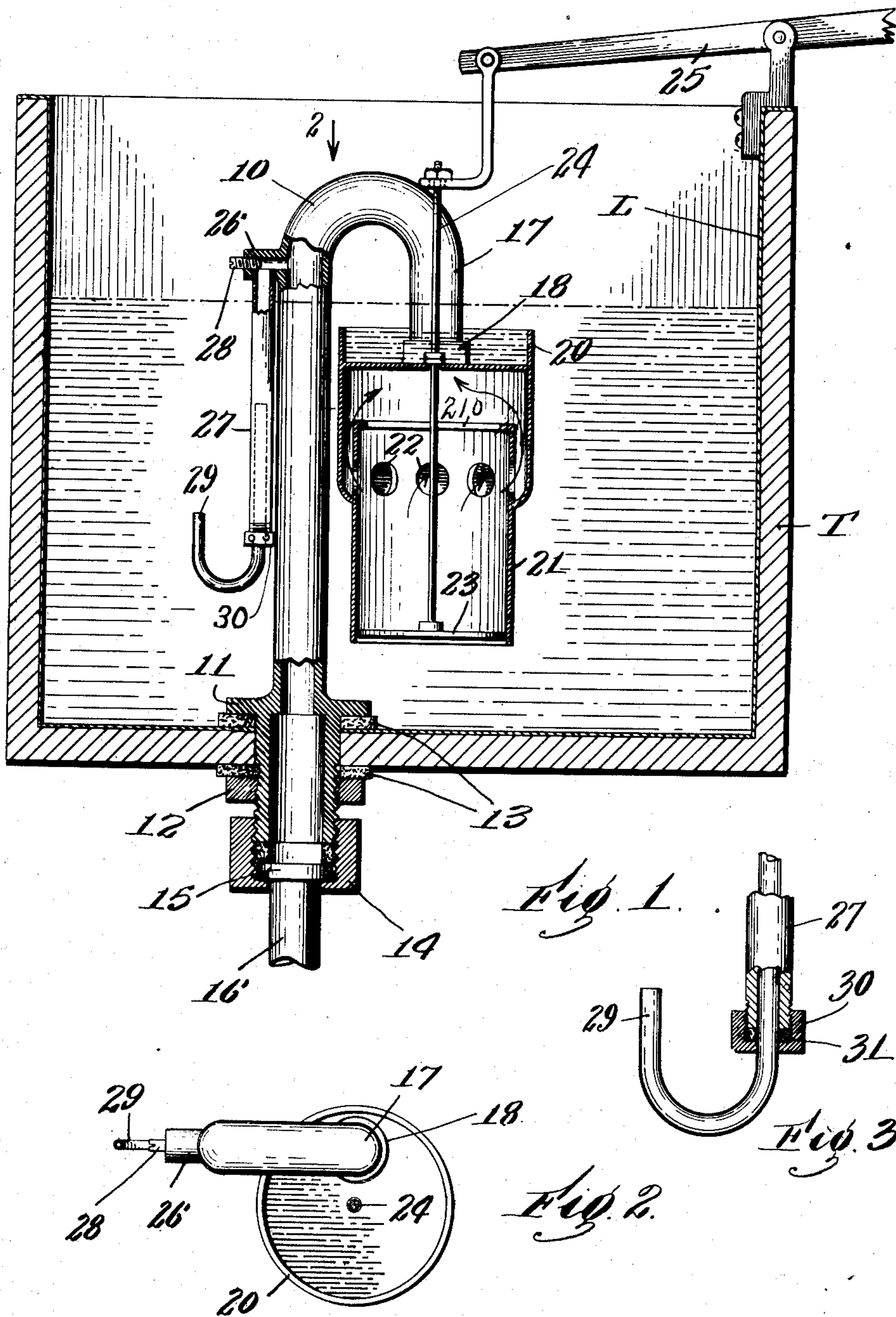


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N. B. JOHNSON.
SIPHON VALVE FOR CLOSET CISTERNS.

