April 13, 1954 D. J. WHITE 2,674,744

DUAL CONTROL FOR FLUSH TANK VALVES

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3 Sheets-Sheet 1

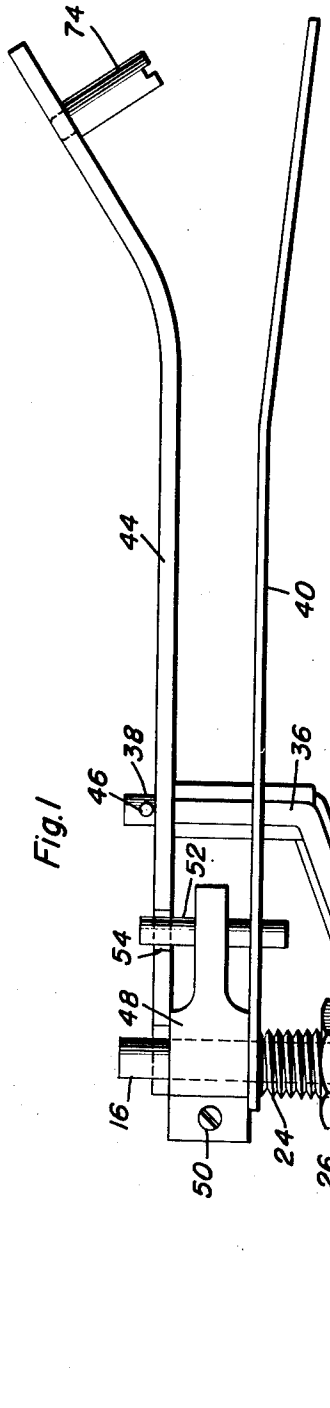


Fig. 1

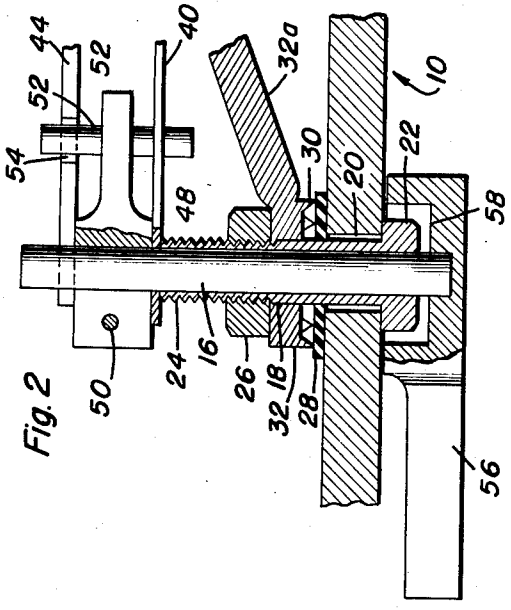


Fig. 2

