No. 823,832. PATENTED JUNE 19, 1906.

W. O. WAYMAN.

CISTERN.

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Fig. 1.

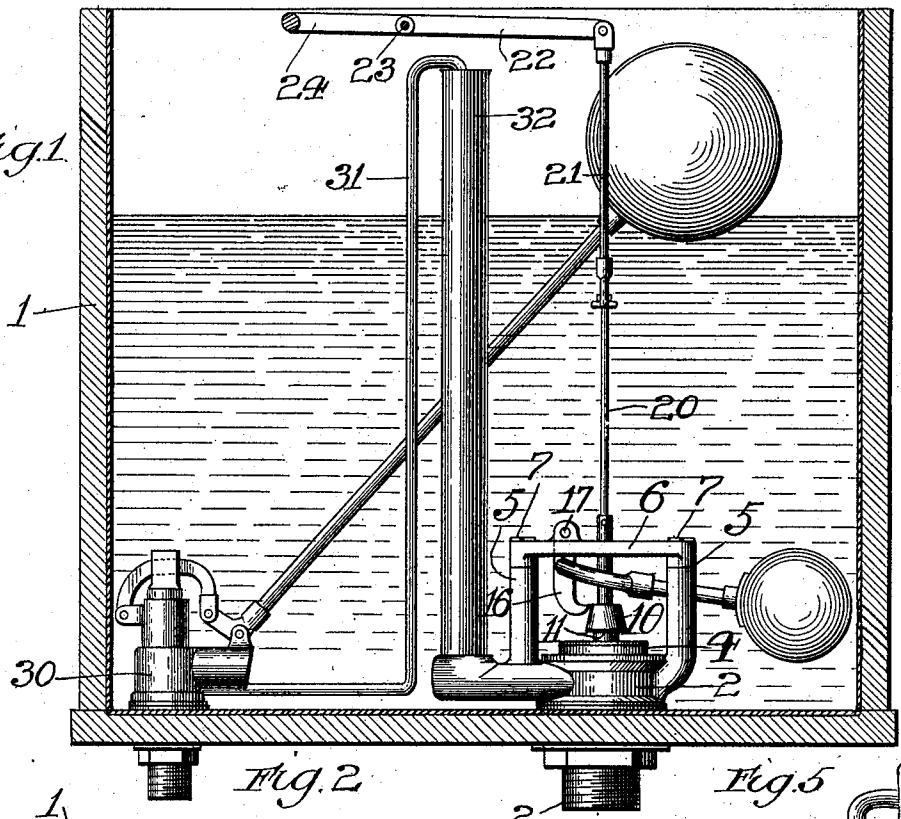


Fig. 2.

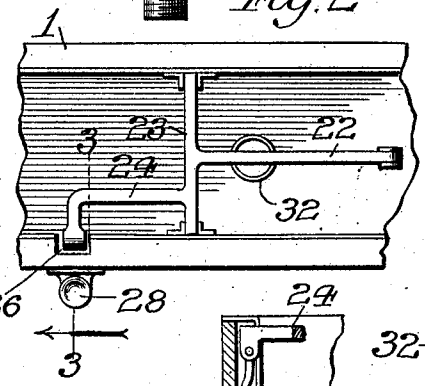


Fig. 3.

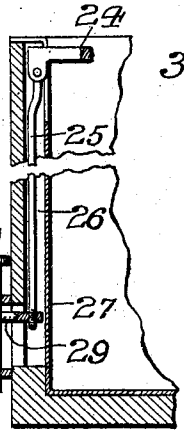


Fig. 5.

