No. 750,955. PATENTED FEB. 2, 1904.

J. E. ERICSON.

AUTOMATIC FLUSHING TANK.

APPLICATION FILED OCT. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

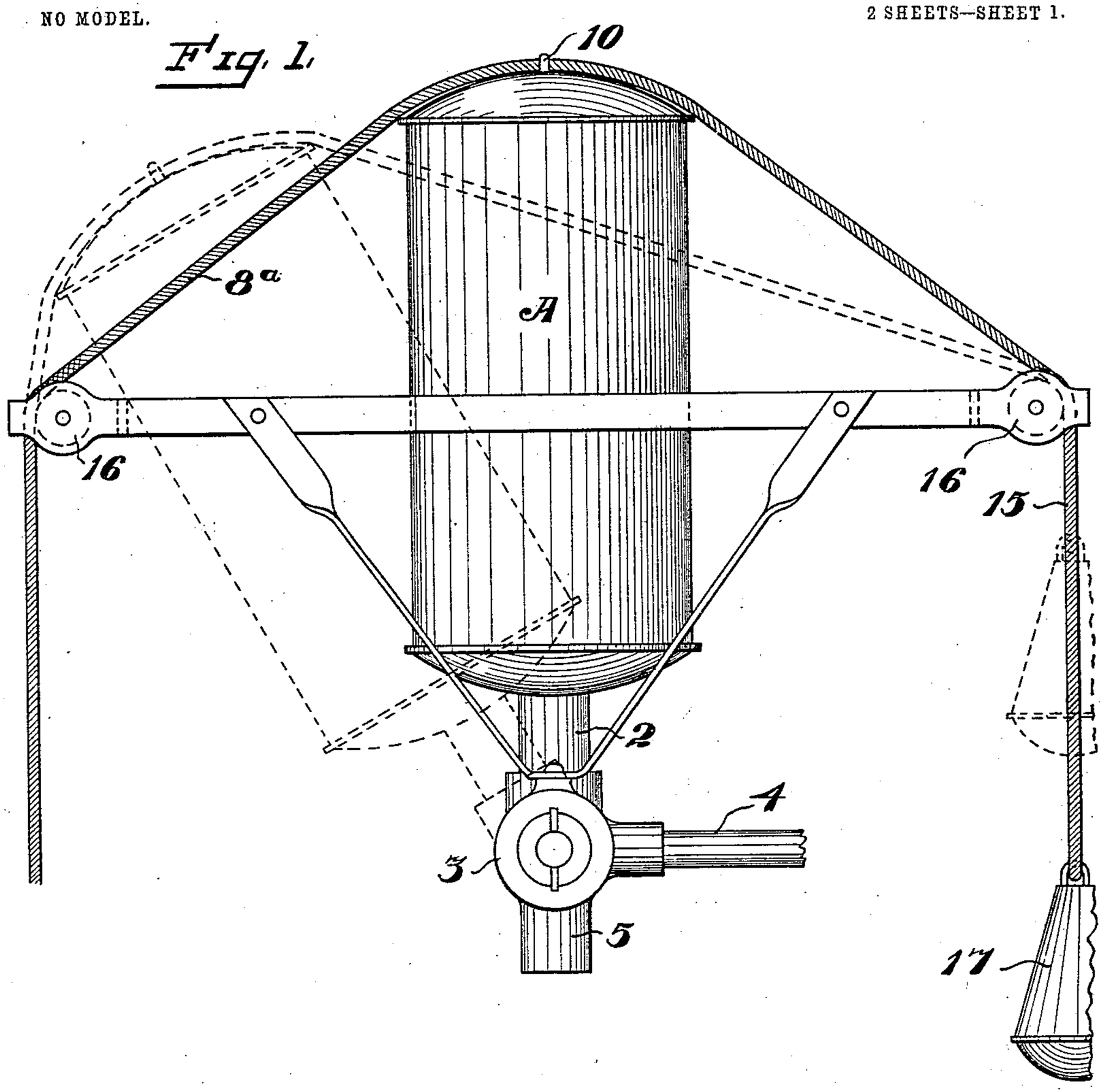


Fig. 2.

