March 11, 1958 G. E. TUCKER 2,825,908

FLUSH TANK WATER CONTROL

Original Filed June 15, 1955

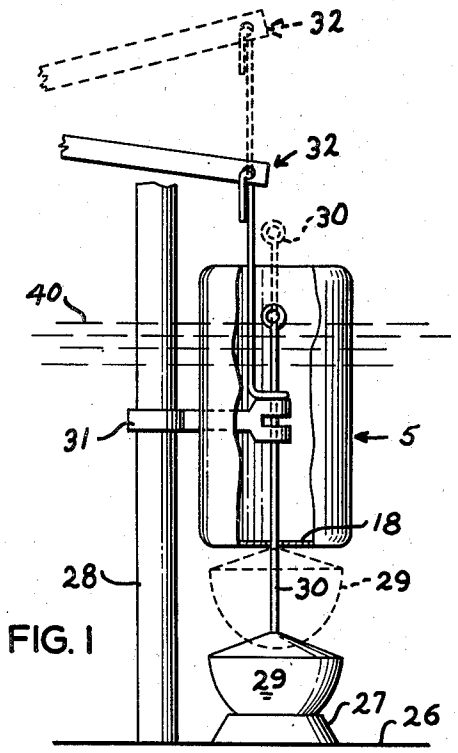


FIG. 1

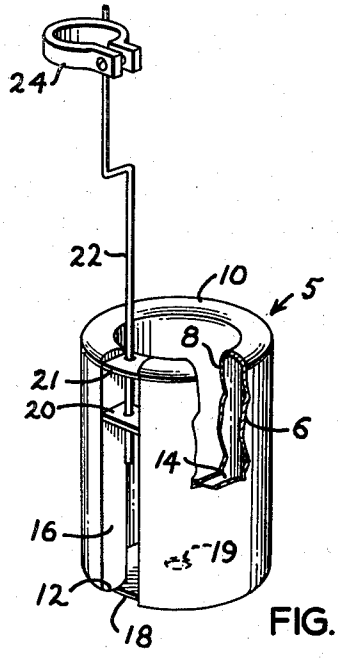


FIG. 3

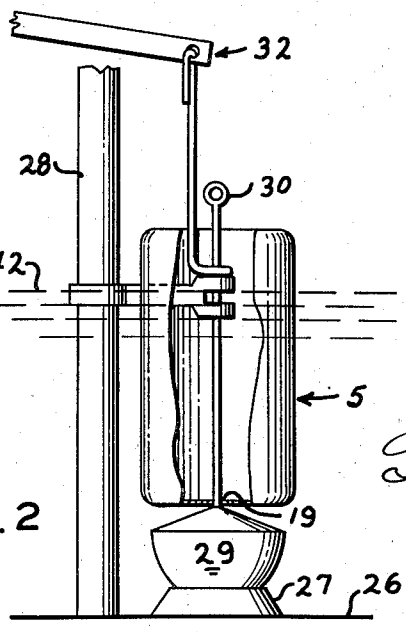


FIG. 2

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FLUSH TANK WATER CONTROL

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Substituted for abandoned application Serial No. 515,677, June 15, 1955. This application July 16, 1956, Serial No. 598,035

1 Claim. (Cl. 4—67)

The present invention relates to water saving devices, and more particularly to a means for controlling the amount of water dispensed from a conventional flush tank.

This application is a substitute of an abandoned application filed by me in the United States Patent Office on June 15, 1955, under Ser. No. 515,677, Division 58, for Flush Tank Water Control, and abandoned May 22, 1956.

Conventional flush tanks are normally equipped with a ball float for opening and closing the drain outlet and which is manually tripped or raised from the exterior of the tank by suitable linkage. When the float is lifted to its raised position, its buoyancy maintains it near the level of the water until almost all of the water has been discharged down the drain pipe at which time the float reseats to allow the tank to refill. Thus, when a conventional tank has been tripped, almost all of the water contained therein is discharged before the float reseats.

In a majority of the times the flush tank is tripped for flushing the contents of the stool into the sewer line, only approximately one-half of the water contained within the tank is needed to adequately perform the work.

It is therefore the primary object of this invention to provide a control device which will allow only a portion of the water to be drained from a flush tank.

An equally important object of this invention is to provide a control device of this class which will permit the dispensing of substantially all the water contained within the flush tank when it is desired to do so.

Another object is to provide a device of this class which is simple in operation and consists of relatively few parts, and may therefore be manufactured at a relatively low cost.

A further object of this invention is to provide a water control device of this class which may be easily and quickly installed by a home owner without the use of special tools or equipment.

Yet another object of this invention is to provide a device of this class which may be used over a long period of time without showing any appreciable amount of wear.

The present invention accomplishes these and other objects by providing a hollow cylindrical buoyant body of a selected diameter and length operated by the normal flushing of a conventional flush tank. The body has an inner and an outer wall integrally sealed at each respective end of the body to form an air-tight space therebetween. The body further has a longitudinally extending slot formed through its walls and is vertically disposed around the ball float lift rod within a conventional flush tank with a horizontal guide arm of the tank extending through the slot. The lower end of the body is partially closed by a plate member having a central perforation for slidably receiving the guide rod therein. The buoyancy of the body maintains it in spaced-apart relation above the conventional ball float, closing the flush tank drain outlet until such time as the ball is unseated. The body then follows the water level downward forcing the ball float to close the drain outlet by the contact of the plate member with the upper portion of the ball float before the same would normally close the drain outlet.

