July 4, 1939. B. T. LONG 2,164,996

SELF-GRINDING FLUSHING VALVE ASSEMBLY

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Fig. 1.

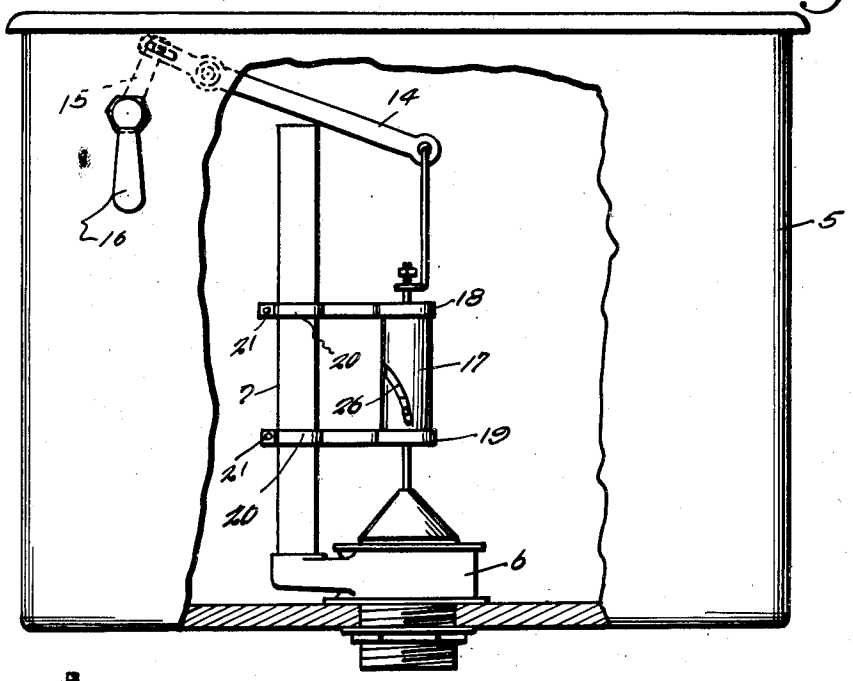


Fig. 5.

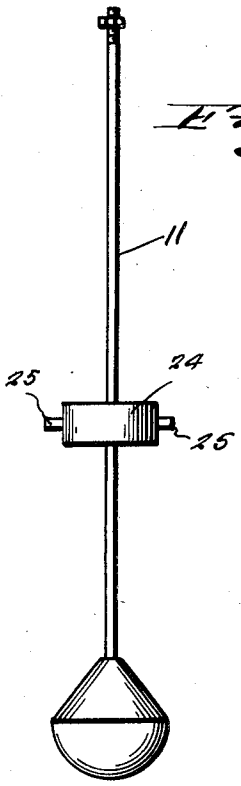
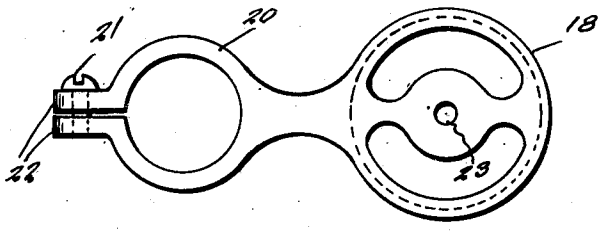


Fig. 6.



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Fig. 2.

