

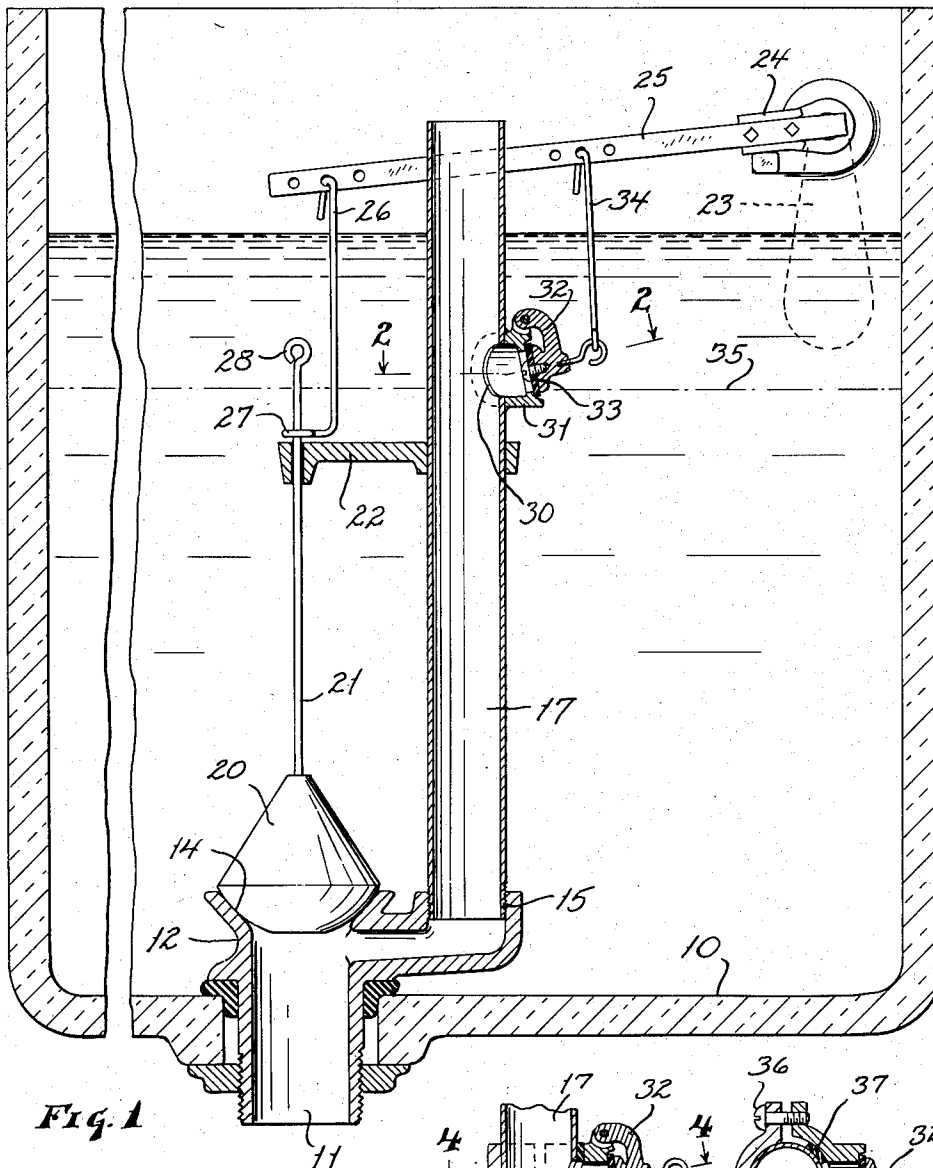
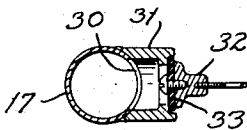
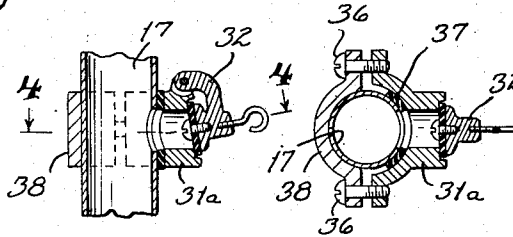
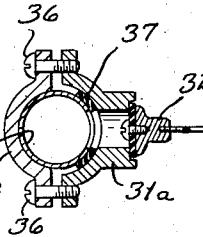
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VALVE MECHANISM

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VALVE MECHANISM

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3 Claims. (Cl. 4—34)

This invention relates to flush tank valve mechanisms, and particularly to a flush tank valve mechanism which will permit the draining either of the entire contents of the tank or a part thereof as desired. This, therefore, is the general object of the present invention.

A more specific object of this invention is the provision of a flush tank valve mechanism operable by a single control to empty either the entire contents of a flush tank or a portion thereof as desired.

At the present time flush tanks used in connection with toilet bowls are generally arranged so that the operation of a valve lever causes the entire contents of the tank to be emptied. At times, however, it is desirable to use only a part of the water in the tank for flushing purposes. It is an object of this invention to provide a supplemental valve mechanism which may be attached to existing valve structures to enable a partial discharge of the contents of the tank without affecting the normal flush operation of the existing structure.

Other objects and advantages of this invention will become more apparent from the following description, reference being had to the accompanying drawing in which preferred embodiments of the invention are illustrated. The essential and novel characteristics of the invention will be summarized in the claims.

In the drawing, Fig. 1 is a vertical section through a flush tank and the valve mechanism thereof, illustrating one form of my invention; Fig. 2 is a transverse section as indicated by the lines 2—2 on Fig. 1; Fig. 3 is a fragmentary view of a modified form of supplemental valve mechanism, the plane of the section being substantially the same as that of Fig. 1; and Fig. 4 is a transverse section through the modified structure as indicated by the line 4—4 of Fig. 3.