Other objects will be apparent from the following description when taken in conjunction with the accompanying single sheet of drawings, wherein:

Figure 1 is a fragmentary elevational view of the interior of a water filled conventional flush tank with the device of the present invention installed therein;

Figure 2 is a view similar to Fig. 1, illustrating the relative position of the instant invention when the water level within the tank has been lowered; and,

Figure 3 is a perspective view of the device, per se, and illustrating its connection with an auxiliary guide rod.

Like charcters of reference designate like parts in those figures of the drawings in which they occur.

In the drawings:

Referring to Fig. 1, the reference numeral 5 indicates, as a whole, the device which is a tubate, or hollow cylindrical body in general configuration and of a selected diameter and length. The device has an outer wall 6 and an inner wall 8 in parallel spaced-apart relation integrally joined at the upper end 10 and the lower end 12 forming an air-tight space 14 therebetween which renders the device 5 highly buoyant. The upper end 10 and the lower end 12 are arcuately formed to prevent the device from lodging against the working parts within the confines of a conventional flush tank. A longitudinally extending opening or slot of a selected width is formed through the walls 6 and 8 of the device, as at 16, for the purposes which will be presently apparent. A comparatively thin plate member 18, diametrically substantially equal with relation to the wall 6, is rigidly connected to the lower end 12. The plate 18 has a central perforation 19 of a selected size.

A pair of superposed guide bars 20 and 21 having vertically aligned central perforations are rigidly connected in spaced-apart horizontally parallel relation to the walls of the device across the upper end of the slot 16.

Referring now more particularly to Fig. 1, the numeral 26 indicates generally the floor of a conventional flush tank through which is connected a water outlet 27 and an overflow pipe 28. A ball float 29 is raised from and guided back into the seat of the water outlet 27 by a guide rod 30 slidably supported by an arm 31 rigidly connected to and extending horizontally from the overflow pipe 28. Suitable linkage 32 is connected to the guide rod 30 to lift or trip the ball float 29 in a conventional manner, as shown in dotted lines. The above structure, referred to by the numerals 26 to 32 inclusive, is conventional with flush tanks and forms no part of the instant invention other than the manner in which the device 5 acts to control the same, as disclosed hereinbelow.

Operation

The device 5 is installed around the guide rod 30 by removing the same and inserting the arm 31 into the slot 16 above the plate 18 and below the lowermost guide bar 20. The guide rod 30 is then replaced through the end of the arm 31 and through the plate perforation 19 and reconnected with the ball float 29. As the water fills the flush tank to the full level, as indicated by the numeral 40, the buoyant device 5 rises and remains floated as is illustrated in Fig. 1. The flush tank drain mechanism may then be manually tripped by the linkage 32 which raises the ball float 29 to contact the plate 18. Normally the ball float 29 would remain near the top of the water until substantially all of the same had drained out through the outlet 27 before reseating. However,

the device 5 is lowered by the draining of the water and as it lowers the ball 29 is forced into seated position within the outlet 27 (Fig. 2) for closing the same when a selected amount of the water has been drained off, or has reached the level indicated by the numeral 42.

Thus, it seems obvious that the selected or desired amount of water may be released from the tank by regulating the water level within the tank in a conventional manner and by the use of the device 5 which acts to close the outlet drain 27 when the water level is lowered. Vertical movement of the device 5 is guided by the arm 31 within the slot 16.

When it is desired to drain substantially all of the water from the flush tank, the trip knob or handle of the flush tank, not shown, may be manually held until the water has been discharged out through the drain outlet 27. Thus it may be seen that a device has been provided which will normally save substantially one-half the amount of water usually flushed down the drain.

On some flush tanks it may be desirable to provide an auxiliary guide rod 22 having a clamp 24 rigidly connected to its upper end. The clamp 24 surrounds and is rigidly carried by the overflow pipe 28. The rod 22 is slidably engaged with the perforations of the guide bars 20 and 21 to maintain the device 5 in alignment with the ball float 29.

Obviously the invention is susceptible to some change or alteration without defeating its practicability, and I therefore do not wish to be confined to the preferred embodiment shown in the drawings and described herein,

further than I am limited by the scope of the appended claim.

I claim:

A water control device for a water filled flush tank having an outlet opening opened and closed by a ball float and having a horizontal arm carried by an overflow pipe mounted therein for guiding slidably a lift rod connected to said ball float, including: a hollow cylindrical buoyant body vertically disposed around said rod, said body normally maintained in spaced superposed relation with said float when said tank is full, said body having a longitudinally extending side opening for receiving said arm therein; a pair of vertically alignedly perforated guide bars spanning said opening in spaced superposed relation adjacent the upper end of said body; a vertically disposed guide member rigidly carried by said overflow pipe, said member loosely received by said aligned perforations of said guide bars for vertical movement of said body relative to said guide member; and a centrally perforated member carried by the lower end of said body and slidable vertically around said lift rod, whereby, when said tank is tripped for flushing, said body follows the water level downward until said perforated member forces said float to close said outlet opening after discharging a selected portion of the water in said tank.

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