

No. 673,466.

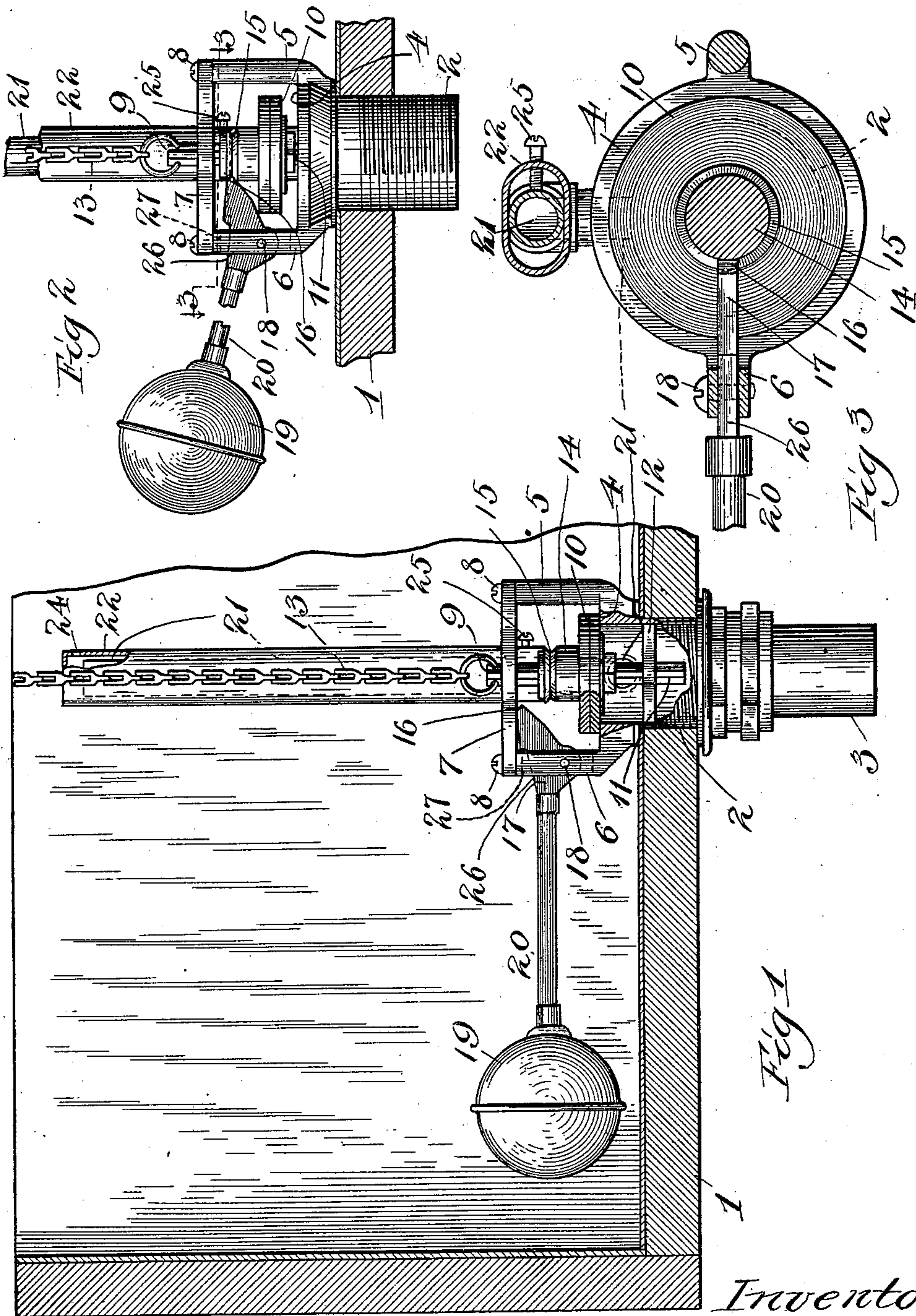
Patented May 7, 1901.

W. BARRY.

CISTERN.

(Application filed Dec. 7, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## CISTERN.

SPECIFICATION forming part of Letters Patent No. 673,466, dated May 7, 1901.

Application filed December 7, 1899. Serial No. 739,519. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BARRY, a resident of 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 pertains to water-closet tanks or cisterns and the like, more particularly to those in which a pull-valve is employed, and the particular object thereof is to provide simple and efficient means for retaining the valve in open position (after being opened) until all or substantially all the water has been discharged or emptied from the cistern.

In the drawings, Figure 1 is a sectional elevation of a part of a cistern with my device applied; Fig. 2, an elevation of the valve and its parts in open position, and Fig. 3 a sectional plan on line 3 of Fig. 2.

Through the bottom of a cistern 1 extends a pipe or nozzle 2, having the usual couplings for securing it to the cistern and to the discharge pipe or outlet 3. The top face of this pipe or nozzle within the cistern forms a valve-seat 4, above which rise two substantially diametrically opposite arms or standards 5 and 6, across whose top ends may extend a cross plate or bar 7, secured to the arms by screws 8 or otherwise. This bar has a central hole which serves as a guide for the stem 9 of a gravity or pull valve 10, adapted to normally rest on the seat 4 to close the outlet from the cistern. The valve has a lower stem 11, guided in a similar manner by a spider or cross-bar 12 within the pipe 2.

The construction just described is the preferable one; but it will be understood that obvious changes may be made without departing from the spirit of my invention—as, for instance, the feature of the guide for the valve-stem is not absolutely necessary and may be dispensed with, leaving simply one standard on which is to be mounted the mechanism about to be described. There is employed the usual chain 13, attached to the valve-stem and designed to operate the valve in the ordinary and well-known manner.

