A. N. PASMAN.

FLUSH VALVE.

APPLICATION FILED MAY 7, 1919.

1,348,662. Patented Aug. 3, 1920.

Fig. 1

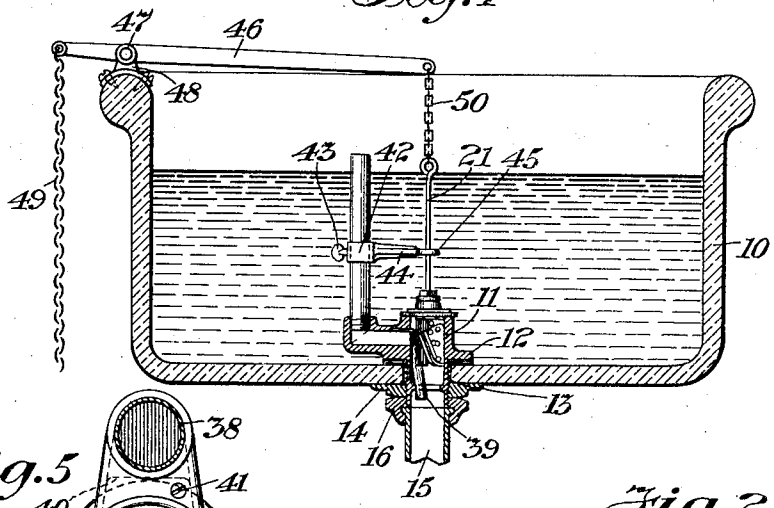


Fig. 5

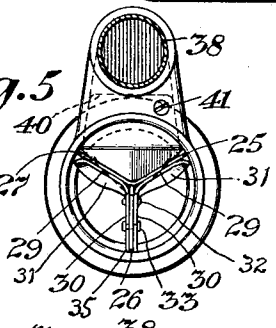


Fig. 2

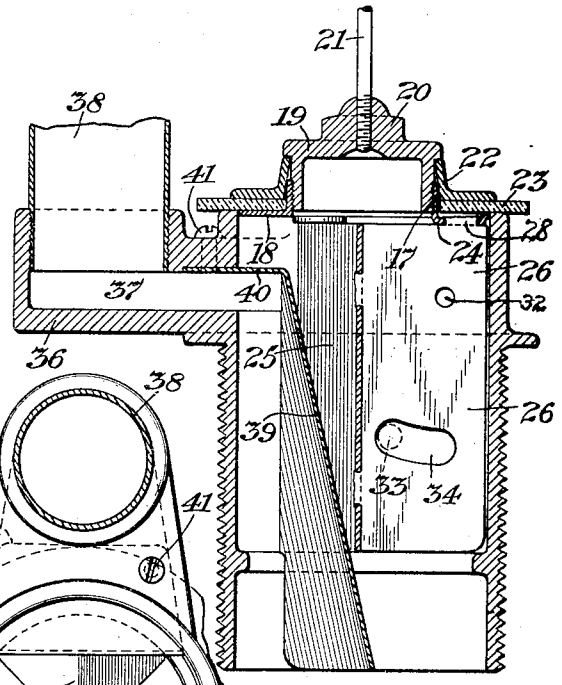


Fig. 3

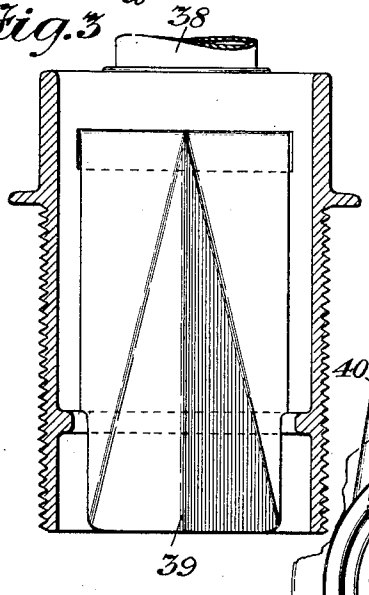


Fig. 4

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FLUSH-VALVE.

1,348,662. Specification of Letters Patent. Patented Aug. 3, 1920.

Application filed May 7, 1919. Serial No. 295,409.

To all whom it may concern:

Be it known that I, ABRAM N. PASMAN, a citizen of the United States, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented an Improvement in Flush-Valves, of which the following is a specification.

