

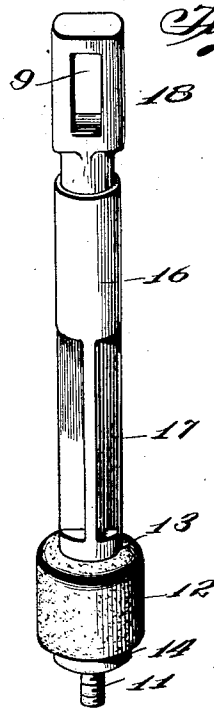
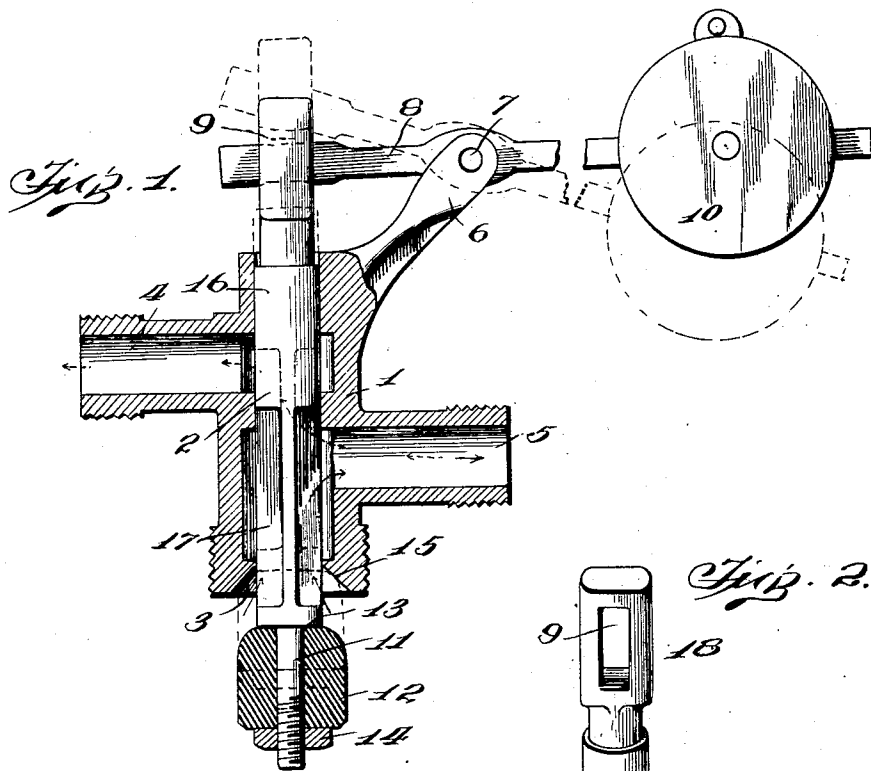
No. 738,026.

PATENTED SEPT. 1, 1903.

R. N. GILL.
HOPPER CLOSET VALVE.

APPLICATION FILED SEPT. 18, 1902:

NO MODEL.



Witnesses

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ROY N. GILL, OF DENVER, COLORADO.

HOPPER-CLOSET VALVE.

SPECIFICATION forming part of Letters Patent No. 738,026, dated September 1, 1903.

Application filed September 18, 1902. Serial No. 123,948. (No model.)

To all whom it may concern:

Be it known that I, ROY N. GILL, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, (whose post-office address is Denver, Colorado,) have invented certain new and useful Improvements in Hopper-Closet Valves; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in valves or cocks, and is especially designed for use for water-closets known as "hopper-closets," and is so constructed as to regulate the inflow of flushing water to such closet and also the discharge of waste therefrom in a suitable manner, the valve or cock being preferably located, so that the piping will be emptied of water below the frost-line when not in use.

It consists in certain novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a vertical central section through my improved hopper-closet valve. Fig. 2 is a perspective view of the valve proper removed from its casing.

The valve forming the subject-matter of the present invention is formed with a casing 1, in which moves a reciprocating valve-piece 2. The valve-casing 1 is so constructed that the inlet of the water-supply is located at the bottom of the casing, as at 3, while the outlet to the waste-pipe or sewer is arranged at 4, near the upper end of the said casing. The outlet-pipe leading to the closet is arranged between the port 4 and the supply-inlet 3, as at 5. The location of the ports 4 and 5 is such that water discharging from the closet through the port 5 will stand in the valve-casing 1 to the height of the outlet-opening 4, thus retaining sufficient water in the casing to act as a seal against the back pressure of sewer-gas from the waste-pipe. The valve-casing, however, is placed sufficiently low in the ground to be below the frost-line, and the water from the closet will be discharged always to a point below the

frost-line, thus obviating any danger of the pipes becoming frozen in cold weather. From the outer end of the casing rises an arm 6, to the upper bifurcated end 7 of which is pivoted a lever 8. The inner end of the lever 8 projects through a slot 9 in the upper end of the valve-stem, while the outer end of the said lever is provided with a weight, as 10, which exerts a downward pressure upon the same and tends to lift the valve-stem and the valves in the casing 1. The weight or the lever may be connected with a chain, rod, or other operating means extending upwardly to within easy reach of the closet.

