Nov. 4, 1930. C. W. BROWN 1,780,810

CLOSET FLUSHING DEVICE

Filed Jan. 21, 1930

Fig. 1.

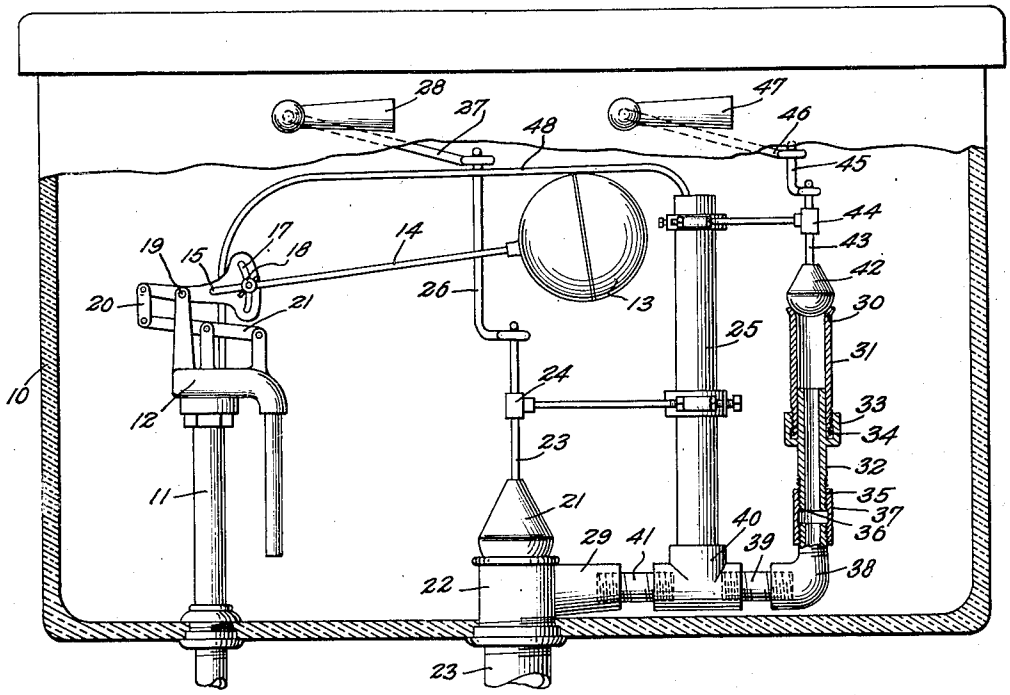
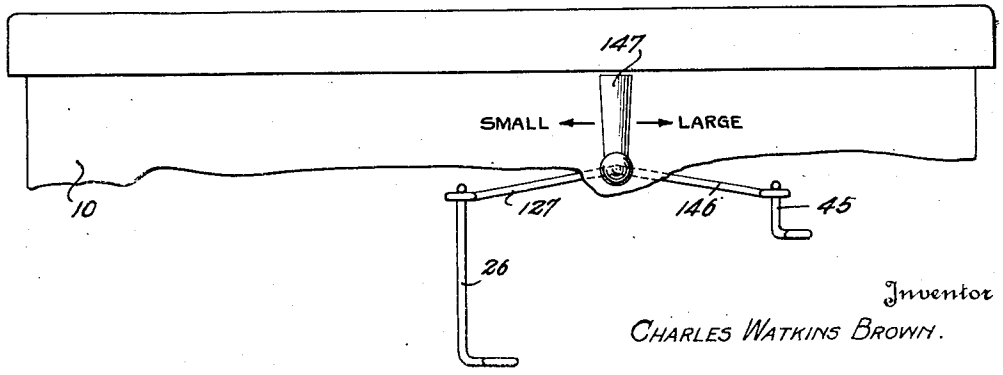


Fig. 2.



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UNITED STATES PATENT OFFICE

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CLOSET-FLUSHING DEVICE

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This invention relates to flush tanks for toilets and has particular relation to those flushing devices where a plurality of flushing means are provided to provide a variable amount of water supply for the flush.

With the increase in the adoption of devices requiring water for their operation and due partly to the increase in population, there is arising, in some cities, a water shortage which is causing the city engineers a great deal of concern. It has been determined that one cause for the large wastage of water is in the flushing of closets with a larger amount of water than would be necessary. In the use of flush tanks for closet flushing, it has been found that for some purposes, less than the full amount is sufficient, but that with the usual constructions of flush control devices, the ball valve once having been lifted, it remains off of its seat until the tank is empty. If the floating valve is replaced by a valve which has to be held up, then careless persons will not take the trouble to see that a proper flushing takes place.

