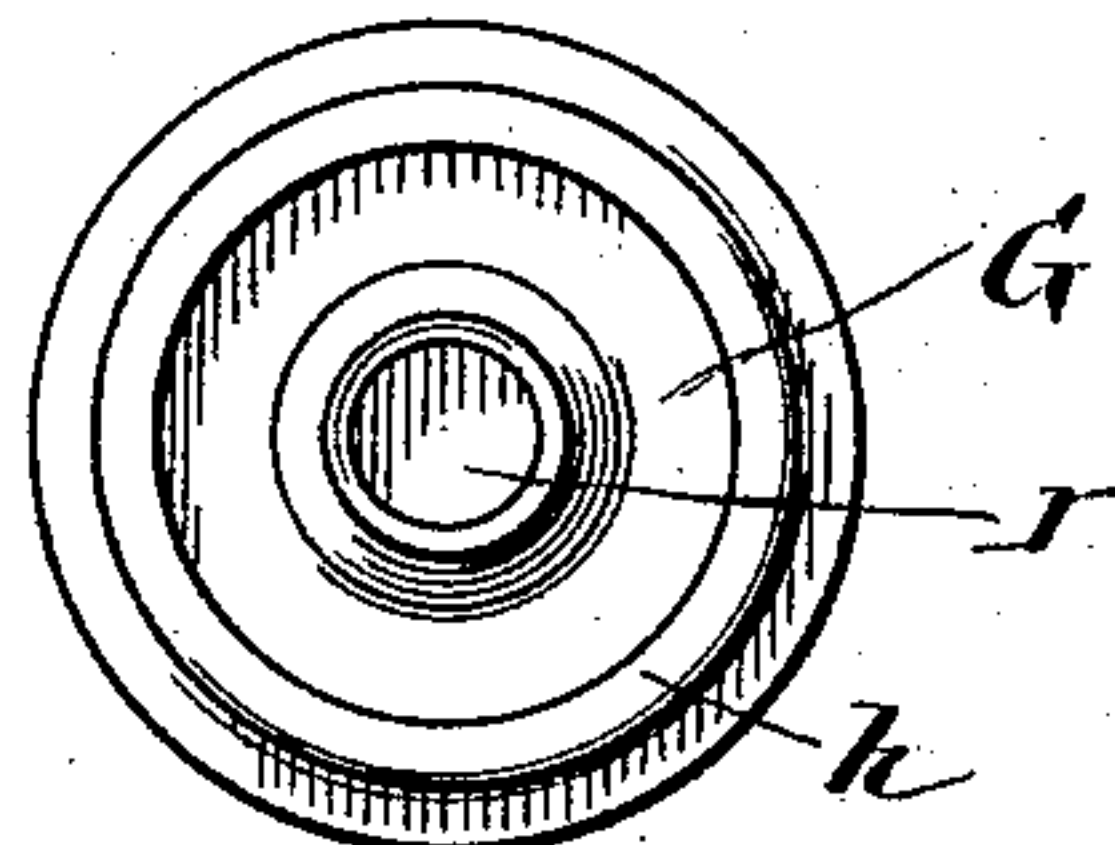


Fig. 7.

