

(No Model.)

G. W. KNAPP & J. V. CHAMBERLIN.
VALVE.

No. 517,575.

Patented Apr. 3, 1894.

Fig. 1.

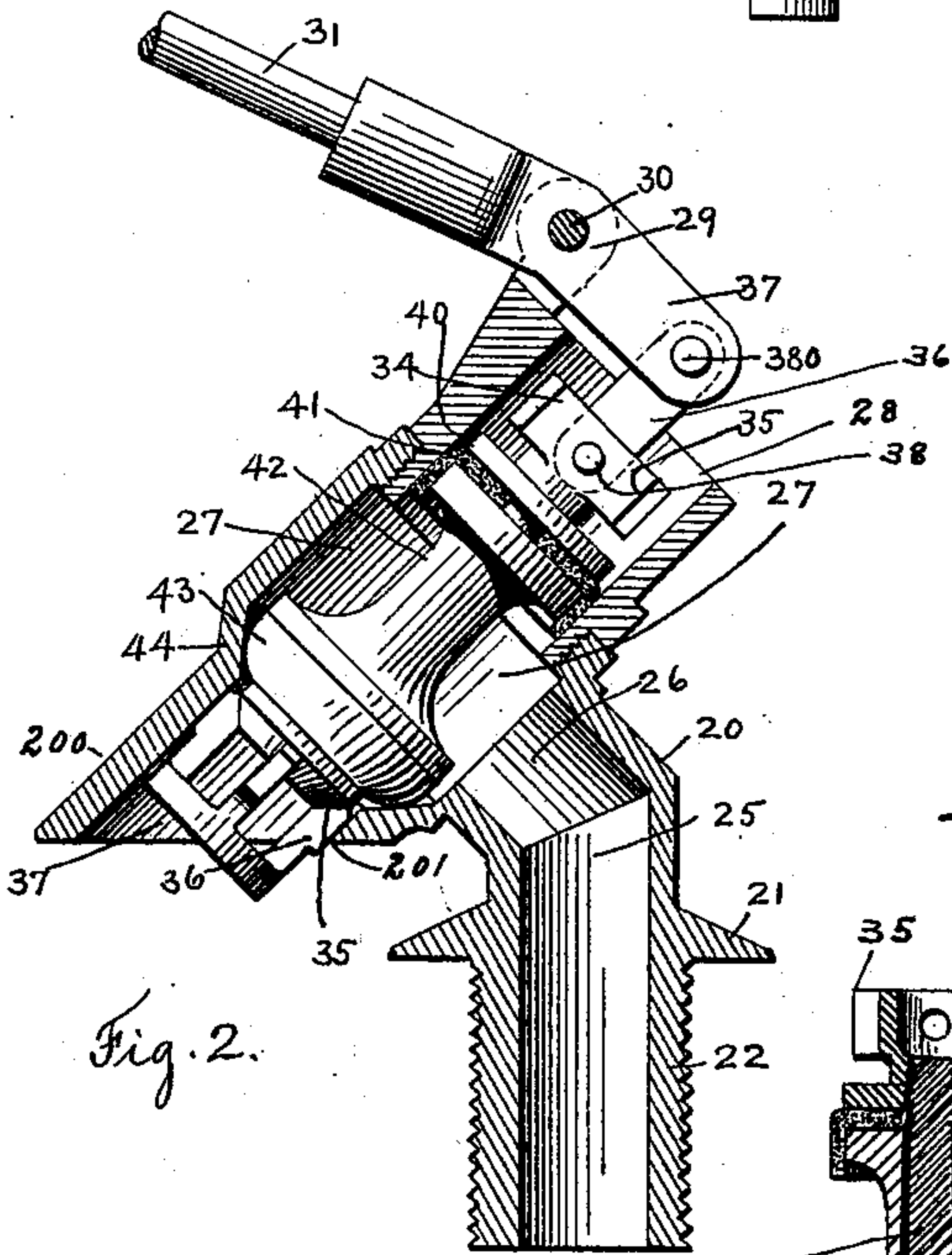
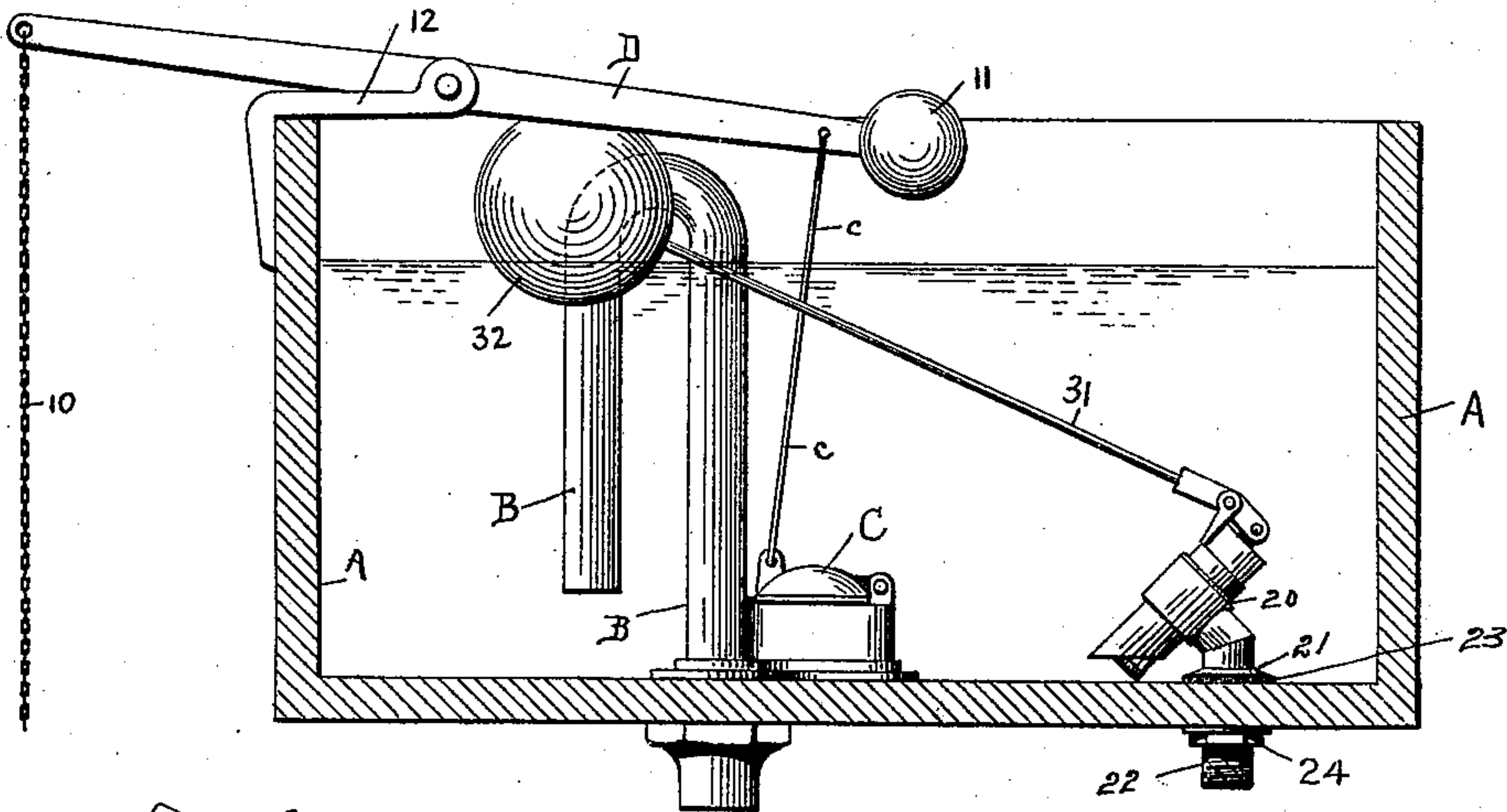


Fig. 2.