The primary object of this invention is the provision of an improved closet flushing device having a differential control for the flushing water.

Another object of the invention is the provision of such a differential flushing device having a provision for releasing variable amounts of water and having a means for adjusting the amount of water to be used in the full flushing and also means for adjusting the amount of water to be released for a lesser flushing.

A further object of the invention is the provision of a plurality of delivery pipes having valves at their tops for providing variable amounts of water for flushing and a means for adjusting the relative height of the valves, one to the other.

Another and still further object of the invention is the provision of such a flushing device having extensible fittings to provide for adjustments as to distance between the valves to take care of different types of tanks and as to height of valves to adjust for a minimum amount of water for the particular bowl with which it is to be used.

Other and further objects of the invention will be apparent to those skilled in the art from a reading of the complete specifications and claims.

Referring to the drawing wherein I have illustrated an embodiment of my invention,

Figure 1 is a front cross section of my invention.

Figure 2 shows a modified operating mechanism for my invention.

Throughout the specification and drawings the same reference characters will be used to describe and designate the same or similar parts.

The numeral 10 designates the tank which is of the usual construction. An inlet supply pipe 11 furnishes a water supply to fill the tank space to the predetermined level. A valve mechanism 12 of the usual construction controls the water entering through the pipe 11. A ball 13 is mounted on a rod 14 which is pivoted at 15 on a lever 16 which has a segmental slot 17. A wing nut and bolt 18 secures the rod 14 to the segmental slot 17 to hold the ball in any one of many adjusted positions. The lever 16 is fulcrumed at 19 and is connected by a link 20 to the valve lever 21 which controls the operation of the inlet valve mechanism in a well known manner.

To control a full flushing, I provide the bulb valve 21 which rests on a valve seat 22 above the outlet 23 to the closet bowl. The bulb valve 21 is held in proper position by a rod 23 which moves in an axial direction in the guide 24.

The guide 24 is supported from the overflow pipe 25. A releasing rod 26 operates the rod 23 to lift the valve 21 and is itself operated by the lever arm 27 connected to the handle 28.

Adjacent and below the valve seat 22 is a branch fitting 29 to receive the water coming from the second valve, about to be described.

In order to vary the amount of a partial flushing for the closet bowl, the second valve seat designated 30, is located at one side of the valve seat 22 and in a position which may be varied, at will, as to height. This adjustable feature is important as it enables the user, by experiment, to determine the exact

amount of water necessary for the desired results and to leave the parts set so that subsequent flushings will be of the same quantity of water.

The valve 30 is at the top of an adjustable fitting 31 which in the embodiment shown has a sliding fit with a short length of adjustable pipe section 32. In order to hold the fitting 31 in adjusted relation to the section 32, I have provided a water tight securing joint.

A packing nut 33 is of a shape to fit closely around the pipe section 32 and is screw threaded to the fitting 31. A packing 34 is held between the packing nut 33 and the end of the fitting 31 and makes a water tight connection between the two. In addition, this packing holds the parts 31 and 32 in relative position. From the description of these parts it is clear that by pressing down or raising up, the height of the valve seat 30 may be regulated. On the bottom of the section 32 are preferably long screw threads 35 which coact with screw threaded surface 36 of a coupling 37. The opposite end of the screw threaded surface 36 receives the screw threads of an elbow 38. The elbow 38 receives one end of a threaded nipple 39, the other end of which is threaded in a T-fitting 40. The opposite end of the T-fitting is connected by a nipple 41 which is threaded in the fitting 29.

By adjustment of the nipples 39 and 41 within their threaded connections, the device as a whole may be adapted for different sizes and types of tanks having the flushing handle means in various places.

By adjusting the part 32 relative to the part 37 and the latter with relation to the elbow 38, various heights may be obtained. If necessary, different lengths of pipe 32 or couplings 37 may be used.

The variations of the adjustments of the pipes and fittings 31, 32, 37 and 38 and the substitution of various lengths of the parts is for the purpose of obtaining different heights for the valve seat 30.

A valve 42 carries a rod 43 which is guided in the guide 44 supported from the overflow pipe 25. A lifting rod 45 is lifted by the lever arm 46 which is operated by the handle 47 in a well-known manner.

