No. 789,561. PATENTED MAY 9, 1905.

A. N. PASMAN.

FLUSHING VALVE.

APPLICATION FILED MAY 2, 1902.

Fig. 2.

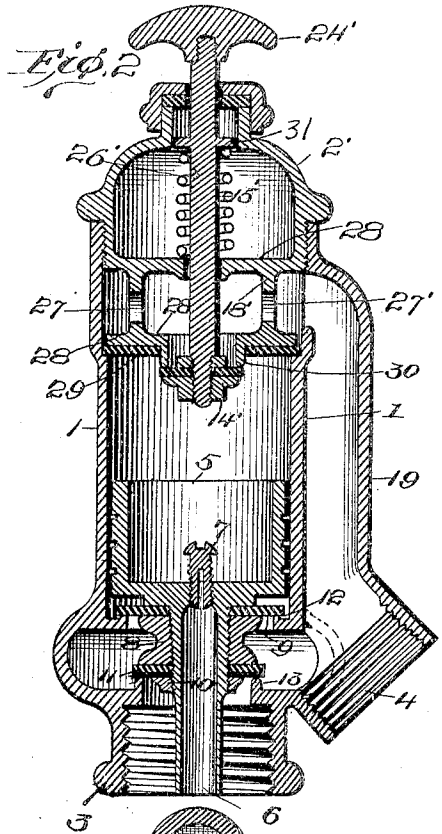


Fig. 1.

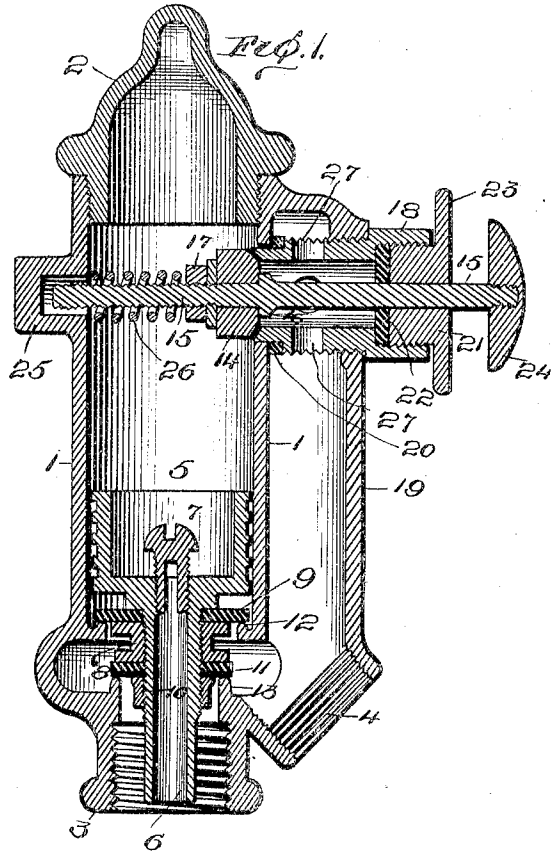


Fig. 3.

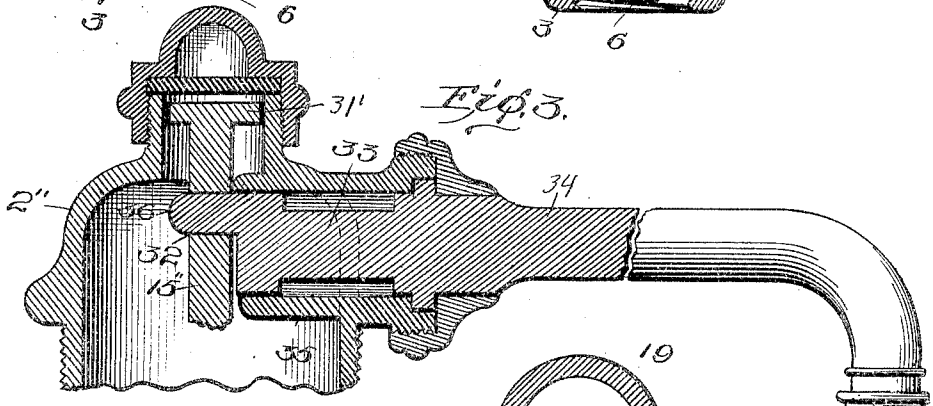


Fig. 4.

