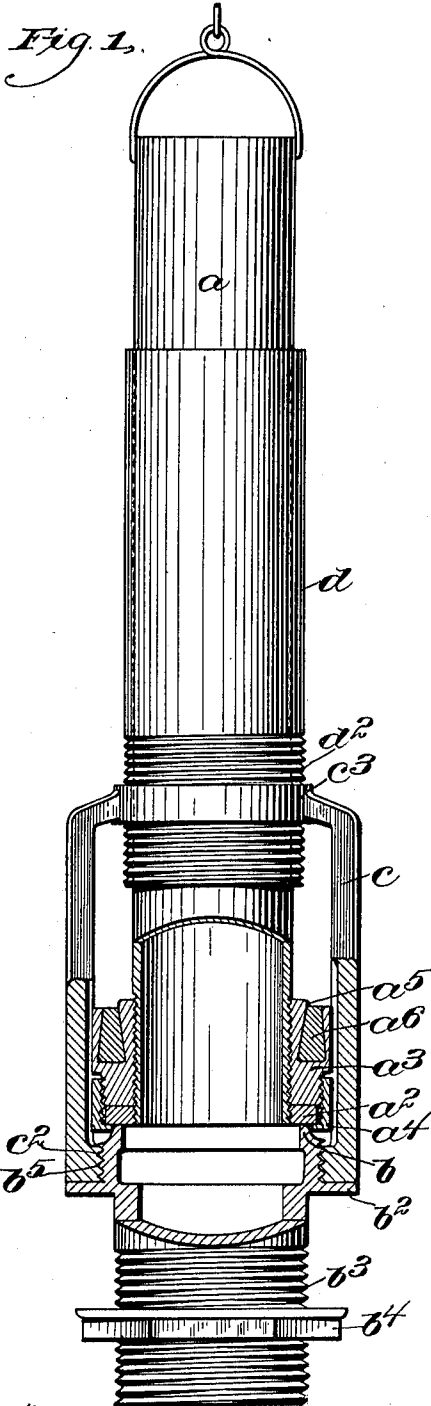


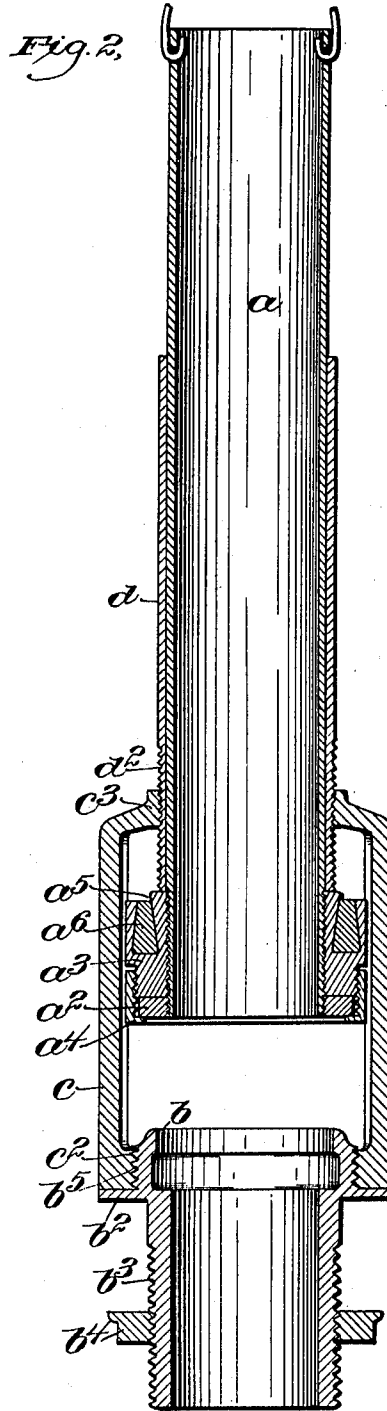
H. N. LIBBEY.
CLOSET TANK VALVE.
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1,021,367.

Patented Mar. 26, 1912.



Witnesses:
James Maloney.
W. E. Brown.



Inventor:
Henry N. Libbey.
by *H. J. Swenson, Atty.*

UNITED STATES PATENT OFFICE.

HENRY N. LIBBEY, OF BOSTON, MASSACHUSETTS.

CLOSET-TANK VALVE.

1,021,367.

Specification of Letters Patent.

Patented Mar. 26, 1912.

Application filed January 24, 1910. Serial No. 539,626.

