

(No Model.)

P. HARVEY.
CLOSET FLUSHING VALVE.

No. 369,003.

Patented Aug. 30, 1887.

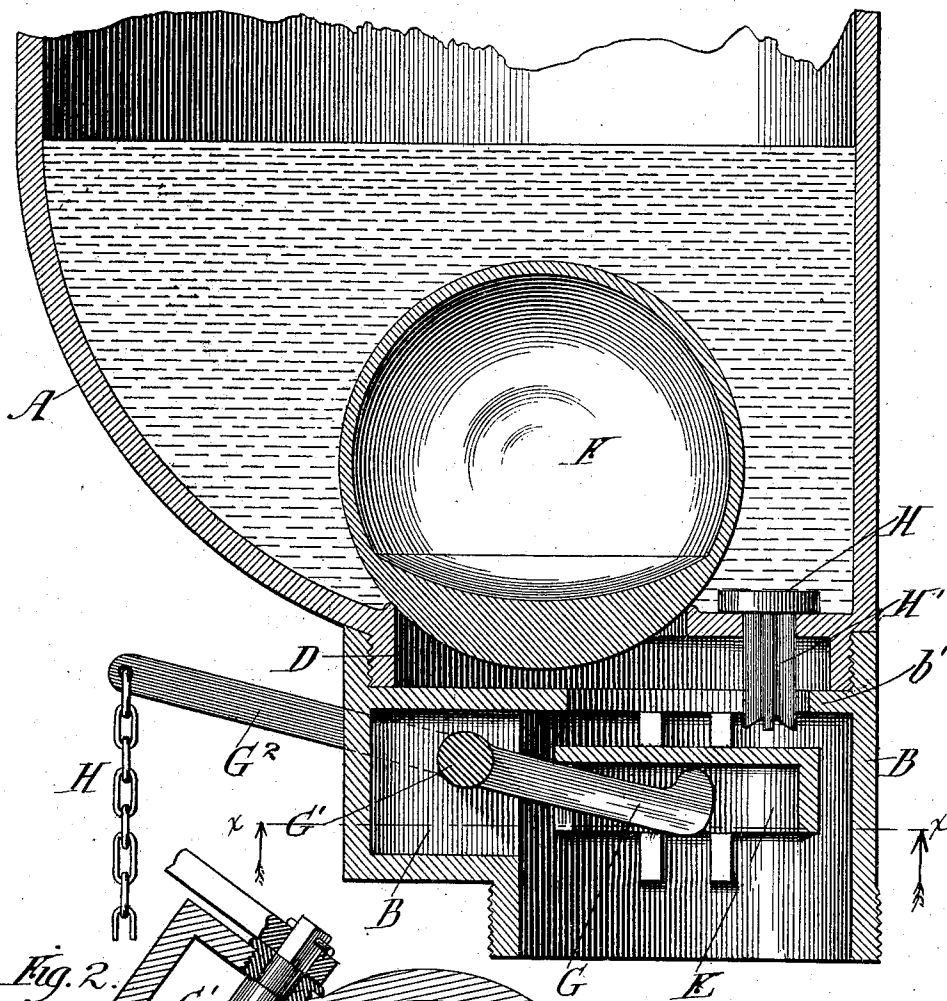
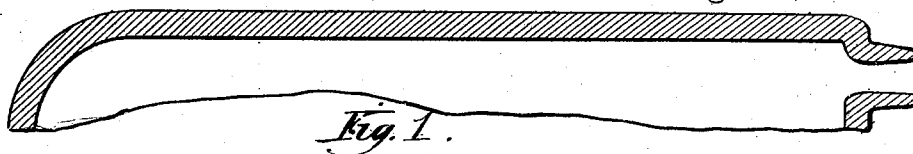


Fig. 2.

Witnesses:

Frank Blanchard
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Inventor:

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By Chas. S. Burton
Attorney.

UNITED STATES PATENT OFFICE.

PATRICK HARVEY, OF CHICAGO, ILLINOIS.

CLOSET-FLUSHING VALVE.

SPECIFICATION forming part of Letters Patent No. 369,003, dated August 30, 1887.

Application filed January 23, 1887. Serial No. 225,129. (No model.)

To all whom it may concern:

Be it known that I, PATRICK HARVEY, a citizen of the United States, residing at Chicago, in Cook county, in the State of Illinois, have invented a certain new and useful Improvement in Closet-Flushing Devices, which are fully described in the following specification, reference being had to the accompanying drawings, forming a part thereof.

Figure 1 is a vertical section of the reservoir designed to contain sufficient water for flushing the closet with which it may be connected, this section being taken directly through the valve which controls the discharge into the flushing-pipe. Fig. 2 is a horizontal section at *x x* on Fig. 1.

A is the reservoir. B is a flushing-pipe. D is an intermediate chamber between the reservoir and the flushing-pipe. E is a piston-valve operating in the upper end of the flushing-pipe, as hereinafter described. F is a float-valve in the reservoir, adapted to seat over the main discharge-orifice of the reservoir. H is an auxiliary valve controlling an auxiliary discharge-orifice adjacent to the main discharge-orifice of the reservoir. G is a lever-arm of the rock-shaft G', which is journaled and suitably packed in the enlargement of B' of the flushing-pipe. Said lever-arm actuates a piston-valve, E, and its rock-shaft is provided with a lever-arm, G², exterior to the flushing-pipe and connected to the pull-chain K.

