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FLUSHING TANK

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Fig. 1

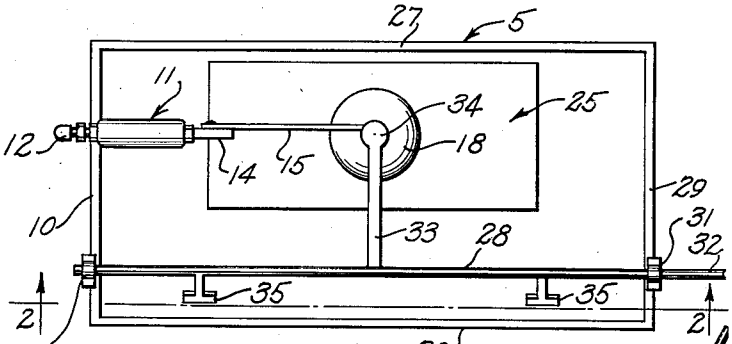
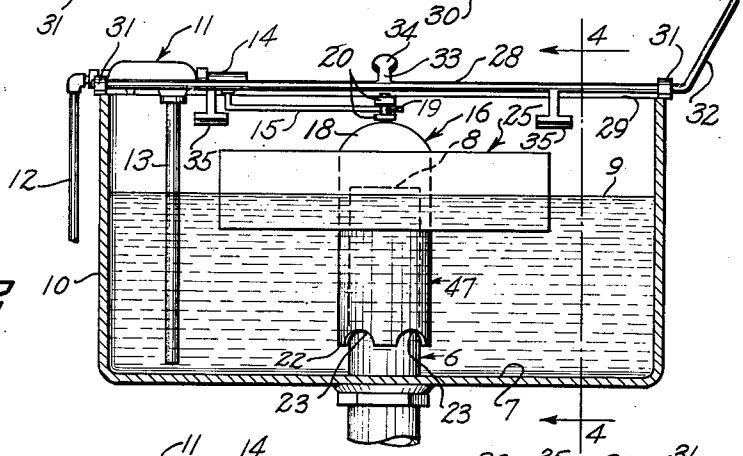


Fig. 2



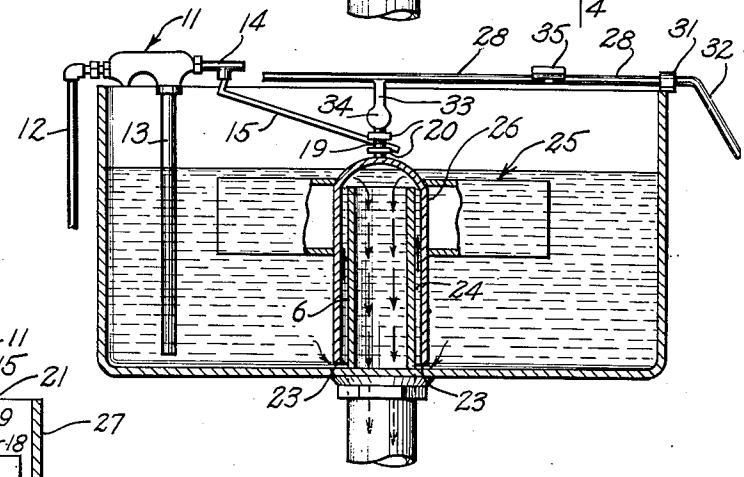


Fig. 3

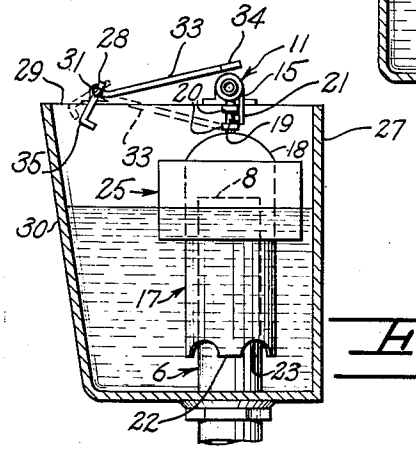


Fig. 4

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FLUSHING TANK

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3 Claims. (Cl. 4—47)

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This invention relates to improvements in flushing tanks of the type wherein the flushing is produced by siphonic action, the primary object of the invention being to provide a structurally and functionally improved flushing tank of this type, primarily but not exclusively, for use as a toilet flushing tank, and involving no valves except a water inlet valve.

Another important object of the invention is to provide a flushing tank of the above indicated character in which the operating parts are of simple and rugged construction, and are associated in an uncomplicated and direct acting manner, whereby trouble free operation, and long life of the parts, are assured.

Other important objects and advantageous features of the invention will be apparent from the following description and appended drawings, wherein, merely for purposes of illustration herein, a presently preferred embodiment of the invention is set forth in detail.

