

J. S. WELBORN.
 FLUSHING MECHANISM FOR CLOSET TANKS.
 APPLICATION FILED MAY 27, 1909.

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945,206.

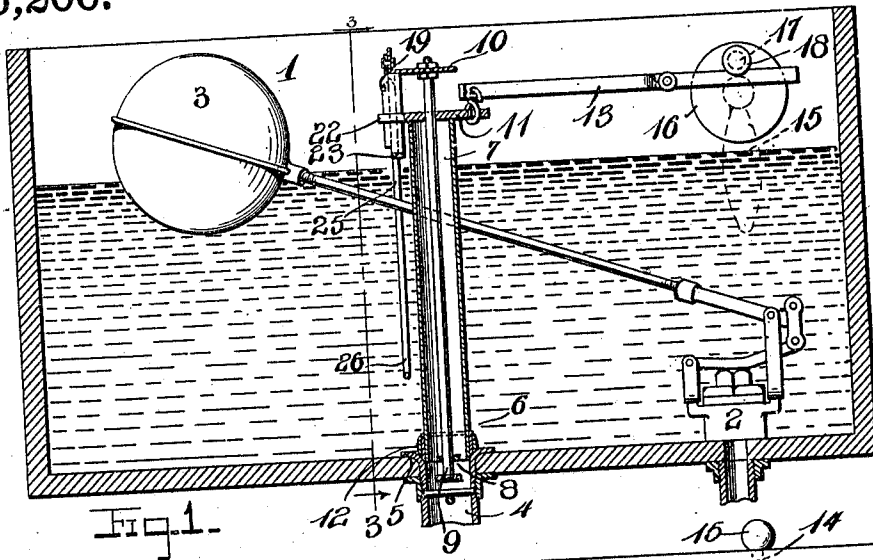


Fig. 1.

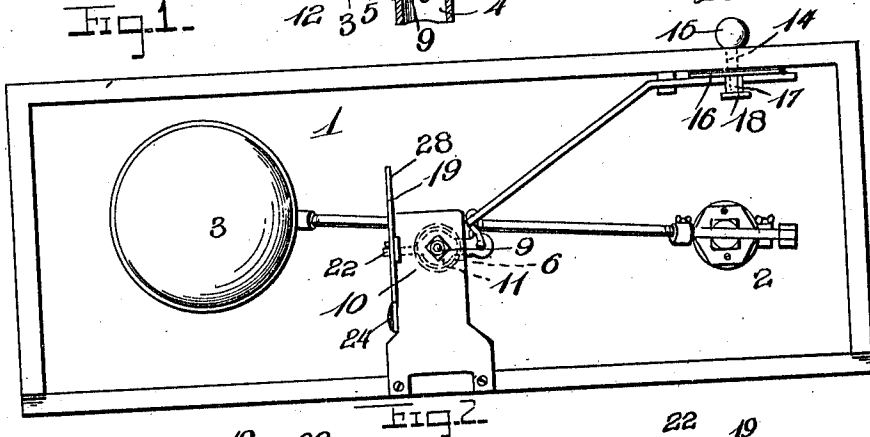


Fig. 2.

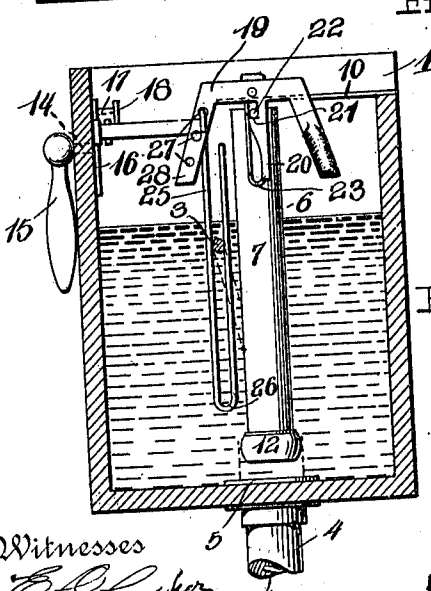


Fig. 3.

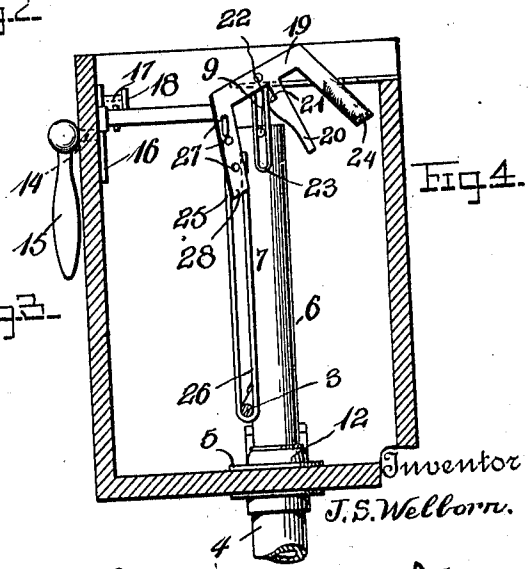


Fig. 4.

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UNITED STATES PATENT OFFICE.

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FLUSHING MECHANISM FOR CLOSET-TANKS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN S. WELBORN, a citizen of the United States, residing at High Point, in the county of Guilford and State of North Carolina, have invented certain new and useful Improvements in Flushing Mechanism for Closet-Tanks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in flushing mechanism for closet tanks.

The object of the invention is to provide a flush valve having an improved construction of operating mechanism adapted to hold the valve open until all the water has discharged from the tank, and means whereby said holding mechanism is automatically tripped by the float of the supply valve of the tank to release the flush valve and permit the same to close.

