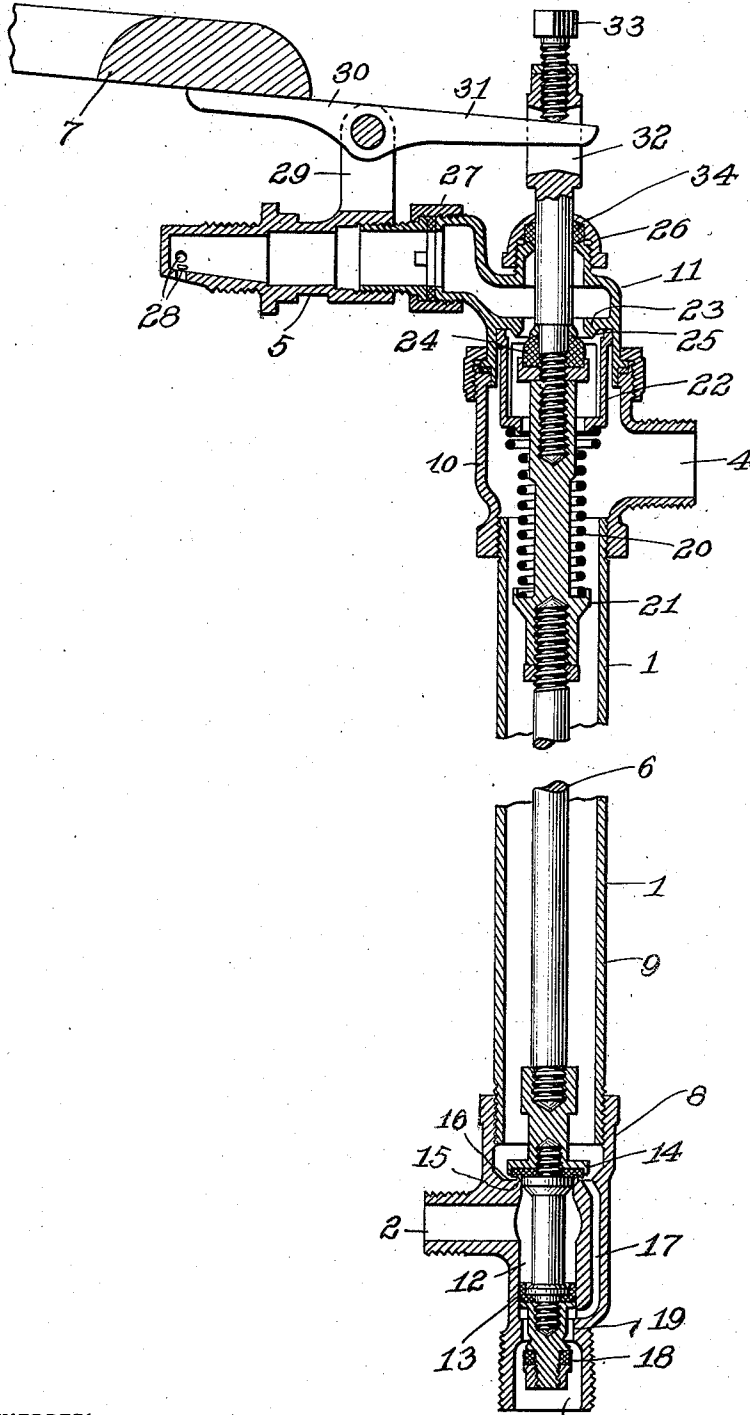


T. F. PAYNE.
FROST PROOF WATER CLOSET VALVE.
APPLICATION FILED JUNE 3, 1912.

1,062,412.

Patented May 20, 1913.



WITNESSES:

J. Herbert Bradley.
Francis J. Tomlinson.

INVENTOR

Thomas F. Payne
by Christy and Christy
Atty's

UNITED STATES PATENT OFFICE.

THOMAS F. PAYNE, OF PITTSBURGH, PENNSYLVANIA.

FROST-PROOF WATER-CLOSET VALVE.

1,062,412.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed June 3, 1912. Serial No. 701,217.

To all whom it may concern:

Be it known that I, THOMAS F. PAYNE, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Frost-Proof Water-Closet Valves, of which improvement the following is a specification.

My invention relates to the construction of frost-proof water-closet valves; and the object of my invention is to provide a valve construction wherein the possibility of its freezing, and thereby being rendered inoperative, will be reduced to a minimum.

A further object of my invention is to provide a valve through which water may flow freely during the flushing operation.

A still further object of my invention is to provide a valve, which, in addition to having the above characteristics, may be easily taken apart for adjustment or repairs.

In the accompanying drawing, which forms part of my specification, I have illustrated the preferred form of my invention. This drawing is a vertical sectional view of the complete valve construction.

In the construction shown herein a casing 1 is provided, at its lower end, with a water inlet 2 and a drain outlet 3; and, at its upper end, with an orifice 4, whereby connection is made to a reservoir (not shown), and a flushing pipe 5, which may be connected to a water-closet bowl. Within the casing 1 there is mounted a reciprocating rod 6, provided with a series of valve members, and having operative connection to a closet-seat 7. The general arrangement of these parts is such that the user, as he occupies the seat, depresses it and lifts the rod 6, so that water flows from a supply pipe through the inlet 2 and casing 1 to a reservoir connected to the orifice 4; and that, when the user leaves the seat, the water from the said reservoir will flow through the flushing pipe 5 and be effective to flush the closet bowl connected to such pipe.