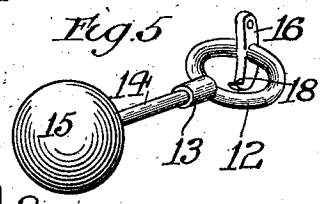
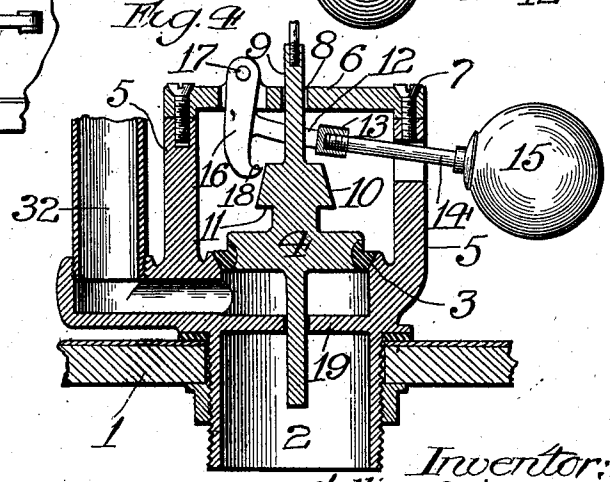


Fig. 4.



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CISTERN.

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Application filed March 1, 1901. Serial No. 49,526.

To all whom it may concern:

Be it known that I, WILLIAM O. WAYMAN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cisterns, of which the following is a specification.

My invention relates to cisterns or tanks for a water-closet and the like, and more particularly to valves for discharging the contents thereof for flushing the bowl. My invention is applicable to both the high-up and the low-down cistern or tank; and its object is to provide simple and efficient means for automatically holding the discharge-valve open when opened and permitting the same to close when all or substantially all the water has been drained from the cistern.

In the drawings, Figure 1 is an elevation of my cistern with the front side removed, showing the mechanism within; Fig. 2, a plan of a portion of the cistern, showing the operating-levers; Fig. 3, a section on line 3 of Fig. 2; Fig. 4, a section of the valve, and Fig. 5 a perspective of the catch device and of the float which controls it.

The cistern 1, which may be of suitable dimensions, has a bottom opening, through which extends a nozzle 2, fastened to the cistern by the ordinary couplings and provided at its upper end with a valve-seat 3, on which the valve 4 seats. From this nozzle rise two arms or standards 5, joined at their top by a cross piece or bar 6, which may be secured to such arms in any suitable way—as, for instance, by the screws 7. This bar has a central hole 8, which constitutes a guide for the stem 9 of the valve, which is adapted to move up and down. The valve has a truncated conical portion or enlargement 10, forming a shoulder 11 for the catch, as hereinafter referred to. In its preferable form, as herein shown, the catch consists of a ring 12, having radiating outwardly therefrom a screw-threaded socket or boss 13, in which screws the stem 14 of a ball-float 15. This ring at a point substantially opposite the socket has a hook 16, pivoted at its upper end at 17 upon the cross-bar 6 and having a curved lower end 18. The ball-float 15 is thus located on one side of the valve-stem, and the pivot of the catch is on the other side, the ring surrounding the valve-stem. By this construction the catch device does its work and does it positively with a very short movement, which I have found to be necessary for the proper positive operation of the catch in order that there may not be at any time and under any consideration a failure of the catch to engage the valve. The valve-stem is preferably extended downward below the valve and into the nozzle proper, where it is guided by a suitable spider 19, as shown in Fig. 4. Although the valve and its stem may be formed in different ways, yet I prefer the construction illustrated in the drawings.

In order to properly operate the valve, suitable means may be employed, such as chains or operating-levers, and in order to illustrate a complete working cistern I have shown a system of levers formed and arranged as follows and which will be found suitable for the purpose intended: A rod 20 is connected to the upper end of the valve-stem 9 and is swiveled to another rod 21, which is in turn pivotally connected to the end of a horizontal lever 22. This lever has a fulcrum-rod 23, pivoted near the top of the cistern and carrying a lever 24, projecting from the side of the fulcrum-rod opposite to that to which the lever 22 is attached, as shown in Fig. 2. The end of the arm 24 is bent at right angles toward the front wall of the cistern and is connected to a vertical rod 25, working in a vertical channel or groove 26, cut in the wood of the cistern outside of the usual lining 27. The rod 25 is connected to a suitable push-button 28 by means of a short rod or bolt 29, Fig. 3. The cistern herein illustrated is of the low-down type, and consequently the push-button, which is shown as arranged on the side of the cistern, is within convenient reach; but it is obvious that in the case of the high-up or elevated cistern it will only be necessary to elongate the vertical rod 25, for instance, and provide it at its lower end with a push-button, which would then be brought within convenient reach.

