P. H. McNEILL.

FLUSHING MECHANISM.

APPLICATION FILED MAY 9, 1908.

929,693. Patented Aug. 3, 1909.

Fig. 1.

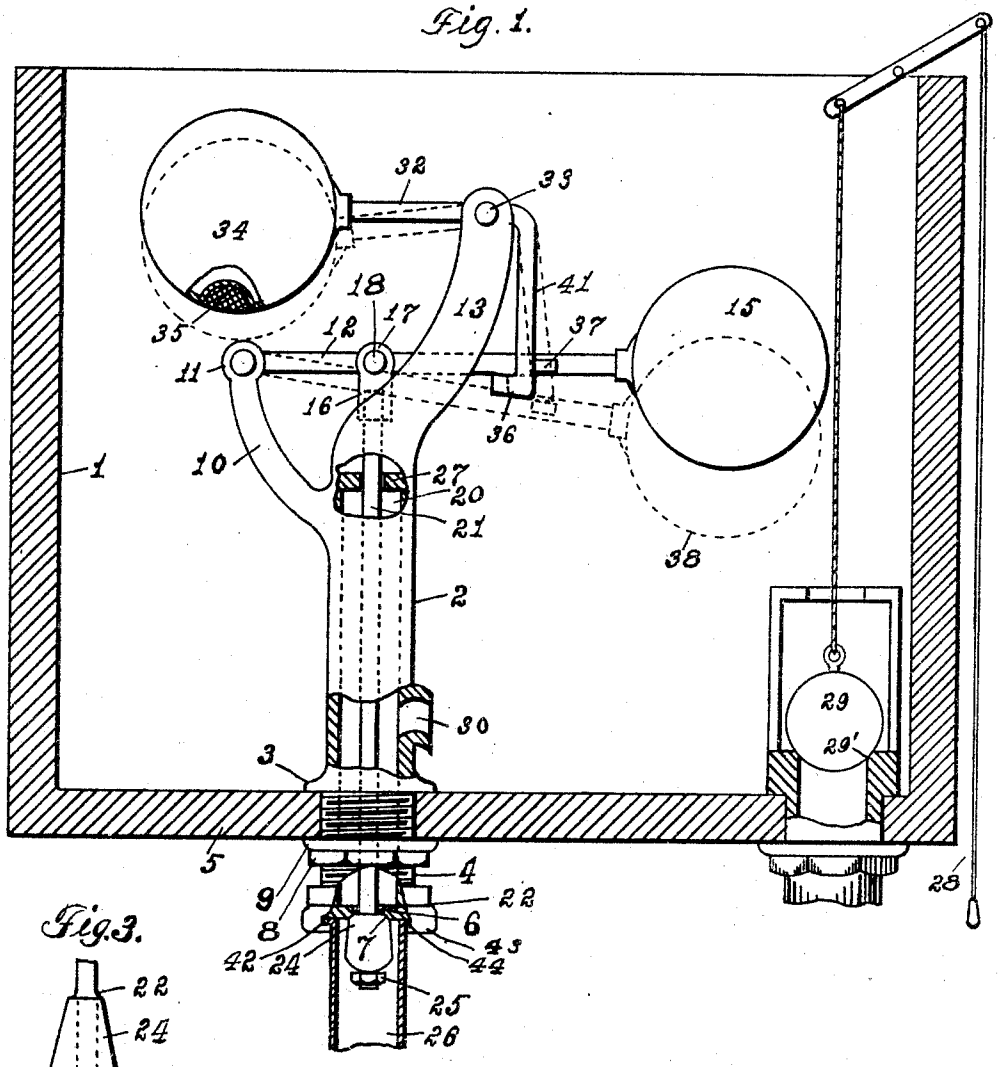


Fig. 3.

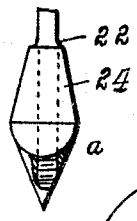
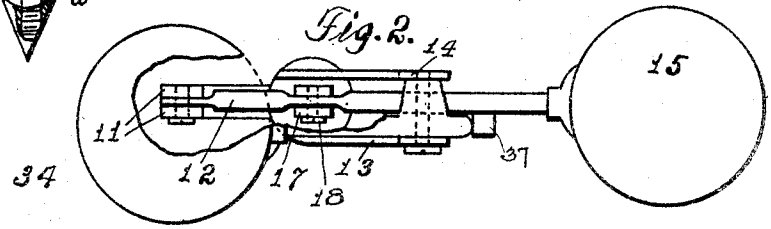


Fig. 2.