The casing, as particularly shown herein, consists of a bottom T-member 8, a pipe-section 9, a top T-member 10, and a cap 11. The bottom T-member is provided with the lateral water-inlet 2 and the drain outlet 3, and is threaded to receive the pipe section 9. The inlet 2 opens into a chamber 12, which, when the rod 6 is in its lowermost position, is closed at each end by valve

members 13 and 14, carried by the said rod 6; the valve-member 13 being a cup-washer forming, with the wall of the said chamber, a piston valve, and the valve-member 14 being a seat valve adapted to bear against an upwardly extending flange 15. At the bottom of the trough 16, formed by the wall of the T-member 8 and the flange 15, there is an inlet to a by-pass 17, which by-pass extends to the lower side of the cup-washer 13. In order to shut off the escape through the by-pass 17 of water from the casing above the valve 14, the rod 6 is provided with a piston valve 18, which to such end, coöperates with the inner surface of the ring 19 when the rod is in lifted position. It will be seen of this construction that, when the rod 6 is in the position indicated in the drawing, and the flushing of the closet bowl has been accomplished, all the water in the pipe-section 1, above the valve 14 will escape through the by-pass 17 to the drain outlet 3. Such a construction is particularly advantageous in that the only body of water in contact with the valve rod 6, which water, if it should freeze, would render the entire construction inoperative, is the water in the chamber 12. The water in this chamber is under pressure and therefore freezable at a lower temperature than water under normal atmospheric pressure.

The T-member 10 in which the orifice 4 is located is suitably threaded to receive the pipe-section 9 at its lower end and the cap 11 at its upper end. The rod 6, which extends through the T-member 10, as well as the cap 11, is held yieldingly in its downward position by a spring 20, which bears at one end against the shoulder 21 of the said rod and at the other end against a spring depressor such as the skeleton cage 22, which cage in turn bears against the cap 11, surrounding the said rod. The said cap has a horizontal port-provided partition 23, adapted to be closed by the valve-seat 24 carried by the rod 6; and a boss 25, having an outwardly beveled edge, is adjacent to the port opening on the lower side of the partition. By such an arrangement of parts in the T-member 10, the spring 20 may, as shown, be coiled closely to the rod 6 thereby reducing to a minimum the space which such spring occupies, and giving a free passageway to the flow of water through the pipe 1 and T-member 10. When the rod 6 is raised, as heretofore described, the

valve-seat 24 will close the port in the partition 23 and the water (flowing through the inlet 2, chamber 12, open valve 14 and pipe 9) will flow through the orifice 4 into a reservoir. After the rod is lowered the valve 24 will be unseated and the water will flow freely through the skeleton cage 22, flushing pipe 5 and ports 28. By beveling the boss 25 so that its lower edge forms a ring of larger diameter than that of the valve seat 24, it will be seen that water draining from the flushing-pipe 5, will follow the beveled edge of such boss and fall outside of the valve seat 24, so that it will not freeze thereon.

The rod 6 extends through the cap 11 and a suitable quantity of packing 34 is held in position around the rod by a nut 26. The flushing-pipe 5, which is secured to the cap 11 by means of a union 27, is closed at its outer end and provided with a plurality of radially arranged ports 28; and the bottom of the said pipe is sloped downwardly from the outer end so that water will not be in the end thereof and freeze. A pair of arms 29, formed integrally with the flushing-pipe 5 affords a pivot point for the seat 7, which is pivoted in the arms 29 by a hinge member 30 having a finger 31 adapted to extend through a slot 32 in the top of the rod 6, a set screw 33 being provided at the top of the rod whereby the extent of the reciprocation of the rod may be determined.

The full operation of the valve will be apparent from the foregoing description. It will be observed that, by disconnecting the cap 11 from the T-member 10, and from the flushing pipe 5, the entire valve rod 6 may be easily removed without in any manner injuring any of the several valve members. Also, it will be observed that from the outer end of the flushing-pipe 5 to the base of the valve 14, the several parts are so formed that, after the flushing operation, all the water remaining in the casing above the lower side of the valve seat 14 will escape from the drain orifice 3.

I claim as my invention:

1. In a frost proof water-closet valve, the

combination of a casing having a water inlet, a discharge outlet, and a reservoir connection between said inlet and outlet, a fixed valve seat within said casing between said outlet and said connection, a movable valve rod extending through said casing and provided with a valve closure coöperating with said valve seat; and a compression spring below said valve seat surrounding said rod and yieldingly holding said valve closure in open position, the lower end of said spring operatively engaging said valve rod and the upper end thereof exerting its pressure against the lower side of said valve seat.

2. In a frost-proof water-closet valve, the combination of a casing provided at its lower end with a water inlet and a drain orifice, and at its upper end with a discharge outlet and a reservoir connection, a cap forming the upper part of the said casing and provided with a valve seat, a valve rod extending through the said casing and held yieldingly in its downward position by a spring engaging at its lower end the said rod, and a skeleton cage extending from the under side of the cap valve-seat to the upper end of the said spring.

3. In a frost proof water-closet valve, the combination of a casing having a water inlet, a discharge outlet, and a reservoir connection between said inlet and outlet, a fixed valve seat within said casing between said outlet and said connection, a movable valve rod extending through said casing and provided with a valve closure coöperating with said valve seat, a compression spring below said valve seat surrounding said rod and yieldingly holding said valve closure in open position, and a member permitting the free flow of water therethrough extending from the underside of said valve seat to the upper end of said spring.

In testimony whereof I have hereunto set my hand.

THOMAS F. PAYNE.

Witnesses:

PAUL N. CRITCHLOW,
FRANCIS J. TOMASSON.