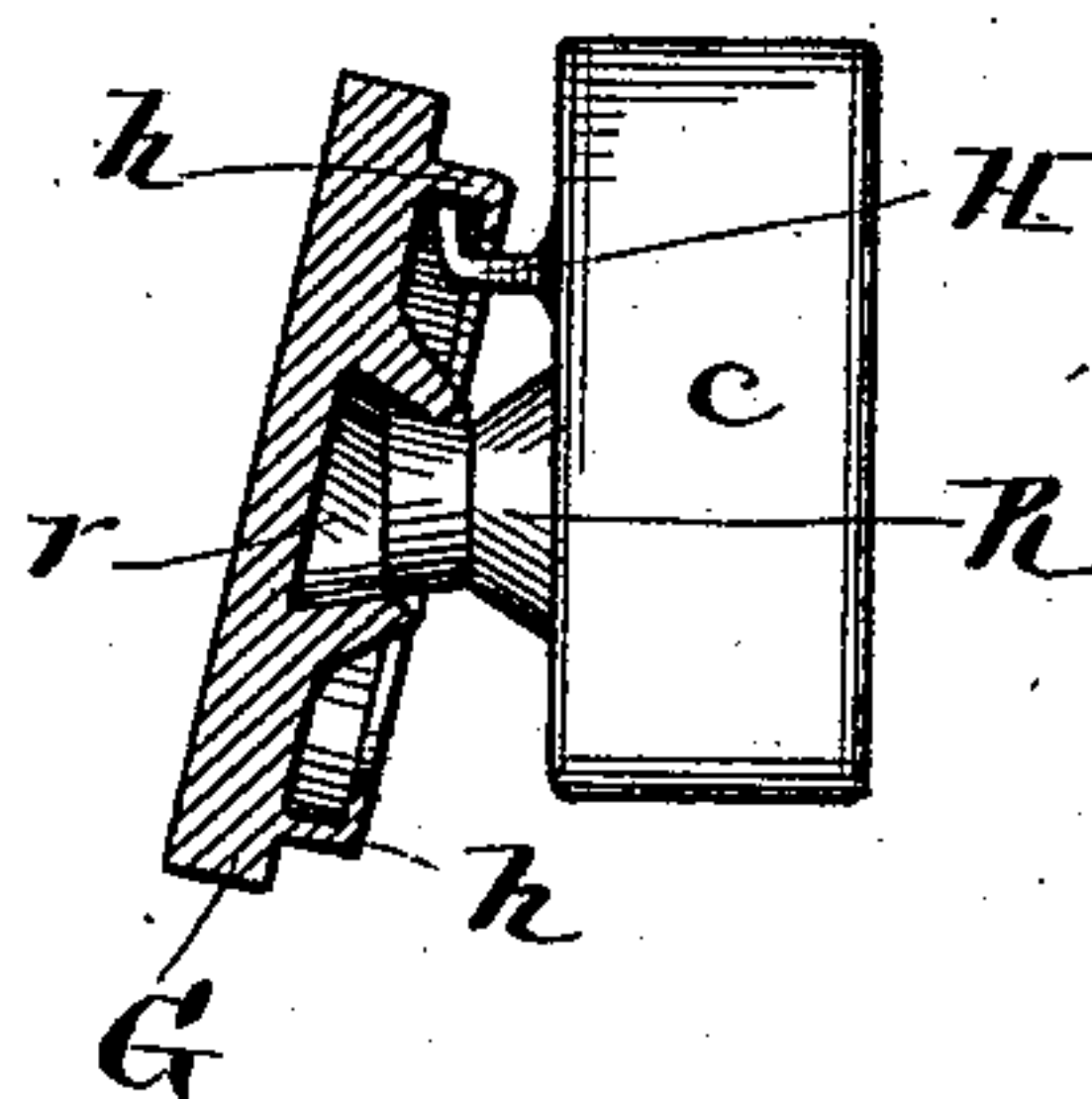
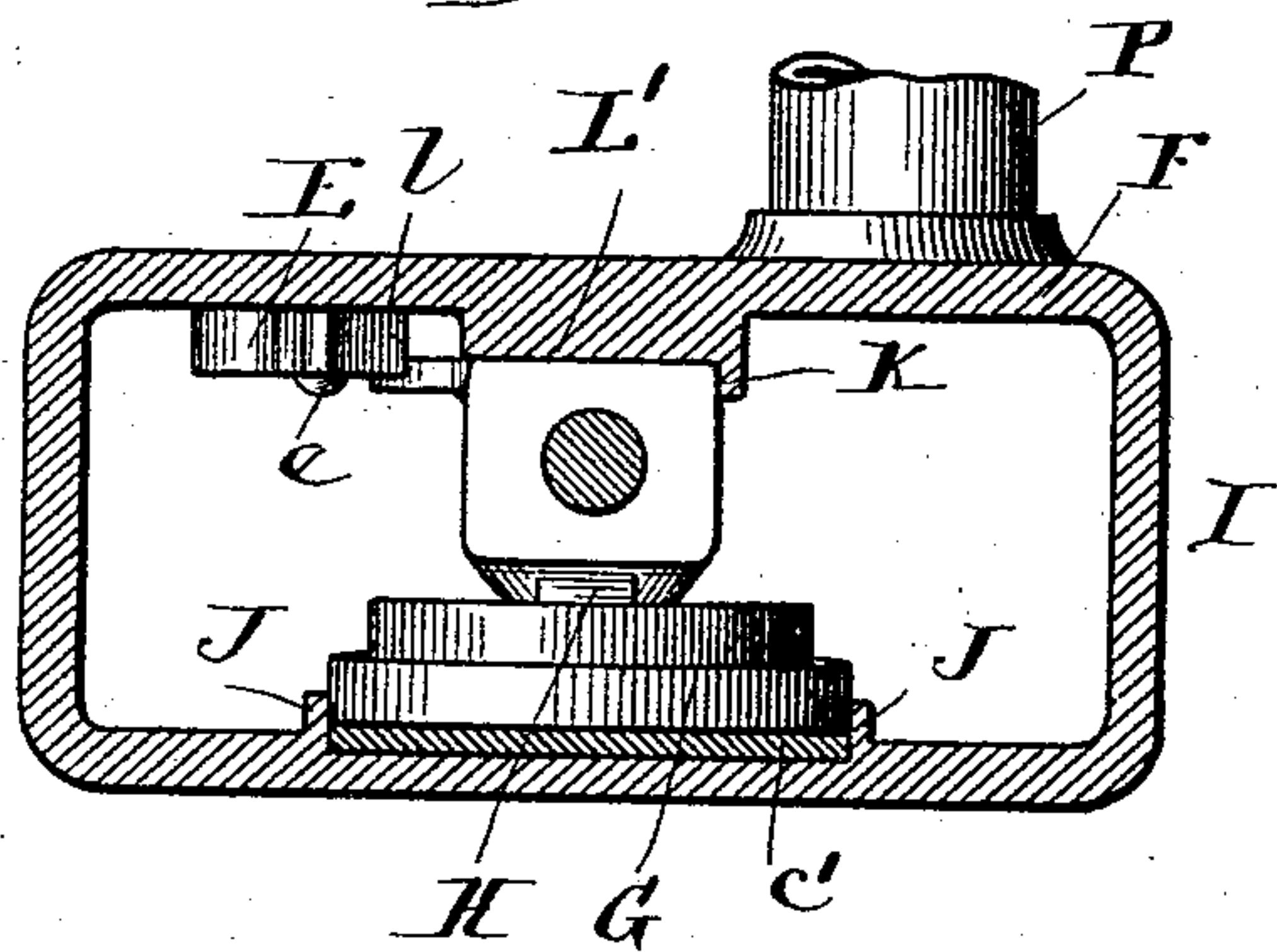


