

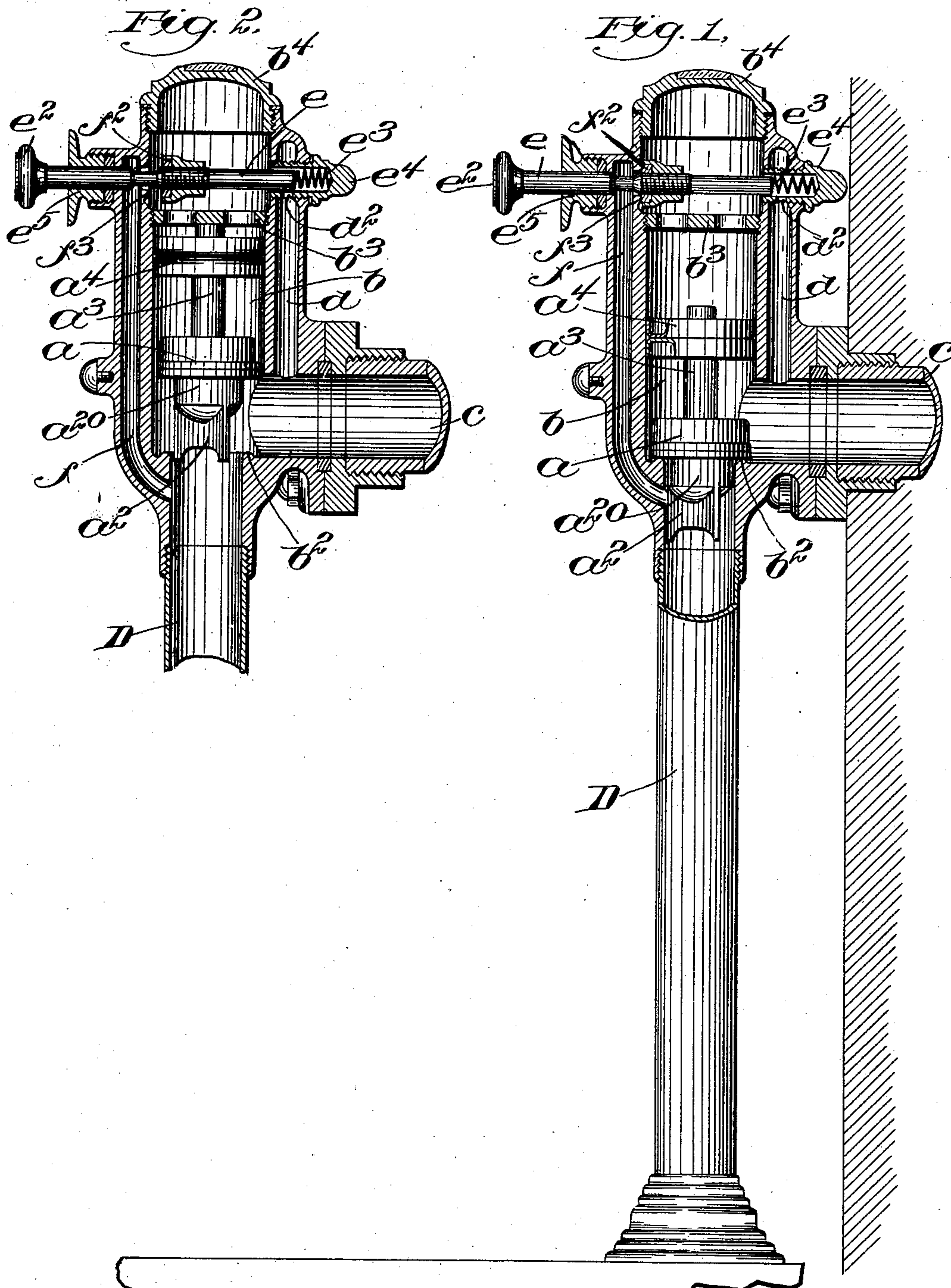
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Patented Nov. 11, 1902.

