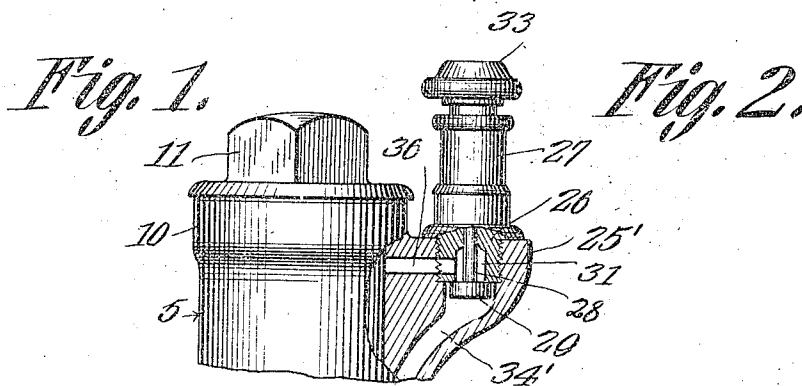
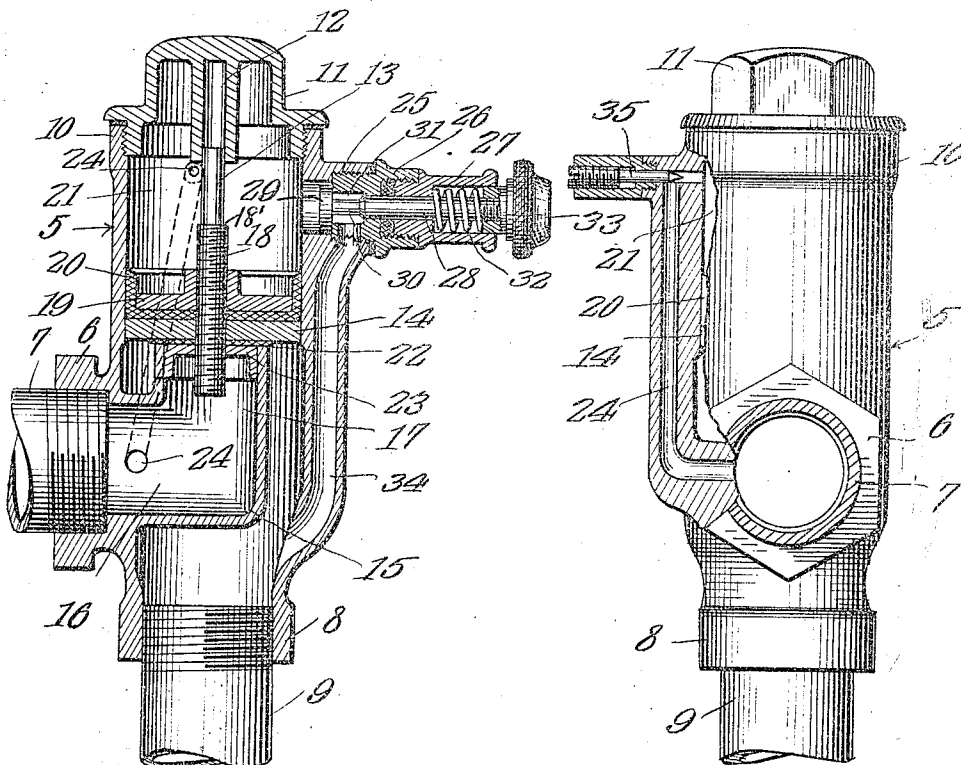


F. F. ROB.
 FLUSH VALVE.
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WITNESSES
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Fig. 3.

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FLUSH-VALVE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FERDINAND F. ROB, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Flush-Valves, of which the following is a specification.

This invention relates to flush valves for water closets and particularly to flush valves which are connected directly to the water supply pipes whereby the use of tanks is dispensed with.

The object of the invention is to simplify and cheapen the construction and increase the utility of such flush valves by providing a valve of this character which is composed of a few simple parts easily assembled, and not liable to displacement or breakage under ordinary use.

With this object in view the invention consists in the improved construction, arrangement and combination of parts of a valve of the character specified, which will be hereinafter first fully described and afterward specifically claimed.

In order that the construction and operation of my invention may be readily comprehended I will now proceed to specifically describe it, having reference to the accompanying drawing, which illustrates an approved embodiment of the invention, in which drawing—

Figure 1 represents a vertical sectional view of a valve of the character specified connected up to a water supply pipe and a discharge pipe, said pipes being shown in elevation and broken away; Fig. 2 represents a view in elevation of the same parts looking at the left hand side as shown in Fig. 1, parts being broken away and parts shown in section; Fig. 3 represents a view of the upper part of a slightly modified construction partly in elevation, with parts broken away and parts in section on the same plane as in Fig. 1.

Like reference characters mark the same parts wherever they occur in any of the figures of the drawing.

Referring specifically to the drawing 5 indicates the casing of my improved valve, preferably a substantially cylindrical casting which is provided with an internally threaded nozzle 6 on one side to receive a water supply pipe 7, a similar nozzle 8 at the bottom to receive a discharge pipe 9 from which communication is had with the closet

bowl, (not shown), and an interiorly threaded upper end 10 to receive a removable cap 11 provided on its interior with a central depending cylindrical guide 12 to receive the stem 13 of a valve 14 the specific construction of which will be later described.

