

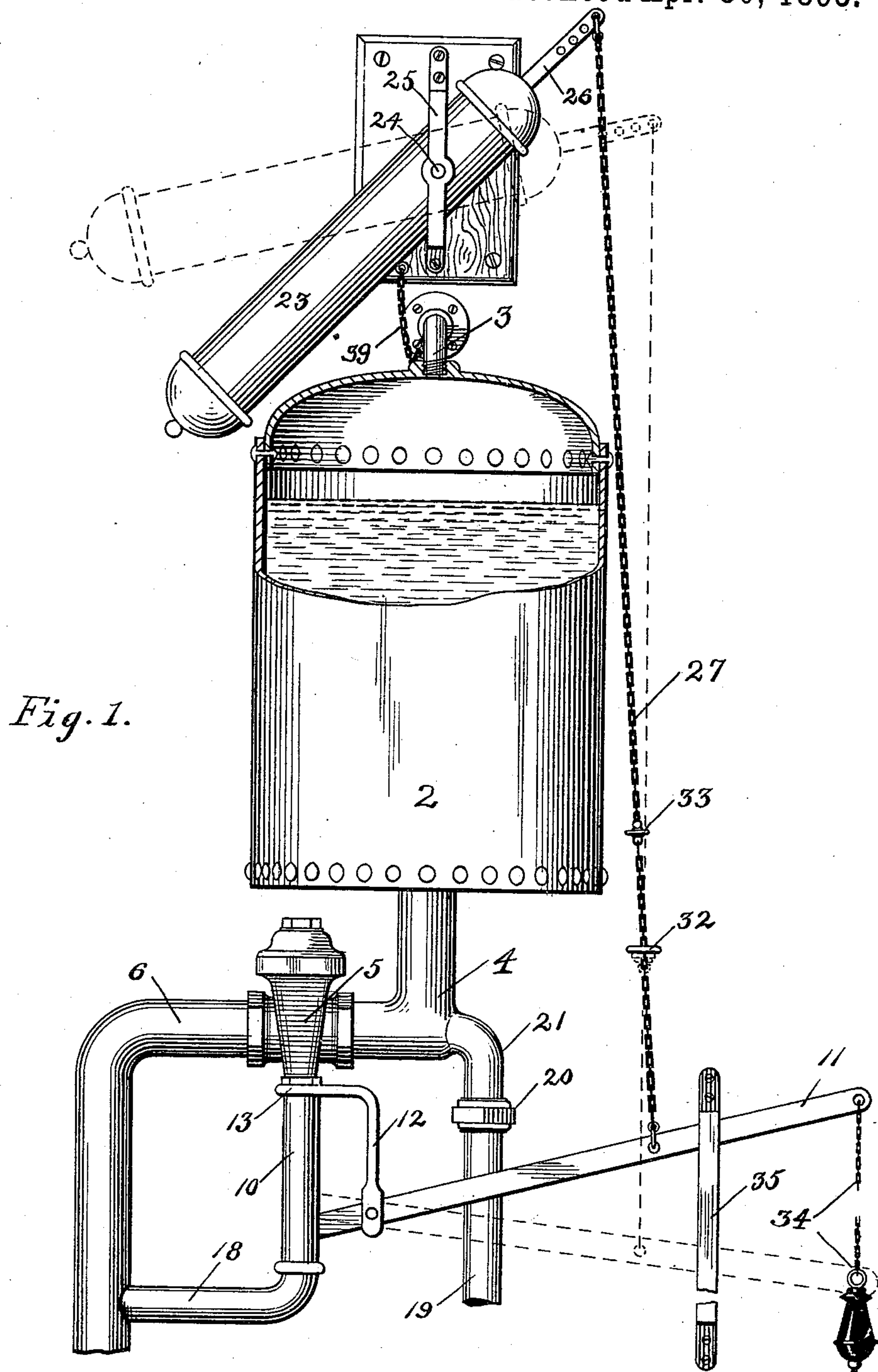
(No Model.)

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J. G. BEATTIE.
FLUSHING APPARATUS FOR WATER CLOSETS.

No. 538,315.

Patented Apr. 30, 1895.



Witnesses;

Henry B. Avery.
F. B. Lyon

Inventor,

John G. Beattie.