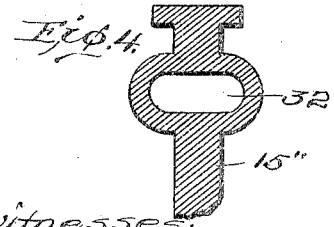
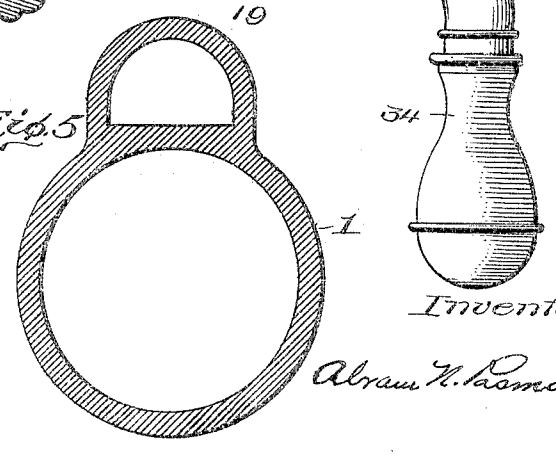


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

ABRAM N. PASMAN, OF JERSEY CITY, NEW JERSEY.

FLUSHING-VALVE.

SPECIFICATION forming part of Letters Patent No. 789,561, dated May 9, 1905.

Application filed May 2, 1902 Serial No. 105,659.

To all whom it may concern:

Be it known that I, ABRAM N. PASMAN, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Flushing-Valves, of which the following is a specification, reference being had to the accompanying drawings, which form a part of this application and in which similar numerals refer to similar parts.

My invention relates to certain new and useful improvements in flushing-valves, and has for its object to produce a valve which will serve the purpose of the ordinary flushing-tank such as are at present employed in connection with water-closets and wherever a strong flow of water for a definite length of time is desired for flushing basins and for other purposes.

In carrying out my invention I employ a casing having a main cylindrical chamber, an inlet below the same, and longitudinal and transverse discharge-chambers arranged exteriorly of the said main cylindrical chamber. I provide a piston freely slidable in the cylindrical chamber and carrying a valve to normally shut off the flow of water to the said transverse chamber and through the service-pipe leading to the closet or basin to be flushed. The valve is retained on its seat against the pressure of the water by a passage-way in the said valve and piston, which permits the water to pass to the other side of the piston into the cylindrical chamber, where it is confined against further egress and is compelled to exert its pressure against the piston in a direction to press the valve against its seat, and though the water-pressure on the valve is opposed in direction to the water-pressure on the piston, the sectional area of the latter being greater than that of the valve, the tendency of said valve to become unseated is more than counteracted and it is held firmly on its seat. In the cylindrical chamber and above the piston there is provided a manually-operated spring-seated valve, adapted when opened to permit the water within the cylindrical chamber to flow out through the said longitudinal chamber into the pipe leading to the closet or basin. This relieves the piston of the pressure of the water confined therein, so that the pressure of the water on the valve prevails to raise the valve from its seat and permit the water to flow in great quantities into the said transverse chamber and through the pipe leading to the closet or basin. After a momentary opening of the manually-operated valve it is released and reseated by the spring to again confine the water which enters the cylindrical chamber through the passage-way in the piston and valve, and as the volume of this water within the cylindrical chamber and over the piston increases the piston is moved gradually, forcing the valve first toward and then onto its seat against the pressure of the escaping water.

In the drawings, Figure 1 is a central vertical section of one form of flushing-valve, illustrating my invention. Fig. 2 is a similar view illustrating a modification of the construction shown in Fig. 1. Fig. 3 is an enlarged vertical section illustrating a modified means for operating the manually-operated valve. Fig. 4 is a section of the upper end of the valve-stem shown in Fig. 3, and Fig. 5 is a transverse section of the casing of either form of flushing-valve.

In the drawings, 1 represents a cylindrical chamber of a casing having a cap or air-dome 2, threaded in its upper end and provided with an inlet-pipe 3 and an outlet-pipe 4 at its lower end, both internally threaded for the reception of the service supply-pipe and the pipe leading to the basin, respectively. A hollow piston 5 is slidable in the cylindrical chamber 1 and has its bearing-surface grooved to arrest any water which might seek to pass between the piston and the inner walls of the cylindrical chamber, thus making a practically water-tight sliding fit. A tubular stem 6 depends from the center of the piston 5, and in the interiorly-threaded opening connecting the stem and piston is a slotted screw 7, by means of which the flow of water through the passage-way in said stem may be regulated, as by turning the screw 7 higher more of its slot is brought above the base of the piston, and so more water may pass therethrough, while the contrary is true of an adjustment made in the other direction.