Fig. 5



Witnesses:

Friedrich

Alberta Adamick.

Inventors:

Thomas A. Knickerbocker

Robert Hughes

By *Wm. Fisher*

Attorneys

UNITED STATES PATENT OFFICE.

THOMAS A. KNICKERBACKER, OF TROY, AND ROBERT HUGHES, OF WATERFORD, NEW YORK.

FIRE HYDRANT OR PLUG.

SPECIFICATION forming part of Letters Patent No. 488,015, dated December 13, 1892.

Application filed July 6, 1886. Serial No. 207,217. (No model.)

To all whom it may concern:

Be it known that we, THOMAS A. KNICKERBACKER, of Troy, county of Rensselaer, and ROBERT HUGHES, of Waterford, county of Saratoga, State of New York, have invented certain new and useful Improvements in Fire Hydrants or Plugs, of which the following is hereby declared to be a full, clear, and exact description, sufficient to enable others skilled in the art to make and use the same.

Referring to the accompanying drawings, forming part of this specification, like letters of reference denote like parts throughout.

Figure 1 is a view in central longitudinal section, showing a fire-plug constructed according to the invention. Fig. 2 is a similar view at the lower part, enlarged, to show the case, gate, and carrier. Fig. 3 is a view similar to Fig. 1 on a plane at right angles thereto, the carrier and valve proper being removed. Fig. 4 is a view in front elevation to display the carrier, guide, and drip-valve, the valve-case being in section. Fig. 5 is a cross-section at line 5 5, Fig. 4, the gate being set in place upon its carrier. Fig. 6 is a back view of the gate; Fig. 7, a detail view, partly in section, to exhibit the removable relation and support of the gate and its carrier.