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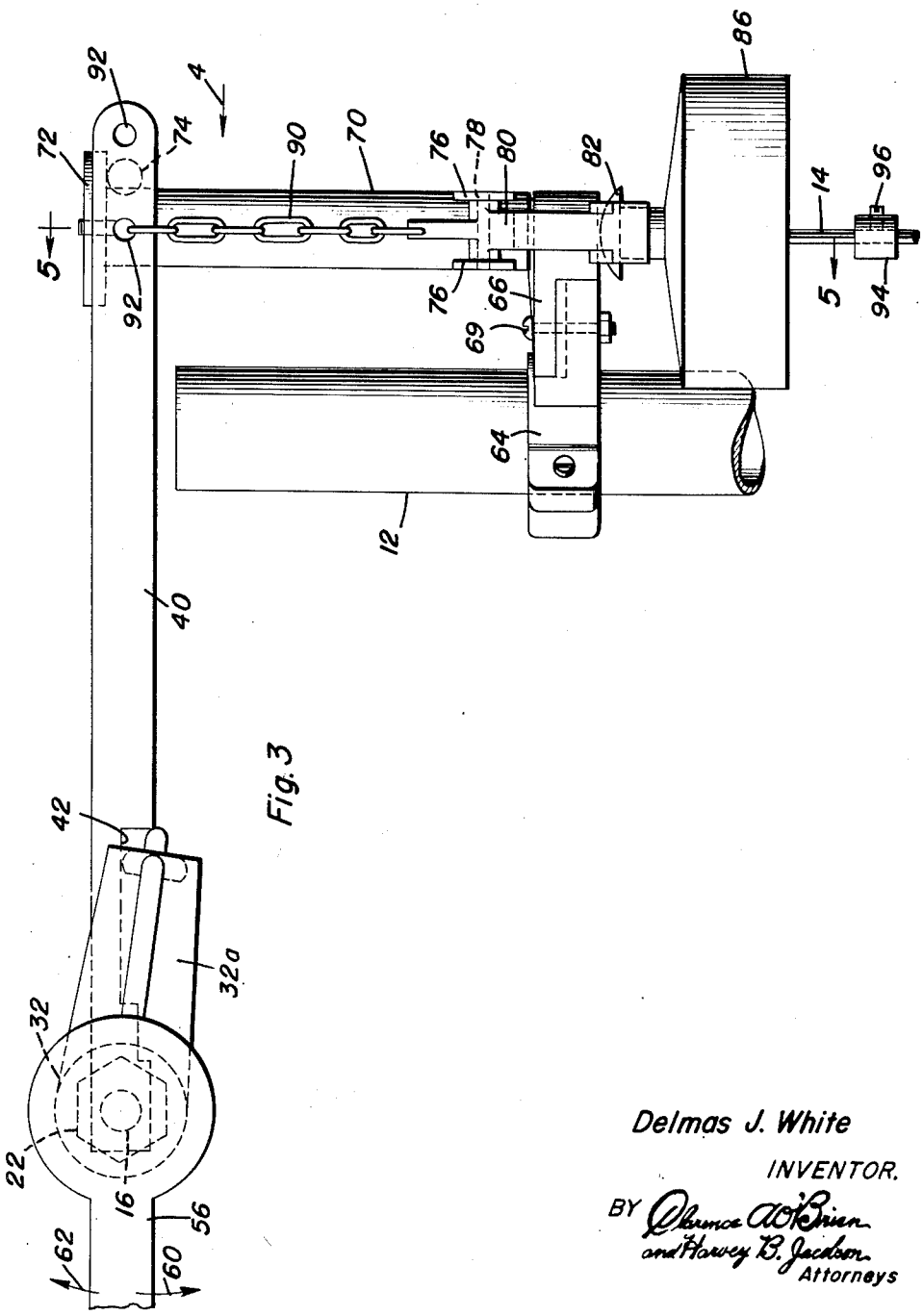


Fig. 3

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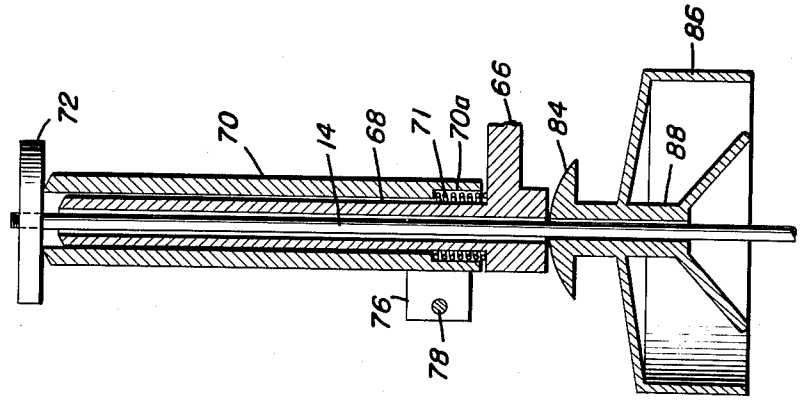
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DUAL CONTROL FOR FLUSH TANK VALVES

