

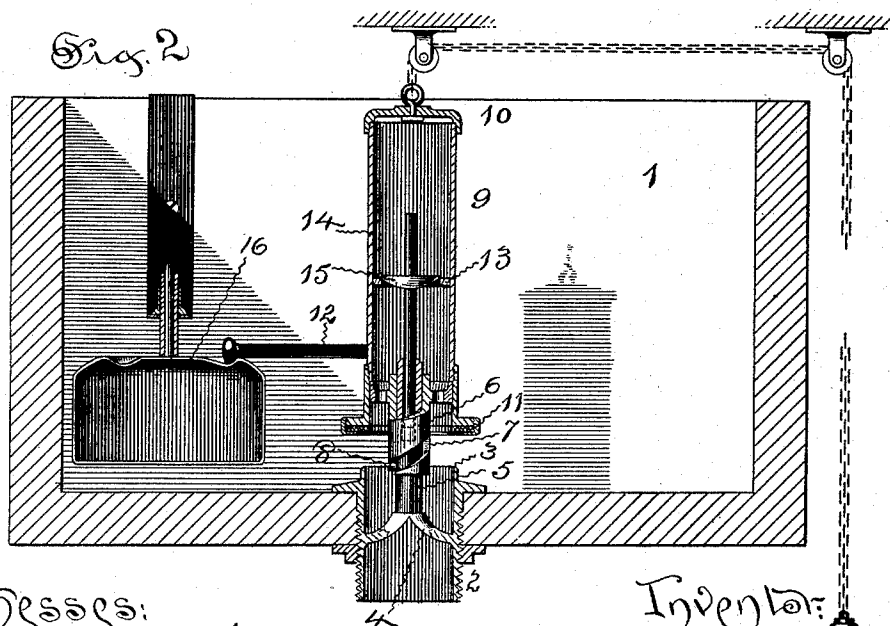
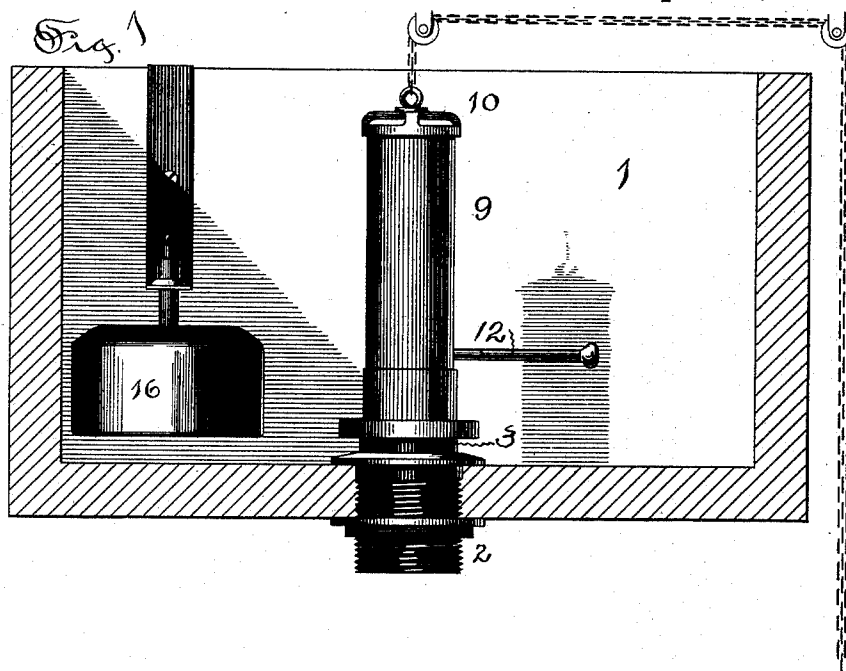
(No Model.)

2 Sheets—Sheet 1.

C. BIRKERY.
TANK VALVE.

No. 483,296.

Patented Sept. 27, 1892.



