July 15, 1924. 1,501,620

D. REED

FLUSHING TANK

Filed Nov. 16, 1921

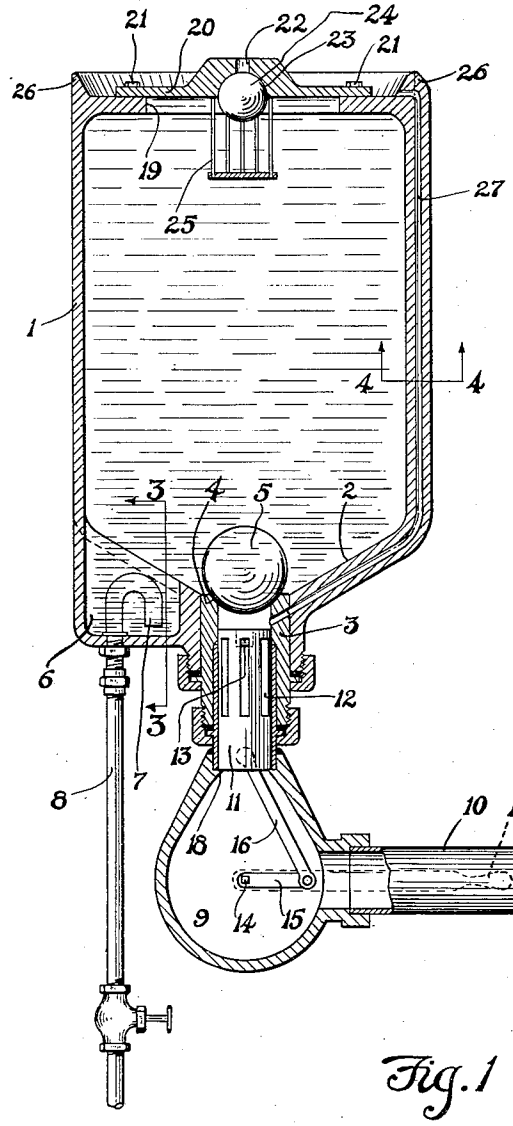


Fig. 1

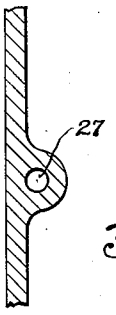


Fig. 4

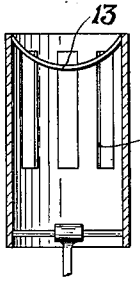


Fig. 2

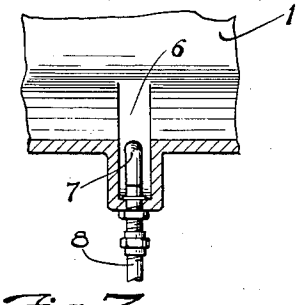


Fig. 3

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UNITED STATES PATENT OFFICE.

DUDLEY REED, OF CANTON, OHIO.

FLUSHING TANK.

Application filed November 16, 1921. Serial No. 515,493.

To all whom it may concern:

Be it known that I, DUDLEY REED, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Flushing Tank, of which the following is a specification.

This invention relates to flushing tanks such as are used for flushing or filling receptacles or devices of different kinds, and has for its objects to provide a flushing tank which may be connected directly to a service pipe supplying water under pressure, and which may be operated to permit the discharge of water from the tank without shutting off the source of supply from the service pipe; the outlet from the tank being controlled by a buoyant, hollow ball normally seated in the outlet, means being provided for raising the ball straight upwardly from the seat; an air vent being provided in the upper portion of the tank, a float valve being provided for excluding all air from the tank when the same is filled with water.

The above and other important objects may be attained by providing a tank having an inverted cone shaped bottom with a central seat to normally seat the buoyant hollow ball, a depression being formed in the bottom of the tank at one side of said seat into which the service pipe discharges, a depending neck connecting the outlet of the tank with the receptacle or device to be flushed or filled, a perforated sleeve being slidably mounted within said neck and arranged to be manually raised through a suitable lever device to unseat the hollow ball when it is desired to flush the tank, the upper float valve being imprisoned within a cage which limits the movement thereof and so arranged that the same will not entirely close until all of the air is excluded from the tank, in order to permit easy operation of the buoyant, hollow ball, a drain being provided in one side of the tank for conveying any water which may be accidentally discharged upon the top of the tank, into the outlet neck.

A preferred embodiment of the invention thus set forth in general terms is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical, sectional view through a flushing tank embodying the invention;

Fig. 2, an enlarged, vertical sectional view through the perforated sleeve;

Fig. 3, a section on the line 3—3, Fig. 1; and

Fig. 4, an enlarged section on the line 4—4, Fig. 1.

Similar numerals of reference indicate corresponding parts throughout the drawing.

The body of the tank 1 may be of any usual and desired form, being provided with the conical bottom 2 at the central portion of which is located the depending outlet neck 3 having at its upper end a seat 4 to normally accommodate the buoyant, hollow ball 5.

A depression 6 is provided in the lower portion of the tank at one side of the outlet for the reception of the U-shaped discharge end 7 of the service pipe 8, which admits water under pressure to the tank.

