March 12, 1929. A. H. KENNEDY 1,705,367

FLUSH TANK VALVE

Filed June 10, 1926

Fig. 1.

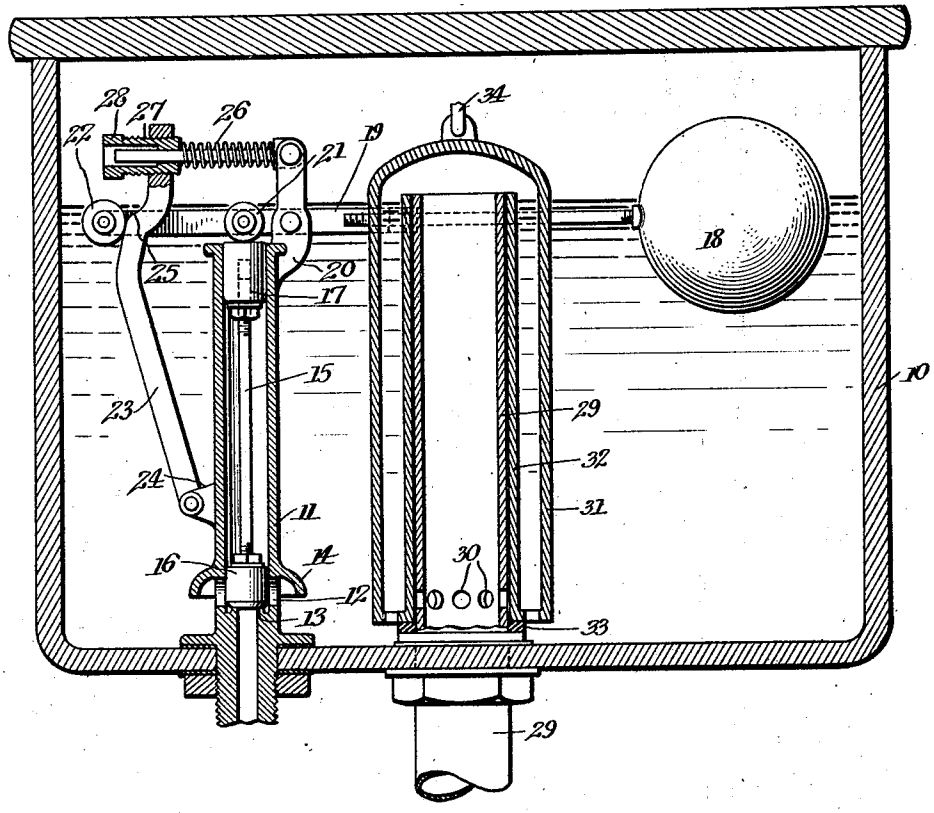
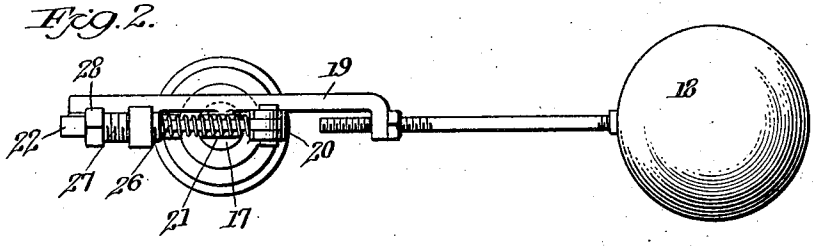


Fig. 2.



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Patented Mar. 12, 1929. 1,705,367

UNITED STATES PATENT OFFICE.

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FLUSH-TANK VALVE.

Application filed June 10, 1926. Serial No. 115,039.

My invention aims to provide improved valves such as are generally employed in flush tanks, and more particularly contemplates improved filling valves.

In the accompanying drawing wherein I have shown one selected embodiment of my invention,

Fig. 1 is a sectional view in elevation showing my improved valve applied to a flush tank, parts being broken away; and

Fig. 2 is a top plan view of the ball-cock valve mechanism shown in Fig. 1.

Referring to the drawing and to the embodiment of my invention there shown, my improved valve is arranged in a tank 10 which is connected to a source of water supply conveniently by means of the valved inlet pipe 11 suitably secured in watertight engagement to the bottom of the tank.

The inlet pipe 11 is shown (see Fig. 1) as having radial ports 12 above a valve seat 13 which is provided at the upper end of a restricted bore of the pipe. Above the ports 12 I have here shown a deflector 14 for the jets issuing from them. This deflector is preferably integral with the inlet pipe and presents a downwardly curved annular surface to direct the jets against the bottom of the tank.

The inlet pipe preferably extends up in the tank to about the desired water level and the stem 15 of a valve 16 which cooperates with the seat 13 is guided in the pipe herein by means of a block 17 shown as being threaded on the stem and projecting slightly above the upper open end of the pipe 11.

I have here shown a float 18 secured to an arm of a lever 19 which is pivotally mounted on a lug or ear 20 at the upper end of the pipe 11. This lever is shown as L-shaped (Fig. 2) and carries a roller 21 operatively to engage the valve stem block 17 to close the valve when the ball rises to a predetermined level.

