

Dec. 16, 1958

J. MARTINO

2,864,095

WATER FLUSH TOILETS AND BALL DUMP VALVE ASSEMBLY

Filed April 12, 1957

2 Sheets-Sheet 1

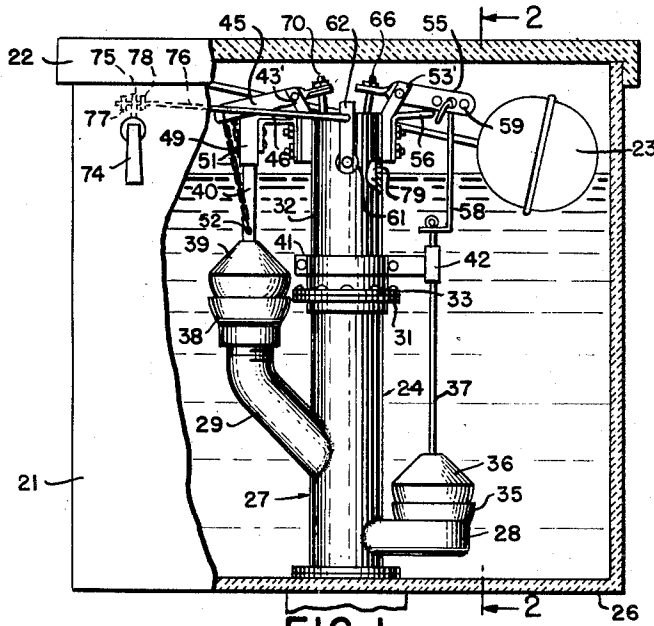


FIG. 1.

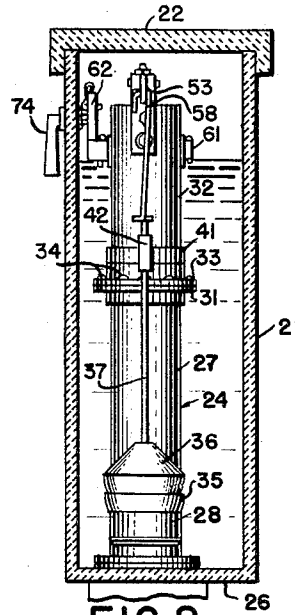


FIG. 2.

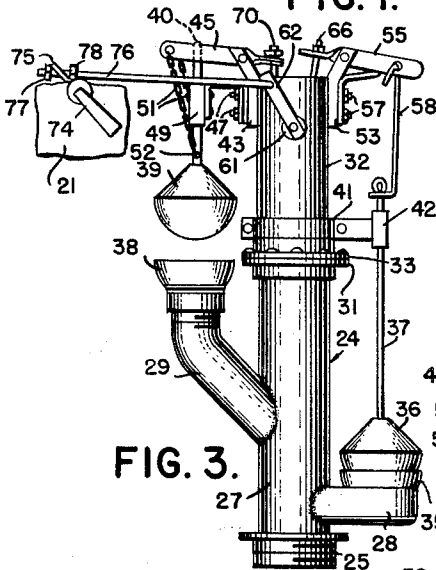


FIG. 3.

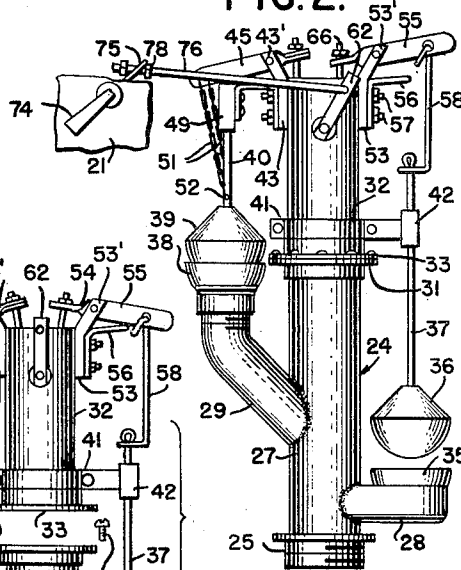


FIG. 4.

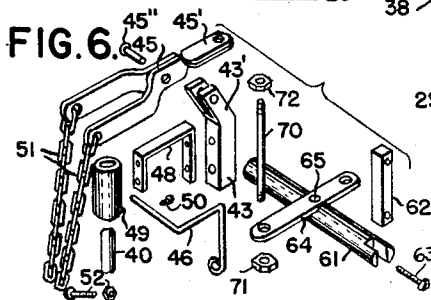


FIG. 6.

