(No Model.)

C. H. HARKINS.

WATER CLOSET VALVE.

No. 380,257. Patented Mar. 27, 1888.

Fig. 1.

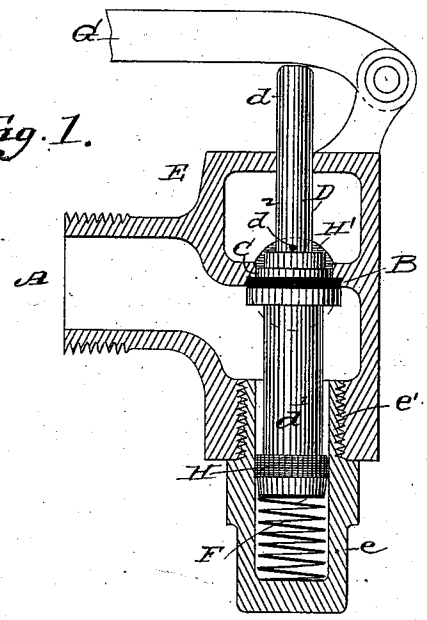


Fig. 3.

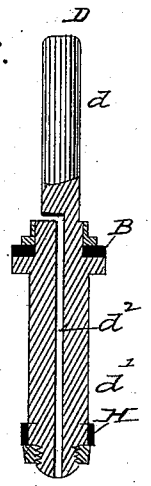
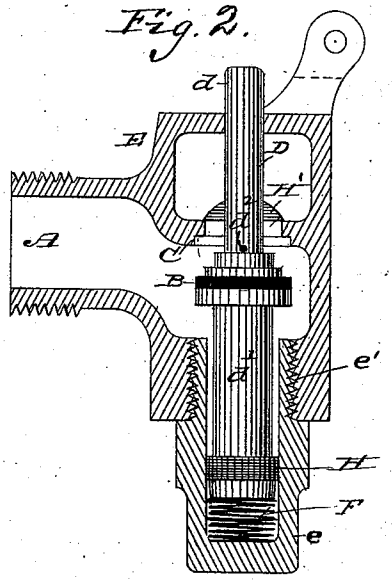


Fig. 2.



WITNESSES.
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UNITED STATES PATENT OFFICE.

CHARLES H. HARKINS, OF ST. LOUIS, MISSOURI.

WATER-CLOSET VALVE.

SPECIFICATION forming part of Letters Patent No. 380,257, dated March 27, 1888.

Application filed October 7, 1886. Serial No. 215,580. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. HARKINS, of St. Louis, Missouri, have made a new and useful Improvement in Water-Closet Valves, of which the following is a full, clear, and exact description.

The improvement relates to the means for effecting the gradual closing of the valve, substantially as is shown in the annexed drawings, making part of this specification, in which—

Figure 1 is a sectional view showing the valve seated. Fig. 2 is a similar section showing the valve unseated, and Fig. 3 is a longitudinal section of the valve-stem and valve.

The same letters of reference denote the same parts.

Aside from its improved feature, the valve is of a familiar form.

A represents the inlet through which the water passes into the interior of the valve-chamber.

B represents the valve proper. It seats with the pressure at C, and it is attached to the stem D, whose upper end, *d*, extends to above the valve-chamber E, and whose lower portion, *d'*, extends from the valve downward into the lower part, *e*, of the valve-chamber. The stem is perforated to provide a passage, d^2, by which water can pass from just above the valve into the stem and then downward through the stem into the portion *e* of the valve-chamber. This part of the valve is connected to the main body by the screw-thread *e'* and comes directly beneath the seat of the valve. This construction is of value in making up the valve or in getting at the interior of it, as for cleaning, &c.

F represents a spring beneath the stem and acting to aid in seating the valve. The stem is provided with a cup-leather, H, to prevent the water from passing directly downward into the space *e*. The wall of that part of the shell which contains the space *e* is also made smooth and free of grooves or perforations, through which water can pass the cup-leather.

The operation is as follows: As the water is exhausted from the chamber containing the device, the ball-lever G drops and, by bearing upon the valve-stem, causes the valve to unseat and the water to pass the valve and be discharged through the outlet H'. The water also enters the perforation d^2 and passes into the space *e*. When the ball-lever rises again, in the usual manner, the water-pressure beneath the valve-stem acts to nearly close the valve, but more and more gradually as the valve approaches its seat. If the entrance to the perforation d^2 were below the valve, the valve would close suddenly; but by reason of the entrance being above the valve the movement becomes a gradual one, as described. The principal function of the spring is to insure the perfect seating of the valve, which otherwise would not perfectly seat.

I desire not to be limited to a ball-lever for opening the valve, as other means can be used for that purpose, provided they do not conflict with the remaining portion of the above-described mechanism.

I am aware that it is not new to provide a valve-stem with a duct for admitting pressure therethrough and below the valve for assisting in seating the latter; but such is not the equivalent of my invention, as I have placed the opening of such duct above the valve, or in the egress-port, which arrangement possesses over prior devices at least two great advantages, to wit:

First. By having the duct communicating with the outlet-port the water does not pass into the piston-chamber when the valve is closed, thus permitting the valve to be opened easily, while if the duct communicated with the inlet-port the water would pass to the chamber beneath the piston when the valve was closed, and the result would be that a great force would be required to open the valve, as the water must be forced (as the piston descends) back through the duct out of the chamber. This would require more force than could be obtained by a float, (which is the desirable way of operating the piston,) while a float would very easily operate the valve when the duct communicates with the outlet, when, as stated, the chamber beneath the piston would not become filled with water.

The second advantage is that by having the duct on the outlet there is much less liability of its becoming stopped or checked up by dirt in the water, and a vast amount of sediment is kept from getting into the chamber beneath the piston, for with the duct on the outlet side there is a constant tendency to carry the dirt

and sediment away from the duct, instead of carrying and forcing it into the duct, as would be the case if the duct communicated with the inlet. Therefore,

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

1. The combination, with the ingress and egress ports, of a valve-seat interposed between said ports, a chamber below said valve-seat, a valve-stem, a valve on said stem between said seat and chamber and adapted to open toward the ingress, an extension projecting from said valve into said chamber, and a piston on said extension, said extension and valve-stem having a duct leading from below said piston to a point above the valve, whereby said duct will be out of communication with the ingress-port and in communication with the egress-port when the valve is closed.

2. The combination, with the ingress and egress ports, of a valve and its seat interposed between said ingress and egress, said valve being adapted to open toward the former, a valve-stem, an extension projecting axially from said stem on the opposite side of the valve and having a longitudinal duct, d^2, and the valve-stem having an opening into said duct, whereby the latter empties into the egress-port when the valve is seated, a valve-chamber communicating with the ingress, a hollow plug secured in said chamber below the valve-seat, a piston, H, on said valve-stem extension fitting in said hollow plug, and a spring below said extension, essentially as set forth.

Witness my hand.

CHARLES H. HARKINS.

Witnesses:

C. D. MOODY,

A. M. EVERIST.