*By Paul Hawley
his attorneys.*

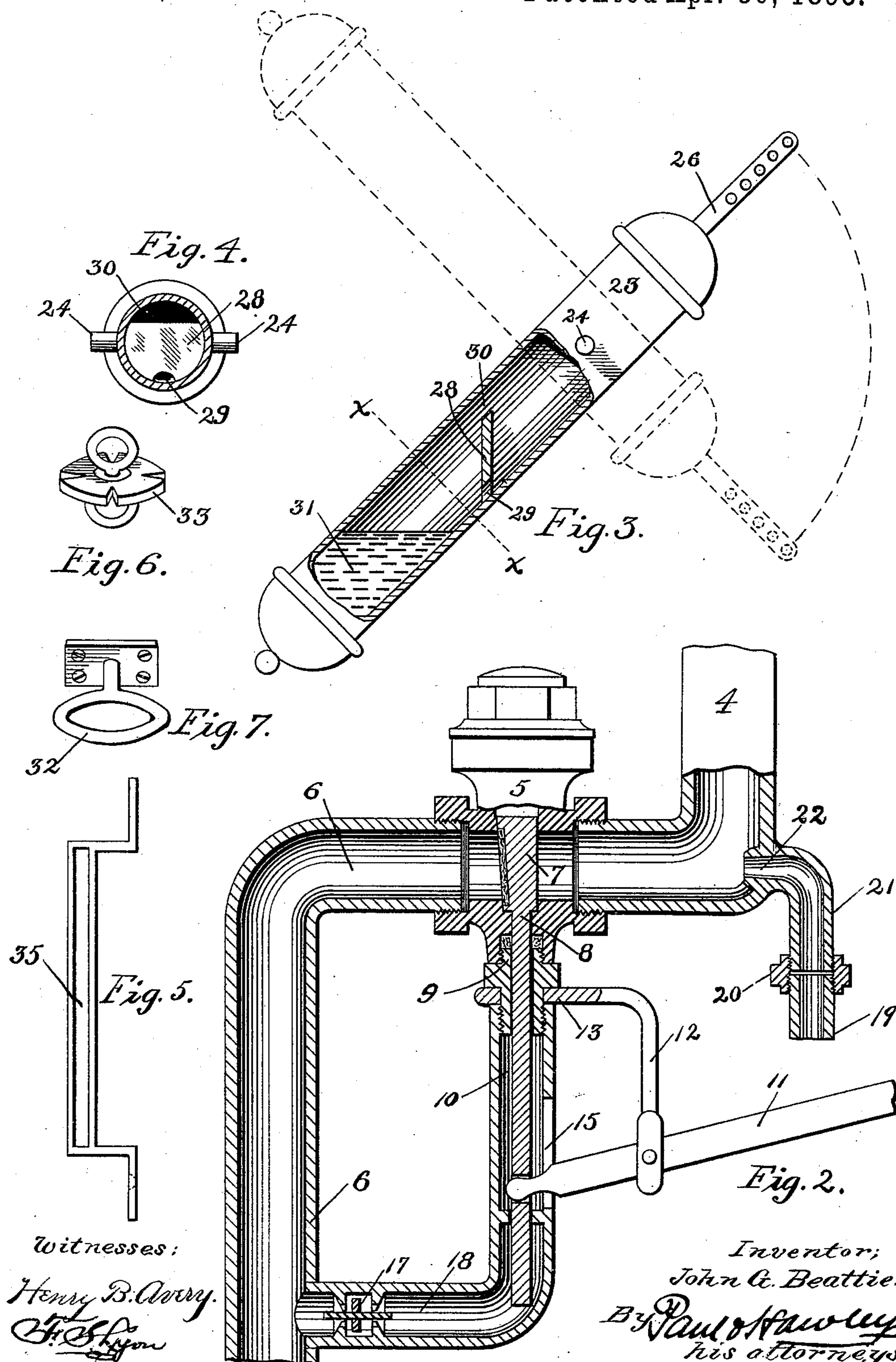
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UNITED STATES PATENT OFFICE.

JOHN G. BEATTIE, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF
TO JOHN KING, OF SAME PLACE.

FLUSHING APPARATUS FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 538,315, dated April 30, 1895.

Application filed March 30, 1894. Serial No. 505,661. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. BEATTIE, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Flushing Apparatus for Water-Closets, of which the following is a specification.