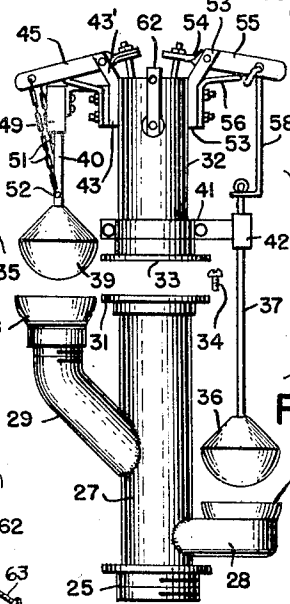


FIG. 5.

INVENTOR.
James Martino

L. S. Saulsbury
ATTORNEY

Dec. 16, 1958

J. MARTINO

2,864,095

WATER FLUSH TOILETS AND BALL DUMP VALVE ASSEMBLY

Filed April 12, 1957

2 Sheets-Sheet 2

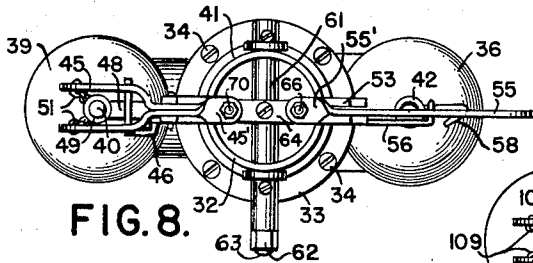


FIG. 8.

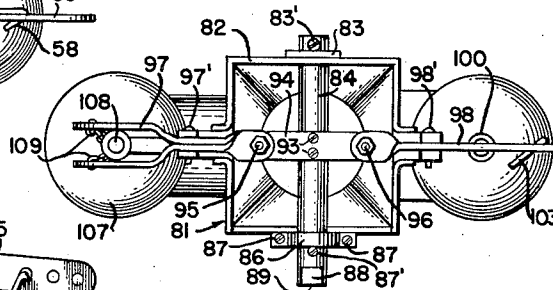


FIG. 10.

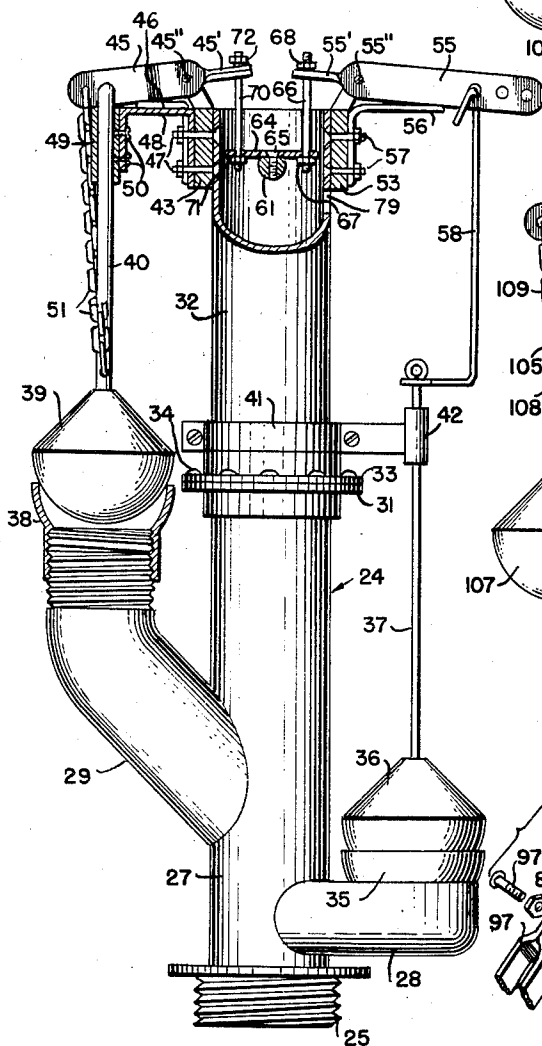


FIG. 7.