The usual ball-cock for controlling the water-feed is represented at 30 and is provided with the usual after-fill pipe 31, discharging into the top of the overflow-pipe 32, which communicates with nozzle 2 underneath the valve-seat to prevent overflow from the cistern.

My cistern and valve devices being con-

structed as hereinbefore set forth operate as follows: Assuming that the tank contains water to the normal height as controlled by the ball-cock, and the parts are in their normal position, as illustrated in Fig. 1, and it being desired to flush the bowl, the push-button 28 is depressed, and the valve 4 is thereby raised from its seat, permitting water to be discharged from the tank downward through the nozzle to the bowl in the usual and well-known way. Simultaneously with the raising of the valve the enlargement 10 on the valve-stem forces the catch device 16 to the left, Figs. 1 and 4, until such enlargement passes beyond the extreme end 18 of such catch, whereupon such end will engage underneath the shoulder 11, whereby the valve will be held in its elevated position although the pressure on the push-button and levers has been withdrawn. The catch will hold the valve in this raised position until the level of the water in the tank has been lowered substantially to the plane of the valve, whereupon the ball-float 15 will move downward with the receding water, throwing the catch 16 to the left, Figs. 1 and 4, and releasing such catch from its engagement with the valve 4. The valve will now drop by gravity upon its seat, and the tank will again become filled with water, owing to the opening of the ball-cock 30. When the tank is filled with water, the float 15 is submerged, and its tendency is to rise to the level of the water, but is stopped by contact of its stem 14 against the top side of the opening 33 in one of the standards 5, through which it passes. When the valve is raised, as hereinbefore set forth, the enlargement 10 acts in the manner of a wedge against the point or hook-shaped end 18 of the catch device, which consequently bears against such enlargement after it has been slightly raised from its seat, so that such end or hook is ready to engage at the very instant the shoulder 11 rises above its plane. It will be observed that the engagement of the catch and valve-stem is accomplished by means of a very short range of movement of the catch device, which is pivoted and arranged as close as practical to the central axis of the valve and its stem, and it is due to this fact, among others, that a positive and effectual engagement of the valve is obtained at every operation.

While the above-described construction is the preferable one, yet it is to be understood that I do not intend to limit myself to the details in construction, but that various mechanical changes might be made therein without departing from the spirit of my invention.

I claim—

1. A discharge device for cisterns and the like comprising a valve having a stem and governing the discharge-passage and means for holding the valve open, when opened until the water is drained from the cistern and consisting of a catch device having a ring or curved member extending on either side of the valve-stem with a ball-float rigidly connected thereto at one end whereby such ring moves with every movement of the float and a hook or catch proper at the other end to engage the valve when raised, said float actuating the catch to both engagement and disengagement position and transmitting all its movements to such catch.

2. In a cistern for water-closet valves and the like the combination of a valve having a stem and governing the discharge and a catch device comprising a curved or ring portion 12 surrounding the valve-stem and a hook 16 on the ring and pivoted at its upper end and also having a curved end 18 adapted to engage the valve when raised and a float connected to said ring at a point substantially opposite the hook 16.

3. In a cistern for water-closets and the like, the combination of the nozzle or outlet-pipe leading from the cistern and having a valve-seat, a valve seating on said seat, and having a stem, an upwardly-extending frame in said nozzle, a cross-bar on such frame, and having a central hole to receive and guide said stem and also having a slot at one side of said hole, lugs on the cross-bar adjacent to said slot and a float-actuated catch passing through said slot and pivoted to said lug, said catch having a hook adapted to engage the valve when raised.

4. In a cistern and the like, the combination of a nozzle 2 having a seat 3, a valve 4 seating thereon, a valve-stem 9 having a truncated conical projection 10, standards 5 on the nozzle, a cross-bar 6 between the standards and a catch device comprising a ring-piece 12 having on one side a hook proper 16 with pivotal connection at its upper end on the cross-bar at 17 and having a curved depending end 18 adapted to engage under said projection 10 when the valve is raised, a float 15 and a stem 14 connecting the float and ring.

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