This invention relates to that type of flush valves which are commonly employed in conjunction with closets, urinals and other places where a predetermined flow of water is required at stated periods. The invention relates more particularly to that type of flush valve shown and described in Letters Patent No. 1,300,865, granted to me April 15, 1919. In flush valves of this type, there is a body member, a valve adapted to seat against the upper portion of the body member, and associated with the valve there are suitably disposed vanes carried by blades secured to the valve member and operated by the pressure of the water or other medium flowing through the body member when the valve is open to maintain the valve in an open position so long as a predetermined pressure is exerted against the vanes. When the pressure is lowered beyond the predetermined point, the vanes no longer hold the valve open and the same is seated automatically by the action of gravity. In this type of valve as indicated in the application aforesaid, I also employ a vent and overflow pipe which has its discharge orifice within the body member of the valve adjacent the vanes associated therewith. It has been found in the operation of this type of valve when the vent and overflow pipe is employed, that there is more or less interference between the passing of the liquid through the valve in one direction and the escape of the air from the flush pipe in the opposite direction. This is sufficient in many cases to cause an objectional noise, and the object of my present invention is to overcome this difficulty by eliminating any interference between the in running water and the escaping air and thus causing the valve to operate silently. To accomplish this purpose, I employ an apron or similar device extending downwardly into the body member and adapted to cover the discharge orifice of the vent and overflow pipe so that the out passing air has a free passage within the body member and does not come into contact with the in rushing water or other liquid medium passing through the valve.

The apparatus comprising my present invention is hereinafter more particularly described in conjunction with the accompanying drawings in which:

Figure 1 is a sectional elevation of a flush valve made in accordance with my invention.

Fig. 2 is a central longitudinal section on an enlarged scale illustrating the invention.

Fig. 3 is a sectional elevation taken at right angles to that shown in Fig. 2.

Fig. 4 is a sectional plan with the valve parts removed, and

Fig. 5 is a sectional plan on smaller scale showing valve parts in position.

Referring to the drawing, 10 indicates a tank such as is commonly employed in the type of flush valve to which the present invention relates. The improved flush valve comprises the fitting including a body member 11 having a flange 12 and a depending extension 13, which latter is adapted to pass through an opening provided therefor in the bottom of the tank 10 with a gasket intervening between the bottom of the tank and the flange 12. On the underside of the tank, there is a nut 14 turned down on the extension 13 so as to secure the parts in position in the bottom of the tank.

Extending from the extension 13, is a flush pipe 15 and this is connected thereto by a nipple 16 or otherwise, it being understood that the flush pipe 15 leads to the closet or urinal or other place to be flushed.

Together with the fitting hereinbefore described, I employ a ring member 17 interiorly screw threaded and having a flange 18 at right angles thereto. A cap 19 is adapted to be turned down into the ring member 17 and this cap 19 is provided with a square head 20 in which there is secured a rod 21. Associated with these parts there is a flanged ring 22 and a washer 23 which acts as a valve and is adapted to bear against the top of the body member 11 which functions as a valve seat. The washer valve 23 as will be understood is secured in position between the flange 18 and the flanged ring 22 by turning the cap 19 to place in the ring 17.

In equally spaced positions in the flange 18 there are bosses 24 as illustrated three in number, and I also employ as illustrated a like number of blades indicated at 25, 26 and 27. On its upper edge each of these blades is provided with a tongue 28 adapted

to fit into and be secured in the corresponding boss 24 so as to maintain the blades in equally spaced positions in the flange 18. I also employ a pair of vanes each comprising a wing 29 and a wing 30 set at an angle corresponding to the angle between adjacent blades, and the wing 29 of each vane is flanged as indicated at 31 in order to retard the flow of the liquid medium and increase the pressure exerted by the same against the vanes. These vanes are pivotally connected to the blade 26 as indicated at 32 and are also linked together so as to move as a unit by a link 33 which passes through a slot 34 provided therefor in the blade 26. The ends 35 of the wings 30 are sufficiently extended and of the required shape to extend slightly over the upper edges of the body member 11 and to contact with the same in order to maintain the valve in an open position so long as the pressure exerted against the vanes by the medium flowing through the body member is sufficient to hold the valve in an open position.