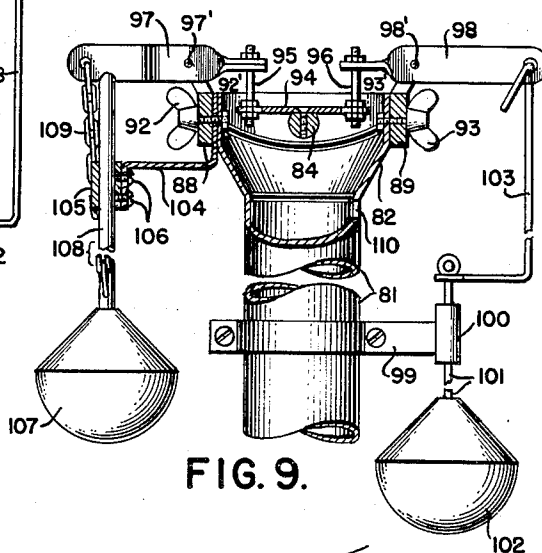


FIG. 9.

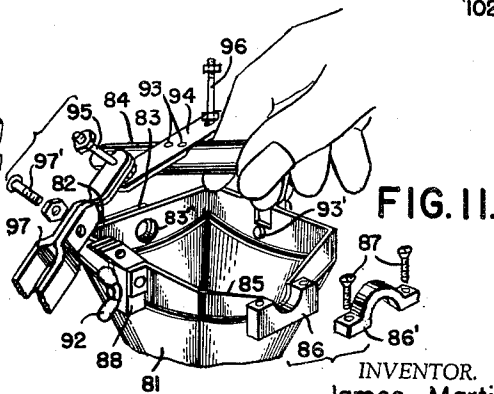


FIG. 11.

INVENTOR.
James Martino

BY

L. S. Saulsbury

ATTORNEY

2,864,095

WATER FLUSH TOILETS AND BALL DUMP VALVE ASSEMBLY

James Martino, White Plains, N. Y.

Application April 12, 1957, Serial No. 652,564

4 Claims. (Cl. 4—37)

This invention relates to water flush toilets and more particularly to the ball dump valves therefor.

It is the principal object of the present invention to provide a dump valve arrangement for water toilets in which the user of the toilet can select between a large dumping of water or a less dumping of water depending upon the amount of water to be flushed away and thereby to effect a great saving in the amount of water used with water closets.

It is another object of the invention to provide a simple apparatus for carrying out the above objects which can be incorporated in or upon the overflow drain pipe and in which the moving parts can be easily and readily detached from for replacement and wherein the arrangement is such upon the stand pipe that in the removal of the movable or mounted parts there is little chance for such parts to drop into the drain pipe.

It is still another object of the invention to provide a flush ball valve assembly for water closets in which a selection can be made of the amount of water to be used for any given flushing in which two of the ball valve seats are arranged upon the drain pipe and wherein the water amount for the minimum flushing can be easily adjustable by simply turning the valve seat of the upper valve upon the stand pipe branch outlet to elevate or lower it and to decrease or increase the minimum flow amount of water.

It is a further object of the invention to provide in a double flush valve arrangement for water closets a valve lever arrangement in which the lever within the upper end of the drain pipe is adequately formed to give the necessary leverage for operating the valves easily, the upper end of the drain pipe being flared to accommodate a long lever and wherein the pivot support for the lever is readily detachable from the flared upper end of the stand pipe by simply removing a bearing half and withdrawing the pivot support from the opposite side of the flared end, disconnecting the lever supporting brackets and lowermost valve from its outer lever and thereafter lifting the entire assemblage from the flared upper end of the drain pipe.

Other objects of the invention are to provide a double ball valve assemblage having the above objects in mind which is of simple construction, has a minimum number of parts, inexpensive to manufacture, easy to assemble, compact, consumes little space, easy to maintain and repair, efficient and effective in use.

For a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which—

Figure 1 is an elevational view of a water supply tank with a portion broken away to show the double valve stand pipe arrangement therein embodying the features of the present invention,

Fig. 2 is a vertical sectional view of the water supply tank taken on line 2—2 of Fig. 1 and looking upon the side of the drain pipe,

Fig. 3 is an elevational view of the overflow drain

pipe with the double ball arrangement thereon and with the uppermost ball elevated to allow the minimum supply of water to flush the toilet bowl,

Fig. 4 is an elevational view of the overflow drain pipe with the lowermost ball valve elevated to flush the toilet bowl with the maximum supply of water,

Fig. 5 is an elevational and collective view illustrating the manner in which the double valve assemblage is detached as a unit by separating the upper half of the pipe with ball valves from the lower half that has the valve seats,

Fig. 6 is a collective and perspective view of certain of the lever and bracket parts,

Fig. 7 is an enlarged elevational view of the drain pipe with the ball valve assemblage thereon and portions of pipe and assemblage broken away to show the interior construction thereof,

Fig. 8 is a top plan view of the pipe and of the ball valve assemblage,

Fig. 9 is a fragmentary elevational view of a modified form of the invention in which the lever and bracket parts are mounted upon a flared upper end of the stand pipe and detachable directly therefrom.