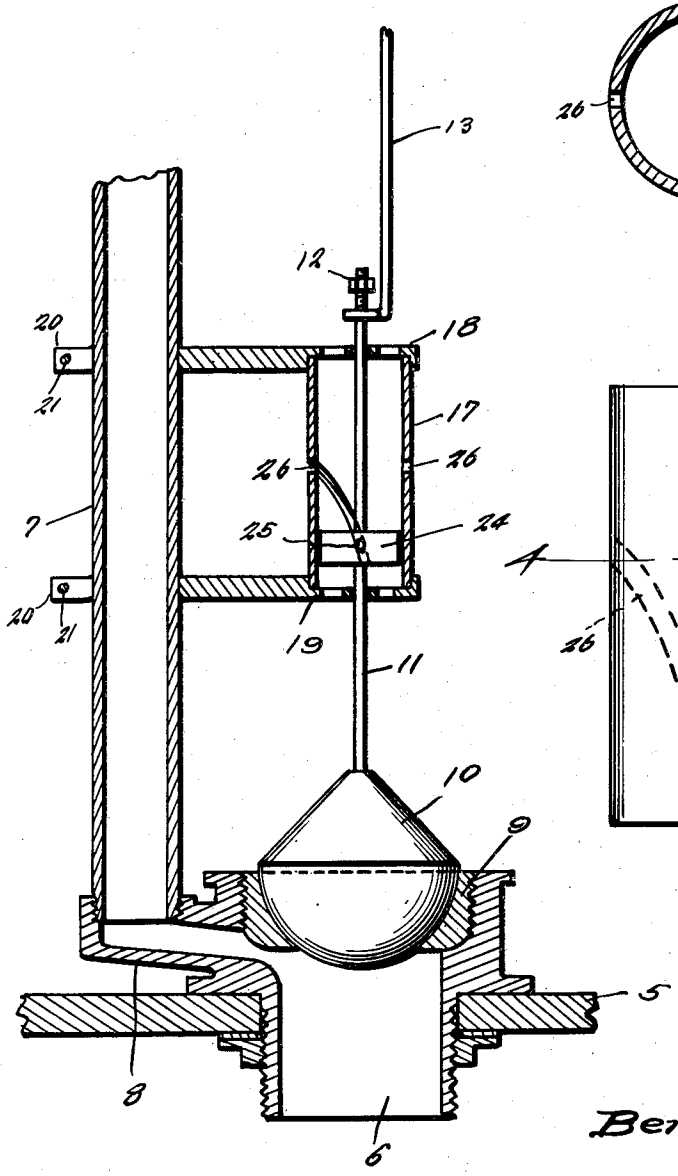


Fig. 4.

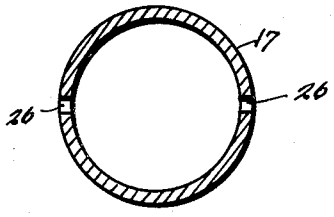
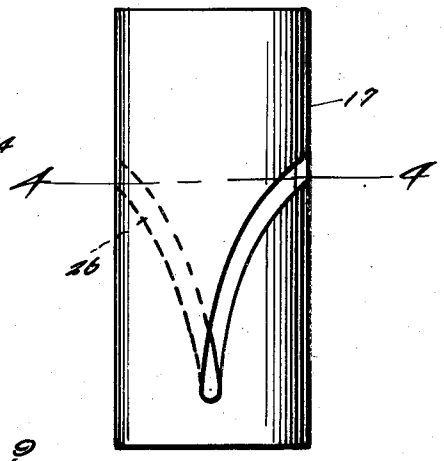


Fig. 3.



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UNITED STATES PATENT OFFICE

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SELF-GRINDING FLUSHING VALVE ASSEMBLY

Ben. T. Long, Kings Mountain, N. C., assignor of one-half to Bennett A. Smith, Kings Mountain, N. C.

Application August 2, 1938, Serial No. 222,686

2 Claims. (Cl. 4—57)

This invention relates to float valves as commonly employed upon flush tanks and among the objects of the invention is to increase the efficiency of valves of this character and also to provide for a proper and complete seating of the valve after each flushing operation.

In accordance with the present invention means is provided whereby the valve in moving into and out of engagement with its seat is caused to rotate in a manner to effect a substantial grinding of the valve and seat at each flushing operation to the end that constant proper seating of the valve will result thus eliminating leaking of the valve as oftentimes results from improper seating of the valve.

The invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is an elevational view illustrating the application of the invention with certain parts of the flush tank broken away and other parts shown in section.

Figure 2 is a view mostly in longitudinal section further illustrating the invention.

Figure 3 is a side elevational view of a guide tube.

Figure 4 is a transverse sectional view through the guide tube taken substantially on the line 4—4 of Figure 3.

Figure 5 is an elevational view showing the ball valve and weight associated therewith, and

Figure 6 is a top plan view of a guide tube cap and associated attaching bracket.

Referring in detail to the drawings it will be seen that 5 indicates a conventional flushing tank.

The usual discharge pipe is indicated by the reference numeral 6 and has a vent pipe 7 connected therewith in the usual manner. The pipe 7 as is well-known extends upwardly in the tank and is adapted to care for any overflow of water. Also as is conventional the discharge pipe 6 is provided with a throat extension 8 to which the lower end of the pipe 7 is connected.

Threaded into the upper end of the discharge pipe 6 is a removable valve seat 9 for accommodating the ball valve 10. The valve 10 is provided with the usual stem 11 and at its upper end is threaded and equipped with a nut as at 12 to accommodate the lateral eye on one end of a link 13 that in turn is connected with the pivoted arm 14, having suitable connection 15 with the flushing lever 16, accessible exteriorly of the tank.

In accordance with the present invention there is provided for the valve stem 11 the tubular guide 17 provided with top and bottom caps 18 and 19.

The caps 18 and 19 are identical in construction and are equipped with integral split clamps 20 that embrace the overflow pipe 7 and are drawn into positive clamping engagement with the pipe 7 through the medium of bolts 21 threadedly engaged with ears 22 with which the split clamps are provided, whereby said clamps are secured at the desired position of vertical adjustment on the pipe 7 with the associated caps 18 and 19 properly engaged with the upper and lower ends of the tube 17 for supporting the tube in position to accommodate the stem 11 that is vertically movable therethrough. In this connection it will be noted that the caps 18 and 19 are of spider-like form and are provided at the centers thereof with openings 23 to accommodate the valve stem.

Suitably mounted on the valve stem 11 and having a working, sliding and rotatable fit within the guide tube 17 is a weight 24.

Weight 24 has extending from diametrically opposite sides thereof pins or extensions 25 that work in spiral grooves 26 provided therefor in the periphery of the guide tube 17. Thus it will be seen that as the stem 11 and associated weight 24 moves vertically relative to the tube 17 the pins 25 working in the spiral grooves 26 will cause the stem 11, weight 24 and associated ball valve 10 to rotate. Obviously the rotating movement of the ball valve 10 as it moves into engagement with its seat 9 or moves upwardly out of engagement with said seat will effect a grinding action between the ball valve and its seat with the result that the seat and ball valve being maintained in well ground condition at all times a proper seating of the valve subsequent to each flushing operation is assured. Consequently there is very little likelihood of the valve leaking, and the annoyance of constantly running water is effectively guarded against.

It is thought that the construction, utility, operation, and advantages of the invention will be had without a more detailed description.

Having thus described the invention what is claimed as new is:

1. In combination with the discharge pipe, the valve and valve seat, and overflow pipe of a flushing tank, of a tubular guide for the stem of said valve supported from the overflow pipe, a weight member on the valve stem and having a working fit within said tubular guide, and interengaging means on the weight and peripheral wall of said

guide for causing a rotation of the valve, its stem and weight incidental to an axial movement of the valve stem through said guide in both directions.

2. In combination with the discharge pipe, the valve and valve seat, and overflow pipe of a flushing tank, of a tubular guide for the stem of said valve supported from the overflow pipe a weight member on the valve stem and having a working fit within said tubular guide, said guide tube having spiral slots in the peripheral wall thereof, and said weight having pins projecting from diametrically opposite sides thereof and engaging in said slots, as and for the purpose specified.

BEN. T. LONG.