Witnesses:
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3

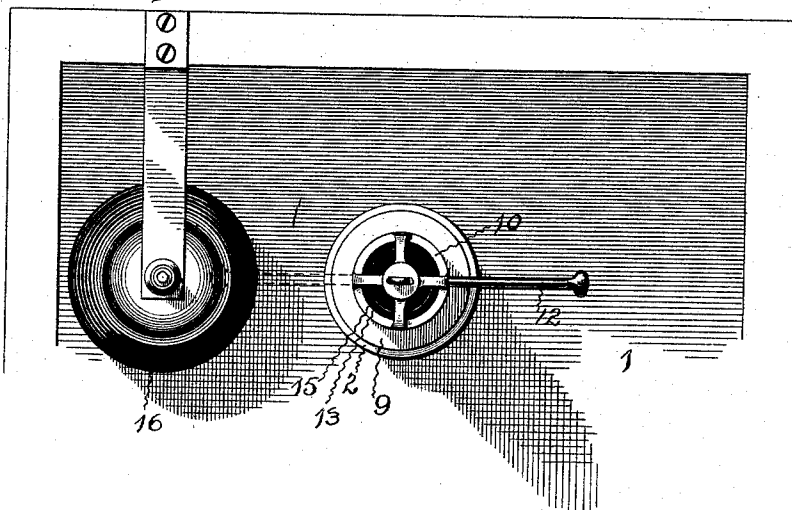
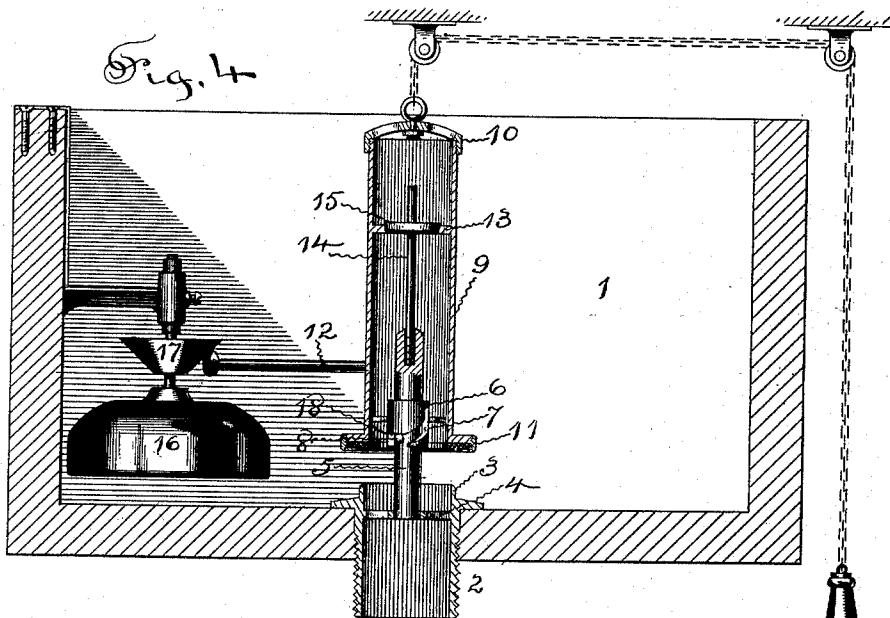


Fig. 4



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UNITED STATES PATENT OFFICE.

CORNELIUS BIRKERY, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE
BIRKERY MANUFACTURING COMPANY, OF SAME PLACE.

TANK-VALVE.

SPECIFICATION forming part of Letters Patent No. 483,296, dated September 27, 1892.

Application filed May 7, 1892. Serial No. 432,142. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS BIRKERY, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Tank - Valves, of which the following is a full, clear, and exact specification.

The invention relates to the class of valves provided for the outlets of tanks containing water for flushing closets, the object being to provide a simple, cheap, and easily-operated valve of this class which when open will allow a large quantity of water to escape for flushing the closet in a short period and tightly seat itself when the desired quantity of water has passed out without gurgling, sucking, hissing, or hammering, and which when shut has an escape, so that the tank cannot overflow.

Referring to the accompanying drawings, Figure 1 is a sectional view of a tank, showing in side elevation the valve as closed. Fig. 2 is a similar view of the tank, showing the valve as open and cut in central section. Fig. 3 is a plan of the valve and a portion of the tank; and Fig. 4 is a sectional view of the tank, showing in central section a modified form of valve open.

In the views, 1 indicates a tank of any size, shape, or construction for containing water or any other flushing liquid, which is filled in the usual manner—ordinarily by means of a ball-cock. In an opening in the bottom of this tank is placed a bushing 2, preferably having a flange on one side and a threaded nut on the other to hold the bushing in place in the opening through the bottom of the tank. Of course the end of the duct or pipe leading to a closet which is attached to the bushing may be screwed close against the bottom of the tank, if desired, to dispense with the nut on the under side. The upper edge of the bushing is shaped to form a valve-seat 3, and supported by the arms or spider 4 on the interior of the bushing is a post 5, fitted to slide upon which is a sleeve 6. A spiral groove 7 is cut in this sleeve, and into it projects a pin or stud 8 on the post, so that as the sleeve moves up or down the post it is given a rotary movement. This same motion,

