

July 12, 1966

W. E. WALKER, SR., ET AL

3,259,918

WATER SAVING DEVICE

Filed Dec. 21, 1964

2 Sheets-Sheet 1

Fig. 1

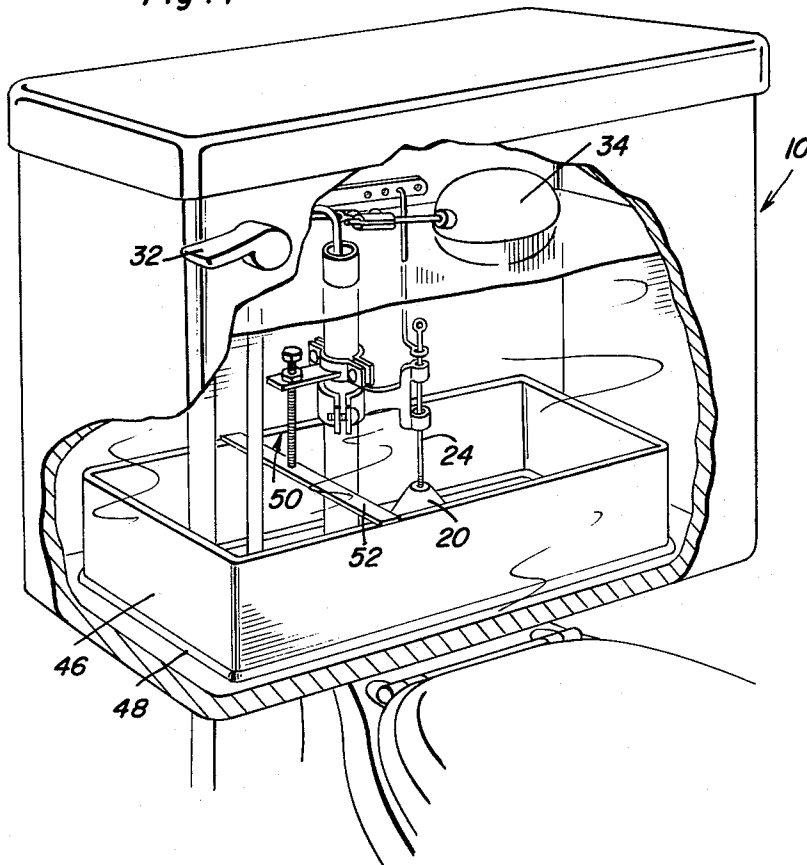
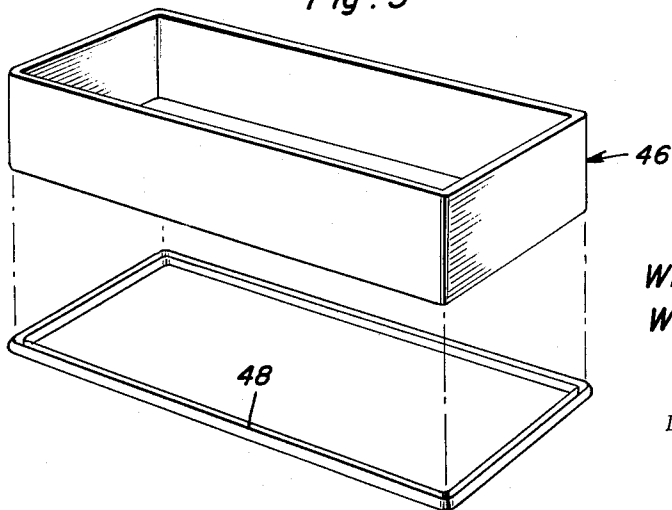