Witnesses

Fred A. Schlosser

Pearl Ackerman

Inventor

Price H. McNeill

By John H. Bosworth

his Attorney

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

PRICE H. McNEILL, OF OLYMPIA, WASHINGTON.

FLUSHING MECHANISM.

No. 929,693. Specification of Letters Patent. Patented Aug. 3, 1909.

Application filed May 9, 1908. Serial No. 431,971.

To all whom it may concern:

Be it known that I, PRICE H. McNEILL, citizen of the United States, residing at Olympia, in the county of Thurston and State of Washington, have invented certain new and useful Improvements in Flushing Mechanism, of which the following is a specification.

My invention relates to a flushing mechanism for flushing tanks or the like.

One of the objects of my invention is to provide means to keep the valve in full open position until the inflow of water from the inlet has reached a pre-determined level at which time the valve will close instantly thereby obviating the noise incident to an ordinary flushing mechanism on account of gradually contracting the orifice or opening in the valve.

Another object of my invention is to provide facilities for repairing the flushing mechanism and prevent the water from escaping from the tank.

A further object of my invention is to provide a simple and efficient means of connecting the inlet pipe to the lower extremity of the flushing mechanism.

A further object is to construct a compact, simple and efficient mechanism.

It further consists of the parts and combination of parts hereinafter described and more particularly pointed out in the claims.

In the accompanying drawing Figure 1 represents a side elevation of my device partly in section and Fig. 2 is a top plan view. Fig. 3 is a detail view of a cone-shaped nut.

In the drawings reference numeral 1 represents a tank with my flushing device mounted therein. The body portion 2 of my device is preferably made cylindrical in form with an annular outwardly extending shoulder 3 which is adapted to overlap the orifice made in the tank or the like. The lower extremity 4 of the body portion is exteriorly screw-threaded and depends below the bottom (5) of the tank. The lower portion 4 of the body is also provided with an inwardly extending annular flange 6 which is beveled to form a valve seat 7. The nut 8 having a washer 9 made integral therewith is threadably fitted to the lower portion 4 of the body and is adapted to be forced in contact with the bottom of the tank making an air and water tight joint and securely and rigidly attaching the body portion of the flushing mechanism to the tank.

An arm 10 extends from the body 2 and is provided with a bifurcated end 11. A lever 12 is pivotally secured to the end 11 leaving its free end extending therefrom and passing between the twin arms 13 and 14 to which a ball 15 is securely attached. An internally screw-threaded sleeve 16 having its upper end 17 slotted to fit the lever 12 is pivotally connected thereto by the bolt 18. The sleeve 16 is secured to the lever so that it depends directly over the center of the chamber 20. A valve stem 21 having one end exteriorly threaded is connected to the sleeve 16 depending through the central portion of the chamber 20 and below the opening of the valve seat 7.

A shoulder 22 is formed on the depending end of the valve stem. The valve 24 has an aperture in the center to receive the lower extremity of the valve stem which is exteriorly screw-threaded to receive the nut 25. The valve 24 is securely held in place on the valve stem through the medium of the nut 25 which forces the upper surface of the valve to abut against the shoulder 22 when the nut is tightened.

In Fig. 1 the valve is shown in closed position cutting off the water supply from the inlet pipe 26. The upper end of the valve stem 21 is guided in its movement by the wall 27 which is provided with an aperture through which the valve stem extends and operates. The ball 15 is made of such specific gravity that when the water is permitted to flow into the tank it will counterbalance its weight or barely float.

When the tank is filled with water to the predetermined level and it is desired to operate the flushing device, the cord 28 is pulled down lifting the ball check valve 29 from its seat 29′ thereby permitting the water to escape therefrom for flushing or other purposes and the lever 12 and the ball 15 gradually move downward thus releasing the valve 24 from its seat and allowing the water to enter the chamber 20 and flow into the tank or other receptacle through the discharge opening 30 until the water has reached the predetermined level in the tank. The water in the supply pipe which exerts a pressure against the valve 24 aided by water in the tank which floats the ball 15, closes the valve when the pre-determined

level is reached. The valve remains closed until the ball check valve 29 is again opened as described and the flushing operation is repeated. When a high pressure is maintained in the supply pipe, I prefer to use a cone shaped nut (*a*) to relieve the pressure against the valve 24.

The above describes the main flushing mechanism. In order to overcome the disadvantages common in flushing devices constructed upon the principle herein described and shown, I have evolved and invented an auxiliary mechanism which can be used in conjunction with the mechanism heretofore described.

