Oct. 7, 1924. 1,510,865

F. A. SCHOSSOW

FLUSHING VALVE

Filed Nov. 23, 1923 2 Sheets-Sheet 1

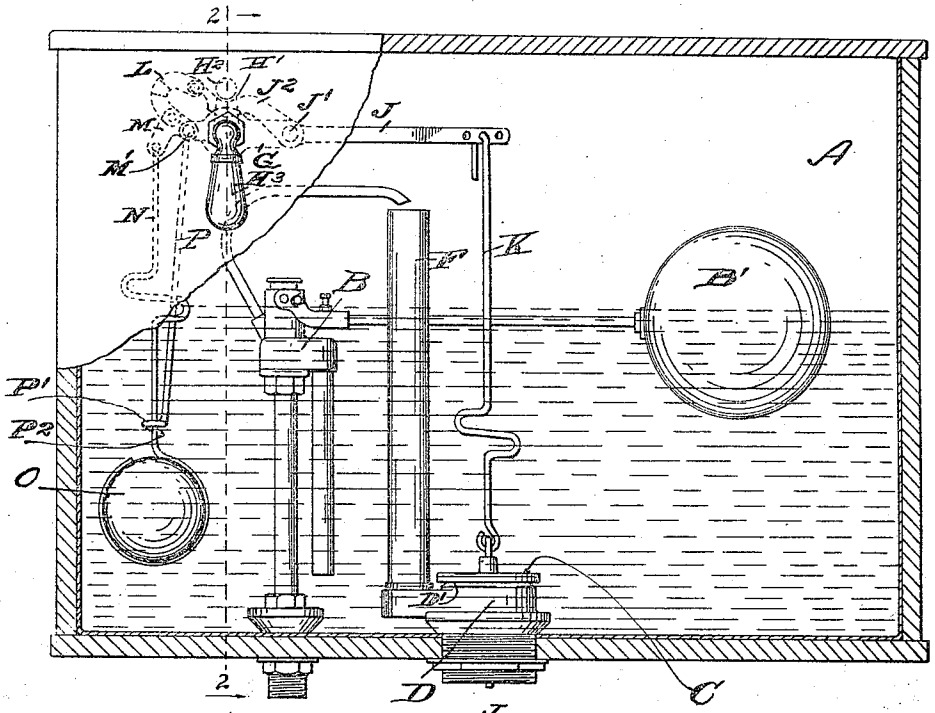


Fig. 1

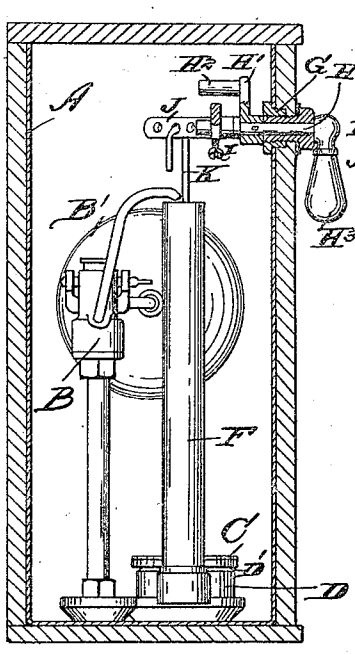


Fig. 2

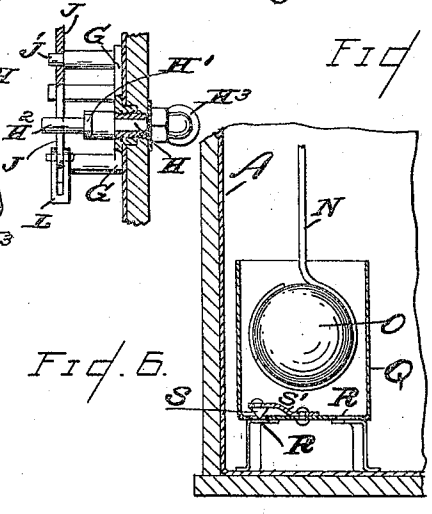


Fig. 6.

Fig. 5.

