

T. F. PAYNE.
FROST PROOF WATER CLOSET VALVE.
APPLICATION FILED AUG. 17, 1910.

1,045,433.

Patented Nov. 26, 1912.

FIG. 1.

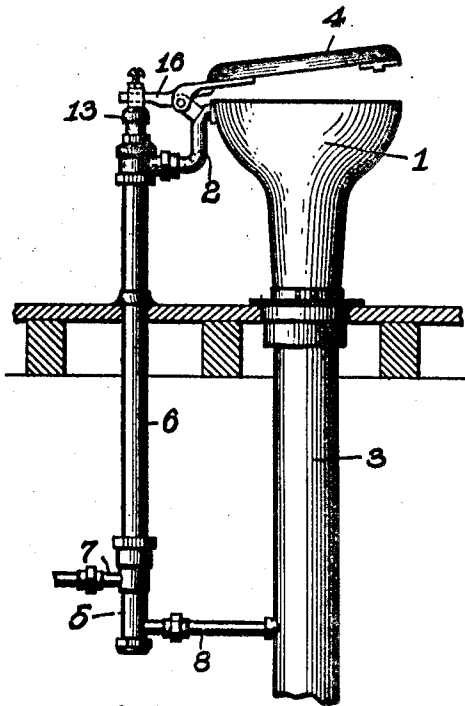
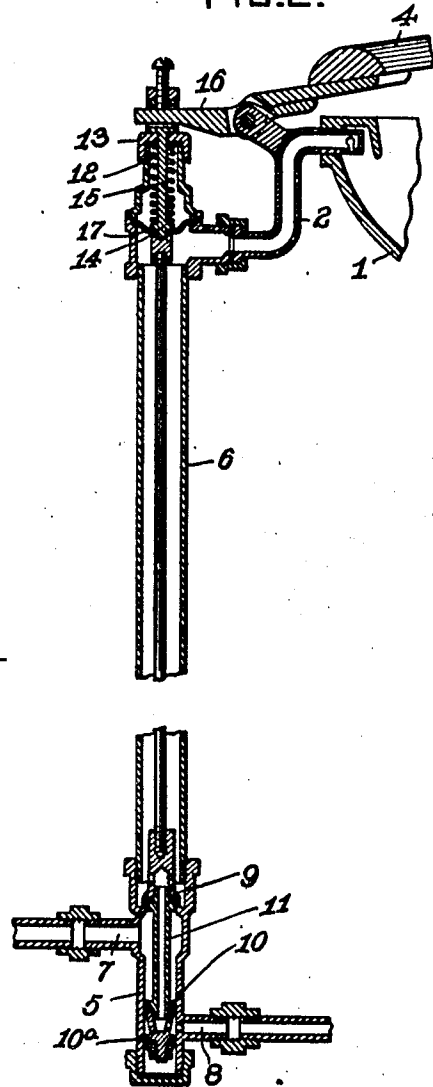


FIG. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS FRANCIS PAYNE, OF PITTSBURGH, PENNSYLVANIA.

FROST-PROOF WATER-CLOSET VALVE.

1,045,433.

Specification of Letters Patent.

Patented Nov. 26, 1912.

Application filed August 17, 1910. Serial No. 577,708.

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 improvements in water closets, and has particularly to do with the construction of the valve controlling the flushing flow of water. The construction is such that, though the closet be installed in a place possessing the temperature of the outdoor air, the controlling valve may be placed in the ground beneath the frost line, or in some other adjacent protected place, to the end that the water in the valve may never freeze.

A further feature is that the pipe through which the flushing stream is conveyed to the closet is, except during operation kept empty, and is not subject to stoppage or injury by freezing.

In the accompanying drawings which form part of this specification, Figure 1 shows in side elevation the water closet and the pipe connections; and Fig. 2 is a vertical section of a portion of the apparatus, illustrating the flushing valve and its operation.

Referring to the drawings, the bowl of the closet is shown at 1, with a pipe connection 2 for the flushing stream of water, a discharge to soil pipe 3, and a seat, 4. The controlling valve for the flushing stream is located in the casing 5 beneath the surface of the ground or in other convenient and protected place, preferably directly beneath a pipe connection upon the flushing pipe 2. This valve casing 5 connects with the flushing pipe 2, through a connecting pipe 6. In addition to the connecting pipe 6, the valve casing 5 is provided with an inlet pipe 7 and an outlet pipe 8.