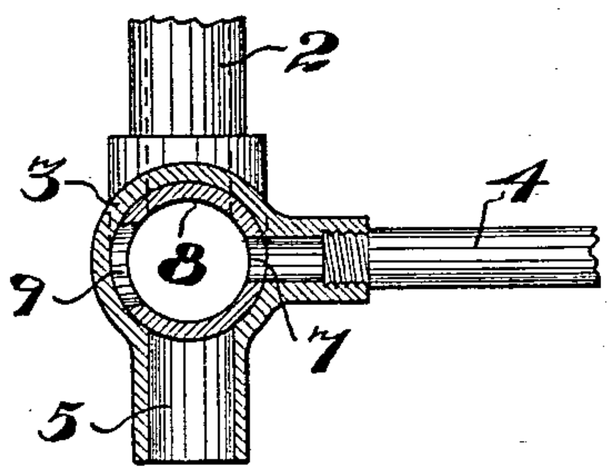
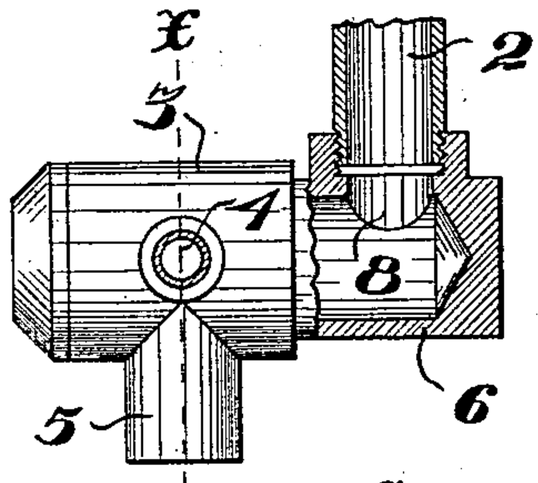


Fig. 3.



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Inventor,
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by Geo. H. Strong, atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 750,955. PATENTED FEB. 2, 1904.

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AUTOMATIC FLUSHING TANK.

APPLICATION FILED OCT. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

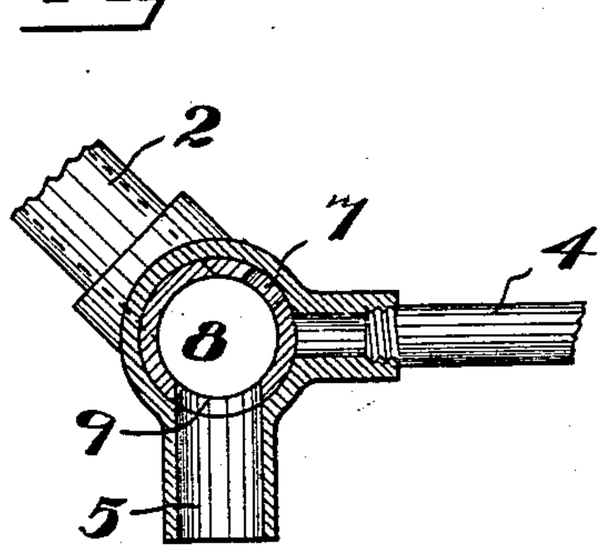


Fig. 5.