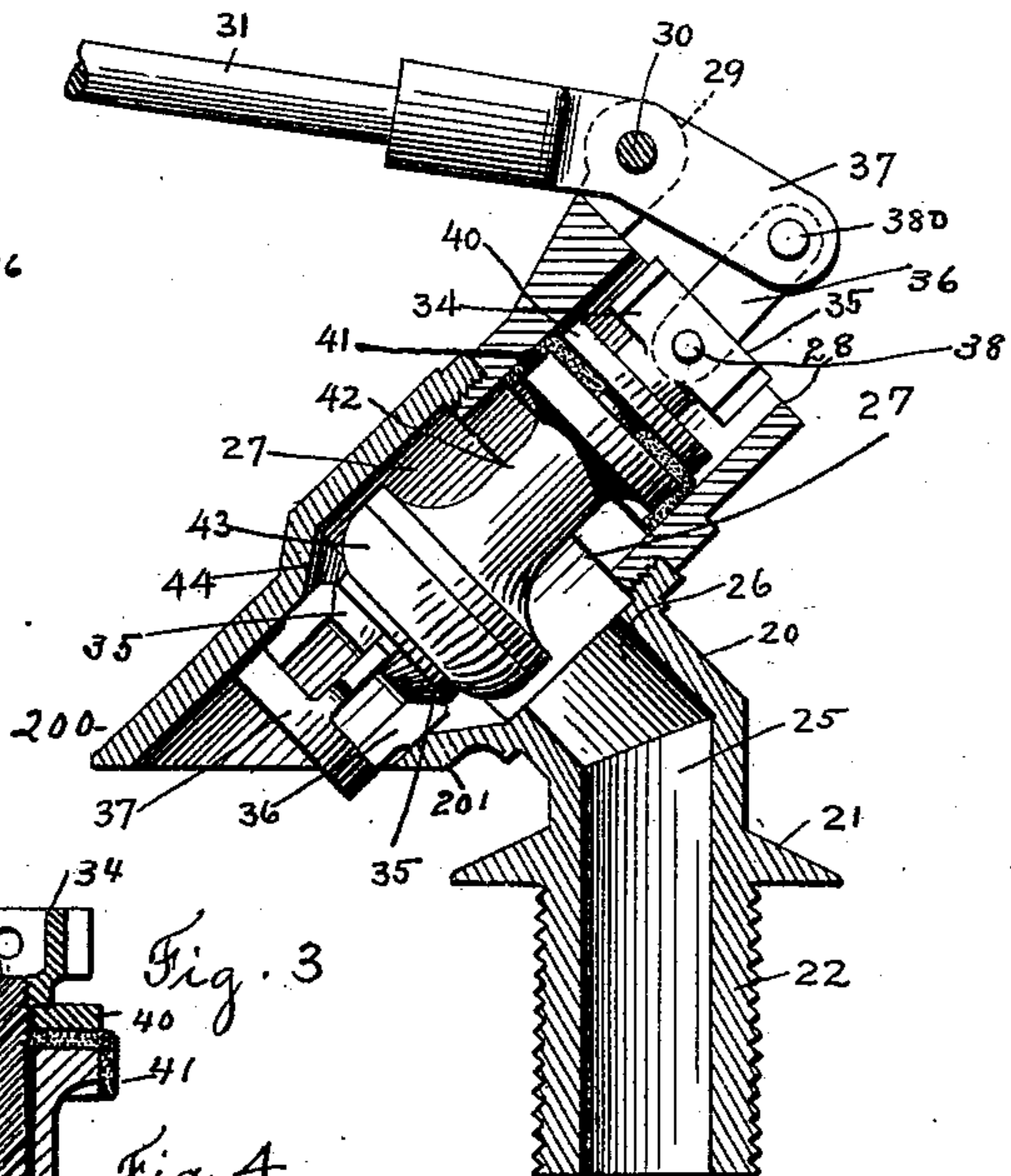


Fig. 3.

