

- [54] DUAL FLUSH TANK VALVE
 [75] Inventor: Ray A. Dunn, Jr., Fairfax, Va.
 [73] Assignees: Barney Elias; Robert H. Caldwell,
 both of Jacksonville, Ill.; Edward
 Elias, Springfield, Va.; part interest
 to each
 [22] Filed: Aug. 19, 1974
 [21] Appl. No.: 498,733

1,963,211	6/1934	Patterson	4/67 A
2,237,294	4/1941	Easley	4/37
2,505,091	4/1950	Brabis	4/37
2,731,647	1/1956	Groth et al.	4/67 A
3,795,016	3/1974	Eastman	4/67 A

Primary Examiner—Henry K. Artis
 Attorney, Agent, or Firm—Rummler & Snow

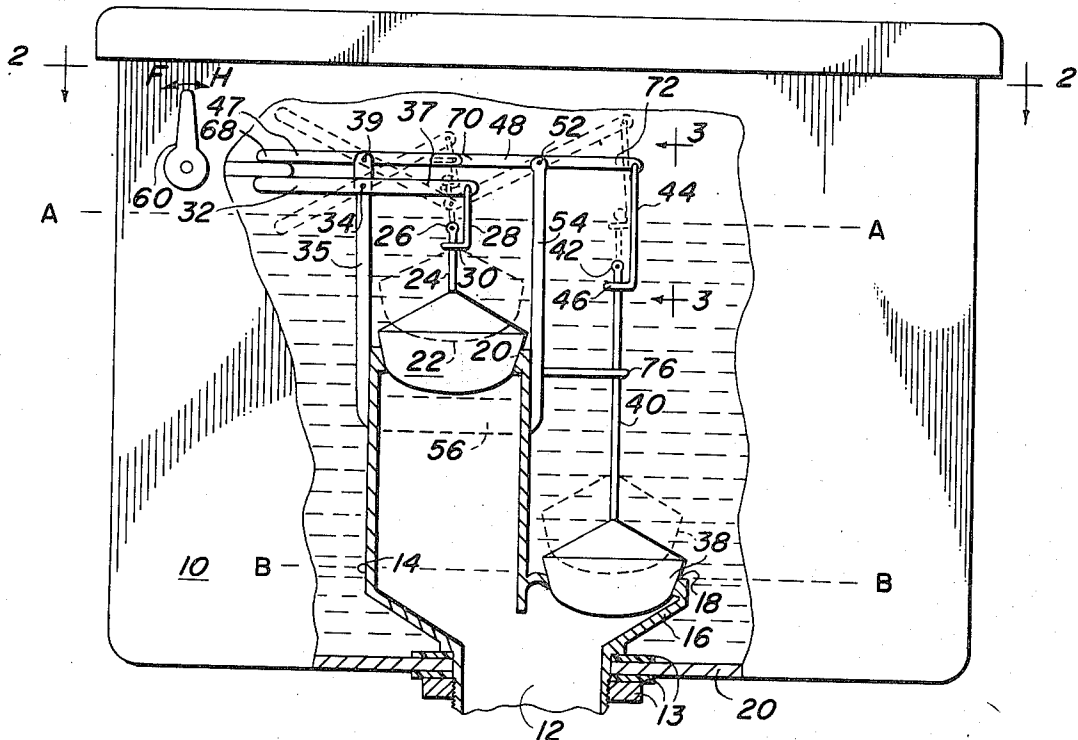
- [52] U.S. Cl. 4/67 A; 4/34
 [51] Int. Cl.².. A61B 19/00; E03D 1/34; E03D 5/02
 [58] Field of Search 4/67 R, 67 A, 249, 57 R,
 4/57 D, 34, 37

