

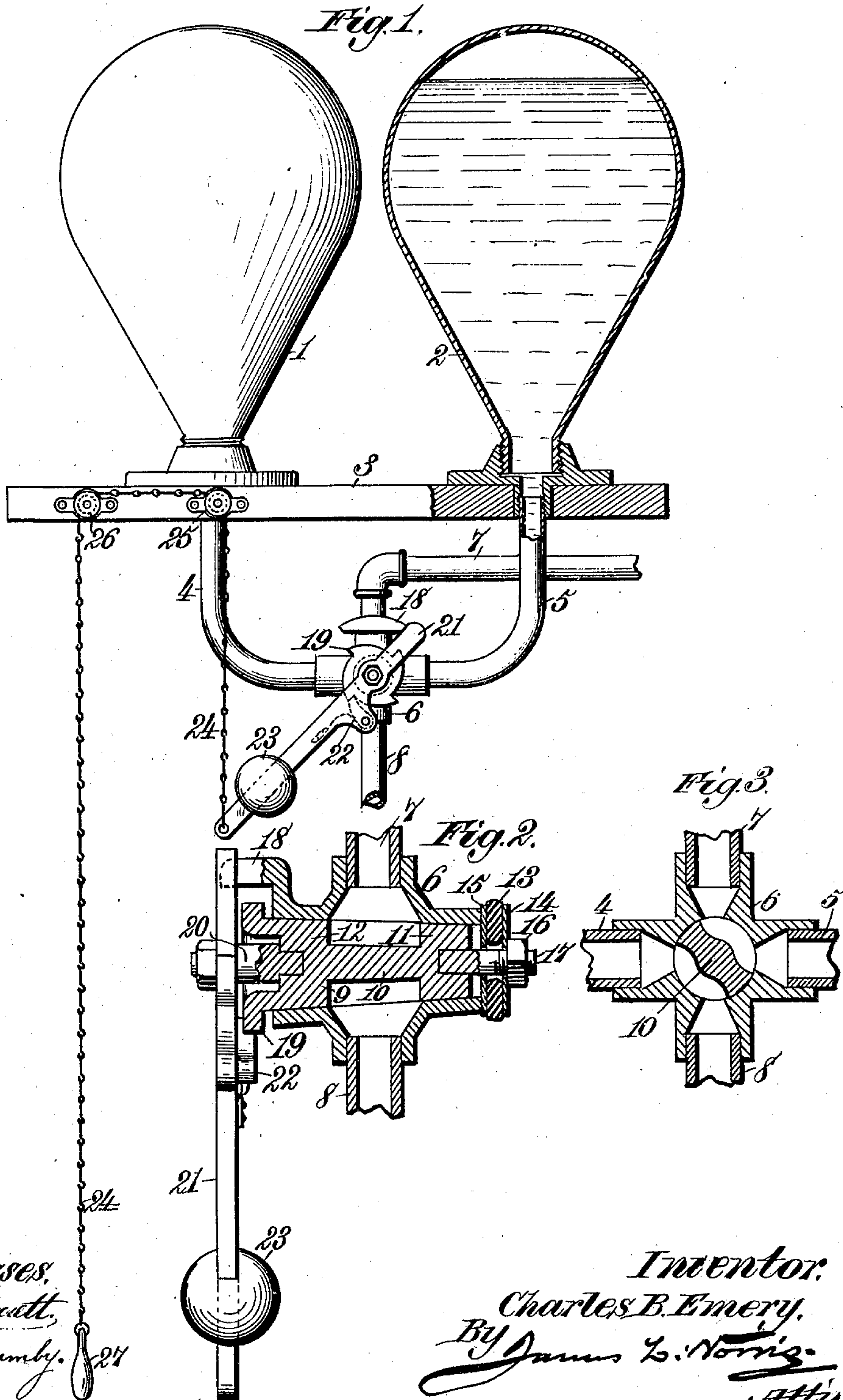
No. 665,887.

Patented Jan. 15, 1901.

C. B. EMERY.
FLUSHING APPARATUS.

(Application filed Mar. 9, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

CHARLES B. EMERY, OF SOMERVILLE, MASSACHUSETTS.

FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 665,887, dated January 15, 1901.

Application filed March 9, 1900. Serial No. 8,090. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. EMERY, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Flushing Apparatus, of which the following is a specification.

My invention relates to flushing apparatus for water-closets and the like, one object of the same being to simplify and otherwise improve apparatus of this kind which involves the employment of two closed tanks, one of which is filled while the other is being emptied and stores up within it compressed air which is utilized in discharging the water therefrom upon the next operation of the valve which controls the flow to the closet-bowl.

A further object of the invention is to provide an improved construction and method of operation of the controlling-valve for the inlet and discharge of the water.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be defined in the claims.

In the drawings, forming a part of this specification, Figure 1 is an elevation, partly in section, illustrative of my invention. Fig. 2 is a longitudinal sectional view of the valve, and Fig. 3 is a cross-section of the same.

Like reference-numerals indicate like parts in the different views.

In carrying out my invention I employ two water-tanks 1 and 2, preferably located side by side, supported upon a shelf or bracket 3 and closed at all points except their lower ends, through which the water is admitted for the purpose of filling them and from which the water is discharged for the purpose of emptying them. Leading from the lower end of the tank 1 and communicating with the inside thereof is a pipe 4, and leading from the lower end of the tank 2 and communicating with the interior thereof is a pipe 5. At the juncture of the pipes 4 and 5 is a valve-casing 6, into the upper end of which leads the supply-pipe 7 and from the lower end of which leads discharge-pipe 8, the latter communicating with the closet-bowl or other device which is to be flushed out by the apparatus. Fitting within the casing 6 is a rotary valve 9, comprising a central web 10, a conical head 11 at one end, and a similar head 12 at the other end.