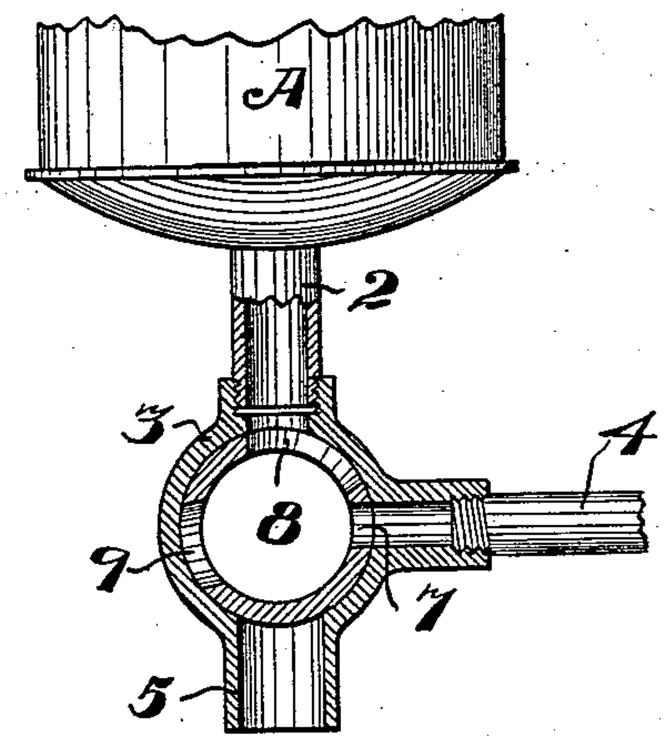
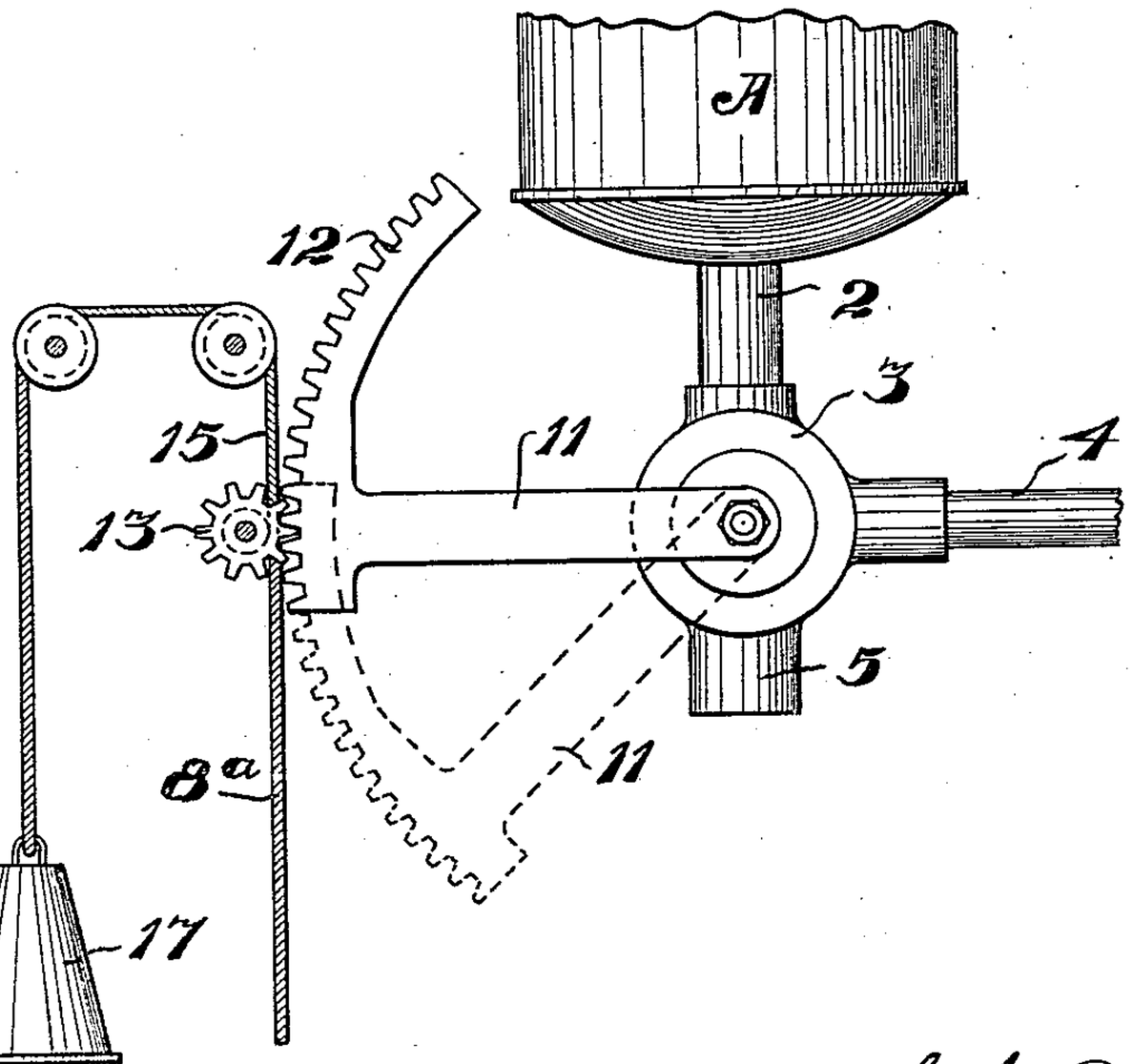


Fig. 6.