The construction of the valve-stem and its valves constitutes an important feature of the invention, both because of the extreme simplicity of the formation of these parts and yet effectiveness of their operation. The valve-stem is made of considerable size, so as to possess sufficient strength to prevent its being easily broken. The lower end of the valve-stem is formed with a reduced threaded portion 11, upon which is slipped a valve 12, preferably of rubber. This valve is forced against a shoulder 13 upon the valve-stem and held there by means of a nut 14, which engages the threads of the reduced portion 11. The upper edge or periphery of the valve 12 is rounded and is adapted to bear against a beveled valve-seat 15, formed at the inlet-opening 3 of the casing. The tendency of the pressure in the water-supply is to normally hold this valve against the valve-seat 15, at which time, of course, the water-supply will be cut off. The tendency of the weight 10 upon the lever 8 is also to hold the valve 12 upon its seat. When it is desired to unseat the valve 12 and permit the flow of water-supply through the casing 1, it is only necessary to lift the weighted end of the lever 8, when the other end of said lever will force the valve-stem downwardly and unseat the said valve 12. Near the upper end of the valve-stem a second valve, as 16, is formed, which I prefer to form with a ground contact with the surrounding casing 1. This ground joint between the valve 16 and the casing forms a sufficiently tight joint between the parts to control the exit of the waste into the waste-outlet 4. The valve 16 is made of sufficient length to reach below the opening 4

when the valve-stem is in its lowered position and closes the said opening. When, however, the valve-stem is raised and the valve 12 is seated, the valve 16 will be lifted also, 5 as indicated in dotted lines in Fig. 1, so that the outlet-opening 4 is opened and water may flow from the closet through the casing and out through the waste-pipe. The portion of the valve-stem between the valve 16 and the 10 shoulder 13 is cut away upon its sides to form longitudinally-arranged deep grooves, as 17, so as to afford ample space for the flow of water past the valve-stem at this point. The grooving of the valve-stem makes it possible 15 to afford an ample flow of water through the valve or cock and yet not weaken the valve-stem. The grooves 17 are made of sufficient length upon the valve-stem so that when the valve 12 is unseated the grooved portion of 20 the stem will extend through the inlet-opening 3 and permit the supply of water to flow freely into the valve-casing. When the valve-stem is raised, the upper end of the groove portion of said stem will be brought opposite 25 the waste-outlet 4 and will extend also past the outlet-opening 5, leading to the closet, so that the two parts 4 and 5 will be connected.

It will be seen that the parts of my improved valve mechanism are so simple that 30 the valve-casing can be made of a simple casting, though of course this is not necessary. The valve-stem also can be made of one piece, and the valve 16, being a ground valve and reciprocating opposite the waste- 35 outlet 4, has little or no wear and will not have to be renewed. The only part of the valve which may require renewing from time to time is the rubber valve 12, which is at the lower end of the valve-stem and can be easily 40 reached at any time without taking the valve-stem out of the casing. The upper end of the valve-stem is preferably enlarged to form a head 18, in which the slot 9 is located. This enlarged head 18 prevents the valve- 45 stem from descending too low in the casing 1. Of course it will be apparent that the casing may be made in several parts, if desired, or the valve-stem may be made in several parts, all within the spirit of the present 50 invention; but a better mechanism is produced when the casing is made of a single piece, as well as the valve-stem, as illustrated in the drawings. Aside from the extreme simplicity of the device the parts can be 55 made of ample strength to withstand all pressure and wear which they may have.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A valve mechanism comprising a casing 60 having an inlet and a discharge opening, a valve-stem mounted in said casing the said stem being of the same diameter from one end of the casing to the other and being partially cut away at points to form recesses in 65 the surface of the stem by which liquids may pass the same, a supply-controlling valve secured to one end of the said stem, the unrecessed portion of the stem at the other end thereof forming a discharge-controlling 70 valve, and means for operating the said valve, substantially as described.

2. A valve mechanism comprising a casing provided with an inlet-passage and discharge-passages the said valve being formed with a 75 bore of uniform diameter throughout, a reciprocating valve-stem engaging the same the said stem being of uniform diameter throughout, recesses or depressions being formed in the periphery of the valve-stem for a portion 80 of its length to admit of the passage of liquids by the stem at that part, one end of the said stem being left at its full diameter for forming a discharge-controlling reciprocating 85 valve, and a removable inlet-controlling valve carried by the opposite end of said stem and engaging one end of the valve-casing, substantially as described.

3. A valve mechanism comprising a casing formed with inlet and discharge passages 90 and provided with a central bore of uniform diameter where it engages the valve-stem, a reciprocating valve-stem of uniform diameter from one end of the casing to the other mounted in said bore, the said valve-stem being 95 made of a single piece of metal, a removable valve carried at the lower end of the stem for controlling the supply or inlet to the valve-casing, recesses being formed in the valve-stem just above said supply-valve for 100 permitting liquid to pass the stem at that point, the unrecessed portion of the valve-stem forming a discharge-controlling valve, the valve being easily taken out from the casing by merely removing the supply-valve, 105 substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

ROY N. GILL.

Witnesses:

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