My invention relates to means for flushing water closet bowls and in particular to means whereby the work may be done effectively with very little water and wholly without noise.

The object of my invention is to provide an effective and noiseless flushing tank for water closets and to prevent leakage therefrom.

To this end my invention consists in the combination with a closed air and water tight tank of a pipe leading from the bottom thereof, a valve arranged in the said pipe, a valve operating lever, an automatic time-closing device in connection with said lever, and means for drawing down said lever to open said valve and to move said automatic device into position for action; and further my invention consists in a combination supply and siphon connection, substantially as hereinafter described and as particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation of a flushing apparatus embodying my invention, the upper part thereof being in section. Fig. 2 is an enlarged sectional detail of the valve and the connections thereto. Fig. 3 is an enlarged detail of the tilting cylinder of the automatic valve closing apparatus. Fig. 4 is a section thereof on the line *x* of Fig. 3. Fig. 5 is an enlarged view showing the guide for the valve lever. Figs. 6 and 7 are perspective views of the ring and yielding or temporary stop respectively, which, I employ in connection with the automatic valve closing device.

As shown in the drawings, 2 represents a water tank which is closed at all points and made both air and water tight. The tank is held up by the pipes beneath it and by a small bracket 3. A pipe 4 leads from the bottom of the tank and a branch therefrom is connected with the gate valve 5, from the other side of

which a discharge pipe 6 leads to the water closet bowl. In Fig. 2 the gate 7 of the valve is shown, the same being arranged to lift upwardly and the stem 8 thereof extending from the bottom of the gate down to a suitable stuffing box 9 and into a small sleeve 10, which preferably has a guide for the lower end of the stem. The valve operating lever 11 is pivoted upon the arm 12 depending from a connection 13 fixed on the stuffing box 9. The end of the lever projects into a slot in the stem 8, and the sleeve 10 is provided with a long slot 15 to permit movement of the lever. The sleeve 10 at the bottom turns in the elbow and extends from thence to a connection with the flushing pipe 6. Small check-valve 17 is arranged in the lower part 18 of the sleeve 10 and is adapted to permit the exhaust of any air which may be in the pipe 6 during the downflow of water. Further any leakage from the stuffing box around the stem is carried out through this valve by means of the discharge pipe. The supply pipe 19 is much smaller than the discharge pipe 6 and is connected by a union 20 to the branch 21 of the pipe 4, which branch extends into the pipe 4 and terminates in the jet or jet opening 22 adapted to project the water into or toward the valve.

For closing the valve quickly and firmly after the tank has been emptied I provide the shifting weight cylinder 23, which is pivoted in its upper end upon the trunnions 24 in bearings 25. A chain 27 extends from the arm 26 on the upper end of the cylinder dropping therefrom to the valve lever 11. In about the middle of the cylinder I provide a partition 28 preferably inclined and having a small opening 29 at the bottom while at the top a much larger opening 30 is left.

31 represents a small body of mercury or other heavy liquid, which when the cylinder is tilted quickly flows over the top of the partition 28 and into the other end of the cylinder. As the cylinder drops into the slightly inclined position shown in dotted lines in Fig. 1 the mercury will be retained in the upper end of the cylinder and can only escape from the same through the hole 29 in the bottom of the partition. The flow of the mercury is therefore slow and the cylinder will not drop

until sufficient mercury has passed to counterbalance that in the upper end thereof. To hold the cylinder during this time I preferably provide a small ring 32 upon the wall
 5 and fix upon the chain 27 a small spring piece or disk 33 preferably of rubber and which is easily drawn through the ring when the valve lever is pulled down by means of the pull-chain 34. When the pull and the lever are re-
 10 leased this rubber disk moves up against the under side of the ring and its strength is such as to prevent the cylinder from dropping in place, therefore holding the same in the position shown in dotted lines in Fig. 1. When suf-
 15 ficient mercury has passed through the small hole 29 and into the bottom of the cylinder, to counterbalance the strength of this spring, the same will be quickly drawn through the ring, whereupon the cylinder being freed will
 20 drop instantly and with such force as to strongly and firmly draw down and close the gate-valve. I preferably provide a limiting stop to prevent the cylinder being thrown too high, using for the purpose a tie chain 39. It
 25 is desirable that the rubber disk should center in the wall ring, and I therefore provide a guide 35 for the valve lever to prevent lateral movement thereof; and further so arrange the fastenings of the chain 27 that said
 30 chain will occupy a vertical position when the lever is drawn down. I further provide several holes in the arm 26, in order that the leverage may be adjusted as required.

