

No. 611,053.

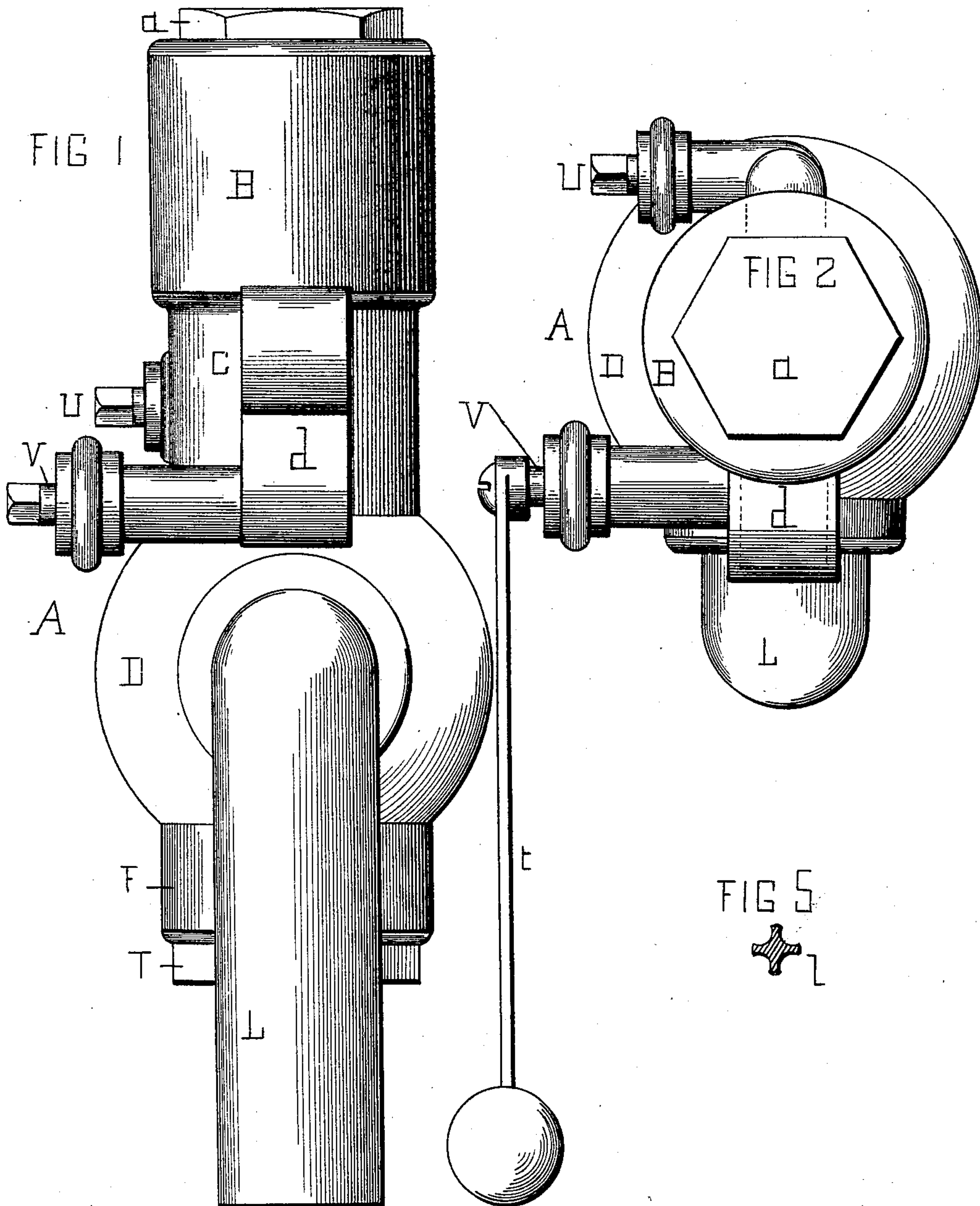
Patented Sept. 20, 1898.

J. M. CAMERON.
WATER CLOSET VALVE.

(Application filed Dec. 6, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses—

R. H. Heath
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Inventor—

John M. Cameron
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No. 6H.053.

