

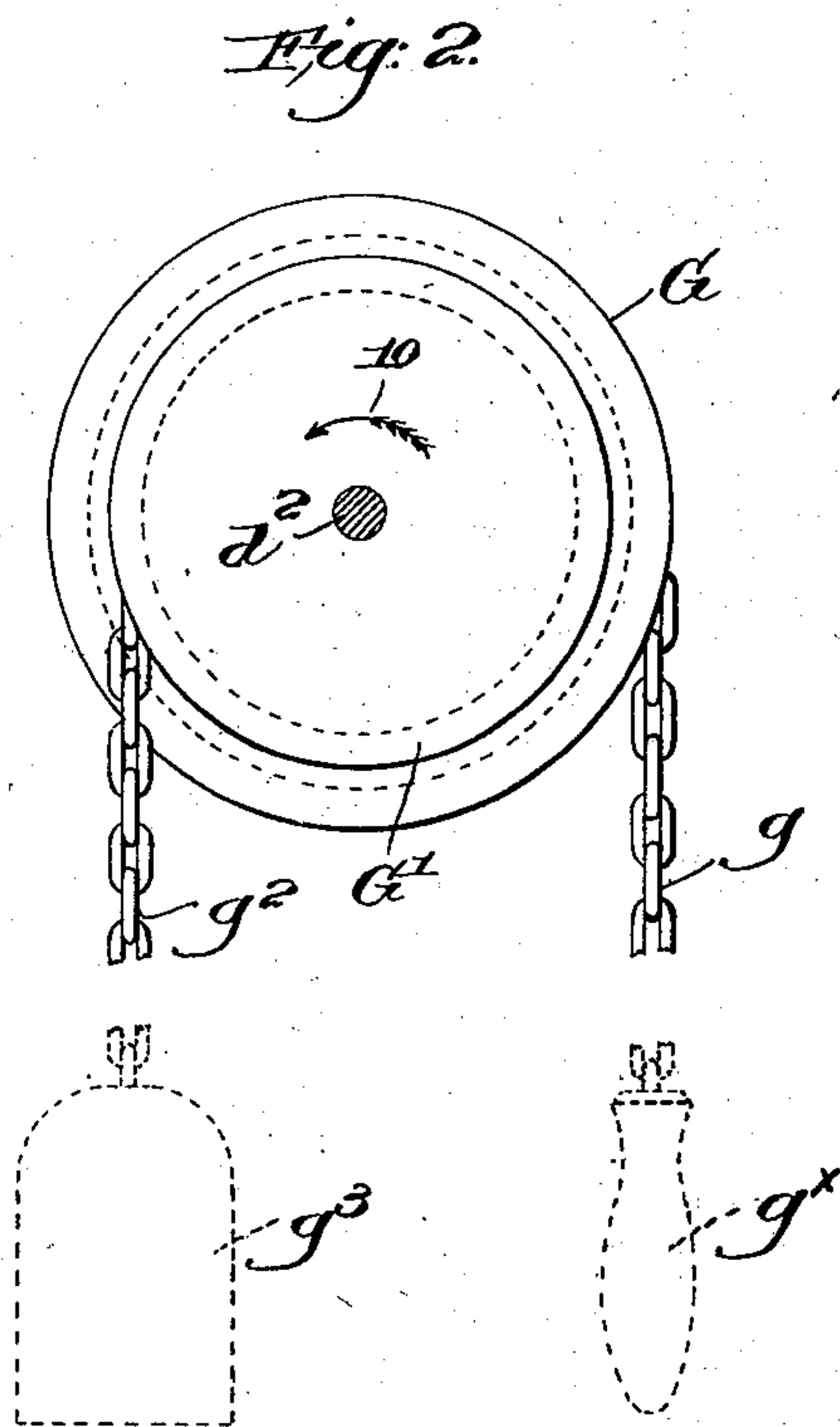
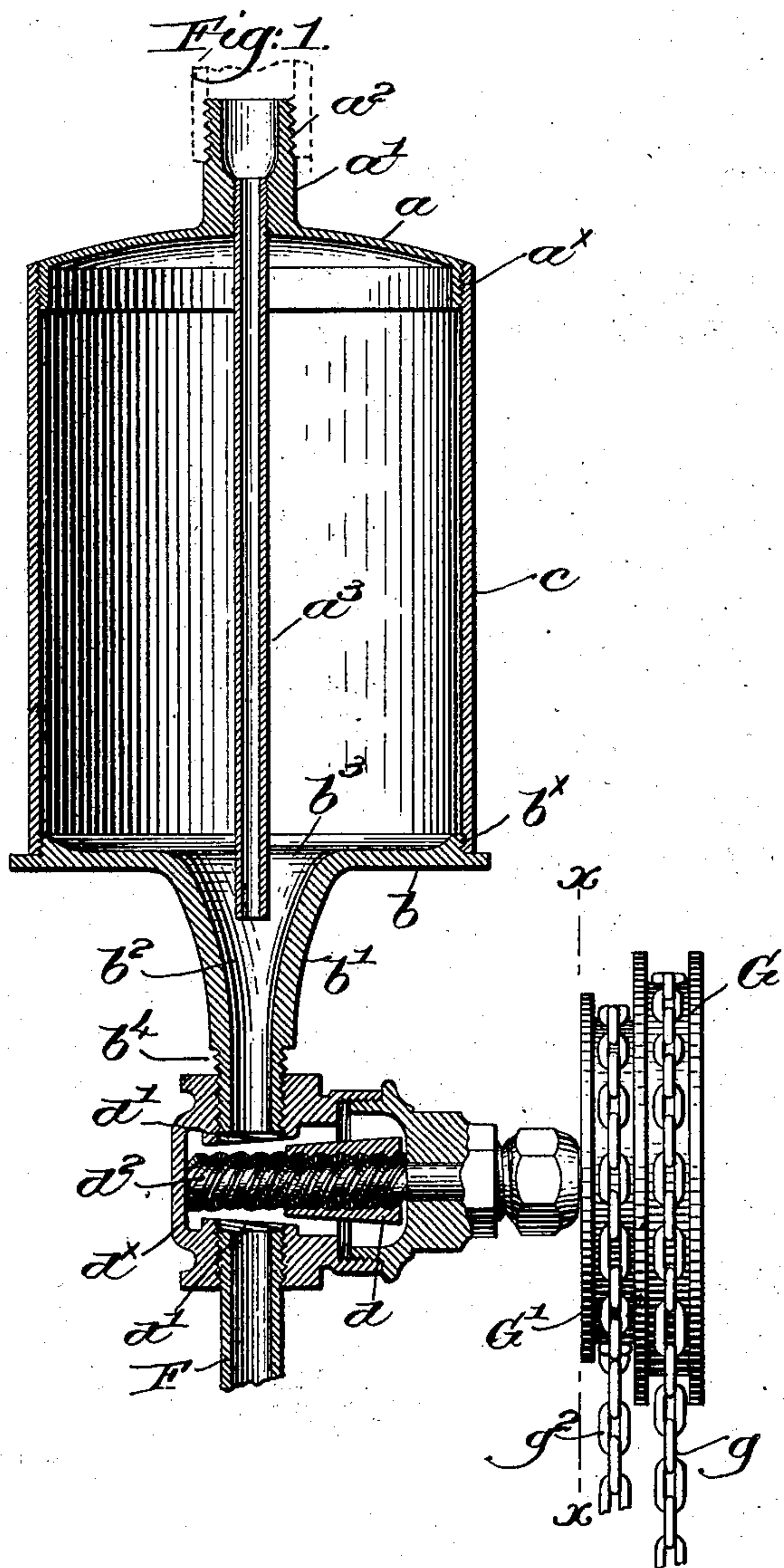
No. 702,060.

