

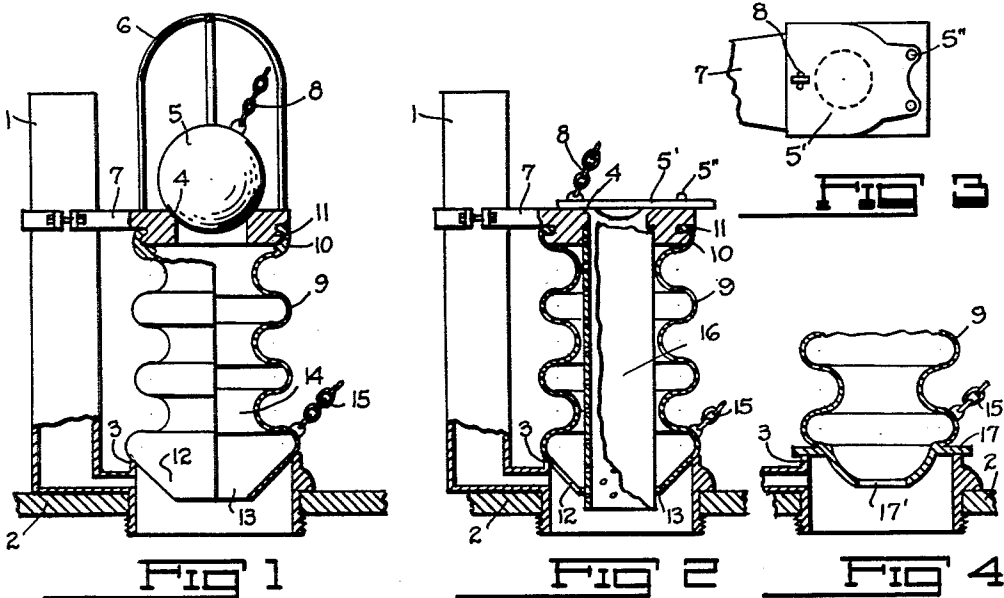
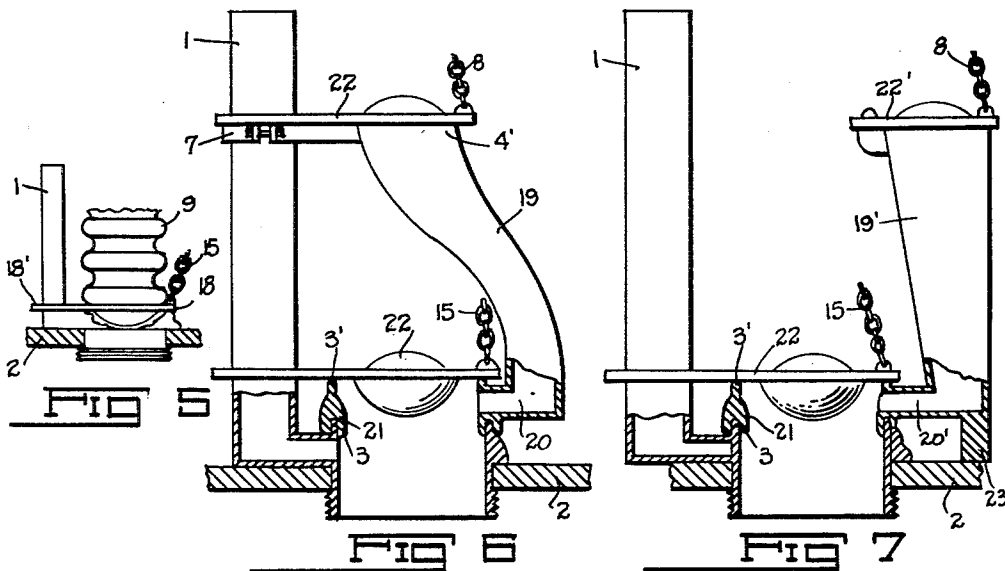
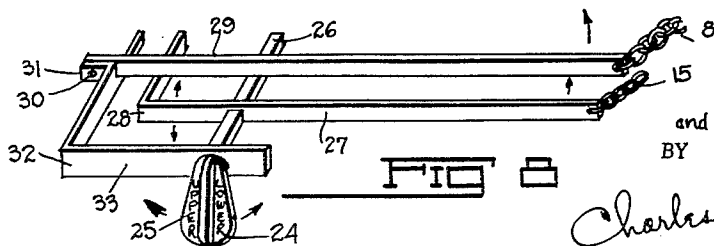
June 14, 1960

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2,940,084

FLUSH VALVES FOR TOILET TANKS

Filed March 18, 1958



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1

2,940,084

FLUSH VALVES FOR TOILET TANKS

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Filed Mar. 18, 1958, Ser. No. 722,228

4 Claims. (Cl. 4—57)

This invention relates in general to flush valves for toilet tanks and in particular to a double flush valve and control means therefor which will permit use of a portion of the water in the flush tank for urinal purposes and all of the water when needed for a more complete flushing.