To all whom it may concern:

Be it known that I, HENRY N. LIBBEY, a citizen of the United States, residing in Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Closet-Tank Valves, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a tank valve, and is shown as embodied in a valve for a flushing tank, the invention relating mainly to novel features of construction of the valve and guide whereby the operation is facilitated and the valve less likely to be accidentally caught or stuck, and thereby prevented from seating.

The invention further relates to means for adjusting the extent of opening of the valve, and also to the means for weighting the valve and connecting the valve washer therewith, the construction being such that a wide and unobstructed opening is afforded through the bottom of the standpipe.

Figure 1 is an elevation of a tank valve embodying the invention, the lower portion or valve proper being shown in section and the valve being shown as closed; and Fig. 2 is a complete vertical section of the same showing the valve open.

The valve member is in the form of a tube or stand-pipe a which is open at the top so as to constitute an overflow passage when the valve is closed, and a valve proper consisting of a washer a^2 at the bottom of the tube adapted to rest, when the valve is closed, as shown in Fig. 1, upon a seat b adapted to be secured in the bottom of the tank. The said seat b is of the usual form having a flange b^2 to rest upon the bottom of the tank, and a tubular threaded projection b^3 extending through the bottom of the tank and provided with a clamping nut b^4 .

In accordance with the invention, the valve proper is secured wholly upon the outside of the tubular portion or stand-pipe a , the valve washer being secured between a weighted valve member a^3 which is screwed upon the outside of the tube a , and a flanged collar a^4 which is screwed on the outside of the valve member. The tubular stand-pipe portion a projects wholly through the valve member so that the screw thread at the end thereof engages and firmly holds the inner wall of the washer a^2 .

In order to weight the valve, I provide the valve member a^3 with an undercut annular recess a^5 into which a mass of molten lead a^6 may be run, the undercutting of the channel preventing the ring of lead thus formed from getting loose, or becoming detached; as frequently happens when the lead is attached directly to the outside of the stand-pipe.

The valve guide is formed of a cage or support c internally threaded at c^2 near the base thereof, and adapted to be screwed upon an external thread b^5 formed around the valve seat piece b . The cage c constitutes an effectual guide for the valve member a^3 , but the main guide for the valve which keeps the stand-pipe and valve both in proper position with relation to the valve seat consists of a tube d which surrounds the stand-pipe a , and is secured in a socket or collar c^3 formed at the upper end of the cage c . By this construction, it is not necessary to extend the cage c along the greater part of the length of the stand-pipe, or to provide said cage with a plurality of engaging portions projecting inward toward the stand-pipe; and the guiding of the valve is much more effectual, while there is less likelihood of binding or catching in the operation thereof. It is desirable, moreover, to adjust the extent to which the valve can be opened, this being especially the case where water is metered and the flushing of the tank is left to the discretion of the operator without starting siphonic action to discharge the tank fully; and such adjustment is afforded in accordance with this invention through the agency of the guide tube d , which is provided with the screw thread d^2 whereby it can be raised or lowered with relation to the guide c to vary the extent of movement of the valve, which, as shown in Fig. 2, is arrested when lifted from its seat by engagement with the bottom of the tube d . If it is desired to throttle the flow of the water from the tank when the valve is opened to its full extent, the guide-tube d may be lowered to any position desired, thus limiting the distance the valve can be lifted from its seat.

Claims.

1. In a tank valve, the combination with an annular valve seat; of a tubular valve coöperating therewith and provided with an overflow pipe extending upward from the valve proper; a cage surrounding the said

valve proper and an inclosing tube extending upward from the upper portion of said cage around the overflow pipe and constituting the main guide for the valve, the
5 lower portion of said inclosing tube constituting the limiting stop in the upward movement of the valve; and means for permitting the raising and lowering of said guide tube for purposes of adjustment.

10 2. In a tank valve the combination with an annular seat; of an overflow pipe smaller than said seat; a weighted valve member screw threaded on the outside of said pipe; a valve washer surrounding said pipe; a retaining device for said washer screw-
15 threaded on the outside of the valve mem-

ber and engaging the outer edge of said washer; an undercut recess formed in the upper part of said valve member and containing weighting material; a supporting
20 cage surrounding the valve seat; and an adjustable tubular guide secured in the upper portion of said cage, and extending upward therefrom and surrounding the overflow pipe.

25 In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY N. LIBBEY.

Witnesses:

JAS. J. MALONEY,
M. E. COVENEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."