The exterior of the tubular stem 6 is screw-threaded and provided with a collar 8, which holds a gasket 9 in place against the under side of the piston 5. A nut 10 is also threaded on the tubular stem 6 and in turn holds a gasket 11 against the collar 8. The gaskets 9 and 11 are formed of leather, rubber, or other suitable material, and the former is adapted to be seated on an upwardly-extending annular bead 12 on the internally-flanged lower end of the cylindrical chamber 1 to positively prevent any passage of water from the cylindrical chamber when the valve is closed, while the gasket 11 is normally seated on the upwardly-extending annular flange 13 on the internally-flanged end of the inlet-pipe 3 and constitutes the valve therefor.

In the upper part of the cylindrical chamber 1 there is located a manually-operated valve comprising the valve proper, 14, preferably of resilient material, such as rubber, secured on a valve-stem 15 between a shoulder 16 of said valve-stem and a nut 17, which is threaded on the valve-stem. A tubular casing 18 is threaded through a half-round longitudinal chamber 19, which is preferably integral with the cylindrical chamber and discharges into the outlet-pipe 4. The casing 18 projects within an opening in the upper part of the cylindrical chamber 1 and is provided with a bushing 20 thereabout, the inner end of the tubular casing 18 being beveled to form a valve-seat for valve 14. A plug 21 is threaded in the outer end of the tubular casing 18 and is seated on a gasket 22 therein to make it water-tight, and the plug is provided with a flange 23 to form a finger-hold for the operator when depressing the knob 24 at the end of the valve-stem 15, which latter projects through the said plug. The inner end of the valve-stem 15 projects within a socket 25 on the opposite side of the cylindrical chamber, and a compression-spring 26 is coiled about the valve-stem between the shoulders of this socket and the nut 17.

The tubular casing 18 is provided with a number of radial openings 27 at that portion thereof which lies within the longitudinal chamber 19, so that when the valve 14 is forced from its seat against the pressure of the spring 26 by depressing the knob 24 the water in the cylindrical chamber above the piston 5 will pass through these openings 27 and down to the outlet-pipe 4 by way of the longitudinal chamber 19. Such an outlet for the water above piston 5 relieves said piston of the downward water-pressure and permits the upward water-pressure beneath valve 11 to raise said piston and valve, thereby allowing the free passage of the water from the inlet-pipe through the transverse chamber to the outlet-pipe.

When the knob 24 is released, the spring 26 closes the valve 14, and thereupon the water begins to accumulate above the piston 5, forcing the piston downward at a speed dependent upon the adjustment of the slotted screw 7. When the piston has reached the end of its downward stroke, the gasket 9 is seated and the valve 11 is closed, and all parts are again in their normal positions.

In the construction shown in Fig. 2 the foregoing description applies for all the lower parts of the device; but here I locate the manually-operated valve in the cap or dome 2′ and form such cap somewhat similar to the tubular casing 18. (Shown in Fig. 1.) In this modification the cap is provided with a double bottom 28, with an interposed cylindrical wall 18′, having discharge-openings 27′ communicating with the longitudinal chamber 19. The lower portion of the double bottom 28 is provided with a gasket 29, seated on a shoulder of the cylindrical chamber 1, and has a depending circular flange 30, forming a valve-seat for the hand-valve 14′ on the valve-stem 15′, which slidably fits in the top of the cap 2′ and is provided with the knob 24′. The valve-stem 15′ is maintained in its normal position by the coil-spring 26′, which bears at its lower end on the upper portion of the double bottom 28 and at its upper end against a flange 31, integral with said valve-stem.

To enable the manually-operated valve to be actuated from a distance, I may employ with the last-described form of flushing-valve a valve-stem 15″, having a laterally-elongated slot 32, as shown in Figs. 3 and 4. In this construction I mount a rotatable cylindrical hub 33 of a crank-handle 34 in a barrel 35 at right angles to the valve-stem, and I provide on the end of the hub 33 an eccentric wrist-pin 36, passing into the elongated slot 32, so that on turning the crank-handle 34 the rotation of the wrist-pin 36 will vertically reciprocate the valve-stem 15″ for the same purposes as described with the construction shown in Fig. 2.

