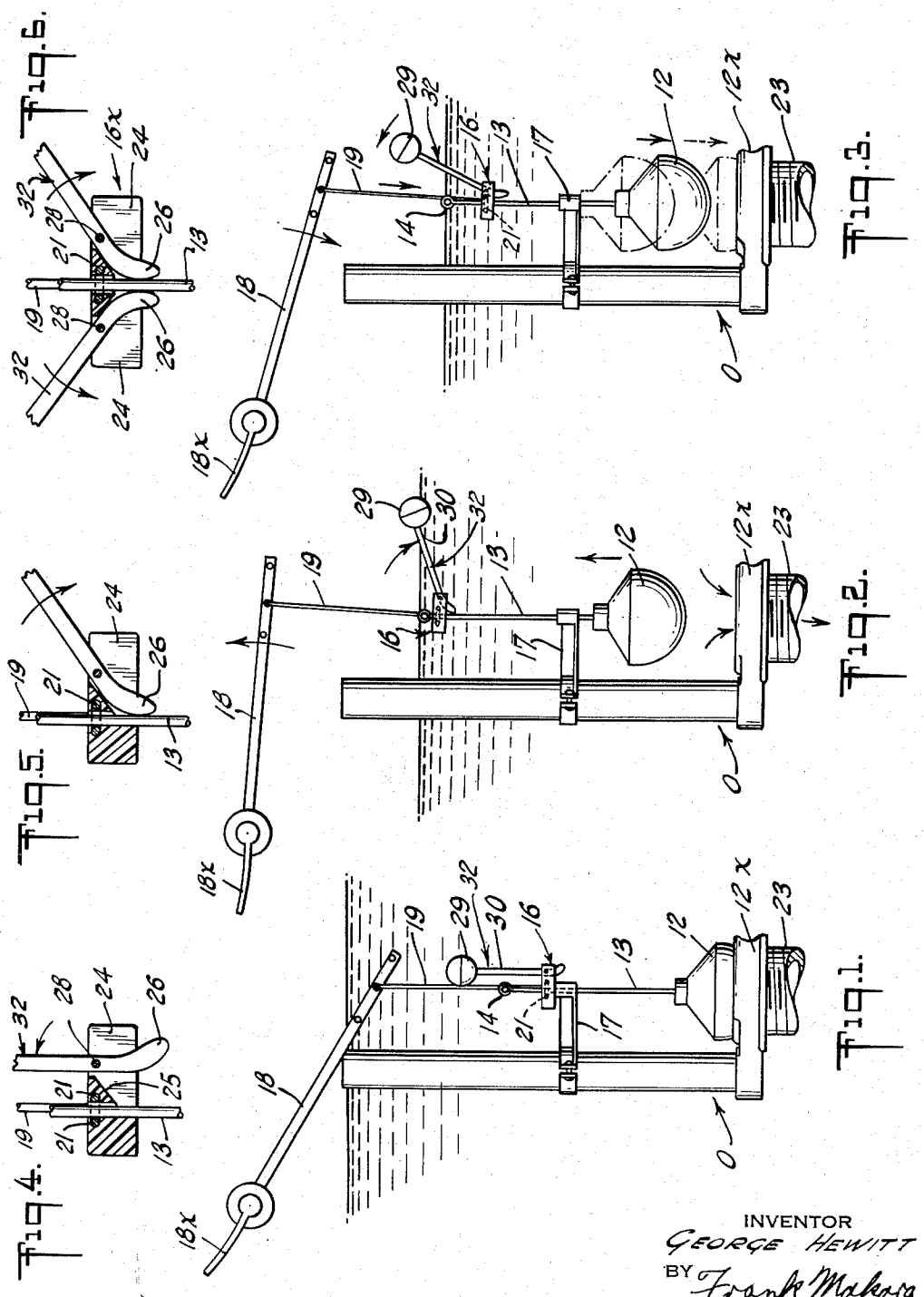
Dec. 31, 1957 G. HEWITT 2,817,849

FLUSH TANK VALVE CONTROL MEANS

Filed July 5, 1956 2 Sheets-Sheet 1



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Fig. 7.