In the drawings:

Figure 1 is a top plan view of the illustrative embodiment, with the tank cover removed to expose the mechanism therein.

Figure 2 is a vertical longitudinal section taken on the line 2—2 of Figure 1, showing the float assembly in normal elevated position.

Figure 3 is a view similar to Figure 2, showing the float assembly depressed in operated discharging position, in which the inlet valve opens to replenish the liquid content of the tank as the level thereof subsides, and

Figure 4 is a transverse vertical section taken on the line 4—4 of Figure 2.

Referring in detail to the drawings, the illustrative embodiment herein shown comprises a generally rectangular tank 5 having a centralized discharge pipe 6 extending upwardly through its bottom wall 7, with its upper end 8 slightly above the normal fluid level 9 within the tank, as shown in Figure 2.

Mounted on the upper part of one end wall 10 of the tank is a water inlet valve 11, with a water supply pipe 12 connected to its outer end and a water outlet pipe 13 depending into the tank 5 to a point near the bottom wall 7. The inner end of the valve 11 has an operating element 14 adapted to be displaced from its normal position to open valve 11 which is normally closed. A motion transmitting arm 15 extends inwardly from valve 11 toward the center of the tank and is operatively connected at its outer end to said valve operating element 14 and has operative connection at its inner end with the float assembly which is generally designated 16.

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The float assembly 16 comprises a cylindrical tube 17 having a closed dome-like top 18 from which an axial stud 19 rises, said stud having vertically spaced collars 20 between which a lateral pin 21 on the inner end of the motion transmitting arm 15 is operatively engaged, whereby any substantial vertical movement of the cylinder 17 is transmitted by the arm 15 to the valve operating element 14. The cylinder 17 is freely telescoped on the discharge pipe 6.

The cylinder 17 is of sufficient height so that when its lower end 22 is engaged with the tank bottom 7 the dome 18 will be spaced above the upper end 8 of the discharge pipe. The lower end 22 of the cylinder is provided with notches 23 so that liquid from the tank can enter the cylinder 17 even when it is engaged with the tank bottom 7. The internal diameter of the cylinder 17 is substantially greater than the external diameter of the discharge pipe 6 whereby an annular passage 24 is provided between the discharge pipe and the cylinder.

A generally rectangular, horizontally elongated float 25 is provided centrally with a conforming opening 26 receiving the upper part of the cylinder 17, the float being secured to the cylinder and disposed lengthwise of the tank 5 and adjacent to the rear tank wall 27, as shown in Figure 1. The float 25 when buoyed up by the liquid content of the tank 5 at normal storage level, holds the cylinder 17 in an elevated position with its lower end 22 spaced above the tank bottom 7, as shown in Figure 2, and with the motion transmitting arm 15 in a horizontal position, in which position the inlet valve 11 is closed, so that further entry of water from the supply pipe 12 into the tank 5 is cut off as soon as the content of the tank reaches the predetermined normal or full level.

The discharge of the liquid content of the tank 5 through the discharge pipe 6 is accomplished by operating mechanism which comprises a rotary rod 28 positioned horizontally on the upper edge 29 of the tank near and parallel to the front tank wall 30 in bearings 31, 31, one end of the rod being extended beyond the adjacent bearing and laterally deflected to provide a handle 32. An intermediate part of the rearward side of the rod 28 has a rearwardly extending rigid arm 33 having a circular enlargement 34 on its rear end overlying the upper end of the stud 19 on the upper end of the cylinder 17. Counterweights 35 projecting from the forward side of the rod 28 are provided to rotate the rod to and hold the rod in normal or starting position, in which the arm 33 is elevated out

of engagement with the stud 15 and the handle 32 is also in elevated position, as shown in Figure 2.

For discharging the water content of the tank, the mechanism being in the normal or starting position described above, the rod handle 32 is grasped and rotated toward the depressed position shown in Figure 3, thereby causing the arm 33 to descend upon the stud 19 and press the cylinder 17 and float 25 downwardly in the water in the tank until the lower end 22 of the cylinder 17 engages or approaches engagement with the tank bottom wall 7 and the float is submerged beneath the water level 9. The handle 32 is held in the depressed position until the predetermined maximum proportion of the water in the tank or any desired lesser amount thereof has been discharged.

The submerging of the float 25 causes the level 9 of the water content of the tank 5 to rise above the normal level, thereby exerting upon the water present in the passage 24 between the discharge pipe 6 and the cylinder 17 an upward pressure in excess of that exerted thereon when the water is at normal level in the tank with the consequence that the water in the passage 24 rises above the upper end 8 of and flows down through the discharge pipe 6. The downward flow of the water in the discharge pipe, coupled with continued upward pressure exerted upon the water in the passage 24 causes a siphonic flow which continues automatically as long as the operating rod handle 32 is held in depressed position and until the water content of the tank subsides to a low level in the tank 5.