The heads 11 and 12 are circular in cross-section and are maintained in close contact with the valve-seat on the inside of the casing 6 by means of a spring 13, preferably of rubber, located between two washers 14 and 15, the outer washer 15 being engaged by a nut 16 on the end of a bolt 17, screwed into the head 11 of said valve. In first applying the valve 9 to its seat the nut 16 is screwed up tight on the bolt 17, which action compresses the spring 13 and maintains the heads 11 and 12 in close contact with their respective seats. As the valve or its seat wears the inequalities will be taken up or compensated for by the action of the spring 13. Leakage in the valve is therefore prevented. The casing 6 is formed on one side with an overhanging lug or projection 18, which has two engaging portions and constitutes a double stop or check, as will hereinafter appear. The head 12 of the valve 9 is extended outside the casing 6 and is provided with a series, preferably four, of ratchet-teeth 19, the same being located directly beneath the overhanging lug 18. Secured in the outer end of the head 12 is a spindle 20, on which is mounted an operating-lever 21, having a spring-actuated pawl 22 thereon, which is adapted to engage the ratchet-teeth 19 when the lever is moved in one direction and to ride over said ratchet-teeth when the lever is moved in the opposite direction. The lower arm of the lever 21 is longer than the upper arm thereof and is provided with a ball or weight 23, which tends to return the lever by gravity to its normal position after it has once been actuated. To the extreme lower end of the lever 21 is attached an operating cord or chain 24, which passes up and around the pulleys 25 26 and has a handle 27 upon its lower end.

The operation of the device, constructed as above described, is as follows: With the valve 9 in the position in which it is shown in Fig. 3 of the drawings the passage is open between the pipes 7 and 5 to the inside of the tank 2, and through the pipes 4 and 8 from the tank 1 to the closet-bowl or other device to be flushed. The tank 1 is therefore discharging or has discharged its contents into the bowl, whereas the tank 2 is being filled or has been filled with water from the supply-pipe 7. As the water enters the tank 2 at its lower end

it rises therein and compresses the air in said tank at the upper end thereof until the pressure of said air and of the head of water is equal. Upon now pulling down the handle 5 27, attached to the cord or chain 24, the lower arm of the lever 21 is elevated until it strikes one side of the stop 18, and through the engagement of the pawl 22 on said lever with one of the ratchet-teeth 19 on the end of the 10 valve 9 said valve is turned a one-quarter revolution. Further movement than this at a single stroke of the operating-lever is prevented by the engagement of said lever with the stop or check 18, formed on the station- 15 ary valve-casing 6. As soon as the hand is removed from the handle 27 the lever 21 returns to its normal position by gravity, the pawl 22 riding over the inclined walls between two adjacent ratchet-teeth 19 and the short 20 arm of the lever 21 engaging the opposite side of the stop 18. When the valve has been turned a one-quarter revolution by the action described, the web 10 thereof lies at right angles to the position shown in Fig. 3 of the 25 drawings, and the passage from the pipe 5 to the pipe 8 is opened and the tank 2 is free to discharge its contents into the closet-bowl to be flushed, the flow of water from said tank to said bowl being caused by the weight of 30 said water assisted or augmented by the action of the compressed air at the upper end of said tank. At the same time the passage through pipes 4 and 8 is closed and the passage through the pipes 7 and 4 is opened. 35 Water from the source of supply can therefore flow into the tank 1, as heretofore described with reference to tank 2. It will thus be seen that as one tank is discharging its contents into the bowl or other device to be 40 flushed the other is being filled with water from the source of supply. It will also be observed that the movement of the valve 9 during the successive operations of the lever 21 is a continuous rotary movement and that 45 all wear between the valve and its seat will be taken up by the spring 13. It will be noted,

further, that it is impossible to turn the valve 9 through an arc of more than ninety degrees by a single operation of the lever 21 by reason of the engagement of said lever with the opposite sides of the double stop or check 18. 50

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

1. In a flushing device, the combination of 55 two tanks, pipes leading into the lower ends of the same, a valve-casing at the juncture of said pipes, a projecting lug thereon constituting a double stop, supply and discharge pipes leading into said casing, a rotary valve 60 controlling the passage from said supply-pipe to said tanks and from said tanks to said discharge-pipe, and a lever for operating said valve adapted to engage said stop on opposite sides for limiting its movements in both 65 directions, as and for the purpose set forth.

2. In a flushing device, the combination with two tanks, pipes leading into the lower ends of the same, a valve-casing at the juncture of said pipes, a projecting lug on said 70 casing having two engaging portions constituting a double stop, supply and discharge pipes leading into said casing, a rotary valve controlling the passage from said supply-pipe to said tanks and from said tanks to said dis- 75 charge-pipe, the said valve having one end projecting from said casing and provided with ratchet-teeth, a spindle fitting a socket in said valve, an operating-lever for said valve mounted on said spindle, and a spring-actu- 80 ated pawl on said lever adapted to engage said ratchet-teeth, the said lever having its movements in both directions limited by its engagement with opposite sides of said stop, as and for the purpose set forth. 85

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

CHARLES B. EMERY.

Witnesses:

J. C. JOSEPH FLAMAND,
GEORGE W. EMERY.