The valve is composed of three valve parts, 9, 10, and 10^a, rigidly carried upon a common stem 11. The valve part 9 moves with the movement of the stem to control communication from the chamber of the valve casing to the connecting pipe 6. The valve stem 11 is hollow, and affords a passageway of relatively small size from connecting pipe 6 to the outlet pipe 8 from the valve casing, when the valve is in inoperative position with the valve 9 on its seat, as

indicated in Fig. 4. The valve parts 10 and 10^a divide the chamber within the valve casing 5 into three parts or sections, and into the middle section, *i. e.*, between valve parts 10 and 10^a the passageway through the valve stem 11 opens. When the valve is in the inoperative position indicated in Fig. 4 communication is open from connecting pipe 6 through valve stem 11 to outlet pipe 8. Rise of the valve (which, as above explained opens communication through valve part 9 from the inlet pipe 7 to connecting pipe 6) effects closure of communication to outlet 8 by valve part 10^a passing over the orifice to said outlet pipe. Valve part 10 at all times separates inlet 7 from direct communication through the valve chamber with outlet 8.

The seat 4 of the water closet is hinged. One arm of a lever 16, mounted on a fixed fulcrum (which is conveniently carried by the connecting pipe 2, as shown), extends beneath the hinged seat 4, and the opposite arm of the lever is held in desired normal position from which it may be swung in one direction against the tension of a spring 12. In its normal position, the lever sustains the seat 4 in the slightly elevated position indicated in the drawings; and when the seat is depressed by the user the lever swings against the tension of the said spring; and the spring again causes the seat to rise when pressure is removed from the seat. The tension of the spring 12 is conveniently exerted between a rigid plate 13 and a block 14, which block is carried on a rod 15 connected in turn to the arm of lever 16. Connection is also maintained from the hinged seat to the flushing valve, and this is preferably effected by prolonging the rod 15 through an imperious diaphragm 17, continuing it through the connecting pipe 6 and uniting it in rigid connection with valve stem 11. The discharge pipe 8 from the valve casing may conveniently be continued to the soil pipe 3, as is indicated in Fig. 1.

Referring now to Fig. 2, it will be observed that, when the user sits upon the seat and depresses it, the valve part 9 will be raised from its seat and a flushing stream will pass from the valve chamber through the connecting pipe 6 and the flushing pipe 2, and will continue to flush the closet so long as the user sits upon the seat. At the same time the normal communication through valve stem 11 between pipe 6 and

outlet 8 is cut off. When the weight is removed from the seat, the spring 12 will cause the seat to rise again, and will shift the valve part 9 back to its seat and so shut off the flushing stream. At the same time communicating through valve stem 11 will again open, and the water then remaining in the connecting pipe 6 and in the flushing pipe 2 will escape through outlet 8 to the soil pipe.

It will be observed that the valve within casing 5 is a balanced valve, undisturbed when in inoperative position by any fluctuation of pressure in the water supply pipes; and that by virtue of its structure its movements are readily controlled by such a spring as is indicated at 12 in the drawings.

It will be apparent that not only is the operating valve thus placed beyond the reach of the frost, but that the pipe connections are drained of water when the closet is not in use, and so there is no possibility of freezing.

I claim herein as my invention:

A valve-structure for controlling the flow of water from a source of water supply to a water-closet, or like fixture, such structure consisting of a cylindrical valve casing having a lateral inlet and an outlet in one head thereof, the said outlet controlled by a valve

opening in the direction of flow, a drain orifice opening laterally from said cylindrical casing, the aforesaid water inlet being arranged intermediate between such drain orifice and the aforesaid outlet, a two-part piston valve arranged within said cylindrical valve chamber and mounted on a common stem with the first mentioned outlet valve, and a by-pass extending through such valve stem and maintaining communication from the discharge side of the first named outlet valve to the chamber formed by and between the members of said double piston valve, one member of said double piston valve maintaining in all operative positions a closure between the said inlet orifice and the said drain orifice, the other of said piston valve parts passing in its range of motion across said discharge orifice, and the said casing extending below the said drain orifice and forming a closed pocket beneath the said valve-provided stem substantially as described.

In testimony whereof, I have hereunto set my hand.

THOMAS FRANCIS PAYNE.

Witnesses:

G. G. TRILL,

BAYARD H. CHRISTY.