July 21, 1953 H. V. BECKER 2,645,780

WATER SAVING FLUSH TANK

Filed Nov. 24, 1950

Fig.1

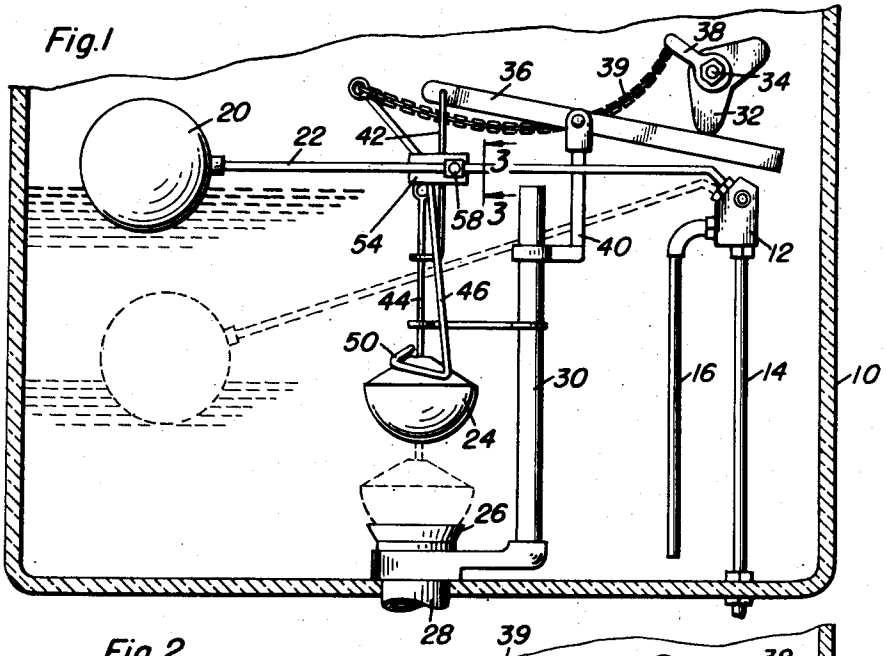


Fig.2

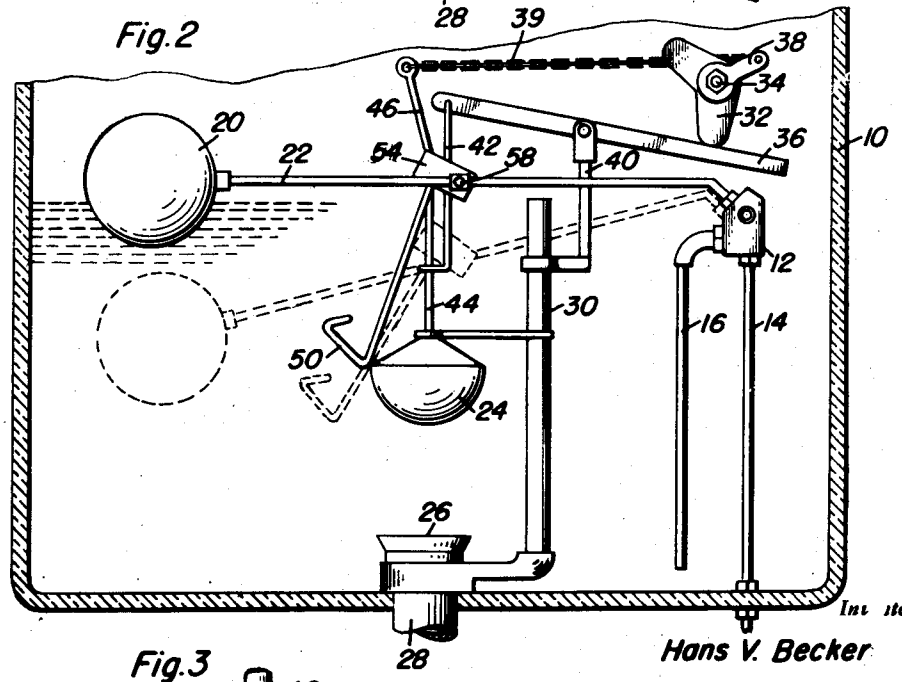
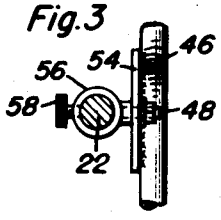


Fig.3



Inventor

Hans V. Becker

By Thomas A. O'Brien and Harvey B. Jackson

Attorneys

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WATER SAVING FLUSH TANK

Hans V. Becker, Miami, Fla.

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1 Claim. (Cl. 4—67)

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This invention relates to improvements in attachments for water closets.