I claim as my invention—

1. A flushing-valve comprising a casing having a main cylindrical chamber, an inlet, transverse and longitudinal discharge-chambers merging in a common outlet, a piston in said cylindrical chamber, a tubular stem forming an axial continuation of said piston into the said inlet, means for regulating the flow of liquid through said tubular stem, a valve secured to said tubular stem and movable with the same and the piston, a seat for the said valve at the said inlet, a seat for the piston in the lower part of said cylindrical chamber and both of said seats being in planes at right angles to the axis of the piston, a manually-operated device and a valve actuated thereby in the upper part of said cylindrical chamber, and devices permitting the discharge of the liquid from the cylindrical chamber into the said longitudinal discharge-chamber upon the opening of the last aforesaid valve.

2. A flushing-valve comprising a casing

having a main cylindrical chamber, an inlet, transverse and longitudinal discharge-chambers merging in a common outlet, a piston in said cylindrical chamber, a tubular stem forming an axial continuation of said piston into the said inlet, means for regulating the flow of liquid through said tubular stem, a valve secured to said tubular stem and movable with the same and the piston, a seat for the said valve at the said inlet, a seat for the piston in the lower part of said cylindrical chamber and both of said seats being in planes at right angles to the axis of the piston, a manually-operated, spring-controlled device and valve actuated thereby in the upper part of said cylindrical chamber, and devices permitting the discharge of the liquid from the cylindrical chamber into the said longitudinal discharge-chamber upon the opening of the last aforesaid valve.

3. A flushing-valve, comprising a casing having a main cylindrical chamber, an inlet, a transverse discharge-chamber between the cylindrical chamber and the inlet, a longitudinal discharge-chamber integral with and exterior of the said cylindrical chamber, both discharge-chambers merging in a common outlet, a piston in said cylindrical chamber, a tubular stem forming an axial continuation of said piston into the said inlet, means for regulating the flow of liquid through said tubular stem, a valve secured to said tubular stem and movable with the same and the piston, a seat for the said valve at the said inlet, a seat for the piston in the lower part of said cylindrical chamber and both of said seats being in planes at right angles to the axis of the piston, a cap secured in the upper end of the cylindrical chamber, a double bottom integral with said cap, a cylindrical wall having holes therein and connecting the portions of said double bottom, a valve-stem, a valve secured thereto, a valve-seat on the lower portion of said double bottom, and means for normally maintaining the said valve-stem in position with its valve against its seat and for returning these parts to their normal positions after the valve has been opened.

4. A flushing-valve, comprising a casing having a main cylindrical chamber, an inlet, a transverse discharge-chamber between the cylindrical chamber and the inlet, a longitudinal discharge-chamber integral with and exterior of the said cylindrical chamber, both discharge-chambers merging in a common outlet, a piston in said cylindrical chamber, a tubular stem forming an axial continuation of said piston into the said inlet, means for regulating the flow of liquid through said tubular stem, a valve secured to said tubular stem and movable with the same and the piston, a seat for the said valve at the said inlet, a seat for the piston in the lower part of said cylindrical chamber and both of said seats being in planes at right angles to the axis of the piston, a cap secured in the upper end of the cylindrical chamber, a double bottom integral with said cap, a cylindrical wall having holes therein and connecting the portions of said double bottom, a valve-stem, a valve secured thereto, a valve-seat on the lower portion of said double bottom, a spring surrounding said valve-stem for normally maintaining the same and its valve in position and for returning these parts to their normal positions after the valve has been opened.

5. A flushing-valve comprising a casing having a main cylindrical chamber, an inlet, transverse and longitudinal discharge-chambers merging in a common outlet, a hollow piston with circumferential grooves in its surface in said cylindrical chamber, a tubular stem forming an axial continuation of said piston into said inlet, a gasket adjacent to the under side of said piston, a seat in the lower part of said cylindrical chamber and upon which said gasket normally rests, a collar on said tubular stem and in contact with said gasket, a gasket 11, a nut on said tubular stem to hold the gasket 11 in place, a valve-seat at the said inlet and upon which the gasket 11 is normally pressed, means for regulating the flow of liquid through said tubular stem, a manually-operated device and valve actuated thereby in the upper part of said cylindrical chamber, and devices permitting the discharge of the liquid from the cylindrical chamber into the said longitudinal discharge-chamber upon the opening of the last aforesaid valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ABRAM N. PASMAN.

Witnesses:
F. E. McGRANDLE,
M. P. MILLER.