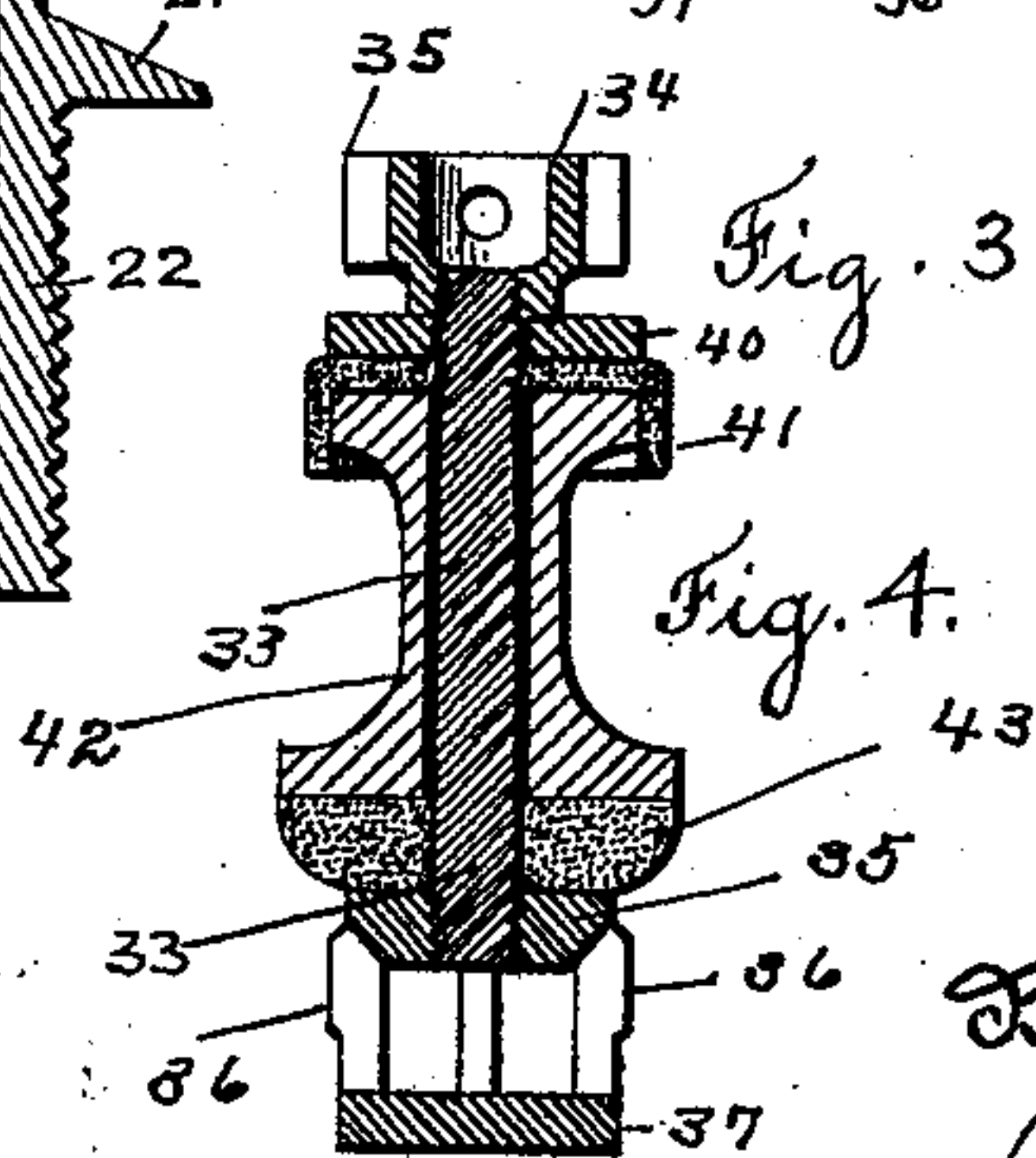


Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE W. KNAPP AND JOHN V. CHAMBERLIN, OF WORCESTER,
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VALVE.