In this form of flush valve, the body member 11 is provided with an offset 36 having a passage 37 therein and is fitted with a vent or overflow pipe 38 extending upwardly into the tank a sufficient distance to normally have its top or upper end appreciably above the normal water or liquid level in the tank. In order to prevent the water or other liquid flowing through the body member from interfering with the free outlet of the air which may be contained in the flush pipe during the operation of the valve, I employ an apron 39 having at its upper end a flange 40 which fits and extends into the upper portion of the orifice in the offset 36 at the end of the passage 37 and is secured therein by a screw 41 or otherwise. This apron extends downwardly through the body member 11 between the blades 25 and 27 and adjacent its inner or lower end is preferably angular in cross section so as to fit within the blades 25 and 27 so that there is a passage between the inner surface of the apron 39 and the adjacent inner surface of the body member 11 in which the inflowing liquid cannot pass, thereby providing a clear outlet for the escaping air. The apron 39 as shown in the drawing extends across the upper end of the orifice at the outlet of the vent and then downwardly to substantially the bottom of the body member of the valve, extending between the blade members 25 and 27 so that at all times there is a free and entirely unobstructed passage for air from the closet bowl through the body member of the valve and consequently the air is not entrapped by the inflowing water in flushing the closet and cannot hinder or retard the siphonic action of the water in the flushing operation. Furthermore in view of the apron being of such a cross section as to extend between the blades 25 and 27, it will be understood that in reseating the valve, the ends or inner extremities of the blades may contact with the exterior surface of the apron, thus causing the valve to seat in a predetermined position. This as will be understood in no wise interferes with the function of the pipe 38 when the same acts as an overflow.

On the vent and overflow pipe 38, there is fitted a collar 42 which may be secured in any desired position thereon by a set screw 43 or otherwise. This collar 42 is provided with a bracket 44 at the end of which there is an eye 45. The rod 21 passes through the eye 45 so that the same, together with the bracket 44, act as a stop to determine the height to which the valve may be raised and also act as a guide for the valve in the movements thereof. As illustrated, the valve may be operated by a lever 46 pivotally connected as indicated at 47 to a bracket 48 which may be fixed on the upper edge or rim of the tank 10, the lever so mounted being actuated by means of a pull chain 49 and causes it to lift the valve by a chain 50 which connects the inner end of the lever 46 with the upper end of the rod 21.

It will be understood that while I have herein shown and described my invention as applying to a flush valve in which devices are employed for maintaining the valve in an open position during the predetermined period controlled by the pressure of the medium flowing through the valve, that the invention may be employed to equal advantage in flush valves of other types without departing from the nature and spirit thereof.

I claim as my invention:

1. A flush valve apparatus comprising a body member having a vent and overflow connection, a valve member adapted to seat on the body member, and a device for covering the orifice of the vent and overflow connection within, and extending approximately to the bottom of the body member so as to provide a constant fixed opening for the passage of air through the chamber in the said body member to the vent and overflow connection.

2. A flush valve apparatus comprising a tubular body member having a vent and overflow connection, a valve member adapted to bear against a seat on the body member, a plurality of vanes movably connected to the said valve member so that pressure exerted against the said vanes by a medium flowing through the body member causes a part of the said vanes to bear against the tubular body member to maintain the valve in an open position, and a device within the body member for covering the orifice of the vent and overflow con-

nection to prevent the liquid medium flowing through the body member from entering the passage in the vent and overflow connection and to provide at all times an open free passage through the body member to the said vent and overflow connection.

3. A flush valve apparatus comprising a tubular body member having a vent and overflow connection, a valve adpted to bear against a seat on the body member, a plurality of blades connected to the said valve and movable within the body member, a plurality of vanes movably connected to the said blades so that pressure exerted against the said vanes by a medium flowing through the body member causes a part of the said vanes to bear against a portion of the body member to maintain the valve in an open position, and a cover extending over the orifice of the vent and overflow connection and lying between predetermined blades to prevent the liquid flowing through the body member from entering the passage in the vent and overflow connection and to provide at all times an open free passage through the body member to the said vent and overflow connection.

4. A flush valve apparatus comprising a tubular body member having a vent and overflow connection, a valve member adapted to bear against a seat on the body member, a plurality of radially placed blades connected to the valve member and movable within the body member, a plurality of angular vanes pivotally connected to one of the said blades and adapted to move together so that pressure exerted against the said vanes by a medium flowing through the body member causes a part of the said vanes to bear against a portion of the body member to maintain the valve in an open position, and an apron extending between predetermined blades and having a flange extending into the orifice of the vent and overflow connection so as to cover said orifice and prevent the liquid flowing through the said body member from entering the passage in the said vent and overflow connection and to provide at all times an open free passage through the body member to the said vent and overflow connection.

5. A flush valve comprising a body member having a vent and overflow connection, a valve member adapted to seat on the body member, and a device for covering the orifice of the vent and overflow connection within the body member and which device also causes the valve member to seat in a predetermined position.

6. A flush valve comprising a body member having a vent and overflow connection, a valve member adapted to bear against a seat on the body member, a plurality of blades connected to the valve member, means carried by the said blades and acted on by a medium flowing through the body member to cause a part thereof to bear against a part of the body member to maintain the valve in an open position, and a shield within the body member and extending over the vent or overflow connection and fitting between the said blades so as to act as a guide for the same in causing the valve member to seat in a predetermined position.

Signed by me this 7th day of April, 1919.

ABRAM N. PASMAN.