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Fig. 5



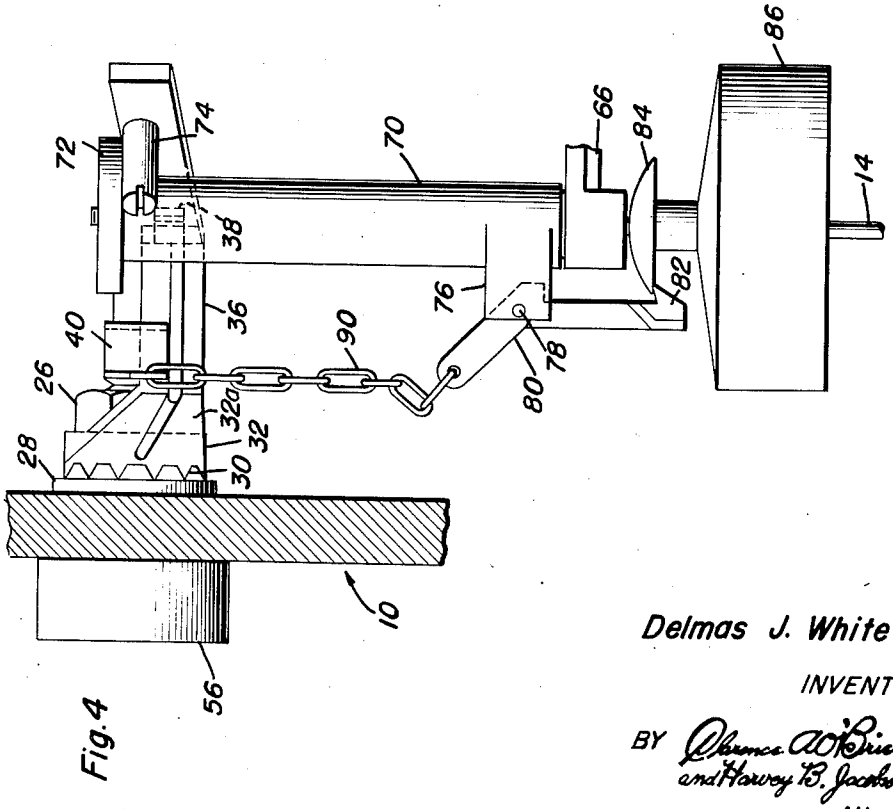


Fig. 4

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UNITED STATES PATENT OFFICE

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DUAL CONTROL FOR FLUSH TANK VALVES

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Application September 2, 1952, Serial No. 307,465

3 Claims. (Cl. 4—67)

1

This invention relates to new and useful improvements and structural refinements in flush tanks, particularly flush tank controls, and the principal object of the invention is to conserve water by employing the usual amount of water only while flushing solid material, but using a considerably smaller volume of water for flushing liquids.

Specifically, the instant invention is an improved embodiment of the invention for which Patent No. 2,532,977 was granted to me on December 5, 1950. While utilizing and experimenting with the apparatus constructed in accordance with my previous patent, I found that the same lends itself to certain structural as well as functional improvements which, therefore, are embodied in the instant invention.

An important feature of the instant device resides in the provision of a single actuating handle which may be employed selectively for discharging the usual quantity of water when flushing solids and a considerably smaller amount of water when flushing liquids. This distinguishes from my previous invention wherein separate handles were utilized for the two different types of flushing operation.

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 a top plan view of the control mechanism installed on the wall of a flush tank, the wall being shown in section;

Figure 2 is a horizontal sectional view of a portion of the mechanism shown in Figure 1;

Figure 3 is a side elevational view of the mechnism;

Figure 4 is an end view, taken in the direction of the arrow 4 in Figure 3, and

Figure 5 is a vertical sectional view, taken substantially in the plane of the line 5—5 in Figure 3.

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 side or front wall of a conventional flush tank, the reference character 12 designates a flush tank pipe and the reference character 14 designates a lift rod of the tank flush valve.

The invention concerns itself with the provision with a dual control whereby either the entire contents or only a portion of the contents of the flush tank may be discharged. The dual control mechanism embodies in its construction a horizontal shaft 16 which is rotatably journaled in a tubular sleeve 18 extending through an aperture 20 in the wall 10 of the flush tank. The outer end of the sleeve 18 has an enlarged head 22 in abutment with the outer surface of the wall 10, while the inner end portion of the sleeve is externally screw-threaded as at 24 to accommodate a nut 26.