SPECIFICATION forming part of Letters Patent No. 517,575, dated April 3, 1894.

Application filed April 26, 1893. Serial No. 471,966. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. KNAPP and JOHN V. CHAMBERLIN, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Valves, of which the following is a specification.

The aim of this invention is to provide a new and improved valve, which may be used for any desired purpose, and especially relates to a valve which is applicable as the inlet valve for closet-cisterns.

To this end, the invention consists of the device described and claimed in this specification, and illustrated in the accompanying drawings, in which—

Figure 1 is a section of the closet-cistern with our valve used as the inlet valve thereto. Fig. 2 is a section of our improved valve showing the same closed. Fig. 3 is a section of the same showing the same open, and Fig. 4 is a section of the valve-stem.

Referring to the drawings and in detail A represents the usual tank, which may have a siphon B, which is adapted to empty the tank in any well-known manner. This siphon B may have a valve C at the bottom of the same, by opening which, the water from the tank is allowed to pass into the outlet pipe, and then when the valve is allowed to return to its seat, the descending column of water in the outlet pipe will start the siphon B in the usual manner. This valve C may be operated from the usual lever D, which may be pivoted upon a bracket 12 secured to the tank A, and this lever D may have a suitable counter-weight as 11, and may be operated by the usual pull or chain 10. The lever D connects by the wire or rod c to the valve C.

Our improved valve consists of the main casing 20, which has a shoulder 21, as shown, and an extending screw-threaded shank 22 which shank 22 is inserted in a hole in the bottom of the tank, and a packing 23 is placed under the shoulder 21, and by means of a nut 24, the valve is nicely held in place. The main casing has an inlet passage 25 formed in the same, which inlet passage is turned at an angle as at 26, and at right angles to the passage 26 is formed the valve-chamber 27,

as shown. By this arrangement, it will be seen that the incoming water will be directed against the bottom of the tank.

Screwed into the top of the valve-chamber 27 is a piece 28 which has extending arms 29, in which arms 29 a pin 30 is mounted, and on this pin 30, the lever 31 of the ball-float 32 is pivoted, as shown.

The valve proper consists of the stem 33 which is screw-threaded at both ends, as shown, and to the upper end of which is secured a piece 34, which has guide-wings 35, as shown, and which is recessed so that a link 36 can fit into the same, and be pivoted upon a pin 38, which is passed through the piece 34, as shown. The arm 31 has extending arms 37 which carry pin 380, and the link 36 is arranged between this pin 380 and the pin 38. Fitting on the stem 33 below the piece 34 is a washer 40, and fitting under the washer 40 is the cup-leather 41. Arranged on the stem below the cup-leather is the bushing 42, and below this bushing 42 is arranged the valve 43, which may be made out of rubber, as shown, and which is adapted to bear against a valve-seat 44 formed in the casing, as shown. Screwed on the end of the stem 33 is a piece 35. This piece 35 has extending wings 36, which act as guides in connection with the guides 35 to nicely center and guide the valve to its seat, and which support and carry a disk 37, this disk 37 acting as a throttle or auxiliary valve as hereinafter described, the disk 37 fitting somewhat loosely in the extension 200 of the main casing, as shown. This extension 200 of the main casing is cut off substantially parallel with the bottom of the tank, so that the disk 37 will be partially in and out of the casing 200, as shown. It will be seen that the cup-leather 41 is arranged above the inlet 26, and that the valve 43 is arranged below the inlet 26. By this means, the valve will be substantially balanced, and by varying the size of the holes in the main casing, and in the piece 28, the balancing can be made on one side or the other of the valve. Also it will be seen that the piece 28 is open at the top, whereby the water in the tank can reach the cup-leather, and thereby, the cup-leather will be kept moist, and in a proper condition.