W. SCOTT.
FLUSHING DEVICE.

(Application filed Apr. 15, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM SCOTT, OF MEDFORD, MASSACHUSETTS.

FLUSHING DEVICE.

SPECIFICATION forming part of Letters Patent No. 713,161, dated November 11, 1902.

Application filed April 15, 1901. Serial No. 55,880. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SCOTT, of Medford, county of Middlesex, and State of Massachusetts, have invented an Improvement in Flushing Devices, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a flushing device, and is embodied in a controlling-valve of novel construction and arrangement adapted to be located near the closet in cases, for example, where a number of closets are supplied from a single tank or directly from the city water-supply. The valve embodying the invention is automatic in its operation, being opened or closed by differential pressures, the pressure being controlled by a small valve having a suitable actuator, such as a knob or push-button, having a comparatively small movement; and the invention consists in certain novel details of construction and arrangement, as will be hereinafter more particularly described and finally claimed.

Figure 1 is a vertical section of a valve embodying the invention, the parts being shown in normal condition and the flush-pipe and a portion of the bowl being shown in elevation. Fig. 2 is a similar section, showing the parts in abnormal position to illustrate the means for opening the valve.

The valve a is shown as located in a chamber b , into which leads the service-pipe c and from the bottom of which extends a flush-pipe D , leading to the bowl A , the chamber being provided near its lower end with a valve-seat b^2 for the valve a . The said valve a is shown as provided with a feather-guide a^2 , which extends into the outlet from the chamber to which is connected the pipe D , the said guide serving to keep the valve centered and in proper position to close the outlet when seated and also to throttle the outlet at a certain stage of the valve's descent, a portion a^{20} of the guide above the feather part being cylindrical and loosely fitting in the outlet-passage.

Connected with the valve a , as by a stem a^3 , is a piston a^4 , shown as provided with cup-leather packings and having a substantially water-tight or working fit in the chamber b , which is shown as cylindrical. The said pis-

ton is located above the inlet from the service-pipe c , there being direct communication between the said service-pipe and that portion of the chamber which is below the piston. Unless, therefore, back pressure is exerted upon the upper side of the piston the direct pressure of the water entering the chamber from the service-pipe will tend to move the said piston upward and unseat the valve a , (which is made smaller in diameter than the said piston, so that the pressure on the valve is overbalanced by that on the piston,) thereby opening direct communication between the pipe c and the pipe D , as shown in Fig. 2. To maintain the valve normally seated, therefore, that part of the chamber which is back of the piston is placed in communication with the service-pipe c , as by a by-pass d , which communicates with a small port d^2 in an independent socket-piece e^4 , fitted in the wall of the chamber and intercepting the by-pass d and leading into the chamber at the upper side of the piston a^4 . As herein shown, the said port d^2 is formed in the wall of the socket e^4 , which serves as a guide for the valve-actuating member e , which is longitudinally movable across the chamber and provided with an actuating-knob or push-button e^2 , the said member being suitably packed where it passes through the wall of the chamber and held in its normal position by means of a spring e^3 , seated in the socket e^4 against the closed outer end thereof. The said actuating member or stem has a loose fit in its guide-socket e^4 , so that water from the by-pass d will enter the chamber around the stem, the inlet for the water, however, being very restricted, so that the chamber will fill slowly. The said valve-actuating member e is adapted to operate the vent-valve f^2 , which is normally seated on a suitable valve-seat f^3 , surrounding an opening or port which leads from the chamber into a by-pass f , which leads to the flush-pipe D or other outlet below the valve a , the opening into said by-pass being comparatively large, so as to allow the water to escape freely and rapidly when the valve f^2 is unseated.