Fig. 5



William E. Walker, Sr.
William E. Walker, Jr.
INVENTORS

BY *Alma MacArthur*
and *Harvey R. Jackson*
Attorneys

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Fig. 2

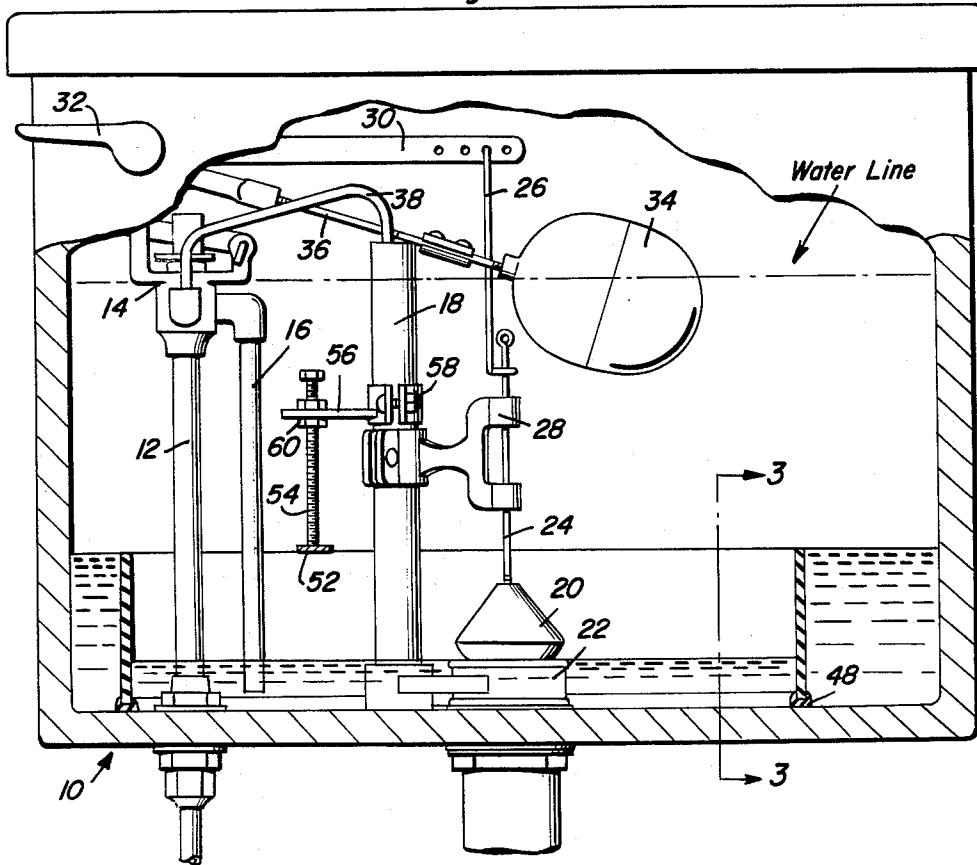


Fig. 3

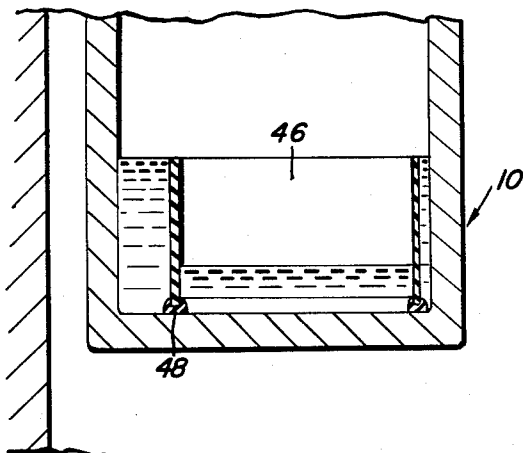
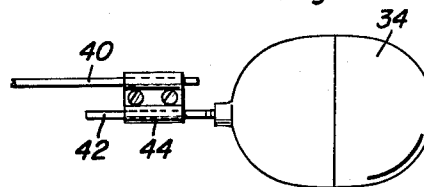


Fig. 4



William E. Walker, Sr.
William E. Walker, Jr.

INVENTORS

BY *Charles A. O'Brien*
and *Harvey B. Jacobson*
Attorneys

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3,259,918

WATER SAVING DEVICE

William E. Walker, Sr., P.O. Box 57, Artesia Wells, Tex.,
and William E. Walker, Jr., P.O. Box 201, Freer, Tex.