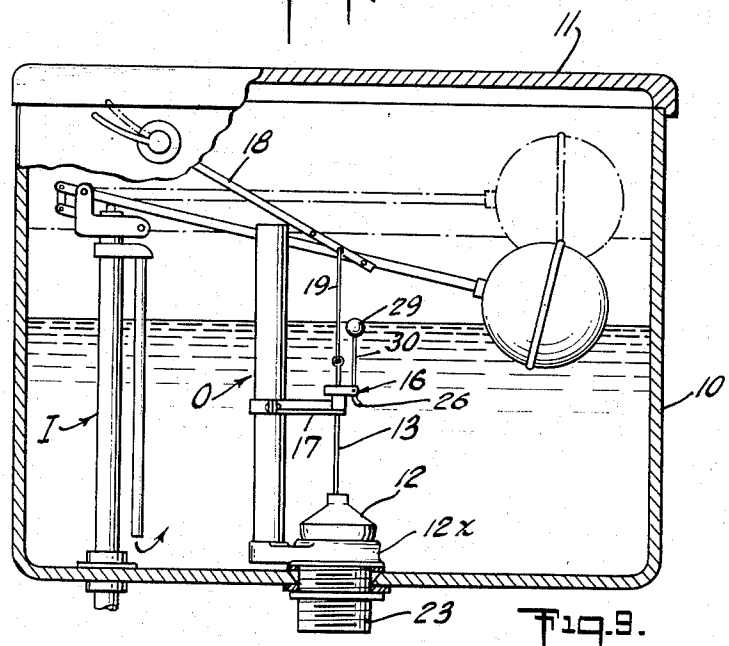


Fig. 8.

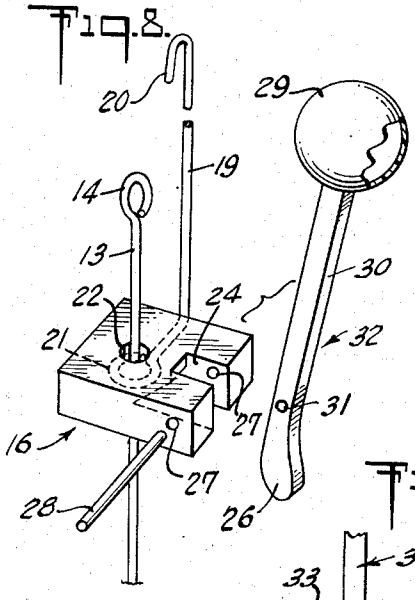


Fig. 9.

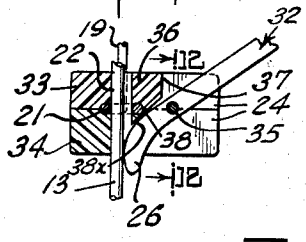


Fig. 10.

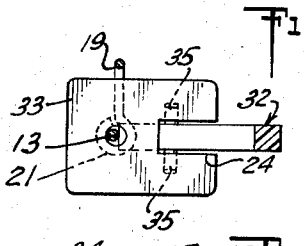


Fig. 12.

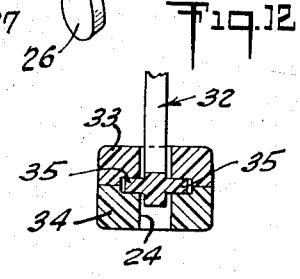
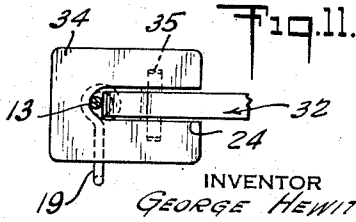


Fig. 11.



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FLUSH TANK VALVE CONTROL MEANS

George Hewitt, Ridgewood, N. J.

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2 Claims. (Cl. 4—67)

This invention relates to a valve control for flush tanks such as are used for toilets.

Due to the growing scarcity of water, it is often inadvisable to flush a toilet with the entire tank contents of about five gallons, when one or two gallons will suffice.

It is an object of this invention to provide means for selectively closing at will the water outlet of the conventional flush tank for a toilet.

It is another object of this invention to provide means for selectively draining any or all of the water contents of a flush tank through the tank outlet opening.

These and other objects and purposes of this invention will become self-apparent upon reading the following descriptive disclosure taken in conjunction with the accompanying drawing in which:

Fig. 1 is a side view of the invention mounted in a conventional flush tank having a conventional over-flow pipe, guide bracket and also a conventional buoyant ball valve seated upon a valve seat, and showing the valve in closed position with the tank full of water,

Fig. 2 is a view similar to Fig. 1 but showing the valve in an open position, being actuated by partial rotation of a conventional operating lever, and further showing the manner in which the device of this invention is mounted about and seizes the valve stem of the buoyant valve,

Fig. 3 is a view similar to Fig. 2 but indicating the manner of forcing the valve stem and its affixed buoyant ball valve downward to effect the seating of the ball valve and hence the closure of the outlet from the tank,