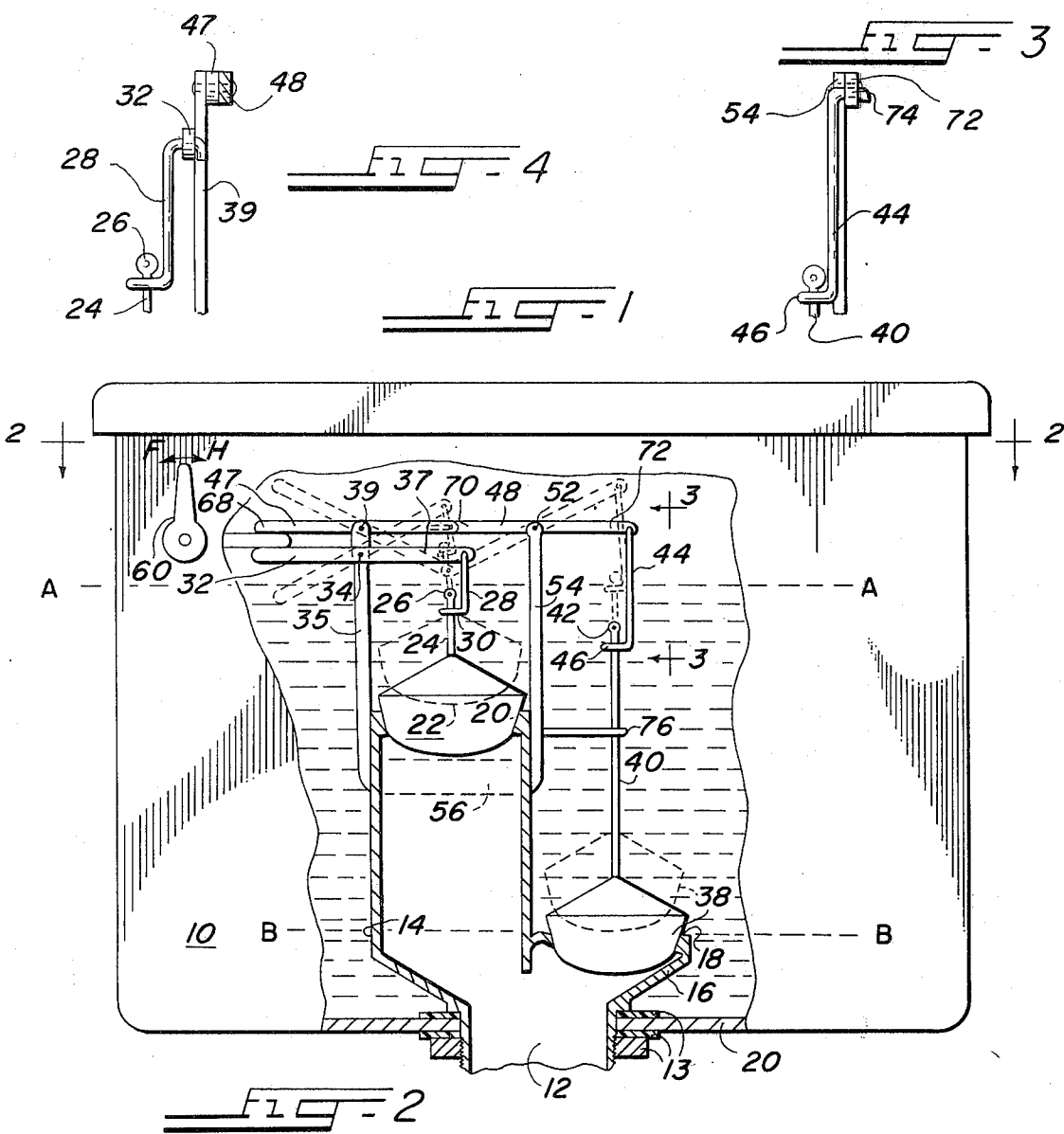
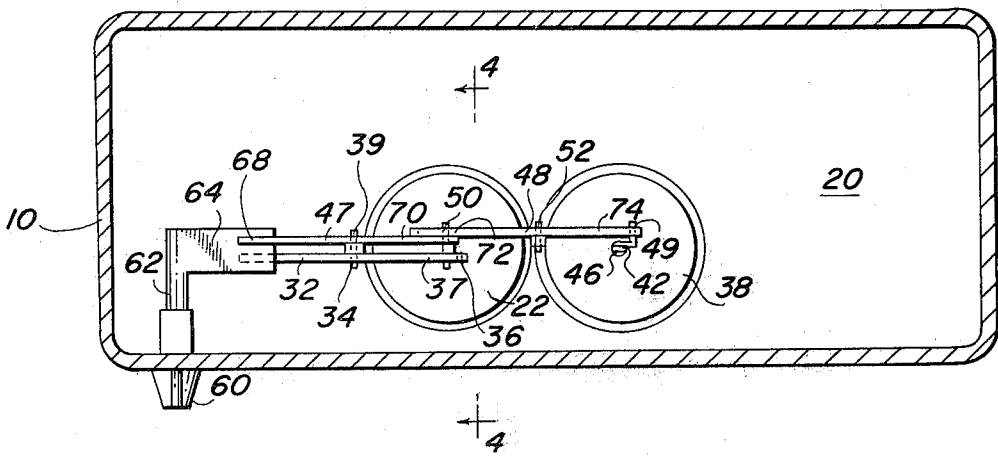
[57] ABSTRACT