however, will be imparted to the sleeve if the slot is cut in the post and the pin projects from the interior of the sleeve. Secured to the sleeve is a cylinder 9, that usually extends nearly to the top of the tank and has on its upper end an open cap or bail 10 and on its lower end a ring 11, of any suitable material, as soft metal, asbestos, or leather, adapted to set against and make a tight joint with the upper edge of the bushing 2 to close the valve. A chain with an ordinary handle within convenient reach is connected by means of a swivel with the cap or bail, so that when lifted by the chain the cylinder will be free to rotate. To the exterior of the cylinder is secured a rod or arm 12, having on its extremity a ball of any suitable material, usually rubber, while on the interior of the cylinder is a valve-seat 13. Supported by the post 3, either loosely or firmly, is a rod 14, with a disk 15, adapted to close against the seat 13 when the cylinder is raised. Held adjacent to the cylinder by an arm attached to the side of the tank is a float 16, having a limited movement up and down, according to the position of the collar which holds it, this collar being adjustably held in the arm by any convenient means. The upper surface of the float is indented, hollowed, or grooved for engaging the ball on the arm projecting from the cylinder, or a wedge, trip, or cone 17 may be secured to the stem of the float, as shown in Fig. 4, for engaging the ball.

When the tank is filled with water and the valve is closed, as shown in Fig. 1, the cylinder is down, so that the packing at the lower end rests tightly against the upper edge of the bushing and the seat 13 is drawn away from the disk 15, leaving an open passage through the cylinder to the flushing-pipe, and should the water rise too high in the tank it will flow over the top of the cylinder through this passage. Of course at this time the buoyancy of the water keeps the float at its highest level. When the cylinder is raised by pulling the handle and chain to draw the valve from its seat and allow water to escape for flushing a closet, it is rotated by the spiral groove in the sleeve and pin on the supporting-post, so that the arm is swung around and engages the float, the ball catching into the

groove or hollow and holding the parts in that raised position, as shown in Fig. 2. When, however, a sufficient quantity of water has flowed through the outlet to reduce the buoyancy, the float drops with the receding water, which movement releases the ball from the hollow in the float, so that the cylinder is free to rotate and drop back by gravity to close the valve and stop the outflow of water. When the cylinder is raised and the water is flowing out, the seat 13 is brought up to the disk 15, so that the passage through the cylinder from the top is closed to prevent the entrance of air, which causes suction, hissing, gurgling, and hammering in the pipes.

In the form shown in Fig. 4 the spiral groove formed in the sleeve is flattened at the lower end, forming a shoulder 18, so that when the cylinder is pulled up the pin enters this part of the groove beneath the shoulder 18 and holds the cylinder raised. When the slot is formed in this manner, the ball passes beneath the wedge or cone when the cylinder is lifted, so that when the float drops as the water recedes the cone forces the ball and arm to one side, throwing the flat shoulder off the pin, so that the cylinder can drop and close the valve.

The valve is simple and cheap in construction, can be readily placed in position at the outlet of any tank, and can be easily operated. When the valve is open, a large quantity of water is permitted to pass freely through the outlet for flushing a closet without noise of any kind, and when the desired amount of water has escaped the valve quickly closes without causing any hissing or water-hammer in the pipes.

I claim as my invention—

1. In combination with a tank having an opening through the bottom and a valve-seat around the opening, a reciprocating and rotary cylinder supported above the opening, a handle and connection for lifting the cylinder, a

float located adjacent to the cylinder, a trip attached to the float, and an arm projecting from the cylinder into the path of the trip, substantially as specified.

2. In combination with a tank having an opening through the bottom and a valve-seat around the opening, a reciprocating and rotary cylinder supported above the opening, a handle and connection for lifting the cylinder, a float located adjacent to the cylinder, and an arm projecting from the cylinder and adapted to engage the float, substantially as specified.

3. In combination with a tank having an opening through the bottom and a valve-seat around the opening, a reciprocating cylinder supported above the opening, a handle and connection for lifting the cylinder, a stationary rod supported by a projection from the valve-seat, and a valve-disk connected with said rod, substantially as specified.

4. In combination with a tank having an opening through the bottom and a valve-seat around the opening, a movable cylinder supported above the opening, a handle and connection for lifting the cylinder, an incline for rotating it when lifted, a float located adjacent to the cylinder, and an arm projecting from the cylinder, adapted to engage the float, substantially as specified.

5. In combination with a tank having an opening through the bottom and a valve-seat around the opening, a cylinder attached to a sleeve borne by a post supported by the tank, a handle and connection for lifting the cylinder, an incline and pin for rotating the cylinder when lifted, a float located adjacent to the cylinder, and an arm projecting from the cylinder and adapted to engage the float, substantially as specified.

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Witnesses:

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