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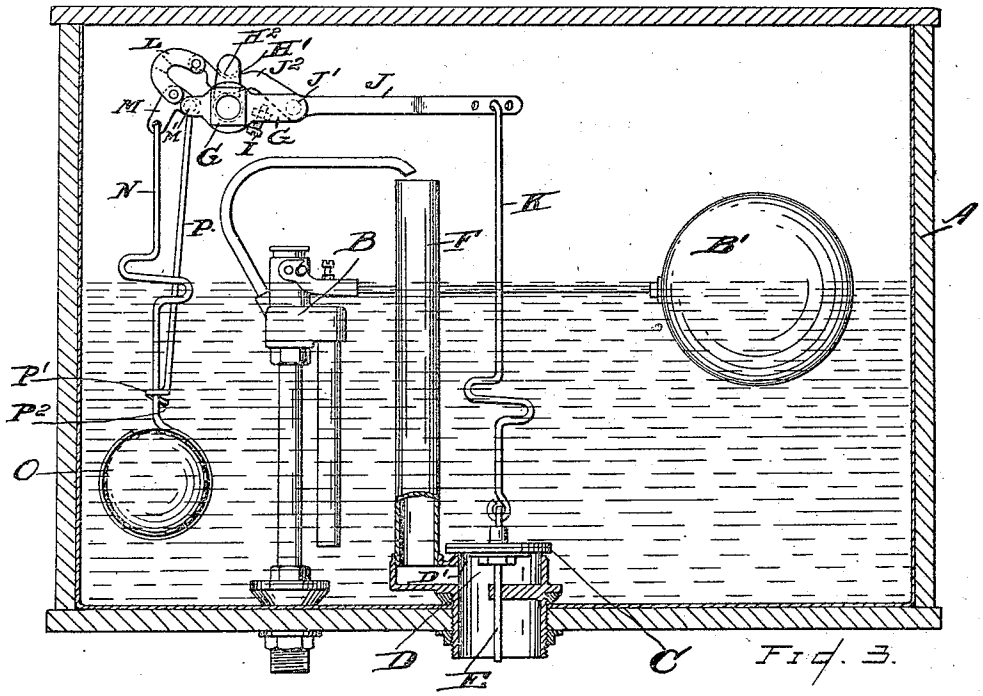


Fig. 3.

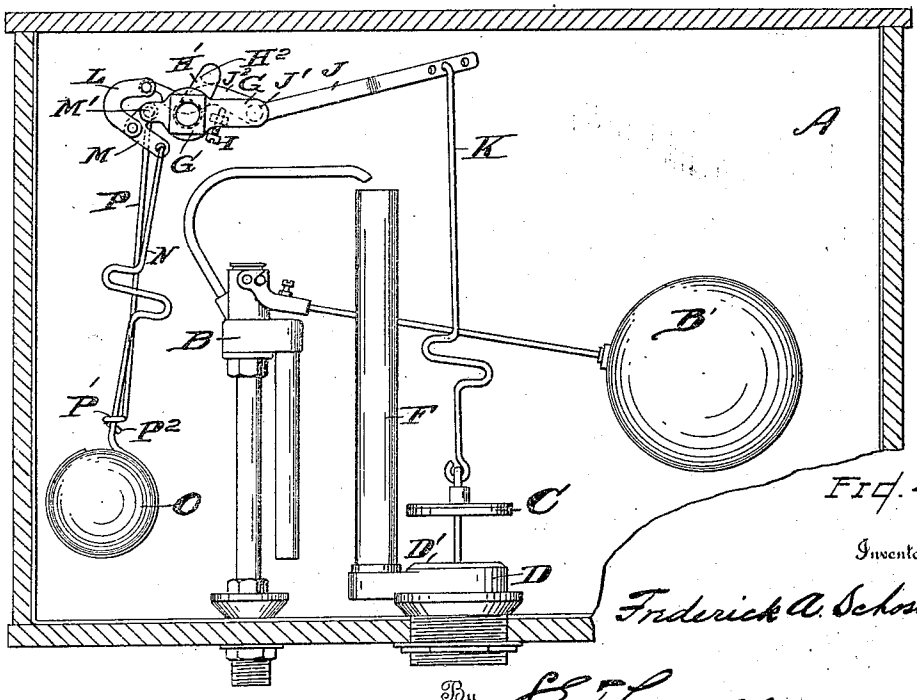


Fig. 4.

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UNITED STATES PATENT OFFICE.

FREDERICK A. SCHOSSOW, OF DETROIT, MICHIGAN.

FLUSHING VALVE.

Application filed November 23, 1923. Serial No. 676,477.

To all whom it may concern:

Be it known that I, FREDERICK A. SCHOSSOW, citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Flushing Valves, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in flushing valves shown in the accompanying drawings and more particularly described in the following specification and claims.

One of the objects of my invention is to provide a device simple in construction and positive in its operation.

A further object of the invention is to locate the working parts above the water level thereby overcoming any tendency for corrosion as often occurs in locations where the water is of a character liable to attack the parts.

A further object of the invention is to provide a device which may be employed to lift and hold open any of the usual flushing valves now upon the market:—applicant prefers however to eliminate the rubber ball or float type of valve in favor of a valve having a closure member provided with a chrome-leather washer on its underface.

One feature of the invention consists of a novel toggle-lever mechanism having a co-operating float connected with the end of the operating lever opposite the end to which the inlet valve is linked, the float thus serves to maintain the valve either in its open or closed position and provides pressure upon the valve when seated to assist in maintaining it in its closed position until manually released.