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No. 750,955. Patented February 2, 1904.

UNITED STATES PATENT OFFICE.

JOB E. ERICSON, OF SAN FRANCISCO, CALIFORNIA.

AUTOMATIC FLUSHING-TANK.

SPECIFICATION forming part of Letters Patent No. 750,955, dated February 2, 1904.

Application filed October 19, 1903. Serial No. 177,690. (No model.)

To all whom it may concern:

Be it known that I, JOB E. ERICSON, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Automatic Flushing-Tanks, of which the following is a specification.

My invention relates to a tank or receiver such as may be employed for flushing and like purposes; and it consists in a means for introducing water into the tank against the pressure of air therein until the tank is approximately filled with water under pressure and a means for discharging said limited quantity of water for the required purposes and independent of any connection with the supply-main.

My invention also comprises details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is an elevation of my invention, dotted lines showing tilt of receiver. Fig. 2 is a transverse section of valve on line *x x*, Fig. 3. Fig. 3 is a side view of valve in partial section. Fig. 4 is a transverse section of valve on line *x*, Fig. 3, with valve open to discharge contents of receiver. Fig. 5 is a vertical central section of modified valve. Fig. 6 is a front elevation of modified form.

Water for flushing purposes is usually drawn directly from a source of supply under such pressure as may be obtained and under such conditions that the only limitation of the flow will be the closing of the valve.

It is the object of my invention to provide a receptacle for holding a given quantity of water to approximately fill the receptacle with water from a source of supply under pressure which will be sufficient to force the water into the receptacle and compress a body of air in the upper part thereof, which afterward serves to force out the limited body of water under pressure of the compressed air within the tank. This may be accomplished in various ways.

As shown in the accompanying drawings, A is a tank or receiver suitably supported with relation to the point where its services may be needed. The tank may be either stationary with a movable valve or the tank may be mounted upon a turnable sleeve which allows the tank to tilt to one side, said sleeve having openings connecting it with the source of supply and with the discharge-passage.

As shown in Fig. 1, A is the tank or receiver supported by means of a pipe 2, projecting from the bottom and turnable with relation to a sleeve or socket 3. Into one side of this sleeve or socket is connected a pipe 4 from the source of supply, and at another point is connected the discharge-pipe 5. Interior to the sleeve 3 is a revoluble valve 6, having passages 7 8 9 made through it, and these passages are so formed as to open communication under certain conditions between the supply-pipe 4 and the interior of the receiver A, and when the valve is turned to cut off communication with the pipe 4 it may open communication between the tank and the discharge-pipe 5. This may be effected either by turning the valve or by tilting the tank. As shown in Fig. 1, the pipe 2, which connects with the tank, is so connected with the valve 6 that the two are turnable in unison.

Under normal conditions the tank A remains in a vertical position and then the pipe 4 communicates through the passages 7 and 8 in the valve with the pipe 2 and the interior of the tank, while communication through the opening 9 and the pipe 5 is cut off. Under these conditions water will flow from the pipe 4 and the source of supply into the receiver A under such pressure as is carried by the main which supplies the pipe 4.

The pipe 4 may be of comparatively small diameter, since it is not necessary to fill the receiver A very rapidly, and the water flowing through the pipes and passages, as previously described, will compress the air in the upper part of the receiver A until there is a substantial equilibrium of pressure between the interior of the tank and the source of supply. In this condition the parts will remain until such time as it is desired to use the supply in the receiver A for flushing purposes. This is effected by turning the receiver with relation to the discharge-valve or the valve with relation to the receiver.

As shown in Fig. 1, the receiver A is turn-

able in unison with the valve 6. I have here shown the receiver as counterbalanced by means of a weight 17 and a rope or chain 15 passing over a direction-pulley, as at 16, and thence leading to a point of attachment upon the receiver, as at 10. This weight is sufficient to normally maintain the receiver in its upright position. The rope may be continued or another one carried from the receiver to a point within reach of the operator, as at 8^a. By pulling upon this rope the receiver will be tilted about its point of support, as shown in Fig. 1, and this will carry the port 7 out of line with the pipe 4 and the port 9 into line with the discharge-passage 5. The port 8 is sufficiently wider than the ports 7 and 9 so that it will always remain in open communication with the receiver A. Thus when the receiver has been tilted, as described, communication is opened through the ports 8 and 9 with the discharge-pipe 5 and the pressure of air within the receiver A will cause the water to be rapidly discharged to the point required. The pipe 5 is made much larger than the inlet-pipe 4, so that the volume of water in the receiver will be discharged with sufficient rapidity to perform its office.