A device for optionally selecting the amount of water to be flushed from a flush tank and to control the amount of water outflowing therefrom.

- [56] References Cited
 UNITED STATES PATENTS
 1,960,864 5/1934 Brown 4/37 X

2 Claims, 4 Drawing Figures





DUAL FLUSH TANK VALVE

BACKGROUND OF THE INVENTION

Flush tanks presently employed in conjunction with toilet bowls wastefully flush substantially the entire contents of the tank each time the toilet bowl is emptied. Attempts have been made to rectify this situation but such devices are clumsy and require special fittings and installations. It was to overcome these deficiencies that the present invention was conceived.

SUMMARY OF THE INVENTION

A multiple level valve assembly having two outlets situated at different discharge levels in a toilet flush tank reservoir, whereby the tank may optionally discharge either one-half or a substantially full tank of water. Both valve assemblies are operable with a single actuator for both valves which are actuatable by separate means to raise one or the other valve from their respective seats optionally.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of a toilet flush tank with parts broken away to disclose the present invention;

FIG. 2 is a cross-sectional view taken on the lines 2—2 of FIG. 1;

FIG. 3 is an end elevational view taken along the lines 3—3 of FIG. 1; and

FIG. 4 is a cross-sectional view taken along the lines 4—4 of FIG. 2.

DETAILED DESCRIPTION OF THE DRAWINGS

A toilet water reservoir 10 is provided with the usual supply line delivering water to the reservoir, the supply shutoff float valve for controlling the amount of ingress of water in the reservoir, the overflow pipe and the bowl refill tube, none of which parts are shown herein as they form no part of the present invention but are required for normal operation of the flush tank or reservoir.

The present invention relates to the valves, parts such as linkages, etc., and combined discharge pipes and tubes, with a novel control for actuating the valves.

The discharge pipe 12 has a pair of tubes—stand pipes or conduits 14—16 extending upwardly from discharge pipe or conduit 12 in the shape of a "Y" and communicating with said pipe 12. The tube 16 is relatively short and is provided with a seat 18, both of which are in close proximity to the bottom wall 20 of the reservoir 10. The discharge pipe 12 is provided with the usual gaskets and nuts 13 to support the same in the reservoir in leak-proof arrangement.

The tube 14 is longer and has its upper end positioned about one-third of the distance below the uppermost water line A in the reservoir 10.

The tube 14 is provided with a valve seat 20 to seat a valve or stopper ball 22. A stem 24 is connected at one end to the valve 22 in the customary manner and extends upwardly therefrom, terminating in a stop 26. The lift rod 28 is provided with a right angled, short section having an eye 30 therein loosely surrounding the upper end of the stem 24.

A horizontally extending arm 32 is pivotally secured medially of its ends by a pin 34 adjacent to the upper end of bracket arm 35. The right-hand end 37 as shown

in the drawings, is pivotally anchored to the upper end of the lift rod 28 at 36.

The valve or stopper ball 38 is provided with an elongated stem 40, one end of which is secured to the valve 38. The stem 40 is provided with a stop 42 at its upper free end. The lift rod 44 is provided with a right angled short portion having an eye 46 therein surrounding the upper end of lift rod 40.

A pair of horizontally disposed link arms 47—48 are pivotally secured together by a pivot pin 50. Medially between its ends, the link arm 48 is pivotally secured by a pin 52 to the upper end of bracket arm 54. The free end of the link arm 48 and the upper end of the lift rod 44 are also pivotally secured together by pin 49. Link arm 47 is pivotally secured to the upper end of bracket arm 35 by pin 39.