It will be observed that the chamber D is formed between the flushing-pipe and the reservoir by means of the threaded extensions of said parts, by which they are united. In the upper end of the flushing-pipe there is provided a piston-seat for the piston-valve E, and at the upper end of said seat a flange, b', to form a stop and final positive seat for said piston-valve.

The auxiliary valve H has a stem, H', extended down through the bottom of the reservoir and protruding into the open end of the flushing-pipe B, so that the piston-valve E may actuate it longitudinally when it is itself lifted by the lever-arm G.

The operation of this device is as follows: The valve F is of specific gravity less than water, and adapted, therefore, to float upon the surface of the contents of the reservoir A,

but when seated, as represented in Fig. 1, and deprived of the buoyant effect of the water over an area equal to the main discharge-orifice of the reservoir it will be held down upon its seat, closing said orifice by means of the water-pressure. This being the condition of the device and the reservoir being filled with water, when it is desired to open the valve and admit the water to the flushing-pipe, the pull K being operated, the lever-arm G actuates the piston-valve E upward, causing it first to collide with the downwardly-protruding end of the stem H' of the auxiliary valve H and lift said valve from its seat. Instantly afterward said piston itself becomes seated up against the flange b', which bounds the opening into the flushing-pipe and thereby closes all access to said pipe. The water admitted from the reservoir past the auxiliary valve H will now fill the intermediate chamber, D, thereby equalizing the pressure upon the float-valve F by admitting such pressure under it as well as above it. Said valve will then, by virtue of its specific gravity being lighter than water, rise from its seat and float to the surface of the water in the tank. All this will have occurred while the pull K has been held down and the piston-valve E held up against its seat b'. As soon, however, as the pull K is released, the water-pressure, which is now continuous from the tank through the chamber D to the head of the piston E, will force said piston down the rocking shaft G', and moving the lever-arms of G and G², and the water will pass around said piston by way of the chamber b' or other suitable water-ways, which may be provided, and will enter the flushing-pipe, performing its function. The water is thus lowered in the reservoir, and the float-valve F, floating upon the surface and descending with it, will be drawn by the outgoing current toward its seat over the mouth of the main discharge-orifice, and by the friction of said current and the vacuum produced thereby in the flushing-pipe said float-valve will be sucked or pressed toward and upon its seat before it would normally reach that position by the falling of the water-level; and, being thus once seated and thereby cutting off the outflow of the water from said discharge-orifice, it will be again held firmly upon its seat, as at

first described, by the pressure of the water in the reservoir, and all the parts will be in the initial position, excepting that the water-level in the reservoir has been lowered. The supply of water to the reservoir being regulated by any familiar method, and the reservoir being again filled, the water will still more firmly hold the valve upon its seat until it is again lifted by the operation of the pull K and the lever-arm G, acting upon the valves E and H, as described.

The main features of this device are also presented in my application made and filed in the United States Patent Office of even date herewith. I have therein claimed, broadly, the float-valve, arranged to operate as described, and the intermediate chamber underneath it, to which the water-pressure is admitted in order to allow the valve to leave its seat and rise to the surface of the water. I do not in this application claim, broadly, these features; but this device is a modification of that shown and described in said application, and only in respect to said modification do I make claim herein. This modification relates to the mode of admitting the water to the intermediate chamber—that is to say, by the auxiliary valve H or equivalent device. I have also in said application claimed the construction of the float-valve F, weighted toward the lower side, as illustrated in Fig. 1, and have therefore not described and do not claim that feature herein.

The reservoir A may be a closed chamber, and water may be supplied to it under pressure and in such manner that the air therein is compressed as the water fills the chamber and is discharged by the reaction of such compressed air, and it is in such cases that the modification above referred to, which constitutes this invention, is particularly useful, because when the float-valve is subjected to extreme pressure it is not desirable to apply force, as of a lever, directly to it to lift or force it from

its seat; but the mode herein described—merely admitting the water underneath it, and thereby balancing the pressure upon it—has no tendency to crush or mutilate it, as direct action of a lever or other mechanical means applied to it would have. Furthermore, when the pressure is great and the valve F is (as it necessarily must be in some cases) of considerable size, because the discharge-orifice must be of sufficient size to furnish an ample stream, if it were necessary to lift such a large valve from its seat in order to start the water, it would be impossible to operate the valve without using either long levers, thereby giving a long stroke, or using much greater force than convenient, and either method would make it impossible to operate the mechanism by direct action of the closet-seat; but by the use of the auxiliary valve H, which may be very small, the water, under whatever pressure it may be in the reservoir, may be easily admitted to the intermediate chamber, D, and thus cause the float-valve to become balanced and rise from its seat.

I claim—

In combination with the reservoir, the flushing-pipe connected thereto, the reservoir having a main and an auxiliary discharge-orifice, both opening into the flushing-pipe, valves to close said orifices, the valve which closes the main orifice being of specific gravity less than water, and a valve to close the flushing-pipe, located at a little distance below the discharge-orifices of the reservoir and engaging and opening the auxiliary valve when it is itself closing, substantially as set forth.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 19th day of January, 1887.

PATRICK HARVEY.

Witnesses:

CHAS. S. BURTON,
FRANCES W. PARKER.