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4 Claims. (Cl. 4—18)

The instant invention is generally concerned with water closets, and more particularly relates to the flush tanks thereof and means for effecting economies in water when activating such flush tanks.

It is a primary object of the instant invention to provide means, which when incorporated into a conventional flush tank, results in a substantial reduction in the amount of water utilized to effect the flushing action.

In conjunction with the above object, it is also a significant object of the instant invention to provide an effective means for avoiding the use of an unnecessary amount of water in the operation of a conventional flush tank, this being particularly desirable in those areas where water is relatively scarce.

Further, it is an object of the invention to provide a device which can be incorporated into a conventional flush tank without requiring a modification thereof or in any way interfering with the operation of the flushing equipment located therein.

In addition, an important object of the instant invention resides in the simplicity of construction and ease of installation associated with the device.

Also, it is an object of the instant invention to provide for an additional aid to the conservation of water residing in a modification of the conventionally provided float rod.

Basically, in order to achieve the above objects, the instant invention contemplates the provision of a solid rectangular frame, which may be of any suitable height, positioned in surrounding relationship to the flush tank operating mechanism and spaced inwardly from the tank wall a predetermined distance. This frame or box, open at the top and bottom, has the lower edge thereof peripherally sealed to the bottom of the flush tank, thereby forming, between the peripheral wall of the frame box and the peripheral flush tank wall, a reservoir of water which will not be discharged through the conventional centrally located outlet upon a flushing of the tank. In this manner, the amount of water discharged through the outlet will be reduced by the amount of water remaining in the reservoir formed by the box or frame, this amount varying in accordance with the specific height of the box. In addition, rather than providing the conventional single piece float rod the float rod of the instant invention is to be formed in two portions which may be longitudinally adjusted relative to each other and clamped to each other in any of a plurality of longitudinally adjusted positions, thereby effectively varying the length of the rod and the location of the float, this in turn varying the level of water maintained in the flush tank in an obvious manner.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of a flush tank, with portions broken away, illustrating the instant invention;

FIGURE 2 is an enlarged front elevational view of the device of the instant invention installed within a flush tank;

FIGURE 3 is a cross-sectional view taken substantially on a plane passing along line 3—3 in FIGURE 2;

FIGURE 4 is a detail view illustrating the manner in which the two pieces of the float rod are to be adjusted and clamped relative to each other; and

FIGURE 5 is a perspective view of the reservoir form-

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ing frame of the instant invention and the sealing gasket therefor.

Referring now more specifically to the drawings, numeral 10 is used to generally designate a conventional flush tank containing the flushing mechanism therein. As will be appreciated, this mechanism includes an inlet tube 12, an inlet valve 14, a filler tube 16, an overflow pipe 18, a tank ball or ball valve 20, a combination ball seat and outlet 22, a lower stem 24, an upper stem 26, a stem guide 28, a trip lever 30, an exterior trip lever handle 32, a ball float 34, a float rod 36, and a refill tube 38. The only modification contemplated in this conventionally provided structure is the formation of the float rod 36 in two portions, 40 and 42, the longer portion 40 being fixed to the inlet valve in the manner of a conventional float rod, and the relatively shorter portion 42 being threaded into the float 34, also in the conventional manner. The unsecured ends of the two portions 40 and 42 are then longitudinally adjusted relative to each other and fixedly clamped together by a clamp 44 which consists of upper and lower clamping plates, each having a flat central portion and two semi-cylindrical portions along the edges thereof, these semi-cylindrical portions receiving the two rod portions and confining the portions 40 and 42 against movement relative to each other upon the passing of bolts through the flat intermediate portions, these bolts either being threaded directly into the lowermost one of the two plates, or having nuts threaded on the ends thereof. Thus, it will be appreciated that by merely loosening the clamp bolts, the length of the float rod 36 can be quickly and easily adjusted, thereby providing an effective means for varying the normal level of the water within the flush tank.