The valve is provided with a central hub or boss 14, having a circumferential groove 15, in which is adapted to engage at certain times the projecting point or toe 16 of a plate or

member 17, that is pivoted at 18 in the arm 6, which is slotted for this purpose. Obviously any other suitable mechanical construction may be adopted, so that the mechanism just described may operate in the desired manner; but the construction shown and described is the preferable and adopted one. A small float 19 is carried at the outer end of a rod 20, which is secured to said plate, so that such plate is automatically float-actuated.

Leading upwardly in the tank from the pipe 2 and offset therefrom below the valve-seat is an overflow-pipe 21, with its open end extending almost to the top of the tank—that is, to the predetermined water-level. The purpose of this overflow-pipe is to carry off any water leaking from the usual supply pipe or faucet or flowing therefrom in case the usual float should fail to close off the supply-pipe valve. To muffle the sound of any overflow water, I place a pipe 22, with its upper end closed, but with its open lower end communicating with the tank, over the pipe 21, but leave sufficient clearance between this closed end and the open top end of pipe 21, as seen in Fig. 1. This pipe may, if desired, be elliptical in cross-section, as shown in Fig. 3, so as to be frictionally held to the inner pipe, although I prefer to employ a set-screw 25 whether this frictional action is present or whether the two pipes are concentric. The upper end of the outer pipe may be provided with an air-vent 24. It is obvious that this outer pipe may be other than elliptical in shape.

Assuming that the tank or cistern is empty and the valve closed, as seen in Fig 1, water is automatically supplied through the usual float-operated valve, (not shown,) whereupon the small float will be upwardly raised until the face 26 contacts the top 27 of the slot in arm 6. The toe 16 will now be in a position directly above and in the line or path of movement of the valve-hub. When the valve is raised by the chain, thus opening the discharge-passage, the toe will first be elevated by the valve and the float depressed somewhat in the water. This action throws the toe upwardly in the arc of a circle, and it will immediately fall back and engage in the groove. The valve will now be held open not-



withstanding the pull on the chain may be released and nothing will release the catch device until the cistern is about emptied, whereupon the float descending slightly with the last water releases the parts from engagement and permits the valve to close ready for a similar operation. The most desirable form of pull-valve for the purpose is a rotatable one, such as shown, and it is for this reason that the groove is circumferential, although it will be understood that so far as some of the claims are concerned in this case any means whereby there may be engagement between the catch mechanism and the valve are comprehended. It is obvious that when the parts are in normal position and the cistern is filled with water the toe of the catch mechanism presses upon the top of the valve-hub and tends to hold it seated. The valve is lifted by the chain against the tension exerted by the float, and as soon as the groove has passed by sufficiently such toe will drop into the groove to hold the valve open. Consequently the catch mechanism not only subserves the function of holding the valve open, but also the function of normally tending to keep such valve closed tightly upon its seat.

By the use of my invention there is provided simple and efficient means for holding the pull-valve open until the cistern is emptied, and this is done in an automatic manner by means of a catch mechanism. Whenever the valve is open, it is positively held open, and it cannot be closed until the lowering of the water-level permits the small float to disengage the catch mechanism. I also provide a simple overflow device in which any overflow water flows upwardly between the two pipes 21 and 22 and thence downward through the pipe 21 into the discharge pipe or outlet 2, below the valve-seat, this construction completely muffling any noise in the overflow.

Although I have described more or less precise forms and details of construction, I do not intend to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution of equivalents as circumstances may suggest or render expedient and without departing from the spirit of my invention.

I claim—

1. A discharge device for cisterns and the like comprising a valve governing the discharge-passage, means for lifting the valve from its seat and means actuated by the pressure of water in the cistern to normally hold the valve seated and, when the valve is lifted, to hold the same open until the cistern is emptied.

2. The combination, with a cistern having a discharge-passage, of a vertically-movable valve governing such passage and a float-actuated device normally pressing upon the top of such valve with a substantially vertical thrust and adapted to hold such valve open when raised.

3. A discharge device for cisterns and the like comprising a valve-seat in the outlet, a pull-valve governing such outlet and having an upwardly-extending vertical hub, a plate pivoted in the cistern at one side of the valve and having at one side of its pivotal point an extension projecting in the path of the hub and adapted to engage such hub when the valve is raised and to normally press downward upon the top of such valve toward the center thereof to hold it seated, and a float connected to said plate at the other side of its pivotal point.

4. A discharge-valve for cisterns and the like comprising a valve-seat in the cistern-outlet, a pull-valve operating substantially vertical and governing such outlet, a central hub connected to and extending upwardly from such valve and provided with a groove, and float-actuated mechanism adapted to engage in said groove to hold the valve open when raised until the cistern is emptied but normally pressing down upon the top of the valve-hub to hold the valve seated.

5. The combination of a discharge-pipe with seat 4 having upwardly-extending arms 5 and 6, a valve 10 seating on such seat, a hub 14 rising substantially vertical from the valve and having a groove 15, a catch comprising a member 17 eccentrically pivoted to the arm 6 and having a toe 16 projecting in the path of the hub and adapted to engage in the groove when the valve is open, a float 19 connected to said member 17 and a cross-bar 7 connecting the arms to form a guide for the valve and also a stop for said toe 16, said toe pressing downward on top of the valve-hub to normally keep the valve closed.

6. An overflow device comprising, in combination with a tank having a valve seating in a discharge-pipe, an open-ended overflow-pipe entering such discharge-pipe below the valve-seat and extending upwardly to the predetermined water-level and a pipe or tube substantially elliptical in cross-section and closed at one end and placed over the overflow-pipe with a frictional contact therewith but leaving a clearance between the adjacent upper ends of the pipes.

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Witnesses:

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