Fig. 10 is a top plan view of the modified form of the invention shown in Fig. 8, and

Fig. 11 is a fragmentary perspective and collective view of the drain pipe having the flared end with an illustration being shown as to the manner in which the assemblage is detached from the upper end of the drain pipe.

Referring now particularly to Figs. 1 to 8, 21 represents a closet water supply tank having a cover 22 thereon. Within the tank is the usual ball float 23 adapted to shut off the water supply to the tank when the water therein has been elevated to sufficiently fill the tank up to the overflow level. According to the present invention, there has been provided an overflow drain pipe 24 having a threaded lower end 25 adapted for the connection of the pipe to bottom 26 of the water tank. This pipe 24 is formed of a lower part 27 that has a lower laterally-extending valve seat branch 28 and an upper valve seat branch 29 extending laterally from the opposite side thereof. Upon the upper end of this part 27 is a flange 31 on which may be rested an upper part 32 having a mating flange 33 and fastening screws 34 adapted to detachably secure the parts 27 and 32 together. The lower valve seat branch 28 has a valve seat 35 thereon with which a rubber dump ball valve 36 may rest to normally prevent the flow of water in the tank through the drain pipe 27. This ball valve 36 has an upwardly-extending stem 37. The branch 29 is elevated upon the stand pipe part 27 above the branch 28 and has an adjustable valve seat 38 thereon with which a rubber ball valve 39 engages. This ball valve has an upwardly-extending stem 40. When only a minimum amount of water is to pass downwardly through the drain pipe 24 and into the closet bowl the ball 39 will be elevated from its seat 38 and when the ball 39 is lifted the level of the water in the tank will be lowered to the level of the seat 38. If a greater amount of water is needed for the minimum flushing of the bowl, the valve seat 38 may be lowered by turning the same down upon the branch pipe 29. Surrounding the lower end of the upper part 32 of the pipe 24 is a clamp assembly 41 that supports a vertically-extending guide sleeve 42 for the valve stem 37 of the valve 36. On the upper end of the part 32 is a bracket 43 that has an upwardly and outwardly inclined bifurcated end 43' in which a valve operating lever 45 is pivoted on a pivot screw 45', Fig. 6. A wire stop 46 is mounted with the bracket 43 upon the upper end of the pipe part 32 and is secured thereto by fastening screws 47. Also

secured with the bracket and wire stop 46 is a sleeve support bracket 48 to which is secured a sleeve guide 49 by screws 50 and through which the upper end of the stem 40 of ball valve 39 may slide.

The lever 45 has a bifurcated outer end to the opposite sides of which are respectively connected chains 51 that are attached by fastening screws 52 to the stem 40 adjacent to the valve ball 39.

Connected to the opposite side of the upper end of the pipe part 32 is a bracket 53 having an upwardly and outwardly inclined bifurcated upper end 53' in which the lever 55 is pivoted on a pivot screw 55". This lever 55 is normally supported upon the wire 56 and with the bracket 53 is secured by fastening screws 57 to the upper end of the pipe part 32. A loose pull wire 58 may be secured in any one of holes 59 in the lever 55 and its lower end is loosely connected to the upper end of the stem 37 of the ball valve 36.

Journalled in the upper end of the pipe part 32 is a horizontally-extending shaft 61 to which a lever arm 62 is fixed by a fastening screw 63, Fig. 6. Within the pipe part 32 a transverse lever 64 is fastened to the top of the shaft by a fastening screw 65. A threaded rod 66 is loosely secured between one end of the lever 64 and the inner end 55' of lever 55. This rod has fastening nuts 67 and 68 thereon. As the lever 64 is tilted in a clockwise direction the outer end of lever 55 is lifted and through the link 58 and stem 37 and the lower ball valve 36 is raised from its seat 35 to allow the maximum discharge of the water from the tank 21 through the drain pipe 24.