A great deal of water is unnecessarily used in conventional flush tanks because at each flushing the entire contents of the tank are emptied. With the lowering of water tables throughout the nation and the rising costs of many things including the supplying of water, it is highly desirable to exercise some conservation methods. Use of our flush valves will not only conserve water but where septic tanks are used it will help keep down the saturation load on the septic tank system.

The objects of the invention are:

First; to provide a simplified bellows type valve having a valve seat at the lower end of the bellows which are hollow and form a passage, and a valve seating at the upper end of the bellows.

Second; to provide upper and lower valve seats, a rigid conduit between the valve seats, a bellows secured at its upper end to the upper valve seat and surrounding the rigid tube, the lower end of the bellows having a valve portion seating on the lower valve seat.

Third; to provide upper and lower valve seats concentrically disposed, an offset conduit forming a passage from a point adjacent the lower valve seat to the upper valve seat.

Fourth; to provide in a conventional flush tank having a valve seat adjacent the bottom thereof, an auxiliary flush valve system comprising a valve seat member receivable on the existing valve seat, an offset passage leading from the valve seat member, an upwardly extending passage to a desired height above the lower seat, and a valve and seat at the upper end of said last named passage.

Fifth; to provide in a flush tank with a dual valve system, a valve control means comprising a dual directional handle, a shaft carried by the handle and engaging a lever arm, an offset and rearwardly extending arm on the lever arm, a second lever arm hinged in offset relation to the shaft and resting across the offset and rearwardly extending arm and extending in parallel and spaced relation to the first mentioned lever arm, movement of the handle toward the right causing the first mentioned lever arm to raise to empty the entire contents of the tank, movement of the handle toward the left causing the offset and rearwardly extending arm on first mentioned lever arm to contact and raise the pivoted second mentioned arm for urinal flushing purposes.

Other objects and advantages as well as the construction and operation of our invention in its various forms will be better understood by reference to the following description in connection with the accompanying drawing in which:

Fig. 1 is a vertical cross sectional view, partly in ele-

2

vation, showing one form of our invention with ball valve in cage, bellows and lower valve without air chamber.

Fig. 2 is a similar view of a modified form of our invention with rigid vertical tube concentric with bellows valve and flat upper valve.

Fig. 3 is a fragmentary top plan view of the form shown in Fig. 2.

Fig. 4 is a fragmentary sectional view of a modified form of construction showing the lower end of the bellows valve.

Fig. 5 is a similar view of a further modified form.

Fig. 6 is a vertical cross sectional view of a modification showing an auxiliary offset valve system mountable on the existing tank valve seat.

Fig. 7 is another modified form somewhat similar to that shown in Fig. 6.

Fig. 8 is an isometric view of the valve control lever and linkage.

Referring now to the drawing by numerals of reference, 1 designates the conventional vent tube in a flush tank 2, with valve seat 3. Our invention employs an upper valve seat 4 supporting ball 5 in cage 6, the valve seat having a bracket 7 adjustably carried on vent tube 1. A chain 8 leads from the ball to the valve control means to be described later.

A bellows 9 has its upper end 10 secured to flange 11 on the valve seat 4 and the lower end of the bellows has valve 12 seated on valve seat 3, the lower end of the valve 12 having aperture 13 forming discharge opening from passage 14 in the hollow bellows. A chain 15 leads from the valve to a valve control as will be hereinafter described.

In the modification shown in Fig. 2, a rigid tube 16 extends downwardly from the valve seat 4, concentric with and to a point below the top of the lower valve seat 3. The bellows 9 and valve 12 may ride up and down on this tube which may be solid or perforated as shown.

Fig. 4 shows a modified form of our invention in which a flat type valve 17 is secured to bellows 9, a central aperture 17' being provided in the valve 17.

A further modified form shown in Fig. 5 shows a flat valve 18 with flexible extension 18' carried by vent tube 1, said extension acting as a hinge.

The form of our invention shown in Fig. 6 shows an auxiliary tube 19 with transverse passage 20 leading to valve seat 3', a bottom flange 21 adapted to snugly engage conventional valve seat 3. Tube 19 is offset whereby upper end 4' which comprises the upper valve seat, is concentric with the lower valve seat although this is not absolutely essential. The upper end of the tube 19 is carried by suitable bracket 7' to vent tube 1. Any of the previously described valves may be used on the upper and/or lower valve seats. We have shown a flat or "Corky" type valve 22 in Fig. 6.