The bulb valve 42 rests on the valve seat 30. When the valve seat is adjusted, the guide 44 is correspondingly adjusted along the overflow pipe 25 which is supported in the T-fitting 40. The lifting rod 45 which is a bent piece of wire can easily be bent to provide for lifting the guide rod 43 at the proper time.

At the time of installation, by trial, the level of the water is adjusted by loosening the wing nut 18 and adjusting the height of the ball by the relation between the lever 16 and the rod 14. The wing nut 18 is then tightened. The height of the water should be controlled so that when the handle 28 is operated, there would be a sufficient amount of water pass out to give a complete flush.

After this adjustment is completed, the second adjustment for the partial flushing is made.

This is made by adjusting the relative positions of the parts 32, 37, 38 by means of screwing down or up on the screw threaded portions and by adjusting the relative positions of the parts 31 and 32 in a manner already described.

When it is determined that the valve 42 and its valve seat are in proper relation to the surface of the water in the tank, then these parts are left in their positions and the proper adjustments of the parts 44 and 45 are made.

In installing the device as a whole, in a tank the adjustment of the parts 29, 41, 40, 39 and 38, places the parts so that they may conform to the position of the operating handle 47 and the position of the tank wall.

In Figure 2 I have illustrated an embodiment of the invention showing a different form of operating means. In this form the parts 26 and 45 are the lifting rods for the valves as already described for Figure 1. In this form, however, the lifting arms 127 and 146 are integral with a pivoted operating handle 147 which may be moved in one direction for a large or full flush and in the other direction for a partial flush. In practice, suitable indicia would be placed on the tank to indicate the direction of movement to produce the desired results. The movement in one direction, for example clockwise would lift the lifting rod 26, the guide rod 23 and would cause the operation of the valve 21 in a well known manner.

At the same time, the lever arm 146 in moving downwardly would simply permit the eye at the lower end of the lifting rod 45 to slide downwardly over the rod 43 with no resultant action. This would cause the bulb 21 to be lifted and due to its sliding connection with the lifting rod 26, would tend to float until the tank was emptied.

After the tank is again full, the same action in a counter clockwise direction will lift the valve 42, delivering the water to the level of the valve seat 30, down through the passage in the fittings 31, 32, 37, 38, 39, 40, 41, 29, 22 and 23. No water below the level of the valve seat 30 will be discharged.

As in the previous case, with the lowering of the water level, the ball 13 lowers and opens the valve 12 and admits the water until the ball 13 raises to a predetermined level and closes the valve 12.

A refilling pipe 48 is connected to the valve 12 and extends to the overflow pipe in the usual manner. This refilling pipe is useful in the present structure as it has a tendency to always have the level of the water, in the

bowl, at the same height when the valves 21 and 42 are operated. This tends to produce the same degree of flushing repeatedly.

While I have described and illustrated, in detail, an embodiment of my invention, I desire to have it understood that the disclosure is merely illustrative and that modifications and changes can be made without departing from the spirit of the invention and within the scope of the appended claims.

Having described my invention, what I desire to secure by Letters Patent is:—

1. A closet bowl flushing device for use in a flushing tank, comprising a connection between the tank chamber and the closet bowl, a means for selectively releasing different amounts of water through the connection to the bowl and adjustable means for predeterminedly and differentially controlling the amounts of water released by the selective releasing means.

2. A closet bowl flushing device for use on a flushing tank, comprising two valves and valve seats, a passage with branches connecting each valve seat with the closet, means for regulating the amount of water to pass either valve seat and to regulate the amount of water released by one of the valves independently of and without changing the regulation of the amount released by the other.

3. A closet bowl flushing device comprising two valves and valve seats placed at different heights and means for adjusting the height of one seat relative to the other seat to control the relative amount of water delivered by the valves when operated selectively.

4. A closet bowl flushing device comprising a plurality of valves and valve seats at different heights, a passage connecting each valve seat with the closet bowl, the two passages joining together adjacent the outlet to the closet bowl and means for adjusting the height of one valve seat relative to the other seat to control the relative amount of water delivered by the valves when operated selectively.

5. A closet bowl flushing device comprising a plurality of valves and valve seats, fittings having a passage connecting each valve seat with the closet bowl, means for varying the height of the valve seat including extensible means for lengthening or shortening a portion of the passage within the fittings.

In testimony whereof I hereunto affix my signature.

CHARLES WATKINS BROWN.