Fig. 4 is a detailed view in section and broken away in part of the invention, showing the valve stem disposed in a holding block and showing the seizure foot of a float arm in inoperative position,

Fig. 5 is a view similar to Fig. 4 but in an operative position and showing the manner of effecting seizure of the valve stem by the seizure foot,

Fig. 6 is a modification of this invention showing two opposed seizure feet disposed in a holding block with the valve stem therebetween,

Fig. 7 is a vertical section view through a conventional toilet flush tank showing the improved valve operating means of this invention disposed about the conventional valve stem,

Fig. 8 is a perspective, exploded and detailed view of the device of this invention having a single float operated seizure foot and showing the manner of securing the seizure foot to the holding block by means of a pivot pin,

Fig. 9 is a section view in detail broken away in part, and showing a modification of this invention wherein the holding block consists of a pair of secured together co-acting half-block pieces,

Fig. 10 is a top view of the modification of Fig. 9,

Fig. 11 is a bottom view, looking upwardly, and showing the manner of effecting seizure between the valve stem and the seizure foot and

Fig. 12 is a section view taken on line 12—12 of Fig. 9 and showing a seizure arm having integral pivot pins therein.

Referring to Fig. 7 a conventional lever flush type toilet having a conventional tank 10 and cover 11 and having a conventional water overflow assembly O and a conventional water inlet valve assembly I, a conventional buoyant ball valve 12 and valve stem 13 with a conventional valve stem loop 14 is provided with a holding block 16 disposed about the valve stem 13 and above the conventional guide bracket 17.

In other words, the device of this invention is added to the conventional flush tank toilet replacing only one element therein, namely the removable connecting link disposed between valve stem 13 and the trip lever arm 18, with a similar link 19 having the bottom loop thereof secured in an apertured holding block 16.

The conventional connecting link is provided with a top hook to engage a suitably disposed aperture in the lever arm 18. Applicant's connecting link 19 also has such a hook 20. The bottom of the connecting link 19 is provided with a conventional horizontally disposed loop 21 which may be embedded in a cast block of plastic or it may be disposed between two block half pieces (Figs. 9 to 12).

As shown in Figs. 4 and 8 a plastic block 16 may be cast about the link loop 21. An aperture 22 is made vertically in said block 16 and through said loop 21 (Fig. 8) by drilling through the plastic. The size of the aperture 22 is such as to provide suitable clearance between the walls thereof and the valve stem 13 to facilitate loose sliding contact between said block 16 and said stem 13. The valve stem 13 is provided with both a conventional loop 14 on its top and with a conventional threaded end at the bottom and in opposed relationship to said loop, said threaded end being disposed threadingly in buoyant ball valve 12 in a metal bushing (not shown) therein.

Thus in order to dispose the valve stem 13 into aperture 22 of block 16, the threaded end thereof is unthreaded from ball valve 12 and then removed from bracket 17. After placing block 16 on the conventional aperture bracket guide 17 with their respective apertures in superimposed relationship, the valve stem 13 is inserted through the respective apertures of both the block 16 and guide 17 and it is then threaded back into buoyant valve 12. Hook 20 of link 19 is then hooked on to trip lever arm 18. Thus block 16 is captively yet slidingly held between loop 14 of stem 13 and the fixed bracket guide 17.

Upward movement of link 19 caused by upward movement of lever rod 18 secured thereto causes block 16 to slide on stem 13 until the top of the block engages loop 14 whereupon continued upward movement of rod 18 raises block 16, loop 14 and ball valve 12 thereby unseating valve 12 from its valve seat 12X.

Unseating of the valve permits the tank water to run out through the valve seat aperture and into outlet conduit 23 into the toilet bowl (not shown).

As shown in Fig. 8, block 16 is provided with a suitable side wall channel 24 suitably spaced-apart from aperture 22 therein. The channel 24 is provided with a bevel undercut wall 25 (Fig. 4 and 5) to permit a swingable foot 26 on an arm 30 to engage valve stem 13 with suitable seizure force, thereby locking the foot 26 to the stem 13 at the point of contact thereof.

As also shown in Fig. 8 the block 16 abutments disposed on each side of channel 24 are provided with suitable linearly disposed bore holes 27 adapted to receive a pivot pin 28.

A float element is provided which consists of a suitable plastic float preferably a hollow sphere 29 and a float rod 32. The float rod 32 consists of arm 30 and a seizure foot 26, the latter being provided with a suitable aperture 31 suitably disposed to the rod 32. The float rod 32 (Fig. 8) therefore consists of the float arm 30 and the seizure foot 26 integral thereto.