When the receiver is filled with water, the weight of water in the receiver will be sufficient to overcome that of the counterbalance 17 after the receiver has been tilted by a pull upon the cord 8^a, and it will remain in this position until nearly or quite discharged, when the superior weight of the counterbalance 17 will automatically return the receiver to its vertical position and again open communication through the valve and the pipe 4 with the source of supply. The receiver will thus be tilted to discharge either by pulling upon the cord 8^a or by connecting it with some movable part which will automatically pull upon the cord when the flushing is required, and the receiver will be returned to its normal position automatically after it has been discharged.

It will be manifest that the receiver might remain stationary and the valve could be turned independently. This is well shown in Figs. 5 and 6, in which the valve has an arm or lever 11, and this arm carries a segmental rack 12 at its outer end.

13 is a pinion suitably journaled and engaging with the rack 12. In this case the weight 17 is connected by the cord 15 with a drum mounted upon the shaft of the pinion 13, and the cord 8^a is also coiled upon the drum, so that by pulling upon the cord the drum will be revolved to wind up the cord 15 and raise the weight 17. The drum is of small diameter and may have a slight spring-pressure, so that the weight 17 will only cause it to revolve slowly as the weight sinks, and the turning of the pinion 13 will act through the segment 12 and the arm 11 to gradually close the valve, the movements being so timed that the valve will be closed when the receiver is approximately empty.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a closed air-tight receiver, of a source of water-supply under pressure, a discharge or flushing pipe, a single rotary valve with ports whereby the supply and discharge are alternately connected with the lower part of the receiver, and mechanism whereby the receiver may be tilted and the valve moved so that the position of said ports is changed to first connect the supply with the tank and subsequently to close the supply and connect the discharge.

2. The combination with an air-tight, tiltably-mounted tank or receiver, a pipe opening from the lower part thereof, a valve and a casing within which it is turnable, said valve actuated by the tilting movements of the receiver, a pipe of small capacity connecting the valve-casing with a source of supply under pressure, a discharge-pipe of large capacity, also connected with the casing, ports made in the valve by which the supply and discharge pipes may be alternately and separately connected with the receiver, and mechanism by which the receiver is tilted and connection with the discharge maintained until the receiver is emptied.

3. The combination of an oscillatory air-tight tank or receiver having a pipe connected with the lower part, a valve and a casing within which it is turnable, said valve connected to the receiver so as to partake of the oscillations thereof, a small pipe connecting said casing with the source of supply, a large discharge-pipe also connected with the casing, ports formed in the valve so as to separately connect the supply or discharge with the tank, mechanism by which the tank may be tilted and the valve may be fully opened to the discharge and remain open until the tank is emptied, said mechanism acting to automatically return the tank and valve whereby the valve connects the supply with the receiver.

4. The combination of an oscillatory air-tight tank having a pipe connected with the lower part, a valve movable with the tank and a casing within which it is turnable, a supply and a discharge pipe connecting with the casing, ports formed in the valve whereby the normal position of the tank and valve connects the supply-pipe with the interior of the tank, a connecting-cord or the like whereby the tank is tilted and the valve is turned to close the supply and open communication between the tank and the discharge, a counterbalanced weight whereby the valve is maintained in its open position until the tank is substantially discharged, said weight acting to close the discharge and open the supply.

5. The combination of a tank or receiver

having a pipe connected with the lower part, a valve turnable in a casing and connection between the receiver-pipe and the valve, a supply and a discharge pipe connected with the casing, ports in the valve adapted to alternately and independently connect the receiver with the supply and the discharge, a counterbalance-weight, a cord connecting it with the receiver, means for tilting the receiver and the valve and connecting the receiver with the discharge, said counterweight acting to automatically return the receiver and valve to their normal position when the water has been substantially discharged from the receiver.

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

JOB E. ERICSON.

Witnesses:
J. P. BROWNLEE,
I. C. DRATHMAN.