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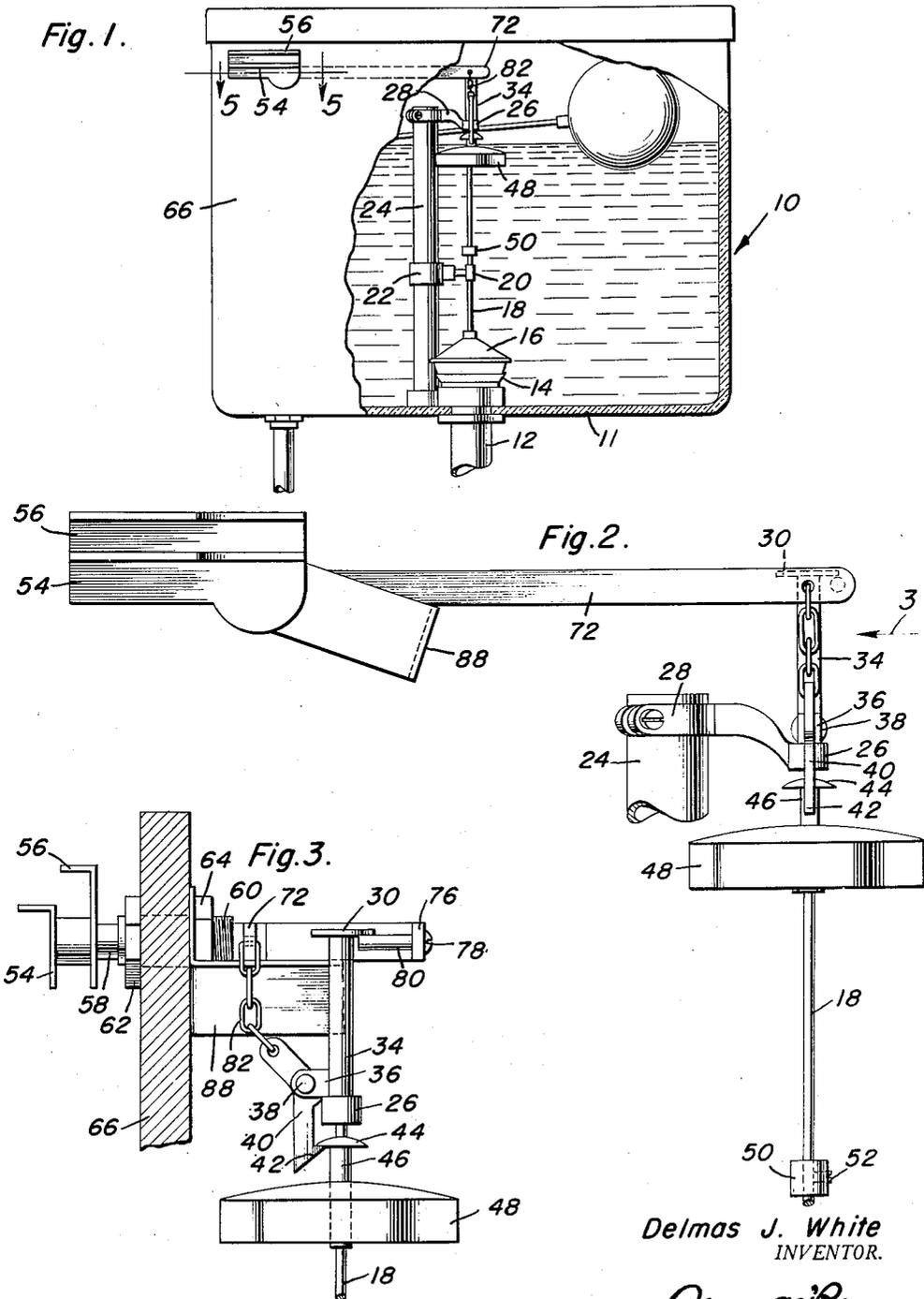
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DUAL FLUSHING SYSTEM FOR TOILETS