To the other end of the lever 64, there is connected a rod 70 that extends upwardly to the inner end 45' of lever 45. The connection is made with the rod by adjustable nuts 71 and 72. When the lever 64 is tilted in a counter-clockwise direction, the outer end of the lever 45 is elevated and the chains 51 lift the ball valve 39 from its adjustable seat 38. The stem 40 extends upwardly through and between the furcations of the outer end of the lever 45. The minimum flow of flushing water is at this time discharged to the toilet bowl.

The usual toilet turn handle 74 has an arm 75 which is pivotally connected by a rod 76 to the upper end of arm 62 of the shaft 63. Adjusting nuts 77 and 78 are provided upon the rod 76 and are sufficiently loose to permit a loose connection therewith and to allow sufficient play for the rod to be angled as the turn handle 74 is operated. Turning the handle 74 in the usual clockwise direction will lift the ball 36 and will give the maximum flushing water to the toilet bowl. Turning the handle 74 in a counter clockwise direction, ball valve 39 is lifted to permit a minimum flushing of water to the flush bowl. It should thus be apparent that there has been provided a ball valve assemblage upon the drain pipe by which the user of the toilet can select either minimum or maximum flushing water thereby in cases where the maximum water is not needed. The minimum water supply is made possible and water is thereby conserved. The water will then be delivered to the tank in the usual manner and the float 23 adjusted to shut off the water when it nears the level of overflow opening 79 in the pipe 32. If for any reason the parts of the assembly have to be repaired, replaced or adjusted the fastening screws 34 of the upper pipe part 32 can be released from the flange 31. The entire assembly mounted upon the pipe 32 can be lifted off the pipe 27 as a unit, taking with it the various lever parts and the two ball valves 36 and 39 as illustrated in Fig. 4. By removing the entire assembly in this manner, access can be had to the various parts and any possibility of parts being dropped into the pipe and flush bowl will be eliminated.

Referring now particularly to Figs. 9, 10 and 11, there is shown a modified form of construction in which more leverage is provided in a flared upper part of the drain pipe and wherein the assemblage is removed from

the upper end of the drain pipe without separating parts of the pipe.

A solid drain pipe 81 is provided with a squared and flared upper end 82. On one side of the flared end is a bearing plate 83 and through an opening in the flared upper end of this bearing plate, there extends a shaft 84. The shaft 84 is normally held against inward displacement by elevating a retaining screw 83' from the end of the shaft. The opposite side of the flared upper end 82 of the drain pipe 81 is cut away at 85 and carries a lower bearing block 86 in which the opposite end of the shaft 84 is supported. A detachable upper bearing block 86' is secured over the shaft 84 to the bearing block 86 by the screws 87. A screw 87' may be elevated to hold the shaft against inward axial displacement from the bearing blocks 86 and 86'. On the outer end of this shaft is an operating arm 88 secured thereto by a screw 89 and to which the link 76 would be connected. On the respective opposite sides of the flared upper end 82 of the drain pipe 81 are opposing lever supporting brackets 88' and 89' respectively bifurcated on their upper ends to respectively pivotally receive operating levers 97 and 98. Thumb screws 92 and 93 are used to detachably secure the brackets 88 and 89 to nuts 92' and 93' respectively welded to the opposite sides of the flared upper end 82 of the pipe 81.

Fixed to the top of the shaft 84 by screws 93 is a lever 94. Respectively connected to the inner ends of these levers are threaded rods 95 and 96 which are respectively adjustably connected to the inner ends of the respective valve levers 97 and 98. These levers are respectively pivoted in the upper end of the bracket members 88 and 89 on respective pins 97' and 98'.

On the pipe 81 is a clamp bracket 99 that has a vertically-extending guide sleeve 100 through which slides a stem 101 of a lower ball valve 102. The stem 101 is loosely connected by a wire 103 to the outer end of the lever arm 98. When the internal lever 94 is tilted in a clockwise direction the outer end of the lever 98 is raised and the ball valve 102 is lifted from its seat to effect a full flush of the toilet bowl.

The thumb screw 92 which secures the bracket 88 to the flared upper end 82 of the drain pipe also secures a guide sleeve supporting bracket 104 having a guide sleeve 105 secured to its outer end by fastening screws 106. An upper ball valve 107 has a stem 108 slidable in the guide sleeve 105. The lower end of this stem is connected by chains 109 to the outer end of the lever 97. When the inner lever 94 is tilted in a counterclockwise direction the outer end of the lever 97 is elevated to lift through the chains 109 the ball valve 107 so that there is only minimum flow of the water from the flush tank. There is sufficient loss motion through the chains 109 and the link 103 to permit the lifting of one valve independently of the other.