The operation of my device may be briefly
 35 described as follows: The tank being empty, except for air contained therein, and the valve closed, water will flow through the pipe 19 into the pipe 4 and thence into the tank, filling the
 40 same until the air in the tank has been so far compressed that its pressure counterbalances that of the water supply. The valve may then be opened by drawing down the lever 11 and the strong stream of water emitted from the
 45 nozzle or jet 22 will start the water from the tank, the supply of water from the tank being quickened and added to by that continuously flowing from the nozzle 22. Sufficient
 50 time will be allowed for the tank to empty; the valve being held open by the engagement of the ring and the temporary stop spring on the chain 27. Instantly when the tension of
 55 said spring is overcome, the cylinder will fall and close the valve. After this the passage of the supply water to the pipe 6 being closed, it will flow into the tank to again fill the same. The compressed air in the top of the tank aids
 60 in expelling the water, and it is obvious that the tank after each operation will be filled with air rushing up the then empty flushing
 65 pipe. Hence the tank can never become air bound.

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

65 1. The combination, with the closed tank, of a pipe leading therefrom, a valve for clos-

ing the outlet from said pipe, a flushing pipe leading from the opposite side of the valve, means for operating said valve, and an open
 70 supply pipe leading into the first mentioned pipe at a point to project a stream of water through said valve, substantially as described.

2. The combination, with the closed tank, of a pipe leading therefrom, a valve for closing the outlet from said pipe, a flushing pipe
 75 leading from the opposite side of the valve, means for operating said valve and an open supply pipe leading into the first mentioned pipe at a point between the tank and said
 80 valve, and said supply pipe being provided with a nozzle or jet opening into said pipe adapted to project the stream of water toward the valve, whereby an ejector action is
 85 obtained to draw the water from said tank when the valve is opened, substantially as described.

3. The combination, with the closed air and water tight tank, of the pipe leading from the
 90 bottom thereof, the valve in said pipe, a discharge or flushing pipe leading from the opposite side of said valve, a combined ejector and supply pipe connected with said pipe between the valve and the tank, the stem of
 95 said valve, an operating lever connected therewith, the pipe or sleeve wherein said stem is operated, the branch from the lower end of said pipe returning to the flushing pipe where-
 by leakage is disposed of, substantially as described.

4. The combination, with the closed air and
 100 water tight tank, of the pipe leading from the bottom thereof, the valve in said pipe, a discharge or flushing pipe leading from the opposite side of said valve, a combined ejector
 105 and supply pipe connected with said pipe between the valve and the tank, the stem of said valve, an operating lever connected therewith, the pipe or sleeve wherein said stem is
 110 operated, the branch from the lower end of said pipe returning to the flushing pipe where-
 by leakage is disposed of, and a check valve provided in said branch to permit the escape
 of air from the flushing or discharge pipe, substantially as described.

5. The combination, with the tank, of the
 115 valved discharge pipe leading therefrom, the valve operating lever, a tilting cylinder, one end of the same connected with said lever, the partition provided in said cylinder, an
 120 opening in the bottom of said partition, and a liquid weight provided in said cylinder, all as and for the purpose specified.

6. The combination, with the tank, of the
 125 valved discharge pipe leading therefrom, the valve operating lever, a tilting cylinder, one end of the same connected with said lever, the partition provided in said cylinder, an open-
 130 ing in the bottom of said partition, a liquid weight provided in said cylinder, and means for holding said valve open temporarily during the action of said cylinder, substantially
 as described.

7. The combination, with the tank, of the
pipe leading therefrom, a valve connected
therewith, a discharge or flushing pipe leading
from the opposite side of said valve, the stem
5 of said valve, an operating lever connected
therewith, and an automatic time operating
device connected to said lever, and having for
its principal part a tilting pivoted cylinder
whereby said valve is strongly and firmly

closed at a given time after the opening there- 10
of, substantially as described.

In testimony whereof I have hereunto set
my hand this 21st day of March, A. D. 1894.

JOHN G. BEATTIE.

In presence of—

C. G. HAWLEY,
F. S. LYON.