The inclined or conical bottom of the tank will cause the ball 5 to readily pass to its seat when the tank is empty. The ball is normally held to its seat when the tank is filled with water by the pressure of the water and is capable of rising in the water after being dislodged from its seat in the manner hereinafter more fully described.

An enlarged elbow 9 connects the lower end of the outlet neck 3 with the pipe 10 which communicates with the receptacle or device adapted to be flushed or filled by the discharge of water from the tank. A sleeve 11 is slidably mounted within the outlet neck and provided with the perforations or slots 12 extending to the upper portion thereof, said sleeve being arranged to engage the under surface of the ball 5 to dislodge the same from its seat when it is desired to discharge water from the tank. A saddle 13 is provided in the upper end portion of the perforated slidable sleeve for engagement with the ball 5, thus eliminating the danger of cutting the surface of the ball by engagement with the upper edge of the sleeve.

A rock shaft 14 is journaled through the enlarged elbow 9 and provided with the rock arm 15 located within the elbow and connected by the link 16 and with the sliding sleeve 11, one end of the rock shaft projects through the elbow and is provided with the operating lever 17, the weight of which normally holds the sleeve 11 in the lower posi-

tion in engagement with the shoulder 18, as shown in Fig. 1.

The upper end of the tank is provided with the enlarged central opening 19 closed by the cover 20 located upon the upper surface of the tank and connected thereto in any usual manner as by the screws 21. This cover is provided with the central raised portion containing the air vent 22 communicating with the half round valve seat 23 which is arranged to receive the float ball 24, said ball being imprisoned within the depending cage 25 which limits the downward movement thereof and guides the ball toward the seat 23.

With this construction, the ball 24 will not close the vent 22 until all air has been excluded from the tank. This construction has been found necessary as difficulty is experienced in unseating the ball 5 while any air remains in the tank, but this ball may be easily unseated by the upward movement of the sleeve 11, after all air has been excluded from the tank.

An upright annular flange 26 is provided around the upper edge of the tank forming a receptacle to receive any water which accidentally leaks through the air vent, and for the purpose of draining this receptacle, a drain passage 27 is formed in one side wall of the tank communicating with the upper end of the tank and with the outlet neck 3.

When the tank is filled, the parts normally rest in the position shown in Fig. 1; the ball 5 closing the outlet from the tank, the operating lever 17 holding the sliding sleeve down out of engagement with said ball and the ball 24 closing the air vent 22, all air being excluded from the tank and the same being entirely filled with water, the weight of the water holding the ball 5 upon the seat 4.

When it is desired to discharge the water from the tank for the purpose of flushing or filling the receptacle or device connected thereto, the operating lever 17 is raised, sliding the sleeve 11 upwardly, engaging the saddle 13 thereof with the under surface of the ball, and at the same time that the upper edge of the sleeve engages the ball, thus raising the ball straight up, dislodging the same from the seat 4.

The ball 5 being buoyant, will rise to the upper portion of the tank and the upper end of the sleeve 11 being perforated, the water from the tank will immediately begin to discharge through said perforations into the outlet neck of the tank. As the ball rises clear of said sleeve, the discharge, of course, will be through the sleeve 11 to the discharge pipe 10. The lever 17 may be immediately dropped after the ball 5 has been dislodged from its seat.

As the water level lowers, the ball 24 will drop to the bottom of the cage 25, allowing air to enter through the vent 22 to facilitate the discharge of water from the tank. The ball 5 will drop as the water is discharged from the tank, the conical bottom of the tank causing the ball to seat upon the seat 4 as the tank is emptied.

The water from the service pipe will again fill the tank, the pressure thereof holding the ball 5 seated and raising the ball 24 to close the vent 22 after the air has been excluded from the tank as above described.

From the above, it will be evident that the flushing tank provided is of simple construction, having few working parts, the operation of which is controlled by the operating lever. The lower float ball, being raised straight upwardly from its seat at the outlet of the tank, may be easily and evenly unseated, allowing a rapid discharge of water from the tank.

The construction of the air vent and float ball closing the same being arranged to exclude all air from the tank before the ball is seated, allows the lower ball to be easily unseated as there is no air pressure within the tank to prevent the lower ball from being easily unseated.

I claim:—

1. A flushing or filling tank connected with a water supply and provided in its bottom with a valve seat, a float ball within the tank and adapted to seat itself upon said valve seat when the tank is empty, a neck beneath said valve seat and a perforated slidable sleeve within said neck arranged to engage said ball to unseat the same, said sleeve having a saddle at is upper end for engagement with the ball.

2. A flushing or filling tank connected with a water supply and provided in its bottom with a valve seat, a float ball within the tank and adapted to seat itself upon said valve seat when the tank is empty, a neck beneath said valve seat and a perforated slidable sleeve within said neck arranged to engage said ball to unseat the same, the upper portion of the tank having a concaved valve seat and an air vent communicating therewith, a flange surrounding said vent forming a receptacle, a drain passage connecting said receptacle with the outlet neck, and a second float ball arranged to be seated in said concaved valve seat to close said air vent, after all air has been excluded from the tank.

DUDLEY REED.