With the foregoing and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts, as will be more fully described and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of a flush tank having my improved flushing mechanism arranged therein, the latter also being in section; Fig. 2 is a top plan view of the same; Fig. 3 is a vertical transverse section of the tank on the line 3—3 of Fig. 1, showing my improved valve and holding mechanism being shown in operative position to hold the valve open; Fig. 4 is a similar view of the holding mechanism in inoperative position and the valve closed.

Referring more particularly to the drawings, 1 denotes a tank to which is connected the usual water supply pipe having connected thereto a valve 2 which is controlled by a float 3. Also connected to the tank is a water discharge pipe 4. On the inner open end of the pipe 4 is arranged a valve seat 5 with which is adapted to coöperate in conjunction with my improved flushing mechanism 6. This flushing mechanism 6 comprises a tubular body portion 7 which projects upwardly in the tank and is of a length to correspond with the height the water reaches when the tank is filled. In the upper and lower ends of the tubular body portion of the

valve are arranged apertured guide bars or spiders 8 which are slidably engaged with a guide rod 9, the upper end of which is secured in a suitable bracket 10 arranged on the upper rear edge of the tank and the lower end of which is secured in a cross bar 11 arranged in the valve seat or upper end of the discharge pipe 4. On the lower end of the tubular body portion of the valve is arranged a rubber packing ring or gasket 12 which, when the valve is in closed position, is adapted to form a fluid tight engagement with the seat 5, thus preventing the discharge of water from the tank. The upper and lower ends of the tubular body portion of the valve are open whereby should the supply valve fail to operate at the proper time when the tank is filled, the water upon reaching the level of the upper end of the tubular body portion of the valve will overflow through said portion into the discharge pipe, thus preventing the tank from overflowing.

Pivotally mounted in a suitable position on the inner side of the tank is a valve operating lever 13, one end of which is bent inwardly and has a loose connection with the upper end of the tubular body portion of the valve whereby when said lever is actuated, the valve will be opened. Any suitable means may be provided for tripping or actuating the lever 13, said means being here shown in the form of a short shaft 14 which is pivotally mounted in the front side of the tank above the water level and has secured on its outer end a handle 15 and on its inner end a circular plate or disk 16. On the disk 16 is eccentrically mounted a stud 17 on which is arranged a bearing sleeve 18 which, when the handle 15 is moved in the proper direction, will be brought into engagement with the free end of the lever, thereby rocking the latter and causing the same to open the discharge valve.

In order to positively hold the discharge valve open until all of the water has discharged from the tank, I provide a valve holding mechanism comprising a frame 19 which is pivotally mounted on the bracket 10 and is provided midway between its ends with a downwardly projecting arm 20 having formed thereon a stop lug or detent 21 which is adapted to be brought into engagement with a laterally projecting finger 22 arranged on the upper end of the tubular body portion of the valve as shown. The

finger 22 projects through and slidably engages a guide loop 23 which is secured at its upper end to the bracket 10. The engagement of the finger 22 with the guide loop 5 prevents the valve from turning and at all times holds the finger in position to be engaged by the detent 21 when the valve has been raised to an open position.

On one end of the frame 19 is arranged 10 a weighted arm 24, the action of which is to swing the detent arm 20 in position to bring the detent in the path of movement of the finger 22. The detent 21 has a beveled or inclined lower edge so that when the 15 valve is raised and the finger 22 brought into engagement with the inclined lower edge of the detent, the frame will be swung back against the pressure of the weighted arm 24 until the finger 22 has passed the detent at which time, the weighted arm will 20 swing the frame back and engage the detent beneath the finger 22 thereby holding the valve in a raised or open position. In order to automatically trip or disengage the 25 detent from the finger 22 when the water has been discharged from the tank, I provide a tripping mechanism connected with the float of the supply valve whereby when said float lowers, the detent will be swung from beneath the finger 22, thus allowing the supply 30 valve to drop or to be drawn to a closed position by the suction of the water passing through the seat of the valve. The tripping mechanism for the detent comprises a rod 35 25 which is preferably formed of copper or other non-corrosive wire, said rod being bent at its lower end to form a loop which is engaged with the stem of the valve, as shown. On the upper end of the rod 25 is formed 40 a hook 26 which is adapted to be engaged with one of a series of apertures 27 formed in a depending arm 28 arranged on the end of the frame 19 opposite to the weighted arm whereby when the float lowers in the 45 tank, the stem of the float will be brought into engagement with the looped lower end of the rod 25 and the weight of the float will overbalance the weighted arm 24 and will swing the detent out of engagement with

the finger 22 thus permitting the valve to 50 close.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without 55 requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention, as defined in the appended claim. 60

Having thus described my invention, what I claim is:

In a tank, a discharge valve seat, a guide 65 rod secured at its lower end in said seat, a bracket to hold the upper end of the guide rod, a tubular discharge valve slidably mounted on said rod and adapted to engage said seat, a valve holding mechanism to 70 hold said valve in an open position, said mechanism comprising a frame pivotally mounted on said bracket, a detent carried by said frame, a stop finger arranged on said valve and adapted to be engaged by said 75 detent to hold the valve in an open position, a weighted arm on one end of said frame adapted to normally hold said detent in the path of movement of said finger whereby 80 when the valve is raised the finger will be automatically engaged by said detent, a supply valve arranged in said tank, a float to operate said valve, a trip rod adjustably connected at its upper end to said valve holding 85 frame, a loop formed in the lower end of said rod, and adapted to be engaged by the float of said supply valve when the water in the tank has discharged thereby tripping said frame and disengaging the detent thereon from the finger on said discharge 90 valve to permit the valve to close.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN S. WELBORN.

Witnesses:

W. C. IDOL,
W. L. SMITH.