While economies in the use of water can be effected through the adjustment of the length of the float rod 36 in the manner discussed supra, the instant invention also contemplates a more effective means for conserving water while still insuring a satisfactory flushing operation. This is achieved through the provision of a rectangular frame or box 46 having an open top and an open bottom. This box 46, as will be appreciated from the drawings, is of a size so as to completely surround the flushing mechanism, while at the same time being spaced inwardly from the flush tank walls so as to provide for the confining of a substantial amount of water between the rectangular box 46 and the flush tank walls which will not flow through the outlet 22 upon a flushing of the tank. This box 46 is to be fixed directly to the bottom of the flush tank by means of an adhesively secured gasket 48 engaged with the lower edge of the box 46 peripherally thereabout, this gasket 48 being both adhesively secured to the box 46 and to the bottom of the tank 10. In addition, in order to insure a positive retention of the box 46 in water sealing relation to the bottom of the tank 10, a hold-down member 50 is provided. This hold-down member 50 consists of an elongated flat bar 52 arranged transversely of the upper end of the box 46 and resting on the opposite sides thereof in the manner illustrated in FIGURES 1 and 2. A threaded bolt 54 is fixed centrally to said plate 52 and projects vertically thereabove through a horizontally projecting plate 56 fixed to one half of a two-part clamp 58 which is bolted about the overflow pipe 18 at any suitable height therealong. In addition, one or more nuts are threaded on the rod 54 and engageable with the plate 56 so as to vertically adjust the bolt 54 for bringing the bar 52 down into bearing engagement with the top of the box 46 so as to, in effect, clamp the box 46 between the bar 52 and the bottom of the tank 10, thereby insuring a watertight sealing of the bottom of the box 46.

From the foregoing, it will be appreciated that the box or frame 46 is utilized so as to specifically retain a quantity of water outwardly of the outlet opening 22

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and between the wall of the box 46 and the surrounding flush tank wall, thereby effectively limiting the amount of water which will be discharged through the outlet 22 upon a flushing of the tank, this consequently resulting in a substantial saving in the amount of water over what would normally be used in the conventional tank not having the device of the invention mounted therein. Incidentally, as will be noted from the drawings, the front wall of the box 46 is substantially narrower than the other three walls, this being such so as to insure that this wall not interfere with the movement of the ball valve 20 and also so as to insure that it be positioned directly against the bottom of the tank 10, the relative closeness of the outlet to the front wall of the flush tank necessitating the thinness of the front wall of the box 46. While the front wall of the box 46 must necessarily be relatively thin, it is contemplated that the remaining three walls be of a substantial thickness so as to, through the weight thereof, also assist in properly retaining the position of the box 46 within the tank 10. In addition, inasmuch as the front wall of various types of flush tanks are of different configurations, while not specifically illustrated, it is also contemplated that the front wall of the box 46 be formed so as to conform to the front wall of the flush tank, which it must necessarily closely follow. Finally, it should also be recognized that the box 46 can be made of various different heights, as well as widths and lengths, so as to correspond to the particular saving of water sought in each instance.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a water closet flush tank having a bottom, side

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walls, and centrally located flushing apparatus, a wall surrounding the flushing apparatus and spaced inwardly from the flush tank wall, said second mentioned wall being sealed to the bottom of the flush tank in a watertight manner and projecting vertically upward therefrom a height substantially less than the height of the flush tank wall.

2. The device of claim 1 including adjustable hold-down means fixed to the flushing apparatus and selectively engageable with the top of said second mentioned wall in a manner so as to exert a downward pressure thereon.

3. The device of claim 2 wherein said flushing apparatus includes a sectional float rod consisting of two independent elongated rod-like portions, and means for clamping said rod-like portions together at a plurality of longitudinally adjusted positions relative to each other.

4. A water closet flush tank including a bottom, a peripheral wall, conventional flushing apparatus including a central valve controlled outlet, and means for segregating a portion of the interior of the tank in a water flow restricting manner from said centrally located outlet, said means comprising a vertically projecting imperforate frame surrounding the flushing apparatus and sealed to the bottom of the tank, said frame being spaced inwardly from the flush tank wall peripherally thereabout and including an open bottom end so as to allow for the projection of the flushing apparatus therethrough.

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LAVERNE D. GEIGER, *Primary Examiner*.

H. ARTIS, *Assistant Examiner*.