

(No Model.)

H. COSTELLO.
WATER CLOSET VALVE.

No. 358,018.

Patented Feb. 22, 1887.

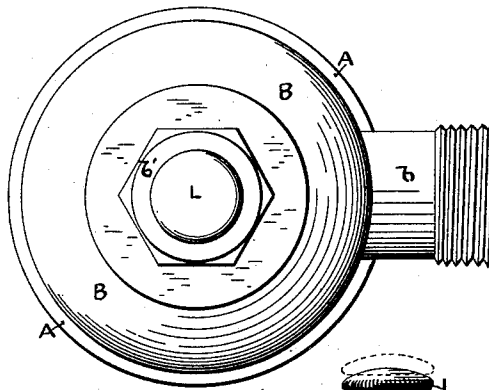


FIG. 1.

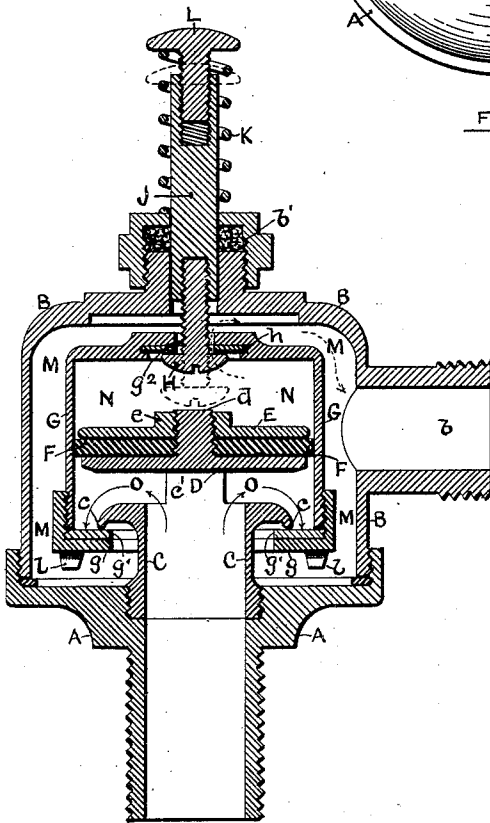


FIG. 2.

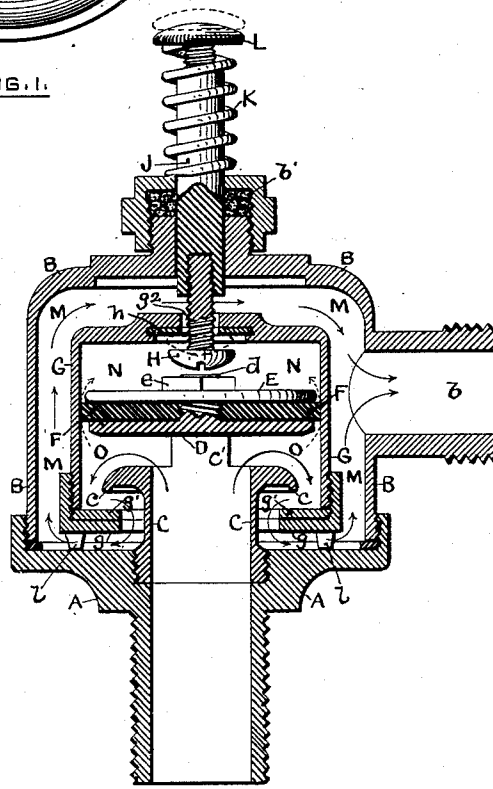


FIG. 3.

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WATER-CLOSET VALVE.

SPECIFICATION forming part of Letters Patent No. 358,018, dated February 22, 1887.

Application filed May 12, 1884. Serial No. 131,237. (No model.)

To all whom it may concern:

Be it known that I, HARRY COSTELLO, of Barrington, in the county of Bristol and State of Rhode Island, have invented a new and useful Improvement in Water-Closet Valves; and I do hereby declare the following specification, taken in connection with the accompanying drawings, forming a part of the same, to be a description thereof.

10 This invention relates to a valve for regulating the supply of water to a water-closet; and it consists in certain features of construction hereinafter described, and set forth in the claims.

15 Referring to the drawings, Figure 1 represents a top view of the valve. Fig. 2 shows a vertical section of the same when the valve is closed. Fig. 3 shows a vertical section of the same when the valve is open.