The invention relates to hydrants or plugs for controlling the discharge of water from a supply pipe or main; and the invention has for its objects to improve the construction of the valve-gate and carrier, to facilitate the removal and setting of such parts within the valve-case, to provide for the escape of the waste or drip water, to furnish supplemental outlets from the case for the main water-supply, and otherwise to simplify and perfect the organization and operation of this class of devices.

To these ends the invention consists of certain improvements in feature and structure of such hydrants or plugs, the nature of which will fully appear from the description following, and be thereafter more distinctly pointed out by claims at the conclusion thereof.

Conveniently secured by flange and bolts, as at *k*, to the valve-case *I* is the hydrant

proper *A*, which latter ordinarily extends upright from the ground, as shown, and consists of a stand-pipe *o* and an enlarged top portion or head *a*, finished externally in any desired design. A nozzle and cap, (one or more,) as at *N*, furnish the usual outlet from the hydrant. The stem *S* works through the stuffing-box *B*, of ordinary construction, and is turned, as desired, by the nut-terminal *d* at its upper end, the plug-cap *Q* serving to secure the stuffing-box plate and also as a bearing for the stem *S*. Below the stand-pipe *o* is the valve-case *I*, which consists of an oblong box having one of its sides somewhat flaring in the upper portion and on the opposite side thereto, near the bottom, furnished with an inlet-port *M* for connection with the water main or pipe. The inner face of the port *M* is made slightly beveled or inclined, as at *n m*, Fig. 2, to better insure the snug seating of the valve-gate *G* against the port, parallel vertical guides *J* at each side of the port-seat serving to direct the gate *G* in its opening and closing movements. Because of the oblong shape of the valve-case *I* the back plate thereof, as at *F*, affords a flat plane face of enlarged area opposite the inlet *M*, through which face suitable educts *T* may be made, connecting with the supplemental discharge-pipes *P P*. These pipes may extend a considerable distance away from the plug proper *A* and are available for flushing or other purposes, although in case of fire the plug *A* and its supply may no longer be accessible. The usual caps, as at *N'*, close the supplemental pipes *P P* and when in place direct the whole volume of water from the main through the stand-pipe *o* and the outlet of the hydrant or plug *A*. Extending from the back plate *F* of the valve-case is the smooth way or bearing *L'*, against which the contiguous face of the gate-carrier *c* firmly abuts and slides in opening and closing the port *M*, and continuous with the guideway *L'* is the upper inclined bearing *L*, sustained from the expanded portion or overhang of the valve-case. These bearings *L L'* are provided at one edge with a raised lip or flange *K*, which prevents

the gate-carrier *c* from being displaced laterally or from becoming disaligned during its up-and-down movements in the case. The carrier *c* consists of an oblong block substantially rectangular in section and threaded longitudinally through its center to receive the lower screw-terminal of the stem *S*. The stem *S* is conveniently divided at about the line of juncture between the stand-pipe *o* and valve-case *I*, a square end and cup coupling with cross-pin, as at *b*, being preferably used to join the parts of the stem *S* rigidly together.

From the side of the carrier-block *c* facing the inlet-port *M* project the swivel-pin *R* and upturned hook *H*, these parts engaging, respectively, with the eye-hole *r* and the inturned rim or flange *h* at the back of the valve-gate *G*. The disk-gate *G* turns freely upon the swivel-pin *R*, the eye-bearing *r* of the disk being sufficiently enlarged to permit the disk to play slightly to and fro about the pin. The upturned hook *H*, while allowing for this easy play of the gate *G* and for its free rotation on the swivel *R*, coacts at the same time with the rim *h* of the gate to limit the play and hold the gate in place upon the swivel. By taking off the hydrant-cap *Q* the stem *S* may be used for lifting the carrier *c* and the attached gate *G* out from the valve-case *I* and stand-pipe *o*. Once removed both carrier and gate become accessible for repairs, and, if desired, the gate can be taken from off its swivel-seat *R*, such construction being sufficiently loose in play to allow the hook *H* to clear the ledge *h* and also to withdraw the slightly-enlarged swivel *R* from the correspondingly-enlarged eye *r* of the disk.