As the float is depressed, as above described, for discharging the tank 5, the motion transmitting arm 15 is tilted downwardly, as shown in Figure 3, thereby opening the inlet valve 11 so that water from the supply pipe 12 can enter the tank 5 through the pipe 13 for refilling the same, whenever the water has been discharged to a low enough level to open the valve 11. As the tank fills up and the float 25 rises with the rising water level therein, the arm 15 is proportionately elevated, until as normal water level is reached the arm 15 resumes the horizontal position shown in Figure 2, in which position the valve 11 is closed and further entry into the tank of water from the supply pipe 12 is cut off.

It will be observed from the foregoing that the component parts of the mechanism are simple in form and few in number, and consist only of the motion transmitting arm 15 for operating the inlet valve 11, the float equipped cylinder 17 for operating the arm 15, and the counter-weighted handle equipped rod 28 for depressing the float equipped cylinder 17 to produce discharge of the tank 5. It will also be observed that these parts are subjected to the minimum of stress and strain and that wear due to friction is practically eliminated, and that these parts can economically be constructed of materials which are not subject to deterioration.

What is claimed is:

1. A flush tank comprising a tank adapted to contain liquid to a predetermined normal level, a liquid discharge pipe rising through the tank bottom to a point above said normal liquid level, a closed top tubular cylinder freely telescoped upon said discharge pipe and having an internal diameter larger than the external diameter of said discharge pipe so as to define an annular passage therebetween, a float secured to said cylinder sufficiently buoyant to hold said cylinder in an elevated position on said discharge pipe and to have a substantial portion of the float exposed above said normal liquid level, a stud rising from the top of said cylinder, a liquid inlet valve on said tank, operating means connected between said inlet valve and said stud at a point below the upper end of said stud whereby said valve is closed whenever said cylinder is in the elevated position and open said valve whenever said cylinder is in a depressed position, and a horizontal axially rotatable rod journalled on the upper part of said tank including a handle for rotating said rod, said rod having a lateral arm overlying said stud, counterweight means on said rod normally positioning said rod with said lateral arm elevated out of contact with said stud, and a handle on said rod for rotating said rod in a direction to engage said lateral arm with the upper end of said stud and depress said cylinder and float and produce siphonic movement of said liquid through said annular passage between the discharge pipe and said closed top cylinder and downwardly through said discharge pipe.

2. A flush tank comprising a tank adapted to contain liquid to a predetermined normal level, a vertically disposed discharge pipe extending through the bottom of said tank and terminating at a point above said normal liquid level, a cylinder having one end open positioned in surrounding relation with respect to said discharge pipe and mounted on the latter for movement therealong into and out of an elevated position, float means carried by said cylinder for normally bringing the latter to said elevated position, a liquid inlet valve having one end in communication with said tank and having the other end adapted to be connected to a source of water under pressure, means operatively connecting said cylinder and said valve to thereby progressively increase the opening of said valve as said cylinder is moved out of said elevated position, hand actuable means positioned above said cylinder and rotatably supported in said tank for movement into engagement with said cylinder to effect the movement of the latter, and counterweight means on said hand actuable means for restoring the latter upon release to its position of movement wherein said cylinder is in its elevated position.

3. A flush tank comprising a tank adapted to contain liquid to a predetermined normal level, a vertically disposed discharge pipe extending through the bottom of said tank and terminating at a point above said normal liquid level, a cylinder having one end open positioned in surrounding relation with respect to said discharge pipe and mounted on the latter for movement therealong into and out of an elevated position, float means carried by said cylinder for normally bringing the latter to said elevated position, a liquid inlet valve having one end in communication with said tank and having the other end adapted to be connected to a source of water under pressure, means operatively connecting said cylinder and said valve to thereby progressively increase the opening of said valve after said cylinder is moved out of said elevated position, hand actuable means positioned above said cylinder and rotatably supported in said tank for movement into engagement with said cylinder to effect the movement of the latter, and counterweight means on said hand actuable means for restoring the latter upon release to its

position of movement wherein said cylinder is in its elevated position, said hand actuable means comprising a horizontally disposed rod positioned contiguous to the upper end of said tank and mounted thereon for rotary movement about a horizontal axis, and an arm disposed transversely of said rod and having one end secured thereto, the other end of said arm being formed with an enlarged head engageable with said cylinder to bridge the latter out of said elevated position in response to said rotary movement.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,077,329	Cabral	Nov. 4, 1913
1,224,845	Brigham et al.	May 1, 1917

FOREIGN PATENTS

Number	Country	Date
45,843	Netherlands	June 15, 1939
603,168	France	Jan. 7, 1926