20 A is the base of the valve, which is adapted to be connected with the inlet or supply pipe. B is the outer casing, which is secured to the base A, and is provided with an outlet, *b*, for connection with the pipe for flushing the water-closet. To the base A is screwed or otherwise centrally attached a tubular stud, C, having a valve-seat, *c*, the said stud being sur-
25 mounted by a plate, D, which is supported by and attached to ears *c'* on the stud. This plate has a screw, *d*, upon which a plate, E, is mounted, and between these plates is placed the packing F, of leather or other elastic material, the plate E being provided with a squared boss, *e*, so the plate can be turned to
30 compress the packing the desired amount.

35 G is the valve, having the shape of a bell or inverted cup, and provided with an annular flange, *g*, and packing *g'*, which engages the valve-seat *c* when the valve is closed. The
40 top of the valve G has an opening, *g''*, through which a relief-valve, H, passes, and is provided with a packing, *h*, to form a seat for said valve. The relief-valve is shown in the form of a screw, which is tapped into a spindle, J,
45 passing upward through the casing B and a stuffing-box, *b'*. A spring, K, surrounds the spindle J and bears upon the stuffing-box and against an adjusting-screw, L, tapped into the upper end of the spindle.

As shown in Figs. 2 and 3, there is a cham- 50
ber, M, between the casing B and valve G, a second chamber, N, between the plate E and the top of the valve, and a third chamber, O, between the plate D and valve-flange *g*.
55 When the valve is closed, the chamber O is filled with water, which passes into it through openings between the plate D and the seat-flange *c*, as shown by arrows in Fig. 2, and the pressure of the water against the flange *g*
60 (shown by arrows) tends to depress the valve and allow the water to flow into the chamber M. Such depression of the valve is prevented, however, by water which fills the chamber N,
65 which water has passed into said chamber by stealing by the packing F when the valve was closing, as will be described.

The valve, as a whole, is secured to the hop-
per of the closet in any preferred manner, and with the screw L in such relation to the usual
70 lever, which is operated by an elevation of the "pull" to open the valve, that the spindle J will be depressed by the pressure of said lever on said screw. It being desired to flush
75 the closet, the pull is elevated and the spindle J and relief-valve H are depressed, as shown by dotted lines in Fig. 2, thereby opening the orifice *g''* and allowing the water to flow from the chamber N into the chamber M, as
80 shown by dotted arrow, Fig. 2, as the valve G descends by the pressure of water upon the flange *g*. During the time the valve is open the movable parts are in the position shown
85 in Fig. 3, the water flowing into the chamber O, thence out into the chamber M and into the outlet *b*, as shown by the arrows in Fig. 3, a passage being maintained between the bottom of the valve G and the base A by lugs *l* on the
90 flange *g*. The pull having been released, the spring K promptly raises the relief-valve H to its seat *h*, as shown by dotted lines in Fig. 3, thereby closing the orifice *g''*. The water under pressure now steals by the packing
95 F from the chamber O into the chamber N, as shown by dotted arrows in Fig. 3, and its force is gradually exerted in the latter chamber to raise the valve G to its seat. The speed with which the valve closes under a given pressure is determined by the closeness of the fit of the

packing F to the valve G, and the speed may be retarded by screwing down the plate E, thereby compressing and expanding the packing, and may be increased by slightly turning up said plate.

If desired, the packing may be made to fit the valve, so that no water can steal by the packing into the chamber N except through a fine vertical groove or grooves made upon the inner surface of the valve G.

As will be understood from the foregoing description and from an inspection of Figs. 2 and 3, the valve G is loosely mounted, with relation to its seat c, on the packing F, and is guided by the latter, which construction allows the valve to accommodate itself to its seat and secures a perfect fit between the two.

When the valve is used with a closet having a flushing-tank supplied with a float, the spindle J may be pivoted to the float-arm, or be arranged to be pressed upon by said arm, in a manner easily to be understood.

What I claim, and desire to secure by Letters Patent, is—

1. In a valve, the combination of an outer

casing having an inlet and an outlet, a hollow stud forming a part of the water-way, carrying a packing and having a valve-seat, and a flanged bell-shaped valve mounted on said packing, substantially as set forth.

2. In a valve, the combination of an outer casing having an inlet and an outlet, a hollow stud forming a part of the water-way, carrying a flexible packing and having a valve-seat, a flanged bell-shaped valve mounted on said packing, and suitable means, as described, for expanding the packing, substantially as and for the purposes specified.

3. In a valve, the combination of an outer casing having an inlet and an outlet, a hollow stud forming a part of the water-way, carrying a packing and having a valve-seat, a flanged bell-shaped valve mounted on said packing and having an outlet-orifice, and a relief-valve for opening and closing said orifice, substantially as set forth.

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