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UNITED STATES PATENT OFFICE.

NELSON B. JOHNSON, OF WEBSTER, MASSACHUSETTS.

SIPHON-VALVE FOR CLOSET-CISTERNS.

No. 873,945.

Specification of Letters Patent.

Patented Dec. 17, 1907.

Application filed February 1, 1906. Serial No. 298,961.

To all whom it may concern:

Be it known that I, NELSON B. JOHNSON, a citizen of the United States, residing at Webster, in the county of Worcester and State of Massachusetts, have invented a new and useful Siphon-Valve for Closet-Cisterns, of which the following is a specification.

This invention relates to a flushing device or siphon for a closet cistern.

10 The especial objects of this invention are, to provide a strong, simple and efficient form of closet flushing siphon, to combine the siphon with a starting chamber in such way that a free outlet will be permitted
15 through the starting chamber, to provide a water-seal or packing for the operating rod, and to provide an improved construction for controlling the amount of water and to secure a slow breaking action providing an
20 after-wash.

In the accompanying drawing, Figure 1 is a sectional view of a closet cistern containing a device constructed according to this invention partly broken away, Fig. 2 is a
25 plan view of the device, and Fig. 3 is a detail hereafter referred to.

One especial object of this invention is to provide a fixture for closet cisterns which will be entirely inclosed within the tank and
30 which will not employ any valves or packed joints liable to leakage.

In ordinary closet cisterns, various forms of valve seats and valves are employed and unless the valves fit their seats absolutely
35 tightly, considerable amounts of water are lost through leakage. I have avoided this by using a siphon which will permit the water to flow only at the desired times and which will be absolutely free from leakage.
40 The flow of water through the siphon is preferably regulated to provide not only for delivering any desired amount of water, but also for securing a slow stopping action providing what is termed the "after-wash" for
45 refilling of a closet bowl.

Referring to the accompanying drawing and in detail, T designates a tank or cistern provided with the usual metal lining L. The fixture which I employ for flushing out
50 a closet bowl or other fixture from the tank T, comprises a return pipe 10, the outlet branch of which is provided with a collar 11. Threaded onto the lower end of the pipe 10 is a nut 12 and a tight joint is in-
55 sured by the use of inside and outside pack-

ings 13. Fitting up against a packing on the lower end of the outlet pipe is an enlarged head 15 of the flush pipe 16 which is fastened in place by a connecting nut 14. The inlet leg 17 of the siphon is threaded into a lug or
60 boss 18 of the starting chamber. As shown most clearly in Fig. 2, the lug 18 is located at one side of the center of the starting chamber so that the starting rod 24 may extend centrally therein.

The starting chamber is provided around its upper ends with a marginal flange 20 which will catch and retain a sufficient amount of water to form a water-seal or
65 water-packing for preventing leakage or the entrance of air around the starting rod during the operation of the siphon. Formed integrally or threaded into the body portion of the starting chamber is an inside cylinder
70 21 which is provided with a number of openings 22 permitting the upward flow of water when the siphon is in operation. Movably mounted in the cylinder 21 of the starting chamber is a disk or lifter 23 carried by a
75 starting rod 24, which starting rod 24 is connected in any ordinary way at its upper end to pull lever 25. The cylinder 21 is provided at its upper end with a flange 210 for limiting the upward motion of the disk or
80 piston 23.

In the operation of the parts as thus far described, when the lever 25 is operated to lift the starting disk, water will be forced up through an opening in the top of the cylinder 21 into the inlet leg of the siphon in
85 sufficient volume to start the siphon in operation. The starting disk 23 will be moved up and will remain in the upper end of the inside chamber 21 and out of the way of the direct flow of the water which will then
90 pass through the openings 22 as indicated by the arrows. The flow of the water will hold the disk in this position while the siphon works. As above stated, the flange 20 will trap sufficient water to water-seal the rod
95 24 during the action of the siphon. This in practice, I have found will provide a very efficient construction for securing a discharge of water from a closet cistern. To control the flow of water, the return bend or body
100 portion 10 of the siphon is preferably provided with a projection or lug 26 and extending down from the lug or projection 26 is a small air pipe 27.