Another object of the invention is to provide for readily adjusting the length of the rod connecting the float with the operating lever, and also between the inlet valve and said lever, that the raising or seating of the valve may be regulated.

With the foregoing and other objects in view which will appear as the description proceeds the invention further resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the drawings forming part of this specification:

Figure 1 is a longitudinal vertical sectional view through a flushing tank, indicating a fragment of the tank in elevation to disclose the manually operable rocking lever supported thereby for raising the flushing valve from its seat.

Figure 2 is a cross-sectional view through the tank taken on or about line 2—2 of Figure 1.

Figure 3 is a longitudinal vertical sectional view through the device showing the position of the parts when the flushing valve is seated.

Figure 4 is a similar sectional view showing the position of the several parts when the flushing valve is raised by the manually operable lever.

Figure 5 is a fragmentary cross-sectional view of a modification of the device disclosing the float for maintaining the valve either in its open or closed position housed in a cup supported within the tank: the cup having discharge crifices which may be adjusted, whereby the discharge of water from the cup into the tank may be controlled to maintain the valve in an open position for a relatively longer period than would obtain in the construction shown in the preceding figures.

Figure 6 is a fragmentary horizontal sectional view through the wall of the tank, and the bracket fixture to which the operating lever is pivoted, showing a portion of the operating lever and the manually operated rock shaft in elevation.

Referring now to the letters of reference placed upon the drawings:

A, denotes a flushing tank, B, a water inlet valve under control of a ball float B^1.

C, designates the closure disc of a flushing valve.

D, indicates the casing of the latter and D^1 the valve seat.

E, represents a valve stem for guiding the valve to its seat.

F, denotes an overflow pipe opening into the casing D of the valve.

G, designates a bracket fixture supported in the wall of the tank near the upper mar-

gin of the latter, through which projects a manually operable shaft H;—see Figure 6. Pinned to the shaft H is a rocker arm H^1 having a projecting finger H^2 adapted to bear upon the lever J, pivoted at J^1 to an arm of the bracket fixture.

The valve disc C is suspended from the lever J by a rod K which is preferably provided with an S-shaped loop midway of its length that it may be easily bent to insure the proper seating of the valve. The lever J on the opposite side of its pivotal connection is inclined upwardly with a hump-shaped formation as at J^2, to receive the thrust of the projecting pin H^2 of the manually operated rocker arm which when operated in either direction by the handle H^3 will raise the lever J thereby lifting the valve C from its seat.

Pivoted to the end of the lever J adjacent the manually operated rock-shaft is an arc-shaped link L, in turn pivoted to a bell-crank lever M, fulcrumed at M^1 to an arm of the bracket.

A wire rod N connected to the bell-crank lever M is bent at its lower end to embrace and retain a ball float O. The rod N is also provided midway of its length with an S-shaped bend to provide for adjusting the length of the rod, if required.

A guide rod P is suspended from the bracket G and is provided at its lower end with an open loop P^1 loosely encircling the rod N, the end of the rod being bent downwardly as indicated at P^2, whereby the rod N may be readily disengaged when it is required to remove or replace the parts in the tank.

In the modification shown in Figure 5 I have shown a cup Q to receive the float O. The cup is provided with a plurality of relatively small apertures R through which water contained in the cup may discharge into the body of the tank.

S denotes a tapering closure plug mounted upon an arm S^1 secured to the wall of the cup which may be compressed to regulate the discharge of the water into the tank as may be required.

Having now indicated the several parts by reference letters the construction and operation of the device will be readily understood.

To release the water from the tank the manually operated rocker arm H^1 is actuated in either direction by the handle H^3 so that the projecting pin H^2 will bear upon the lever J thereby raising the discharge valve C from its seat. The tilting of the lever serves to shift the link L and bell-crank lever M from the position indicated in Figure 1 to that disclosed in Figure 4,—the bell-crank lever M being held in its shifted position by the upward thrust of the float O until the altitude of the water in the tank is sufficiently low for the float to become inoperative to further support the valve in its elevated position whereupon the valve M will automatically return to its seat as indicated in Figure 3:—the water again entering the tank through the ball cock due to the action of its controlling float,—in a manner well understood in the art.

The modification shown in Figure 5 provides for a cup with apertures for the discharge of water therefrom into the tank. The float O extends into the cup in order that the valve may be maintained in its elevated position for a relatively longer period than would obtain were it to depend upon the altitude of the water in the tank to support the float due to the fact that the water contained in the cup will escape slowly through its relatively small discharge orifices,—a higher water level is thus maintained to support the float than in the tank which is discharged at a much more rapid rate of speed,—therefore if it is desired to hold the float open until all of the water contained in the tank is discharged before seating the valve the device shown in Figure 5 may be employed.