To secure a quick refilling of the tank after flushing and to eliminate some of the noise incident thereto, I provide means to permit the valve to remain fully open until the tank is as full as desired. To this end I have shown the float lever 19 as extending across the top of the pipe 11 and having a roller 22 secured to its end to cooperate with a spring-urged cam, herein shown as an arm 23 pivoted on an ear or lug 24 on the pipe 11 and near the bottom of the tank and presenting a more or less abrupt cam shoulder 25, on one side, over which the roller must ride during the final stage of the filling operation. This arm is shown as being urged against the periphery of the roller 22 by means of a spring 26 which is carried on a rod 27 that is mounted on the upper end of the ear 20 which provides a fixed abutment for the spring. To vary the compression of the spring 20, for example, to insure a snap action after the parts become worn, I have shown a nut 28 having a hole loosely receiving the guide rod 27 and adapted to tighten the spring as desired. Obviously, the cam surface 25 may be on the inner side of the arm 23 and cooperate with the outside periphery of the roller 22, in which case the spring 26 would be a tension spring.

The stem of the float is shown as threaded to the arm 19 to provide for varying the length of the lever arm thereby to regulate between limits the level to which the water can rise before the valve is closed. For example, if the arm is shortened the water will rise higher before the roller 22 overcomes the compression of spring 26 and snaps over the abrupt cam shoulder 25. On the other hand, if more water than is needed for efficient flushing is being admitted, the arm may be lengthened and thus effect a saving of water.

Referring to Fig. 1, I have there shown a siphon-type of flush valve well adapted for use with my ball-cock valve. The flush pipe 29 passes through the bottom of the tank to about the normal water level therein and near the bottom, preferably has holes 30 therein to initiate the flushing action. Around the pipe 29 I have shown a bell casing 31 carrying a tube 32 slightly larger than the pipe 29 which is adapted to seat on a soft gasket or washer 33 at the bottom of the tank to prevent water from passing through the openings 30 until the bell is raised by a hand lever of the usual type (not shown) attached to the eye 34 of the bell. When the flush valve is operated, the bell 33 and its attached tube 34 are lifted, permitting water to start flowing through the holes 32 and water in the bell will be lifted by it to start the siphon action over the top of the tube 31. The siphon action will then continue until the tank is practically empty.

From the foregoing description it will be observed that I have provided a comparatively simple and effective mechanism which not only reduces the noise incident to filling the flush tank but also enables some economy in water consumption. Also, my improved

flushing valve increases the efficiency of the flushing action and reduces the noise incident thereto.

Obviously, my invention is capable of many different embodiments.

What I claim and desire to secure by Letters Patent is:

1. A ball-cock valve mechanism for flush tanks comprising, in combination, an inlet pipe having a valve seat, a plurality of ports above the seat, a valve cooperating with the seat and having a stem projecting through the open end of the pipe, a float lever pivotally mounted on the pipe having means to close the valve and a spring urged cam cooperating with the float lever to hold it inoperative and to permit the valve to remain open until the tank is filled to the desired level.

2. In a ball-cock valve for flush tanks, an inlet valve, a float lever for closing the valve, and a spring urged pivotally mounted cam coacting with the float lever to resist the rising movement of the float until the water has reached the desired level in the tank and then to permit quick closure of the valve by the float.

3. In a ball-cock valve, a float lever for closing the valve, said lever having an extension, a roller on said extension, a pivoted arm presenting a cam cooperating with said roller and a compression spring normally urging said arm against said roller to cause the cam to resist the rising movement of the float until the water reaches the desired level and then to permit quick closure of the valve by the float.

4. In a ball-cock valve, a float lever extending across the upper end of the valve stem, a float on one end of the lever, a roller on the other end of the lever, and a spring urged cam presenting a cam shoulder over which said roller rides to cause the float lever to close the valve with a snap action after the float has risen to the desired height.

5. In a ball-cock valve mechanism for flush tanks, an inlet pipe adapted to extend vertically into the tank and having a valve seat, a valve stem projecting through the top of the pipe, a float lever pivoted to the pipe and having operating means cooperating with the valve stem, said lever extending across the top of the pipe and having a roller mounted thereon, an arm pivoted to the pipe below its top and having a cam shoulder cooperating with said roller and a compression spring urging said cam outwardly to engage said roller to resist the movement of the lever in one direction for closing the valve.

6. In a ball-cock valve for flush tanks, a float lever for closing the valve, a float carried by the lever, said lever having an extension, a roller on said extension, a pivoted arm presenting a cam cooperating with said roller, a compression spring urging said arm against said roller to cause the cam to resist the rising movement of the float, and an adjusting nut presenting an abutment for the spring adapted to vary the pressure of the arm against the roller.

7. The ball-cock valve comprising the inlet pipe 11 having valve 16 below its top and having the ports 12, the jet deflector 14, the valve stem 15 projecting at one end through the pipe, the float lever 19, the roller 21 on the lever to close the valve, the pivoted cam arm 23 cooperating with the roller 22 on the lever 19, and the spring 26 on the rod 27 urging the cam arm against the roller 22, all substantially as shown and described.

In testimony whereof, I have signed my name to this specification.

ALBERT H. KENNEDY.