A suitable washer 28 is positioned in the sleeve 18 in engagement with the inner surface of the tank wall 10 and is engaged by teeth or serrations 30 of an apertured bracket 32 which the sleeve 18 also carries between the washer 28 and the nut 26. It will be apparent from the foregoing that when the nut is tightened, the bracket 32 will be securely and non-rotatably held in position on the sleeve.

The bracket 32 is formed integrally with an extension 32a which, in turn, has an angulated portion or limb 36. This limb is substantially parellel to the shaft 16 and terminates at its free end in a shaft-like projection or boss 38.

An upwardly swingable arm 40 has an apertured end portion positioned on the shaft 16 at the inner end of the sleeve 18, this arm being provided intermediate the ends thereof with a recess 42 (see Figure 3) which receives the limb 36 so that the limb functions as a stop in preventing the arm from swinging downwardly.

A second arm 44 has an intermediate portion thereof provided with an aperture to receive the boss or projection 38 on the limb 36, and one end portion of this second arm underlies the inner end portion of the shaft 16, so that the shaft functions as a stop to prevent the arm 44 from swinging downwardly. A transverse bore 46 may be formed in the boss 38 for the reception of a cotter pin, or the like, to sustain the arm 44 on the boss.

A crank 48 is secured by means of a clamping screw 50 on the shaft 16 between the arms 40, 44, and a transversely extending pin 52 is rigidly secured in the crank 48. One end portion of the pin 52 is disposed in the recess 42 at the underside of the arm 40, while the other end portion of the pin is disposed in a recess 54 (see Figure 1) in the upper edge of the arm 44.

A suitable actuating handle 56 is mounted on the outer end portion of the shaft 16 and is suitably counter-bored as at 58 to provide clearance for the head 22 of the sleeve 18. When this

handle is swung downwardly, that is, in the direction of the arrow 60 as shown in Figure 3, the portion of the pin 52 engaging the underside of the lever 40 will swing the lever 40 upwardly while the lever 44 remains stationary. On the other hand, when the handle 56 is swung upwardly (in the direction of the arrow 62) the portion of the pin 52 engaging the upper edge of the lever 44 will swing the lever 44 about the axis of the boss 38 in an upward direction while the lever 40 remains stationary.

In this manner, the same actuating lever or handle is employed for selectively and individually imparting upward swinging movement to the arms 40, 44.

An adjustable clamp 64 is secured at a suitable height to the tank pipe 12 and a lateral projection 66 on a vertical bearing or guide 68 is attached to the clamp 66 by a bolt 69. The bearing or guide 68 has slidable therein the upper end portion of the flush valve lift rod 14 and a tubular sleeve 70 is slidably telescoped on the bearing or guide 68, as is best shown in Figure 5. A disk-shaped cap 72 is screw-threaded on the upper end of the rod 14 and the underside of this cap is operatively engaged by a laterally projecting stud 74 provided on the free end portion of the aforementioned arm 44. The lower end of the sleeve 70 is provided with a counterbore 70a to receive a compression spring 71 to urge the sleeve upwardly.

A pair of spaced ears 76 are secured to the lower end of the sleeve 70 and carry a horizontal pivot pin 78 on which is swingably mounted a locking member 80. This locking member has a hook-shaped lower portion 82 which is releasably engageable with a head 84 of a hollow float 86. This float has a bored hub portion 88 which is freely slidable on the rod 14 below the bearing or guide 68.

A flexible element such as, for example, a length of chain 90 extends from the locking member 80 to the outer end portion of the aforementioned arm 40 which is provided with a plurality of apertures 92 to selectively receive the upper end of the chain 90 for adjustment purposes.

Finally, the invention contemplates the provision of an adjustable stop 94, equipped with a set screw 96, whereby it may be secured to the rod 14 below the float 86.

When the invention is in use and solid material is to be flushed with the entire contents of the tank, the locking member 80 engages the head 84 of the float 86 and by rotating the handle 56 in the direction of the arrow 62, the pin 52 will swing the arm 44 upwardly so that the stud 74, engaging the cap 72, will slide the rod 14 upwardly to unseat the flush valve. While this occurs the stop 94 will be brought upwardly toward the relatively stationary float 86 and the entire contents of the tank will be discharged until the rod 14 is shifted downwardly by the seating of the flush valve.