Within the casing 5 is a hollow elbow 15 comprising a horizontal arm 16 communicating directly with the supply pipe, and a vertical arm 17 which has its upper end open and forms a valve seat.

The valve stem 13 is plain where it enters the guide 12 and is enlarged and threaded at 18 to form a stop 18' upon which threaded portion is threaded a disk 19 in a cup shaped packing 20 which slidably fits in a chamber 21 in the upper end of the casing 5, said packing cup resting on a metallic disk threaded on the stem and forming the valve proper 14 beneath which, on the stem, is a packing disk 22 which normally rests upon the top of the valve seat 17 and is held up on the stem, against the valve 14, by an inverted cupshaped supplementary valve 23 which enters within said valve seat 17.

A port 24 leads from the horizontal arm 16 of the elbow 15, through the wall of the casing 5, to the chamber 21 and from said chamber projects a horizontal threaded nozzle 25 which receives a sleeve 26 into which is threaded at its outer end a second sleeve 27. Each of the sleeves has a bore which bores are alined with each other, forming a guide for a stem 28 of a valve 29, said stem being reduced in diameter at 30 in an enlarged inner end of the bore, which forms a chamber 31. The valve head, when the valve is closed, which it is normally by a spring 32, seats itself at the inner end of the sleeve 26 and cuts off communication between the chambers 31 and 21.

The valve 29 may be opened by manual pressure upon a knob 33 on the outer end of the stem 28 against the closing force of the spring 32 which is coiled about the stem between a shoulder in the sleeve 27 and the inner end of the knob.

A port 34 in the wall of the casing 5, leads from the chamber 31 to the lower portion of the casing 5 which is in communication with the discharge pipe 9.

The upper end of the port 24 may be wholly or partially closed by a needle valve 35 (Fig. 2), whereby its discharging capacity may be regulated.

In the modification shown in Fig. 3, the casing 5, threaded end 10, and cap 11 are the same as in the constructions shown in Figs. 1 and 2 and previously described but instead of the horizontal nozzle 25 there is a vertical nozzle 25' to receive the sleeve 26, a port 36 communicating between the chamber 31 and the valve casing and a port 34' leading from said chamber to the lower end of the casing, the whole object of the modification being to bring knob into a position sometimes to be preferred and to have it and the release valve stem move vertically instead of horizontally.

The operation of the invention may be described as follows: Assuming the parts to be in position illustrated in Fig. 1 and the chamber 21 filled with water from the supply pipe 7 through the port 24, the pressure of the water in said chamber will tend to keep the valves 14 and 29 closed, the latter also having the pressure of the spring 32, thus cutting off all connection between the supply pipe 7 and the discharge pipe 9. By pressing inwardly on the knob 33, the valve 29 is opened, permitting the water to flow from the chamber 21, around valve 29, through chamber 31 and port 34 to the casing and the discharge pipe, which will release the pressure in chamber 21, so that the pressure of the water from the supply pipe 7 through the elbow 15 will raise valve 14 off its seat and open a passage for the supply of water out of the elbow, below the raised valve 14 and out at the lower end of the casing and discharge pipe 7, thus flushing the bowl. The spring 32 will have closed the valve 29, and, the water continuing to flow through port 24, the chamber 21 will be again filled, and the valve 14 closed by said pressure, when the flushing will cease, the length of time during which the flushing will be continued depending upon the regulation of the discharge through port 24 by means of the needle valve 35.

From the foregoing it will be seen that I have provided a strong, simple, and economical flush valve of the character described, and while I have specifically described the construction, location, and operation of the various parts composing the same, I desire it to be understood that slight changes and variations may be made there-

in, without departing from the spirit and scope of the invention as defined in the appended claim.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is—

A flush valve of the class described, comprising a casing, having an inlet and an outlet, said inlet being in the form of an elbow disposed within the casing and consisting of a horizontal and vertical arm, the horizontal arm being extended to provide a threaded coupling adapted to connect with a supply pipe; a threaded cap on said casing, said cap having a guide sleeve depending therefrom, a valve stem slidable within the guide sleeve, said valve stem having an enlarged threaded portion producing a shoulder adapted to contact with the guide sleeve and constitute a stop, a piston valve disposed upon the threaded portion of the valve stem and consisting of a disk, a cup shaped packing superposed on said disk, the side of the packing being flush with the edge of the disk and contacting with the interior of the casing; a second disk threaded upon the valve stem, said second disk being less in diameter than the first disk and arranged within the cup shaped packing, the edge of said second disk contacting with the inner side of said packing, an inverted supplemental cup-shaped valve threaded upon the valve stem and normally disposed within the vertical arm, and packing disposed between the supplemental valve and the first mentioned disk, said piston valve cooperating with the casing to form in the upper end thereof a main water chamber, a by-pass through said casing from the horizontal arm of said elbow to the main water chamber, a screw threaded needle valve adapted to control the flow of water through said by-pass, a passageway connecting the main water chamber with the outlet, and a manually-operated spring pressed valve controlling said passageway.

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

FERDINAND F. ROB.

Witnesses:

E. WALTON BREWINGTON,
MARY M. MAGRAW.