Referring now to the drawing in detail, it will be seen that I have illustrated a flush tank 10 having an outlet 11 in its lower wall for the reception of an outlet fitting 12 which may be connected to the toilet bowl in the usual manner. The fitting 12 is provided with an upwardly facing valve port 14, and an upwardly facing threaded opening 15 to which is secured an overflow tube 17 which rises upwardly from the fitting so that its open end is above the normal water level of the tank. The valve port 14 is selectively closed, in the usual manner, by a rubber ball or float valve 20 carried by a stem 21 slidably in a guideway formed in an arm 22 supported by the overflow tube 17. Flushing of the

5 tank is accomplished by turning a handle 23, indicated by dotted lines in the upper portion of the tank. This handle is journaled in the tank wall and on its inner end carries a crank arm 24 to which is secured a substantially horizontally extending lever 25. A link 26 depends from the outer end of the lever 25 and is provided with an eye 27 through which the valve stem 21 extends. Thus when the handle lever 23 is swung to rock the lever 25 in a clockwise direction, the eye 27 of the link 26 coacts with an enlargement 28 of the valve stem 21, raising the valve from its seat. The valve 20 being of the usual type of float valve remains open until the water in the tank drops to the level of the valve port 14, whereupon the valve rests on the fitting 12 closing the port 14, and thereafter is held in place by the pressure of the water in the tank until the operating handle 23 is again actuated.

20 The valve mechanism above described is of the type generally used in flush tanks.

The arrangement is such that consequent upon the operation of the handle 23, substantially the entire contents of the tank flows is discharged. Immediate release of the operating handle does not affect this discharge because the buoyancy of the valve member 20 retains it in an uppermost position until the water in the tank lowers to a level beneath the top of the valve port. Flush tanks of the type described are ordinarily equipped with a float controlled intake valve (not shown) that serves to automatically refill the tank to the level indicated in the drawing.

35 The present invention is particularly concerned with a valve structure which will permit a portion only of the contents of the tank to be emptied without affecting normal function of the valve mechanism heretofore described. To accomplish this, I provide the overflow tube 17, intermediate its ends, with an opening 30. I also provide a valve mechanism to normally close this opening, and which is operable by the crank 23 to permit the draining of the contents of the tank above the opening through the overflow tube without affecting the port closing valve 20.

45 As shown in Fig. 1, I secure to the overflow tube 17 adjacent the opening 30, a valve seat member 31. Pivotaly secured to the upper end of this member is an arm 32 carrying a valve closing disc 33. The valve seat as shown in Fig. 1 is preferably angularly disposed relative to the vertical axis of the tube, that the weight of the arm 32 will retain the valve disc 33 in a closed position. Interconnected between the arm 32 and the operating arm 25, heretofore described,

is a link 34. The arrangement of this link is such that the valve disc 33 is rocked away from its seat on the initial movement of the operating handle 23, thus permitting that portion of the contents of the tank above the dotted line 35 to flow from the tank through the overflow tube. Due to lost motion between the link 26 and the valve stem 21 of the main valve 20, the latter will not be removed from its seat during the partial rotation of the handle required to open the valve disc 33. However, if the operating handle 23 is rocked through its complete swing, the main valve 20 will be opened in the usual manner.

In Figs. 3 and 4, I illustrate a modified form of supplemental valve member. This form is particularly well adapted for use with existing flush tank structures. In this form the valve seat member 21a is arranged to be clamped in position on the overflow tube 17 by a clamp 32. The clamp 32 and the seat member 31a form in effect a split ring which is secured together and clamped about the tube 17 by screws 36. A washer, such as for instance that shown at 37, may be interposed between the seat member 31a and the overflow tube 17 to maintain a tight joint therebetween. Thus it will be seen that this form is well adapted for use in connection with existing structures as it requires only the cutting of the opening 30 in the overflow tube 17.

I claim:

1. In a flush tank having an outlet fitting in its lower wall, said fitting being provided with a valve port, a valve member to close said port, a vertically extending overflow tube in said tank and connected at its lower end with said fitting, said tube having an opening in its vertical side wall, a valve seat member on said tube having a valve port in communication with the opening and spaced vertically from the main valve port, a supplemental valve member carried by said member and adapted and arranged to close said second named valve port, an operating arm, a connection between said operating arm and said

supplemental valve seat, and a second connection including a lost motion device disposed between said operating arm and the main valve, whereby the initial movement of the operating member will open the supplemental valve without disturbing the main valve and whereby a complete movement of said operating member also will open the main valve.

2. In a flush tank having an outlet therefrom, a float valve to control the flow of fluid from the tank through the outlet, an overflow tube mounted vertically in the tank and having its lower end in communication with the outlet, a valve port in the vertical wall of said tube spaced above the main valve port, a valve seat member removably secured to said tube adjacent said port and having a valve seat disposed at an acute angle relative to the axis of said tube, an arm pivotally connected to said member, a seat engaging washer carrier by said arm, a rotatable operating lever carried by the tank, an arm carried by said lever, connections between the arm and said float valve and valve member, and wherein said connections are arranged to permit sequential operation of said valve and valve member.

3. A supplemental valve mechanism for the outlet of a flush tank having a main valve, a main valve operating member and an overflow tube, said supplemental valve comprising a bracket adapted and arranged to be removably secured to the overflow tube intermediate its ends, means to clamp said member in position on said tube, a valve member carried by said bracket to close an opening to be formed in the vertical wall of said tube, said member being arranged and adapted to move to a closing position under the influence of gravity, and a link connected to said member and connectable to the main valve operating member of the tank, and wherein said bracket and valve member are applicable as a unit to said tube.

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