An object of this invention is to provide a simplified attachment for a water closet which controls the quantity of water used during a single flushing operation, said attachment being arranged to control the extent of travel of the valve in the water closet.

Ancillary objects and features of importance will become apparent in following the description of the illustrated form of the invention.

In the drawings:

Figure 1 is a fragmentary sectional view of a typical water closet having the attachment disposed therein and showing in phantom the location and position of some of the elements when only a portion of the full amount of liquid in the water closet is used for a single cycle of operation;

Figure 2 is a fragmentary sectional view of the water closet illustrating the relative position of various elements when the water closet mechanism is used to empty the water substantially entirely therefrom, as in normal and unimpeded operation; and

Figure 3 is an enlarged sectional view taken substantially on the line 3—3 of Figure 1 and in the direction of the arrows.

There is a standard water closet tank 10 illustrated, this water closet having a standard float controlled inlet valve 12 fed by the riser pipe 14. The valve has a discharge pipe 16 connected to it which opens into the tank 10.

A float or ball 20 is connected to a float beam 22 which is operatively connected with the valve 12 for operation thereof in response to the fluid level in the tank 10.

A standard resiliently buoyant valve 24 is removably disposed on the seat 26, this seat having a discharge conduit 28 operatively connected with it. An overflow pipe 30 is appropriately joined with the seat and conduit 28 to serve its standard and usual function.

Although the attachment may be used in connection with substantially all standard types of water closet mechanisms, the illustrated type includes the double cam 32 mounted on a spindle 34, the cam contacting the lever 36 to operate the valve 24. An arm 38 is connected to the double cam 32 and has a flexible element, as the chain 39, connected to it, the arm 38 and the chain forming a part of the attachment.

Included in the standard equipment of the water closet mechanism is the support 40 which is carried by the overflow pipe 30 and which

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mounts the lever 36 intermediate its ends for pivotal movement. The link 42, pivoted at one end to the lever 36, is arranged to lift the valve stem 44, this valve stem being fixed to the valve 24.

The usual and standard operation of the water closet mechanism is deemed known to those skilled in the art. The attachment including the arm 38, chain 39 and arm 46 is so arranged as to cause a full flush or a partial flush, depending upon which way the double cam 32 is operated. When the handle (unshown) attached to the spindle 34 is rotated in a direction so as to cause operation as disclosed in Figure 2, the chain 39 is pulled tight, thereby pulling the upper end of the arm 46. This causes the arm 46 to be pivoted about the pivot pin 48 as an axis, swinging the lower end of the arm 46 away from the valve 24. Since the valve is lifted by the lever 36 and the arm 46 is swung as disclosed in phantom in Figure 2, the valve 24 is raised the full amount. Hence, the water closet operation is such as though the attachment were not present.

However, when the unshown handle is rotated in the opposite direction (Figure 1), the chain 39 is slackened. Due to the weight of the chain and gravity, the arm 46 pivots about the pin 48 as an axis so that the hook 50 at the end of the arm 46 contacts the top surface of the valve 24. This hook is made of two sections of the wire forming the arm 46, said sections being bent at substantially right angles to each other. Then, when the float beam 22 is lowered, the arm 46 is correspondingly lowered. Since this arm is now disposed on the top surface of the valve 24, it pushes the valve down with it. Hence, after the valve rests upon the seat in this manner, no more water escapes from the tank 10. Once the valve has been seated in this manner, water having started to flow thru the valve 12 begins to completely fill the tank 10 to capacity. As the tank 10 fills, the beam 22 is lifted, carrying with it the arm 46, inasmuch as this arm is connected to the beam by means of the pivot pin 48 which passes through a plate 54, welded or otherwise rigidly fixed to the arm 46 and also which is connected to the bearing 56 held in place on the beam 22 by means of the set screw 58.

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

In a flushing device comprising a tank having an outlet, a buoyant valve for closing the outlet, an inlet valve and float means for actuating said inlet valve, a water saver including a spindle journaled in the tank, a lever pivotally mounted in the tank, a link operatively connecting one end

of the lever with the buoyant valve for opening same, a double cam on the spindle operatively engaged with the other end portion of the lever for actuating same for opening the buoyant valve when said spindle is rotated in either direction, an arm fixed on the spindle, an arm pivotally mounted on the float means and engageable with the buoyant valve for prematurely closing same for a partial flush when said float means drops with the level of the liquid in the tank, and a flexible member operatively connecting the first-named arm to the second-named arm for swinging the latter to inoperative position away from the buoyant valve when the spindle is rotated in one direction for a full flush.

HANS V. BECKER.

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