As is clearly shown in the drawings, if the push-button e^2 is pressed inward with relation to the chamber the valve f^2 will be unseated, thus opening communication between

the upper portion of the chamber and the flush-pipe or other outlet and affording a free escape-passage for the water behind the piston, while the inlet to said chamber from the service-pipe is so restricted that water cannot get into the chamber fast enough to maintain the back pressure. An unbalanced pressure therefore will at once be exerted on the under side of the piston a^4 , which will carry the valve away from its seat, as shown in Fig. 2, the action being quick, since the vent-passage f^2 is made of sufficient size to immediately relieve the pressure above the piston a^4 . When the push-button e^2 is released, the valve-actuating device e is at once restored to normal position by means of the spring e^3 , thus closing the outlet from the chamber b , which is then gradually refilled through the by-pass d . Since the water enters slowly through the restricted inlet, some time elapses before the valve will return to its seat, and during the latter part of its return movement the cylindrical upper portion a^{20} of the guide throttles the outlet, but does not wholly close the same, thus insuring the slow flow of water which is necessary to refill the bowl.

To maintain the main valve in position in the chamber and limit the upward movement thereof after the said main valve is wholly opened, the said chamber is shown as provided with a bridge-piece b^3 , so located as to be engaged by the valve-stem a^3 when the said valve is fully opened, as indicated in Fig. 2.

For convenience in assembling the parts the chamber b is shown as provided with a removable cover b^4 , the opening closed by the said cover being of sufficient size for the insertion of the valve and piston and also for the bridge-piece, which is removable and held in position by screw-threads, that portion of the chamber which contains the piston and the said screw-threads being slightly smaller in diameter than the portion above.

The valve-actuating member e is arranged to be inserted endwise through a suitable opening, and the spring e^3 is inserted in the socket-guide e^4 , which is preferably held in place by a screw-thread, as shown. The valve f^2 is also arranged to be threaded on the actuating member e , which can be passed through the said valve while it is being inserted and then turned to screw the said valve into place. The packing-gland e^5 serves to afford a watertight joint around the said actuating-stem. The push-button e^2 may be located, as shown, directly above and back of the bowl, whereby the closet may be flushed by leaning back against the button, if desired.

It is not intended to limit the invention to the specific construction shown and described, since modifications may be made without departing from the invention.

I claim—

1. A flushing device comprising a chamber

having a main open water-inlet and a main outlet adapted to be connected with a flush-pipe, a valve for controlling said outlet, a piston arranged in said chamber above said inlet and connected with said valve, an inlet-duct in the wall of said chamber communicating with the water-inlet, an independent socket-piece fitted in the wall of the chamber and intercepting the said inlet-duct and opening into said chamber and provided with a port communicating with said inlet-duct, an outlet-duct also in the wall of said chamber and provided with an inlet-opening arranged opposite said socket-piece and an outlet communicating with the flush-pipe, a valve-stem loosely fitted in said socket-piece and extending across the chamber and passing through the inlet-opening of the outlet-duct and the wall of the chamber and provided with an operating-knob, a valve on said stem adapted to seat against the inlet-opening of said outlet-duct, a spring in said socket-piece engaging said stem for normally seating said valve, and a removable bridge-piece arranged in said chamber between said valve-stem and piston, substantially as and for the purpose described.

2. A flushing device comprising a chamber having a main open water-inlet and a main outlet adapted to be connected with a flush-pipe, a valve for controlling said outlet, a piston arranged in said chamber above said inlet and connected with said valve, an inlet-duct in the wall of said chamber communicating with the water-inlet, an independent socket-piece fitted in the wall of the chamber and intercepting the said inlet-duct and opening into said chamber and provided with a port communicating with said inlet-duct, an outlet-duct also in the wall of the chamber and provided with an inlet-opening arranged opposite said socket-piece and an outlet communicating with the flush-pipe, a valve-stem loosely fitted in said socket-piece and extending across the chamber and passing through the inlet-opening of the outlet-duct and the wall of the chamber and provided with an operating-knob, a valve on said stem adapted to seat against the inlet-opening of said outlet-duct, a spring in said socket-piece engaging said stem for normally seating said valve, a removable bridge-piece arranged in said chamber between said valve-stem and piston, and a removable cover for the chamber, whereby the said parts are readily accessible for repairs and assembling, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM SCOTT.

Witnesses:

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