As arranged, the valve has a slight tendency to come to its seat. The action of the disk 37 greatly aids in the action of the closet-cistern, and is as follows: When the siphon B is started in the cistern, the water is gradually drawn out, and, at the same time, the float 32 allows the water to come into the tank, and in the ordinary construction, the lower the ball 32 descends, the wider the valve will be opened and the larger the incoming stream. This usual construction is very faulty, in that, if the supply let into the tank from the inlet valve is the same or substantially the same as that which the siphon draws out, the siphon will keep in operation, the supply from the valve being equal to the siphon. This often takes place also when the siphon is made much larger than the inlet valve, because it sometimes happens that the outlet gets slightly choked, or some impurities or sediment remain in the siphon.

By my improved construction, it will be seen that when the valve 43 is slightly raised from its seat, the disk 37 will not substantially affect the flow, but that, as the valve 43 is raised still higher from its seat, the disk 37 will be brought up into the extension 200, and will come nearer and nearer to the point 201, and will thus throttle the supply of water when the ball-float 32 is at its lowest position. By this means, when the siphon has nearly exhausted the water from the tank, the water will only be allowed to flow in through the inlet valve very slowly, and hence the siphon will be easily broken. Then, the inflowing water will raise the ball-float, and when the disk 37 has been slightly lowered, the full head of water can pass into the tank. Thus, it will be seen that in operating, the disk 37 is in effect a throttle-valve, which comes into action as the main valve is opened to its fullest extent. By this means, we have devised a simple valve, and one that is especially applicable to siphon closet-cisterns.

The valve herein shown and described may be put to other uses, and so far as some of the claims are concerned, the disk 37 can be omitted, and the construction therein claimed, applied to an ordinary faucet or valve.

The details of the invention herein shown and described may be greatly varied by a skilled mechanic without departing from the scope of our invention as expressed in the claims.

Having thus fully described our invention,

what we claim, and desire to secure by Letters Patent, is—

1. The combination in a ball cock of a casing arranged to direct the supply against the bottom of the tank, the valve chamber being formed so as to stand at an incline to the bottom of the tank, the outlet portion being cut off substantially parallel with the bottom of the tank, a valve stem 33 suitably connected to the float 32 and carrying the valve 43 and co-operating with a suitable seat 44 in the casing and a throttle or auxiliary valve connected with the valve stem 33 arranged below the main valve and adapted to throttle the outlet from the casing below the main valve, substantially as described.

2. The combination with a casing 20 having an inlet passage 25 which is bent at an angle, and a valve chamber carried by the casing 20 located at an angle at the bottom of the tank and having its outlet portion cut away, substantially parallel with the bottom of the tank, whereby, the supply is directed against the bottom of the tank, a valve stem 33 having a cup leather 41 arranged on the valve stem 33, and a valve 43 arranged on the stem below the cup leather and co-operating with a suitable valve seat 44, the supply being admitted between the valve and the cup leather, substantially as described.

3. The combination in a ball-cock of the casing arranged so as to direct the supply against the bottom of the tank, the valve-chamber being formed so as to stand at an incline to the bottom of the tank, the outlet portion of the casing being cut off substantially parallel to the tank, the valve-stem 33 having the guide-wings 35 secured to the upper end thereof, the cup-leather mounted on the valve-stem and working in the upper part of the casing, the valve 43 secured to the lower end of the valve-stem, and co-operating with a suitable seat 44 in the casing, the auxiliary valve or disk 37 connected to the main valve by means of the guides 36, and a suitable ball-float connected to operate the valve and auxiliary valve, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

GEORGE W. KNAPP.
JOHN V. CHAMBERLIN.

Witnesses:

LOUIS W. SOUTHGATE,
E. M. HEALY.