

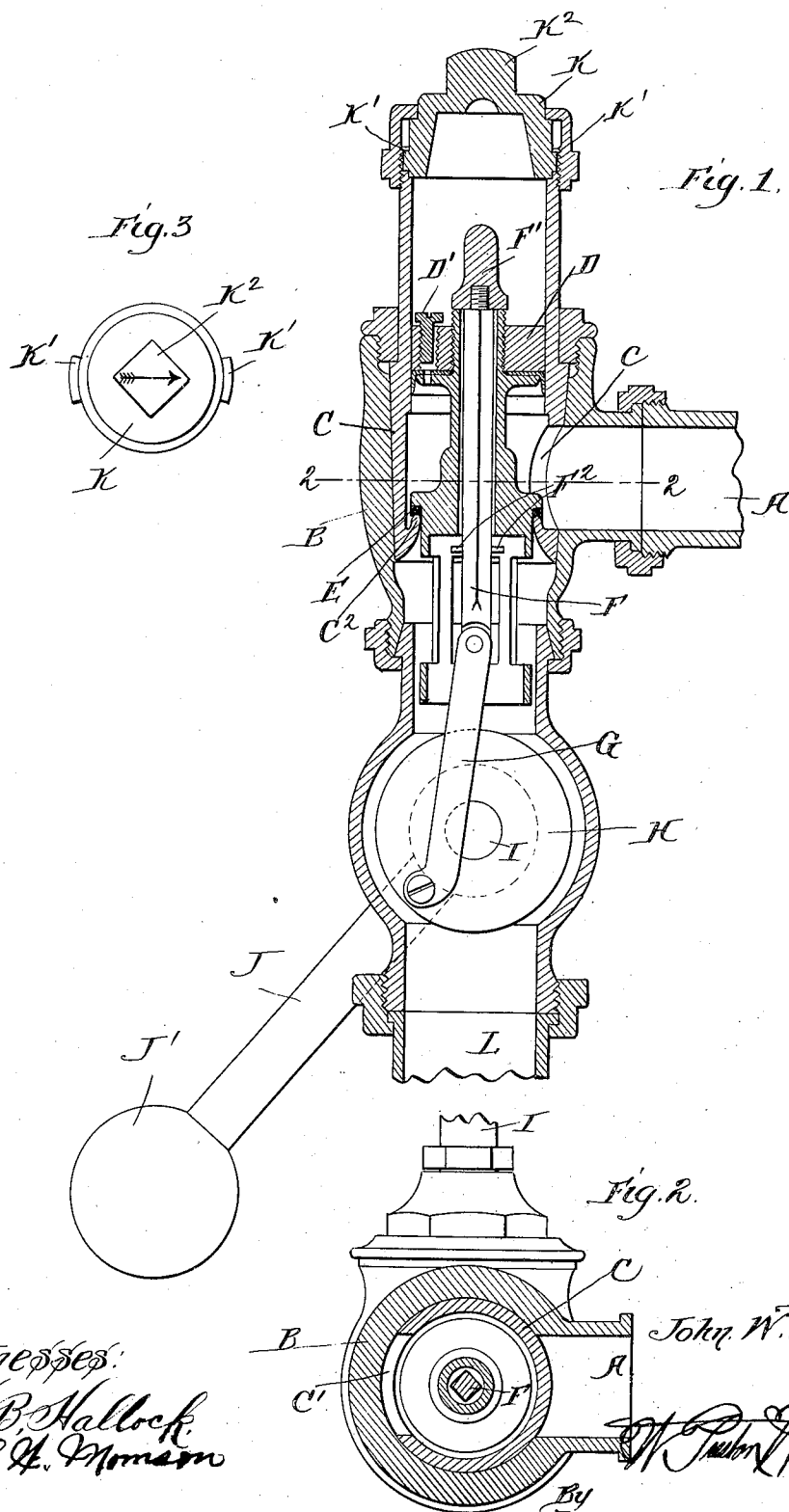
No. 822,116.

PATENTED MAY 29, 1906.

J. W. GRANTLAND.

FLUSHOMETER.

APPLICATION FILED APR. 13, 1905.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN W. GRANTLAND, OF PHILADELPHIA, PENNSYLVANIA.

FLUSHOMETER.

No. 822,116.

Specification of Letters Patent.

Patented May 29, 1906.

Application filed April 13, 1905. Serial No. 256,429.

To all whom it may concern:

Be it known that I, JOHN W. GRANTLAND, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a certain new and useful Improvement in Flushometers, of which the following is a specification.

My invention relates to a new and useful improvement in water-closet valves, technically called "flushometers," and has for its object to provide a valve of this description which contains not only the flushometer valve and mechanism, but also a rotary plug-valve, whereby the flow of water can be entirely cut off.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claim.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a vertical section through my improved valve; Fig. 2, a horizontal section taken on the line 2 2 of Fig. 1, showing the plug-valve turned in position to cut off the supply of water; Fig. 3, a plan view of the cap-nut at the upper end of the valve.