The twin arms 13 and 14 are spaced apart and a bell crank lever 32 is pivotally journaled therebetween and supported by the bolt 33. A ball 34 is secured to one end and its specific gravity varied more or less by any foreign substance preferably solder which can be placed in the cavity 35 and which also acts as a buffer when the ball drops down and rests upon the upper extremity of the arm 10 leaving the enlarged end 36 of the lever in proper position to engage the lug 37. The free end of the bell crank lever 32 is provided with an enlarged end 36 which is adapted to contact with the top of a lug 37 on the lever 12 when the tank is being filled and rests against the edge thereof when the valve 24 is closed as will be described hereinafter.

The operation of my flushing device is as follows: When the cord 28 is pulled down lifting the ball check valve 29 from its seat, the water flows out through the opening and the ball 15 carrying the valve mechanism gradually moves downward corresponding to the level of the water until it reaches the point 38 shown by the dotted lines in Fig. 1 when the valve 24 will be in full open position and the water from the supply pipe 26 will flow into the tank or other receptacle through the discharge orifice 30.

The bell crank lever 32 is balanced so that when the valve is in full open position the enlarged end 36 is directly over and in contact with the upper surface of the lug 37 keeping it from rising to close the valve opening until the water in the tank reaches the level of the ball 34 and forces the lever 32 to oscillate to the position shown by the full lines 41 when the lever will be released and the ball 15 and the valve and its connecting mechanism will move upward instantly and close the valve.

It will be apparent that the mechanism herein described affords facilities for rapidly filling the tank as the valve is kept in full open position until the water therein reaches a pre-determined level at which time the bell crank is released and the valve 24 is automatically and instantly closed.

To connect the supply pipe to the flushing mechanism I have formed the end of the supply pipe with an outwardly extending annular flange 42 which is adapted to abut against the lower extremity of the portion 4 of the body of the flushing mechanism. A nut 43 having an annular recess 44 is provided and fitted to the outer periphery of the supply pipe 26 and threadably connected to the portion 4 of the body leaving the flange 42 fitted to the recess. When the nut is tightened the flange 42 is forced in close contact with the lower surface of the lower portion 4 of the body making a water tight joint.

Having fully described my invention, what I claim and desire to secure by Letters Patent is:

1. In a flushing device comprising a body portion with a valve seat formed on its lower extremity, an arm formed on said body portion, a lever pivotally journaled to said arm, a valve stem pivotally secured to said lever, a valve secured to said valve stem, twin arms provided on said body portion, a bell crank lever pivotally journaled between said twin arms, a lug secured to the first mentioned lever, and adapted to contact with the enlarged end of the bell crank lever as and for the purpose described.

2. In a flushing device a hollow body adapted to be secured to the bottom of a tank, a valve seat formed in the lower end of said body, an arm secured to said body, a lever pivoted to said arm and extending horizontally over said body, a ball or float secured to said lever, a stem pivoted to said lever and projecting downward into said body, a valve secured to said stem and adapted to contact with said valve seat, twin arms projecting upward from said body, a bell crank pivotally mounted between said arms, a ball or float secured to one end and the other end being enlarged to engage with a lug made integral with the horizontal lever.

3. In a flushing device, a tank, a hollow body secured in said tank and provided with a discharge aperture, a horizontal lever pivoted to a member of said body, a float secured to said horizontal lever, a valve stem pivoted to said lever and extending through said body, a valve secured to said stem and adapted to contact with a seat formed in said body, a bell crank pivotally secured to members of said body one end of said bell crank adapted to engage with a lug on the said horizontal lever, a float secured to the opposite end of said bell crank.

4. In a flushing device and tank, the combination of a body portion having two upwardly extending arms, levers pivotally mounted on the free ends thereof, floats secured to the free ends of the levers, said levers being so arranged as to automatically engage and disengage from each other for

the purpose of keeping the inlet valve in full open position until a predetermined amount of water has passed into the tank.

5. The combination of a flushing device and tank, a body portion secured to said tank having a valve seat located below the tank and two upwardly extending arms provided on the upper end, levers pivotally mounted thereon, a valve-stem connected to one of said levers, a valve secured thereto and located below the valve-seat the said parts being so arranged as to permit said levers to automatically engage and disengage with each other.

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

PRICE H. McNEILL.

Witnesses:

GEO. A. MOTTMAN,

NELL GALLIPER.