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2 Sheets-Sheet 1



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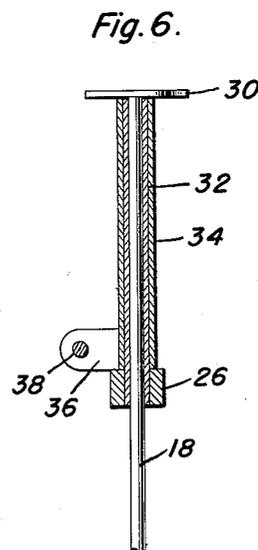
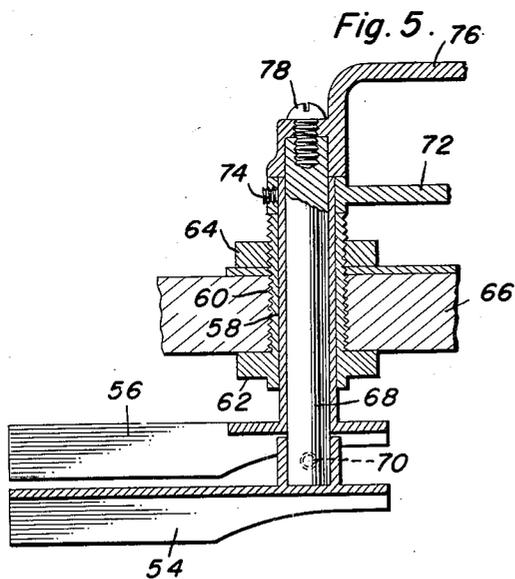
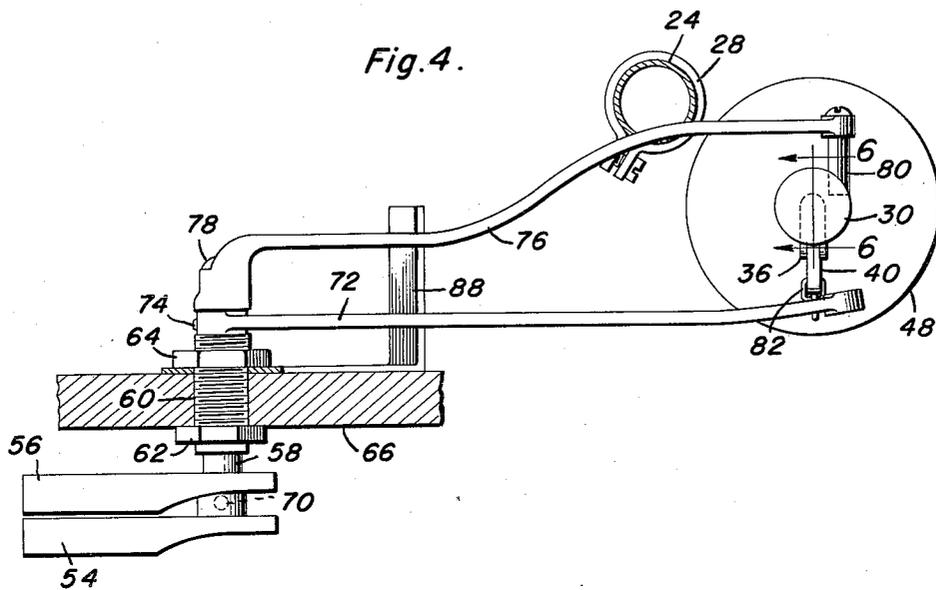
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DUAL FLUSHING SYSTEM FOR TOILETS

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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DUAL FLUSHING SYSTEM FOR TOILETS

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3 Claims. (Cl. 4-67)

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This invention relates to new and useful improvements in structural refinements in toilet tanks, and the principal object of the invention is to conserve water used for flushing, this being achieved by the provision of what may be referred to as a dual flushing system which permits the usual amount of water to be used while flushing solid material, but wherein a considerably smaller volume of water is used for flushing liquids.

An important feature of the invention, therefore, resides in the provision of a selective flushing control, while another feature lies in the association of that control with only one flushing valve.

Some of the advantages of the invention lie in its simplicity of construction, in the water saving factor as aforesaid, and in its adaptability to conventional toilet tanks without extensive modification.

With the above more important objects and features in view and such other objects and features as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is an elevational view of a toilet tank, this being partially broken away so as to reveal the invention therein;

Figure 2 is an enlarged elevational detail of the invention per se;

Figure 3 is an end view, taken substantially in the direction of the arrow 3 in Figure 2 and illustrating the invention applied to a wall of the tank;

Figure 4 is a top plan view of the subject shown in Figures 2 and 3;

Figure 5 is a cross sectional detail, taken substantially in the plane of the line 5-5 in Figure 1; and

Figure 6 is a cross sectional detail, taken substantially in the plane of the line 6-6 in Figure 4.

Like characters of reference are employed to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the general reference character 10 designates a toilet tank having a bottom 11 provided with an outlet pipe 12 which, in turn, is equipped with a seat 14 for a flushing valve member 16, this valve member being provided with a vertical rod 18 slidable in a bearing 20 supported by a bracket 22 on the overflow pipe

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24, which structural arrangement is, of course, more-or-less of a conventional nature.

However, in accordance with the invention, an additional bearing 26 is provided adjacent the upper end of the overflow pipe 24, being secured thereto by a bracket 28, and slidably accommodating the upper end portion of the rod 18, while a diametrically enlarged cap 30 is provided at the upper end of the rod, as will be clearly apparent.

A vertically disposed tubular element 32 has the lower end portion thereof secured in the bearing 26 so that in effect, the upper end portion of the rod 18 is slidable in the element 32 (see Figure 6), it being understood that the element 32 is stationary but has a tubular sleeve 34 vertically slidable thereon, the lower end portion of the sleeve 34 being provided with a pair of spaced ears 36 affording bearings for a pivot pin 38 on which is mounted a catch member 40.

This catch member, in turn, includes a hook-shaped portion 42 which is releasably engageable with an enlarged head 44 connected by a sleeve 46 to a suitable float 48, the head 44, the sleeve 46 and the float 48 constituting an integrally movable unit which is slidable on the rod 18 below the bearing 26. However, a stop in the form of a collar 50 is secured by a set screw 52 to the rod 18 at a point below the float 48, so as to restrict the extent of downward movement of the float relative to the rod.