As shown in Fig. 6 the holding block 16X is provided with a pair of opposed channels 24 and a pair of opposed float rods 32. In this modification the opposed pair of float feet 26 seize the valve stem 13 in a grip-tight manner permitting thereby the rod 13 to be forcibly forced downward upon downward movement of link 19.

In place of a unitary block 16 the block 16 may consist of a top co-acting half-block piece 33 co-acting with a bottom half-block piece 34 (Fig. 9). Where co-acting half-block pieces 33 and 34 are used the blocks 33 and 34 are each provided with co-acting semi-circular channels adapted to receive loop 21. Also the channels 33 and 34 are each provided with respective pivot pin receiving channels linearly disposed on both sides of each channel 24 (Fig. 6).

As illustrated in Fig. 12 the rod 32 is made of plastic material with integral opposed pivot pins 35. The pivot pins 35 are disposed in the lateral channeled bore holes disposed between the half-blocks 33 and 34 provided with suitable clearance to rotatingly receive pivot pins 35.

As shown in Figs. 9 to 11, the top half-block piece 33 is provided with a side channel disposed inwardly to about one-fourth of the distance through the block leaving an integral bridge piece 36 between aperture 22 and the interior wall 37 of the channel 24.

The bottom half-block piece 34 has a small bridge piece 38 having a sloped bottom surface 38X disposed between the aperture 22 therein and its respective channel 24. The blocks 33 and 34 are secured together by conventional means such as adhesive, screws, etc.

In the operation of the device of this invention (Figs. 1 to 3) the trip rod 18 is raised by applying conventional downward pressure on lever rod extension 18X. Raising of lever rod 18 effects engagement between block 16 and loop 14 of valve stem 13, followed by unseating of valve ball 12 from its valve seat 12X (Fig. 2). The raising of lever 18 simultaneously raises float 29 and rod 32 above the normal water level in the tank resulting in rod 32 falling pivotably to a substantially horizontal position thereby causing seizure foot 26 (Fig. 5) of said rod 32 to engage and seize valve stem 13. Meanwhile the rod 18 having been raised, is maintained in its raised position.

After a sufficient amount of the tank contents have been withdrawn for flushing purposes, for example, two gallons of the five gallons originally present in the tank, the rod 18X is manually raised causing the seized valve stem 13 and the valve 12 to be forced into the valve seat 12X thereby stopping further passage of water into conduit 23 (Fig. 3).

In the operation of the device having a single float foot the valve stem 13 is seized between the seizure foot 26 and the wall of aperture 22 disposed opposite to the foot 26 (Fig. 9), but where two opposed seizure feet are used in a block 16 (Fig. 6) the valve stem is seized between both co-acting feet without any contact with the walls of aperture 22.

Where a full tank flush is required or desired the tank lever extension 18X is pushed down and remains in a downward position until the entire tank contents has been withdrawn whereupon valve ball 12 drops into valve seat 12X causing valve stem 13 and connecting link 19 to pull trip lever 18 downward to its normal position thereby returning lever extension 18X to its original position.

This invention has been described broadly because of its novel scientific principle of operation.

Accordingly the claims are of a generic nature and are intended to cover all equivalents and obvious modifications of the illustrative species shown and described.

I claim:

1. A device regulating the draining of water from a conventional flush tank having a trip lever comprising a reciprocally moveable upward and downward block having a vertical borehole for receiving the vertically disposed conventional stem of a flush tank ball valve, said block having at least one vertical channel communicating with said borehole, a vertical rod having its bottom secured to said block and removeably securable at its top to said trip lever, a pivot pin disposed across said channel and secured in the opposed channel walls, said pivot pin being at a right angle to said borehole, a longitudinal lever arm rotatably secured to said pivot pin intermediate the arm ends, a float secured to the top end of said lever arm, said lever arm normally being vertically disposed by said float in a flush tank full of water, said lever arm having a bottom foot for frictionally engaging said stem in said borehole upon suitable rotation of said lever arm, so that upon lifting operation of said flush tank trip lever and its ball valve stem a subsequent downward movement of said trip lever forces the block lever arm foot to frictionally engage the stem and its attached ball valve and force it downward to terminate outflow of water from said tank.

2. The device of claim 1 comprising a block having a pair of channels on opposed sides of said borehole, each of said channels having a pivot pin and a rotatable lever arm secured thereto, each of said lever arms having a float which moves away from the other simultaneously with the falling of the water level to respectively seize said stem in diametrically opposed relationship.

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