Patented June 10, 1902.

L. F. HAYNES.
FLUSHING TANK FOR CLOSETS.

(Application filed Nov. 28, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

LUTHER F. HAYNES, OF LUNENBURG, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO HENRY E. COWDREY AND CHARLES F. COWDREY, OF FITCHBURG, MASSACHUSETTS.

FLUSHING-TANK FOR CLOSETS.

SPECIFICATION forming part of Letters Patent No. 702,060, dated June 10, 1902.

Application filed November 28, 1900. Serial No. 37,969 (No model.)

To all whom it may concern:

Be it known that I, LUTHER F. HAYNES, a citizen of the United States, and a resident of Lunenburg, in the county of Worcester and State of Massachusetts, have invented an Improvement in Flushing-Tanks for Closets, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates more particularly to flushing apparatus for water-closet bowls; and it has for its object the production of novel means for accomplishing the desired results in a simple and very efficient manner.

My invention belongs to that type of such apparatus wherein the flushing system is in direct communication with the city water mains or pipes, the tank which forms a part of my novel apparatus containing no valves, floats, or other movable devices, a single controlling-valve external to the tank serving to govern the flushing operation.

Various novel features of my invention will be hereinafter described in the specification, and particularly pointed out in the following claims.

Figure 1 is a view, principally in vertical section, of a flushing apparatus embodying one practical form of my invention; and Fig. 2 is a side elevation of the valve-actuating drum to the right of the line $x x$, Fig. 1.