The bracket arms 35—54 are secured at their lower ends to tube 14. This can be accomplished in any suitable manner such as molding the parts, etc., but as here shown, the lower end of the brackets are secured together by a circular band 56 which is force fitted on the tube 14.

The reservoir 10 is provided with a rotatable flushing handle 60 pivotally secured to the front wall reservoir in the usual manner except that the handle member preferably lies in a vertical plane and preferably the free end extends upwardly.

A substantially flat plate 64 is connected to the shaft 62 of the handle member 60 and extends interiorly of the reservoir housing and extends inwardly at right angles to the axis of the shaft 62. The free ends of the lever arm 32 lie underneath the plate 64 while the free end of the link 47 lies above the plate 64 and each contacts the respective surfaces of the plate.

When the operating handle is manually rotatably shifted to the right (towards the letter H on the front wall of the reservoir housing), the plate 64 will move downwardly forcing the lever arm 32 downwardly about pivot pin 34 to move the end 37 of arm 32 upwardly and shift lift arm 28 and the stem 24 along with it causing the valve 22 to lift from its seat 20 to the position shown in the broken lines in FIG. 1 and allow the water in the reservoir above the open end of tube 14 to flow through the tube 14 to the toilet bowl (not shown). Since the valve 22 is buoyant, it will remain in the broken line position until about one-half of the water in the reservoir has been emptied through tube 14 and then it will drop down by gravity to its seat 20 again.

When the operating handle 60 is shifted to the left toward the letter F, the end 68 of link arm 47 will be shifted upwardly about pivot pin 39, causing the opposite end 70 of arm 47 to shift downwardly and carry the end 72 of link arm 48 to shift downwardly about pivot 52 to shift the end 74 upwardly to raise the lift arm 44 and the stem 40, whereby the valve 38 will shift upwardly from its seat 18 to allow all the water in the reservoir 10 above the waterline B to flow outwardly through tube 16 to the toilet bowl. The valve 38 being buoyant will remain in the position shown in broken line until all the water above the waterline B has been exhausted, when it will drop downwardly by gravity to its seat 16.

The stem 40 may be guided in its movement by guide 76.

It will thus be seen that this construction will save water as this structure provides the user as between a lesser volume flush or a full volume flush.

This invention may be installed in existing flush tanks as should be obvious or may be installed as original equipment.

Although but one specific embodiment of this invention is herein shown and described, it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. A toilet flush tank valve assembly wherein a selective volume of water may be flushed into a toilet bowl comprising a flush tank, a discharge pipe having communication with a toilet bowl, a first conduit extending vertically upwardly from said discharge pipe into the interior of the flush tank and being offset therefrom and communicating therewith, a second conduit extending vertically upwardly from said pipe, offset from said first conduit and said pipe and communicating with said pipe, said second conduit terminating closely adjacent the bottom of said tank, valve means seated on the open ends of said conduits, a series of pivoted link arms for optionally opening one or the other of said valves, said link arms positioned in horizontal

planes, one below the other and each link arm having a free end, a shaft extending interiorly into said tank and connected at one end to a handle positioned exteriorly of said tank, a flat plate secured to said shaft and extending at right angles thereto, whereby the free ends of said links lie against the upper and lower faces of said plate respectively whereby upon movement of said plate in an upward direction, the upper link arms will actuate the valve on said second conduit to flush a full tank of water and when the plate is shifted downwardly, it will actuate the valve on said first conduit to flush a half tank of water, and handle means to operate said plate.

2. The device according to claim 1 wherein the series of linkages comprises a first linkage having a pair of link arms pivotally secured together and lying in a horizontal plane with one free end abutting the upper surface face of the plate and the other free end pivotally secured to the lift arm of the valve that discharges a full tank of water, each of said link arms pivoted medially of its ends, and a second link arm pivoted medially its ends, one free end of said link arm abutting the lower face of said plate and the other free end pivotally secured to the lift arm of the valve for discharging substantially one half a tank of water.

* * * * *

30

35

40

45

50

55

60

65