To regulate the tilting action of the lever J an abutment or adjustable stop I, extending into the path of the lever may be employed if desired.

Having thus described my invention what I claim is:

1. In a device of the character described, a tank, a flushing valve in the tank, a bracket having a projecting arm, an operating lever mounted intermediate of its ends directly upon the projecting arm of the bracket and adapted to rock thereon, means connecting the flushing valve with one end of the operating lever, a toggle lever mechanism pivoted to the other end of the operating lever and to the bracket, a float connected with an arm of one of the toggle levers and manually operated means adapted to actuate the operating lever, whereby the flushing valve may be raised from its seat and held by the float off its seat until the altitude of the water in the tank discharging through the flushing valve is lowered sufficiently to cause the float to become inoperative for sustaining the valve in open position.

2. In a device of the character described, a tank, a flushing valve, a bracket supported in the wall of the tank above the water level in the latter, an operating lever pivoted to the bracket having a hump-shaped formation at one end, a toggle lever mechanism pivoted to the hump-shaped end of the lever and to the bracket, a float connected with the toggle-lever mechanism, a link connection between the opposite end of the operating lever and the flushing valve and manually operated means adapted to bear upon the hump of the operating lever to lift the flush-

ing valve from its seat, whereby the float connected with the toggle lever mechanism may maintain the flushing valve off its seat until the altitude of the water in the tank discharging through the flushing valve is lowered sufficiently to cause the float to become inoperative to sustain the valve in its raised position.

3. In a device of the character described, a tank, a flushing valve, a bracket supported above the water level in the tank, an operating lever pivoted to the bracket having a hump-shaped formation at one end, a link pivoted to the hump-shaped end of the lever, a bell-crank lever pivoted to the link and to the bracket, a float connected with one arm of the bell-crank lever, a link connection between the opposite end of the operating lever and the flushing valve, a manually operated rocking arm adapted to act upon the hump-shaped end of the operating lever to raise the flushing valve, whereby the bell-crank lever is rocked to a position in which the float is adapted to maintain the flushing valve off its seat until the water in the tank has been discharged through the flushing valve sufficiently to render the float inoperative to maintain the valve off its seat, the action of the float however serving to hold the flushing valve on its seat upon the lever mechanism returning to its initial position until again raised by said manually operated means.

4. In a device of the character described, a tank; a flushing valve in the tank; a bracket, an operating lever, pivoted to the bracket, one end of which is given a hump-shaped formation; a bell-crank lever pivoted to the bracket, a link connecting the hump-shaped end of the operating lever with the bell-crank lever, a float, a rod connecting the float with one arm of the bell-crank lever, said rod provided with a bend midway its length for purposes of adjustment, a guide rod having an open loop engaging said link, a flushing valve, a rod connecting the flushing valve with the other end of the operating lever, a manually operated rocker arm supported in the wall of the tank adapted to act upon the hump-shaped end of the operating lever whereby the flushing valve may be raised and held in its raised position until the altitude of the water in the tank is lowered sufficiently to cause the float to become inoperative to support the valve in its open position.

5. In a device of the character described, a tank, a flushing valve in the tank, a bracket, an operating lever pivoted to the bracket, means connecting the flushing valve with one end of the operating lever, a toggle-lever mechanism pivoted to the other end of the operating lever and to the bracket, a cup housed within the tank adapted to be filled from the water in the tank, said cup having apertures in its wall through which the water may be discharged from the cup into the tank when the water in the tank drops below the line of the apertures in the cup, means for regulating the size of the apertures in the cup, a float supported within the cup by a rod connected with one arm of the toggle levers, and manually operated means adapted to actuate the operating lever whereby the flushing valve may be raised from its seat and whereby it may be maintained off its seat through the action of the float until the water in the cup has been discharged into the tank to render the float inoperative to support the valve in its raised position.

6. In a device of the character described, a tank, a flushing valve in the tank, a bracket supported in the wall of the tank, an operating lever pivoted intermediate of its ends to the bracket, a link connection between the flushing valve and one end of the lever, means for limiting the movement of the operating lever, a link pivoted to the other end of the operating lever, a bell-crank lever pivoted to the link and to the bracket, a float connected with one arm of the bell-crank lever, a manually operated rocker arm adapted to act upon the operating lever to lift the flushing valve off its seat and to shift the position of the bell-crank lever, said float being adapted to hold the flushing valve upon its seat and off its seat when raised by the operating lever until the altitude of the water in the tank is insufficient to cause the float to further support the flushing valve off its seat.

In testimony whereof, I sign this specification in the presence of a witness.

FREDERICK A. SCHOSSOW.

Witness:
S. E. THOMAS.