Referring to Fig. 1, I have shown a closed air-tight tank comprising ends or heads $a b$ and a side wall c , preferably made of metal, the heads being rigidly secured to the side wall in any suitable manner—as, for instance, by threaded connections $a^x b^x$. The head a is shown as provided with an external tubular boss a' , externally threaded at a^2 for connection to the service-pipe leading from the water-main. The head b is provided with an external tubular outlet boss or pipe b' , having a conical or contracted bore b^2 , forming a contracted throat, the opening b^3 forming the discharge-outlet for the contents of the tank. The boss a' has rigidly secured in its bore a supply-pipe a^3 , which is herein shown as extended through the tank and projecting into the throat b^2 beyond the opening b^3 , which

latter forms the inlet of the throat, the supply-pipe being concentric with the throat. A valve-case d^x is secured to the threaded end b^4 of the discharge or outlet pipe b' , and the outlet for the valve-case communicates with a pipe F , which leads to the closet-bowl, of any usual construction. (Not shown.) A valve d , mounted to slide back and forth relatively to the seat d' , is threaded to receive a correspondingly-threaded rotatable spindle d^2 , mounted in the valve-case, the valve being shown open in Fig. 1. Rotation of the spindle in one direction or the other opens or closes the valve, the valve mechanism *per se* not being of my invention, and any other suitable valve mechanism may be used instead of that herein illustrated without departing from the spirit and scope of my invention. A double drum or sheave $G G'$ is shown as fast on the valve-spindle, the larger drum G having wound upon it and attached thereto an actuating-chain g , provided with a suitable handle g^x , Fig. 2, while the smaller drum G' has oppositely wound upon it and secured at one end a chain g^2 , to the free end of which a weight g^3 is secured, heavy enough to normally turn the spindle in the direction of arrow 10 to shut the valve.

Supposing the connections with service-main and closet-bowl to be properly made, opening of the valve d permits the water to rush through the supply-pipe a^3 with city pressure into the contracted throat b^2 and through the valve-case to the flushing-pipe F and bowl, flushing the latter; but the stream of water rushing through the throat exhausts the air in the tank, so that a vacuum is produced therein, the action being similar to that of the injector. When the valve is thereafter shut, the water continues to flow from the supply-pipe a^3 ; but it passes back through the throat into and fills the tank, the flow stopping when the latter is filled. When next the valve is opened, the water from the supply-pipe again rushes through the throat; but this time it draws with it the body of water stored in the tank, so that the flushing of the closet-bowl is effected not only by the incoming water under service-pressure, but also by the volume of stored water in the tank. The

fact that the service-pressure is utilized in connection with the stored body of water enables a tank of comparatively small capacity to be employed, with the attainment of a much more effective and complete flushing than is possible with other flushing apparatus known to me, and the advantageous features of my invention over the well-known open-tank structure will be manifest. The emptying of the tank when flushing obviously forms a vacuum therein, so that after the controlling-valve is shut the tank will refill automatically.

I have shown the tank-outlet b^3 as of large area compared to the area of the supply-pipe a^3 , so that the tank will rapidly discharge its contents.

The principle of operation of the apparatus obviates the location of the tank, so that "head" is provided, and the elimination of all movable parts—such as valves, floats, &c.—in the tank makes the apparatus durable and quick in operation, and there is no liability of its getting out of order. The closed tank prevents overflow or leakage.

I have shown one practical embodiment of my invention without attempting to illustrate various changes or modifications which may be made by those skilled in the art without departing from the spirit and scope of the invention.

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

1. A closed tank, an outlet-pipe leading therefrom, a valve in said pipe to control the discharge from the tank, the said outlet-pipe between the tank and valve being provided with a throat of gradually-decreasing cross-sectional area from the tank to the valve, and a supply-pipe leading into the outlet-pipe and extended into the contracted portion thereof between the tank and valve.

2. A closed tank, a straight outlet-pipe con-

nected to the bottom portion of said tank, a valve in said pipe for controlling the discharge from the tank, the opening in the said outlet-pipe gradually contracting from the tank to the valve, and a supply-pipe concentric with said outlet-pipe and extended into the contracted portion thereof above the valve.

3. A closed tank, a discharge-pipe leading from its bottom, a controlling-valve in said pipe, the said pipe contracting gradually between the tank and valve, a relatively small supply-pipe concentric with the discharge-pipe and extended into the latter, the end of the supply-pipe being located in the contracted portion of the discharge-pipe between the valve and tank.

4. A closed tank, a discharge-pipe communicating with its bottom, a supply-pipe entering the top of the tank and extended downward into and concentric with the discharge-pipe, a controlling-valve in the latter, beyond the mouth of the supply-pipe, a manual actuator for the valve, and means to automatically close the valve.

5. A closed tank having a large outlet in its lower end, a discharge-pipe leading therefrom and having a contracted throat, the outlet forming the entrance thereof, a relatively small supply-pipe entering the tank through its upper end and extended downward through the outlet and into the throat concentric therewith, and a controlling-valve in the discharge-pipe beyond the mouth of the throat, a rotatable spindle on which said valve is threaded to slide, and means for turning said spindle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LUTHER F. HAYNES.

Witnesses:

HERBERT G. MORSE,
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