In setting or removing the carrier *c* and gate *G* from the valve-case it will be noted that the inclined bearing or way *L* performs an important function, supporting and directing the carrier so that the same, together with the gate, may drop snugly into position or in removal may clear the junction-offset at the top of the valve-case and come centrally within the stand-pipe.

The waste or drip vent *D* in the side of the casing *I* is controlled by a drip-valve *E*, pivoted, as at *e*, to the casing and having reversely-inclined faces *p l p j*, which contact with the cam-lug *f* projecting from the side of the carrier *c*. As the carrier *c* is raised, together with the gate *G*, to admit the water from the main the lug *f* slides against the incline *p l* of the drip-valve *E*, turning the latter about its pivot *e* and effectually closing the waste-port *D*. On the return or downward movement of the carrier *c* to shut off the flow of water from the main into the plug the cam *f* encounters the companion incline *p j* of the drip-valve *E*, reversing the position of the latter and exposing the port *D*, so that the residual water in the plug may gradually escape. A pin *g*, projecting from the casing *I* into the path of valve *E*, checks the swing of said

valve upon its pivot *e*, and thus holds the same within the field of play of the carrier-lug *f*. The valve *E*, as appears, is actuated positively in both directions, so that the use of weight or reaction springs and the danger from fouling or the breakage of such expedients is entirely obviated. The flange *K* at the side of the ways *L L'* not only aids in directing the carrier *c* but is in position to resist the thrust of the cam-lug *f* in actuating the drip-valve *E*, in consequence whereof the carrier *c* remains evenly aligned upon its bearing *L'* during its up-and-down shift, while the cam-lug *f* is held firmly to its work in tripping the waste-valve *E*. At its lower end the way or bearing *L'* terminates in an abruptly-inclined nose *w*, against which the carrier abuts near the end of its downward travel, such nose-piece *w* coacting with the bevel-face *n m* of the inlet-port to sharply wedge the carrier and gate, and thus to effectually close the port. Before the closing of the inlet is finally accomplished the gate *G*, being free to rotate about the swivel-pin *R*, contacts with the port-face *n m* and turns with a twisting movement to its seat. This twisting movement insures a tight closure or joint, while at the same time the wearing effect thereof is evenly distributed around the circuit of the gate-disk *G*, because the latter hangs and turns upon the swivel-pin *R*. A brass, as at *c'*, in the upper part of the valve-case furnishes a bearing for the gate *G* in its upward movement and assists to keep the gate from rust or fouling.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a hydrant, the combination, with the stand-pipe and with the valve-case below the pipe, having a waste-educt therein, of the screw-stem, the carrier-block threaded thereto and having a projecting lug thereon, and a drip-valve provided with reverse inclines or cam-edges engaging alternately with said lug to shift the drip-valve positively in opening or closing the educt, substantially as described.

2. The combination, with the stand-pipe and with the valve-case below the pipe, having an inlet-port and a waste-educt therein and furnished with a guideway or bearing having a raised flange thereon, of the screw-stem, the carrier-block threaded thereto supporting the valve-gate and resting against said way and flange and provided with a projecting lug, and a drip-valve having reverse inclines or cam-edges to engage with said lug, whereby the drip-valve is shifted and coacts, also, with the raised flange of the way to position the valve-gate in its relation to the inlet-port, substantially as described.

3. The combination, with the stand-pipe and with the valve-case below the pipe, having an inlet-port and a waste-educt therein, 130

5 and a carrier guide or way, of the screw-stem, the carrier block threaded thereto and having the valve-gate mounted thereon, and the supplemental discharge pipe or pipes located opposite the inlet-port at the side of the guide or way and in free communication with said case irrespective of the position of the inlet-valve, whereby the waste water in said sup-

plemental pipes may escape through the waste-duct, substantially as described.

TH. A. KNICKERBACKER.
ROBERT HUGHES.

Witnesses:

C. A. WALDSON,
JOHN KNICKERBACKER.