When it is desired to remove the various parts of the lever assembly from the flared upper end 82 of the pipe 81, the screw 83' of the shaft 84 is screwed down to permit its removal from the bearing 83 and hole 83' in the flared upper end of the pipe. The screws 87 are loosened and the top bearing block 86' is removed from the lower bearing block 86 so that the forward end of the shaft 84 is made free. The clamp screws 92 and 93 are released from their respective thread nuts 92' and 93' and the rod 103 from the lever 98 and by lifting upon the free end of the shaft as illustrated in Fig. 11 the entire assemblage except for the ball valve 102 can be removed from the flared end of the pipe. If it is desired to disconnect the levers 97 and 98 from the respective brackets 88 and 89 the respective screws 97' and 98' may be removed thereby leaving the brackets 88 and 89 in place upon the flared upper ends. By flaring the upper end of the drain pipe, a lever arm 94 of adequate length can be used to give the desired leverage without increasing the diameter of the pipe 81. A drain hole

5

110 is provided in the pipe 81 so that the level of the water in the tank will be kept at this elevation and the lever assembly at the top of the pipe left open in the air space at the top of the tank above the water.

It will thus be apparent that there has now been provided a water dump valve assembly in which the amount of water to be used for the flushing operation can be selected by the user of the toilet for either maximum or minimum flow. It should also be apparent that easy access can be had to the various operating parts of the lever assembly and without any chance of these parts being dropped into the drain pipe and lost. The assembly in both instances is removable from the drain pipe for the purpose of being repaired or is reinstalled upon the drain pipe as a unitary structure.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A selective water dump valve assembly for water flush tanks comprising an upright drain pipe having an upper end and laterally extending branch pipes located at different elevations thereupon, said branch pipes having valve seats thereon, ball valves overlying said seats and respectively having valve stems, and a selective lever arrangement mounted on the upper end of the drain pipe, said lever arrangement having two ball valve lift levers respectively loosely connected to the stems of the respective ball valves and respectively pivotally mounted on the drain pipe at the respective opposite sides thereof, a common operating shaft journaled in the drain pipe and having lever arms extending from the opposite sides of the shaft and within the drain pipe and selectively actionable upon said ball valve lift levers to lift said valves, and linkage means for connecting the common operating member with a turn handle of a flush tank.

2. A selective water dump valve assembly for water flush tanks as defined in claim 1, and stem guide sleeves mounted on the drain pipe and overlying the valve seats, and said valve stems slidable through the guide sleeves to be guided thereby and having enlarged ends to limit the downward movement therethrough, said upright drain

6

pipe having separable upper and lower parts, said guide sleeves being mounted upon the upper part, means for releasably securing the upper part of the drain pipe to the lower part thereof, said lever arrangement, guide sleeves and ball valves thereby being wholly connected to the upper part and removable from the lower part of the drain pipe as a unit.

3. A selective water dump valve assembly for water flush tanks as defined in claim 1, and the upper end of said drain pipe being outwardly flared, journal bearings disposed at the opposite sides of the flared upper end, said operating shaft being journaled in said bearings, said lift levers being releasably pivotally connected to the upper end of the drain pipe, one of said bearings being split to provide a removable bearing member to release one end of the shaft, said shaft being vertically and axially removable upon the bearing member being removed and upon the lifting levers being released to lift the lever arrangement from the drain pipe.

4. A selective water dump valve assembly for water flush tanks comprising an upright drain pipe with at least two laterally extending branch pipes located at different elevations thereon, said branch pipes having seats thereon, ball valves overlying each of said seats and having valve stems, and a selective lever arrangement mounted upon the drain pipe, said lever arrangement having valve lift arms respectively loosely connected to the ball valve stems and common operating means connected to the lift arms and movable in one direction so as to lift one ball valve and in another direction to lift another of said ball valves from said seats and linkage means for connecting the common operating means to an operating member on the flush tank.

References Cited in the file of this patent

UNITED STATES PATENTS

1,563,729	Dominquez	Dec. 1, 1925
1,623,109	Hass	Apr. 5, 1927
1,960,864	Brown	May 29, 1934
2,237,294	Easley	Apr. 8, 1941

FOREIGN PATENTS

843,802	France	Apr. 3, 1939
---------	--------	--------------