The flushing valve actuating means involve the provision of a pair of selectively and independently manipulable elements in the form of cranks 54, 56, the latter of which is rigidly secured to what may be referred to as a hollow outer shaft 58 rotatably journaled in a screw threaded bushing 60 secured by suitable nuts 62, 64 in an aperture provided in the front wall 66 of the tank 10, while an inner shaft 68 is rotatable in the outer shaft 58 and has the crank or lever 54 secured thereto by a suitable set screw 70.

An actuating arm 72 is secured at one end thereof as at 74 to the outer shaft 58, while a second arm 76 is similarly secured as at 78 to the inner shaft 68, it being noted that the free end portion of the arm 76 is provided with a laterally projecting pin or stud 80 which engages the underside of the aforementioned cap 30 on the rod 18.

On the other hand, the free end portion of the arm 72 has connected thereto one end of a flexible element, such as for example, a chain 82, the remaining end of which is connected to the

aforementioned locking member 40, as is best shown in Figure 3.

Having described the construction of the invention, the operation thereof will now be explained.

Assuming that it is desired to flush solid matter, the actuating crank or lever 54 is simply depressed in the conventional manner, thus raising the arm 76 and lifting, through the medium of the pin 80 and cap 30, the rod 18 so as to unseat the valve member 16. In this manner, the entire contents of the tank 10 will be discharged, that is, the entire volume of water in the tank will be discharged through the outlet 12 in a conventional manner. After such a discharge is effected, the valve member 16 will automatically seat itself on the seat 14 by the influence of gravity, until such time as the tank is refilled and again flushed.

However, when it is desired to flush liquid material, the actuating crank or lever 56 is depressed, thus raising the arm 72 and, through the medium of the chain 82, disengaging the locking member 40 from the head 44, after which further upward movement of the arm 72 will slide the sleeve 34 upwardly, thus sliding the rod 18 therewith and unseating the valve member 16. Thereupon, as the water is discharged from the tank, the float unit 48 will slide downwardly on the rod 18 until it comes in engagement with the stop 50, at which point the weight of the float 48 will slide the rod 18 downwardly and engage the valve member 16 with the seat 14 even though the entire volume of water in the tank 10 has not been discharged. The volume of water discharged during this particular operation may be varied by simply adjusting the position of the stop 50 on the rod 18, as will be clearly apparent.

Needless to say, when the tank 10 is being refilled with water, the float 48 will rise until the head 44 thereof is again lockably engaged with the member 40, in readiness for the subsequent flushing operation.

Finally, it is to be noted that a stationary rest in the form of an angle bracket 88 may be secured to the inner surface of the tank wall 66 by the nut 64, this bracket being engageable with the lower edges of the arms 72, 76 for supporting the same in a proper inoperative position.

It is believed that the advantages and use of the invention will be clearly apparent from the foregoing disclosure and accordingly, further description thereof at this point is deemed unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction, combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

1. In a toilet flushing system, the combination of a tank having an outlet provided with a flushing valve including a seat, a valve member en-

gageable with said seat and liftable therefrom, and a vertically slidable rod secured at its lower end to said valve member, a bearing provided in said tank to slidably receive an intermediate portion of said rod, and a dual flushing control comprising a float slidable on said rod below said bearing, a stop provided on the rod below said float and engageable by the latter for sliding the rod downwardly and engaging said valve member with said seat, a cap secured to the upper end of said rod, a sleeve slidably positioned on the rod between said bearing and said cap, a locking member pivoted to said sleeve and engageable with said float to prevent downward movement of the latter, a pair of selectively and independently manipulable actuating elements provided on said tank, an arm provided on one of said elements and engageable with said cap for lifting said rod while said float is locked by said locking member, and a second arm provided on the second element and operatively connected to said locking member whereby the latter may be disengaged from said float and said rod lifted through the medium of said sleeve and cap.

2. The device as defined in claim 1 wherein said actuating elements comprise a pair of cranks, inner and outer coaxial shafts mounted in a wall of said tank and each having one of said cranks and one of said arms secured thereto, and a stationary rest provided in said tank for said arms.

3. In a toilet tank, the combination of a flushing valve including a seat, a valve member engageable with and liftable from said seat, a vertically slidable rod secured at its lower end to said valve member, and a dual flushing control comprising a float slidable on said rod, a stop on said rod below said float and engageable by the latter for sliding the rod downwardly and engaging said member with said seat, a cap at the upper end of said rod, a sleeve slidable on said rod and engageable with said cap for sliding said rod upwardly therewith whereby to disengage said valve member from said seat, means on said sleeve for locking said float thereto, and a pair of selectively and independently manipulable actuating elements provided on said tank, one of said elements being operatively connected to said cap for lifting said rod and the other element being operatively connected to said locking means whereby said float may be released from said sleeve and said rod lifted through the medium of the sleeve and said cap.

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