Fig. 7 shows a vertical tube 19' with transverse passage 20' leading to valve seat 3'. The flange 21 securely grips valve seat 3 and a projection 23 aids in holding the device steady. In this form no support on the vent tube is used.

The valve control comprises a handle 24 with indicia 25 indicating direction to move handle for the desired flushing action. A shaft 26 extends rearwardly from the handle 24 and is fixed in nonrotative relation to lever 27, said lever having a transverse leg 28 extending rearwardly and passing under lever 29 which is pivotally engaged at 30 to leg 31 of bracket 32, the leg 33 of which is supported on shaft 26, the latter being freely movable with respect to the leg 33. Chains or linkage 8 and 15 lead to levers 29 and 27 respectively.

In operating any of the forms of our device shown,

3

movement of the handle 24 to the left will cause complete flushing of the tank by raising the leg 23 to swing lever 29 upwardly actuating chain 8 to unseat the lower valve. Movement of the handle 24 to the right will swing lever 27 upwardly to unseat the upper valve and only water above that valve will be used for urinal flushing purposes. The convolutions of the bellows will aid in quickly reseating the lower valve when the water has been discharged.

The action of the valve control means is the same for all the various modifications shown. Also, in all of the forms of our invention the installation of the dual flush arrangement can be accomplished with no alteration of existing structure.

From the foregoing it will be apparent that we have devised a new and novel arrangement of flush valves for toilet tanks in which a simple and effective valve control lever and linkage system is employed to operate novel valve and valve seat structure.

Obviously, changes in form, proportion and details of construction may be resorted to without departing from the spirit of our invention and we reserve all rights to such changes as come within the scope of these specifications and the claims which follow.

What we claim as new and desire to secure by Letters Patent is:

1. A double flush valve assembly for toilet flush tanks, in combination with the overflow pipe and the valve seat adjacent the bottom of the flush tank, a valve on the seat in the flush tank, an upper valve supporting member adjustably carried by the overflow pipe, a hollow bellows connecting member between the valve and the upper valve supporting member forming a continuous fluid passage from the valve seat to the upper valve supporting member, a second valve seat in the upper valve supporting member, a valve on said second valve seat, and means for independently operating either of the two valves, said hollow bellows providing means for longitudinal adjustment between the two valve seats, the hollow bellows being deformable upon actuation of the valve on the seat in the flush tank, said last mentioned valve being provided with a central aperture and being formed integrally with the hollow bellows to provide a continuation of the continuous fluid passage through said bellows, and a rigid duct carried by the upper valve supporting member and positioned within the hollow bellows.

2. A double flush valve assembly for toilet flush tanks, in combination with the overflow pipe and the valve seat adjacent the bottom of the flush tank, a valve on the seat

4

in the flush tank, an upper valve supporting member adjustably carried by the overflow pipe, a hollow bellows connecting member between the valve and the upper valve supporting member forming a continuous fluid passage from the valve seat to the upper valve supporting member, a second valve seat in the upper valve supporting member, a valve on said second valve seat, and means for independently operating either of the two valves, said hollow bellows providing means for longitudinal adjustment between the two valve seats, the hollow bellows being deformable upon actuation of the first mentioned valve, said first mentioned valve being provided with a central aperture, a rigid duct carried by the upper valve supporting member and positioned within the hollow bellows, and an inwardly and downwardly extending annular lip seating on the seat in the flush tank and formed integrally with the hollow bellows to provide a continuation of the continuous fluid passage through said bellows, said annular lip on said first mentioned valve being adapted to ride on the rigid duct during movement of said hollow bellows, said duct guiding the lip to its seat.

3. The structure as specified in claim 1, said rigid duct depending from the upper valve supporting member to a point below the valve seat adjacent the bottom of the flush tank, the hollow bellows connecting member being positioned concentrically about the rigid duct and vertically movable thereon.

4. The structure as specified in claim 1, said rigid duct being provided with perforations and depending from the upper valve supporting member to a point below the valve seat adjacent the bottom of the flush tank, the hollow bellows connecting member being positioned concentrically about the rigid duct and vertically movable thereon, the perforations in the rigid duct permitting discharge of water to the interior of the hollow bellows.

References Cited in the file of this patent

UNITED STATES PATENTS

40	815,661	Vissing	Mar. 20, 1906
	1,474,288	Rath	Nov. 13, 1923
	1,890,281	Dollinger	Dec. 6, 1932
	1,960,864	Brown	May 29, 1934
	2,598,967	Bennett	June 3, 1952
45	2,685,694	Allison	Aug. 10, 1954
	2,709,263	Doty	May 31, 1955
	2,716,242	Robinson	Aug. 30, 1955
	2,744,260	Harkness	May 8, 1956
	2,760,206	Loyd	Aug. 28, 1956
50	2,879,521	Brasher	Mar. 31, 1959