However, when only liquid matter is to be flushed, the actuating handle 56 is swung downwardly in the direction of the arrow 60 so that the pin 54 will lift the arm 40 upwardly. This movement will result first in the disengagement of the locking member 80 from the head 84 of the float 86, whereupon the chain 90, through the medium of the locking member 80 and ears 76 will slide the sleeve 70 upwardly on the guide 68. This movement, in turn, will be imparted to the cap 72 and rod 14 to unseat the flush valve.

As the level of water in the flush tank descends, the float 86 will descend therewith and will eventually come in engagement with the stop 94 at a point where only a portion of the contents of the tank have been discharged. At that point the weight of the descending float, through the medium of the stop 94, will shift the rod 14 downwardly to close the flush valve, so that further discharging of water from the tank will not be permitted to occur.

It is to be noted that by adjusting the position of the stop 94 on the rod 14, the volume of water which may be discharged in this manner may be conveniently regulated and it will be also observed that by employing the clamp 64, the invention may be installed in flush tanks of different sizes and types.

It is believed that the advantages and use of the invention will be readily understood 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 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. A dual control for flush tank valves, comprising a shaft adapted to be rotatably mounted in the wall of a flush tank, a single actuating handle secured to said shaft, a pair of upwardly swingable arms adapted for movement independently of each other, means operatively connecting said arms to said shaft for selective and independent swinging by actuation of said handle in opposite directions, a vertically slidable flush valve lift rod, a float slidable on said rod, a stop provided on said rod under said float and engageable by the float for sliding the rod downwardly, a cap secured to the upper end of the rod, a sleeve slidable on the rod between said cap and said float, a locking member carried by the sleeve and engageable with said float to prevent downward movement of the latter, one of said arms engaging said cap for lifting said rod while the float is locked by said locking member, and means operatively connecting the other arm to said locking member for disengaging the same from said float and lifting said rod through the medium of said sleeve and cap, said first mentioned means including a stationary bracket provided on said shaft, a projecting limb provided on said bracket, said limb underlying one of said arms and constituting a stop therefor, the other arm being pivoted to said limb, said shaft overlying said other arm and constituting a stop therefor, and means carried by said shaft for selectively and individually engaging said arms.

2. A dual control for flush tank valves, comprising a shaft adapted to be rotatably mounted in the wall of a flush tank, a single actuating handle secured to said shaft, a pair of upwardly swingable arms adapted for movement independently of each other, means operatively connecting said arms to said shaft for selective and independent swinging by actuation of said handle in opposite directions, a vertically slidable flush valve lift rod, a float slidable on said rod, a stop provided on said rod under said float and engageable by the float for sliding the rod downwardly, a cap secured to the upper end of the

rod, a sleeve slidable on the rod between said cap and said float, a locking member carried by the sleeve and engageable with said float to prevent downward movement of the latter, one of said arms engaging said cap for lifting said rod while the float is locked by said locking member, and means operatively connecting the other arm to said locking member for disengaging the same from said float and lifting said rod through the medium of said sleeve and cap, said first mentioned means including a stationary bracket provided on said shaft, a projecting limb provided on said bracket, said limb underlying one of said arms and constituting a stop therefor, the other arm being pivoted to said limb, said shaft overlying said other arm and constituting a stop therefor, a crank secured to said shaft, and a transverse pin provided on said crank, opposite end portions of said pin being operatively engageable with the respective arms.

3. A dual control for flush tank valves comprising a horizontally extending shaft adapted to be rotatably mounted in the wall of a flush tank, a first arm extending substantially perpendicular to said shaft and being pivotally secured at one end to said shaft, a stationary bracket mounted on said shaft and including a limb underlying said first arm, a second arm being pivotally mounted intermediate its ends on said limb, one end of said second arm underlying said shaft, a crank member mounted on said shaft between said arms, a transverse pin projecting on opposite sides of said crank underlying said first arm and overlying said second arm, whereby rotation of said shaft in one direction will raise said first arm and rotation in the opposite direction will raise said second arm, and means at the free ends of said arms operatively connected to a flush tank valve.

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