Adjustably fitting in the end of the air- 110

pipe 27 is a small pipe 29, the outer end of which is bent upwardly, as shown. A nut 30 is threaded on the end of the air-pipe 27 and is provided with a ring packing 31, as shown in Fig. 3, so that the pipe 29 can be adjusted in the air-pipe 27. Also threaded into the lug 26 is a pointed screw 28, the end of which serves as a throttle-valve for throttling the connection between the air-pipe 27 and the body portion of the siphon. When the valve 28 is wide open, the action of the siphon will be promptly interrupted, and a comparatively slight after-wash will be secured, but by closing the valve 28 to any desired extent, any desired amount of throttling action may be secured which will delay the breaking of the action of the siphon, causing the flow to be interrupted gradually providing any desired amount of after-wash for refilling the closet bowl or other fixture. I regard this as a particularly important feature of my invention as it enables me to secure a perfect control of the siphon action.

Having thus fully described a construction embodying this invention, what is claimed as new and sought to be secured by Letters-Patent is:—

1. The combination with a siphon for discharging liquid from a tank, of a starting chamber connected with the short leg of the siphon, said chamber having an open-bottomed casing provided with an open top and communicating freely with the short leg of the siphon, and side passages also communicating freely with the short leg of the siphon, a lifting disk mounted in said casing, and means connected with the disk for raising it to force liquid through the open top of the casing and holding it raised above the side passages, whereby the liquid may flow through said passages when the disk closes the top of the casing.

2. In a fixture of the class described, the combination of a siphon, a starting chamber comprising a body portion, a bottom casing of smaller diameter extending up inside the body portion and having outlet openings into the portion of larger diameter, a lifting disk, and means for raising the lifting disk above the outlet openings so that the disk will be out of the way during the flow of water through the siphon.

3. In a fixture of the class described, the combination of a siphon, a starting chamber of larger diameter connected at one side of its center to the inlet leg of the siphon, a lifting disk in the starting chamber, and a rod therefor extending up centrally through

the body of the starting chamber at one side of the inlet siphon leg.

4. In a fixture of the class described, the combination with a tank, of a siphon therein, a starting chamber connected with the short leg of the siphon and having a substantially closed top with a perforation therethrough, a disk in the starting chamber, an operating rod for the disk passing freely and loosely through said perforation, and a flange on the top of the starting chamber for retaining sufficient water on the top thereof to supply the leakage through said perforation around the rod while the tank is being emptied by the siphon.

5. In a fixture of the class described, the combination of a siphon, a starting chamber connected at one side of its center to the inlet leg of the siphon, and comprising a body portion having a flange around its upper edge, a casing of smaller diameter extending up inside of the body portion and connected therewith by outlet passages, a lifting disk mounted in the inside casing, and a rod for raising the lifting disk above the openings so as not to interfere with the flow of water while the siphon is in operation, said rod extending up centrally through the starting chamber at the side of the starting leg of the siphon in position so that the water retained by the flange of the starting chamber will serve as a water-seal or packing therefor.

6. The combination with a siphon, of an air pipe extending down from a point near the top of the long leg thereof, said pipe having a U-shaped adjustable lower end fitting therein, whereby air may be admitted to the siphon when the level of water reaches the top of the outside leg of the U-shaped end.

7. In a fixture of the class described, the combination of a siphon having a projection or lug, an air pipe extending down from said lug, a pipe having an upwardly turned lower end fitting therein, and a throttling screw threaded into the lug transversely to the inlet of the air pipe for throttling the connection of the air pipe of the siphon to produce a gradual stopping action.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses.

NELSON B. JOHNSON.

Witnesses:

C. F. WESSON,
E. M. ALLEN.