Where flushometer-valves are used in connection with water-closets, the cut-off valves are placed in the pipes leading from the valve to the supply-tank, and in order to apply this valve to the supply-pipe it is oftentimes necessary to place the flushometer-valves at a greater distance from the wall than is convenient or else have the pipe extend a longer distance, with several curves, in order to make space for the valve. My invention is intended to do away with the cut-off valve in the supply-pipe and place the cut-off valve in the flushometer without increasing the size of the flushometer or complicating the parts to any great extent.

A represents the supply-pipe, which leads into the barrel B of the valve. Fitted into the barrel B from above, with a ground tapering joint, is the plug-valve C, this plug-valve C being hollow and having an opening C' formed through its wall communicating with the supply-pipe A when the plug-valve is turned in a certain position; but when the

plug-valve is turned so that the opening C' is out of alinement with the supply-pipe A the water is cut off entirely from the valve, as shown in Fig. 2.

In ordinary flushometer-valves a reciprocating valve is used, which valve ordinarily operates in conjunction with the side frame in the barrel of the valve. In my improved valve the operating parts of the flushometer operate in the same manner except that they operate upon the interior of the plug-valve instead of upon the interior of the barrel. The upper portion of the hollow plug-valve C extends above the barrel B of the valve, and upon the interior of this upper portion is fitted a piston D, which is connected by a hollow stem with a vertically-reciprocating valve E, adapted to seat from above upon a seat C², formed upon the interior of the lower end of the plug-valve C. An opening is formed through the piston D, which is adapted to be closed partially by a screw-threaded plug D', which plug is flattened upon one side so as to allow a certain amount of leakage around the plug, according to the depth it is screwed into the screw-threaded opening of the piston. The supply-opening enters through the opening C' to the interior of the plug-valve between the piston D and the reciprocating valve E.

F is a stem which extends upward through the center of the reciprocating valve E, the piston D and the tube connecting the two, and on the upper end of the stem F a head is formed (represented at F') adapted to normally seat over the upper end of the opening through which the stem F extends, thus closing the opening. The stem F does not fill the opening through which it passes, so that any leakage or air may pass around said stem through the opening. The lower end of the stem F is connected by a link G with a disk H, to which disk the lower end of the link G is eccentrically pivoted. The disk H is connected to a shaft I, extending out of the valve through suitable stuffing-boxes, and extending outward from this shaft I at right angles is a rod J, to the outer end of which a weight J' is attached. The upper end of the plug-valve is closed, and this closed end may be integral with the plug-valve or may be separated for convenience. As shown in the drawings, it consists of a cap-nut K, fitting tightly by a suitable stuffing-box to the top of the plug-valve C, and this cap has tongues K', extending out from its sides, fitting in notches in the

upper end of the plug-valve, and upon the extreme upper end of the cap-nut a squared lug K^2 is formed, to which a wrench may be applied, and therefore the plug E can be
5 turned at any time by simply applying a wrench to the squared portion K^2 and turning the valve until the opening C' is out of alinement with the supply-pipe A.

I do not claim any novelty in the construction of the reciprocating valve mechanism
10 constituting the flushometer. This operates in the same manner as other flushometers now upon the market, the operation consisting in raising the rod J and weight J' and by
15 so doing turning the disk H, which, through the link G, raises the stem F, so that the head F' is off its seat, and after the stem F has raised a certain distance lugs F^2 , fastened to the stem, will contact the under side of the
20 reciprocating valve and raise this valve from off its seat and allow the water to rush downward through the body of the valve into the pipe L to the closet. The water previously within the space above the piston D will have
25 passed downward around the stem F when the valve is raised, but as soon as the weight J' is released it will pull the head F' downward upon its seat, and then the valve will slowly close, the rapidity of its movement being regulated by the orifice through the piston.
30

While I have shown this construction of flushometer-valve, I wish it to be distinctly

understood that any flushometer construction could be utilized which can operate upon
35 the interior of a hollow plug E, and I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of the invention.
40

Having thus fully described my invention, what I claim as new and useful is—

In combination, a valve-casing, a supply-pipe leading into the valve-casing, an exhaust-pipe communicating with the valve-
45 casing, a hollow rotary valve-plug for the supply-pipe fitting within the valve-casing, said plug having a valve-seat formed on its interior, a reciprocating valve for the exhaust-pipe fitting within the hollow plug and
50 adapted to rest on the valve-seat within the plug, said reciprocating valve having a passage through its upper portion communicating with the portion of the hollow plug above the valve and communicating with the sup-
55 ply-pipe when the passage of the supply-pipe is unobstructed, and means for operating the reciprocating valve.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.
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JOHN W. GRANTLAND.

Witnesses:

MARY E. HAMER,
L. W. MORRISON.