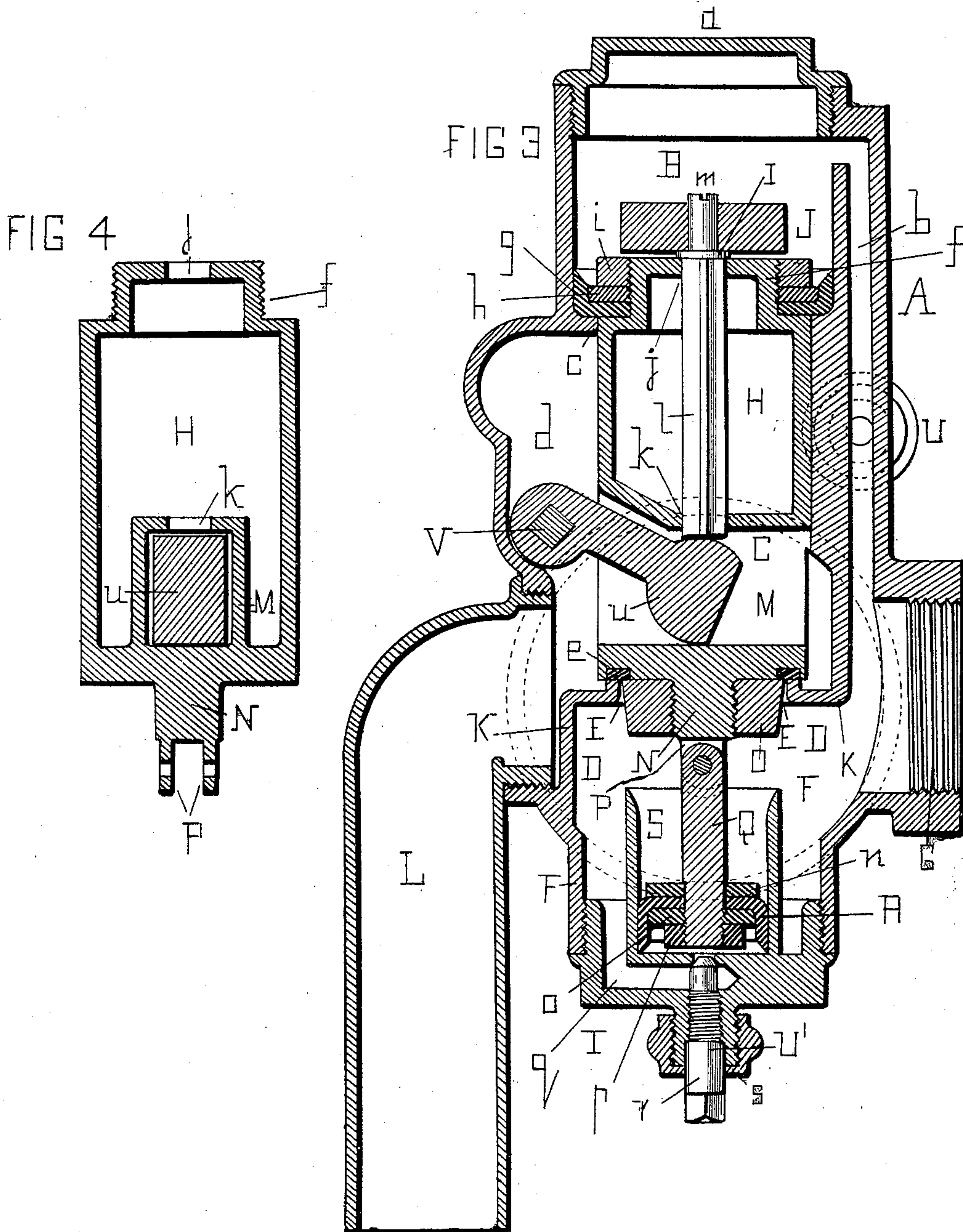
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UNITED STATES PATENT OFFICE.

JOHN M. CAMERON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
WILLIAM H. DOYLE, OF SAME PLACE.

WATER-CLOSET VALVE.

SPECIFICATION forming part of Letters Patent No. 611,053, dated September 20, 1898.

Application filed December 6, 1897. Serial No. 660,848. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. CAMERON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Slow-Closing Valve for Flushing Water-Closets, Urinals, &c., of which the following is a specification, reference being had to the accompanying two sheets of drawings, in which—

Figure 1 is a surface elevation of the invention. Fig. 2 is a plan view. Fig. 3 is a vertical section. Fig. 4 is a vertical section of the slow-closing valve, and Fig. 5 is a transverse section of the puppet-valve elongated stem.

Similar letters refer to similar parts in the several views.

The valve-casing A consists in the upper and enlarged water-pressure chamber B, which is provided with a screw-cap *a* and an exterior water-channel *b* from a water-supply, a reduced valve-chamber C, whose connection with the chamber B forms a valve-seat *c*, a lifting-toe chamber *d* being formed exteriorly of it, a globular chamber D into which the valve-chamber C extends and communicates with by means of its open bottom E and its valve-seat *e*, and a bottom chamber F, which communicates with the water-supply nozzle G and has a water-cushion piston.

A hollow cylindrical slow-closing valve H, fitted to reciprocate in the valve-chamber C, is provided with a top or screw-neck *f*, over which takes a cup-valve *g*, preferably of leather, overlaid with a washer *h*, held in place by a nut *i*. In the top and bottom axial ports *j k* of said valve H is a fluted or water-passage spindle *l* of a puppet-valve I, which seats on and closes the top port *j*, being held in place by a weight J, which embraces the reduced and extended end *m* of the spindle *l* and bears on the top of said valve, while the bottom of the slow-closing valve H seats on the valve-seats and opening E of the partition K, which separates the water-supply nozzle G from the flushing-pipe L. The bottom end of the puppet-valve spindle *l* projects far enough below the bottom of the valve H for the application of means for lifting it. To that end a chamber M is formed

transversely of the valve H for the action of said lifting means, while the valve closes on the valve-seats *c e*.

A screw-shank N of the valve H is provided with a conical nut O and depending jaws P, in which is pivoted the stem Q of a preferably leather cup or water-cushion piston R, between the upper and lower washers *n c* and jam-nut *p* on the screw end of the shank N. Said piston reciprocates in the cylinder S, which extends upwardly from the screw-cap T of the bottom chamber F, in which a water-pressure channel *q* is formed for making an upward water-pressure against the bottom of the piston R.

To control and regulate the volume of water flowing through the exterior channel to the top and water-pressure chamber B and the interior channel *q* of the cap T, like regulating valves or plugs U U' are employed, each consisting, preferably, in a plug *r*, which screws through a stuffing-box *s* of the cap T into the channel *q*, and thus restricts or entirely closes it and the water flow.

A rod V, operated by an exterior handle *t*, extends through and is journaled in the sides of the exterior toe-chamber *d*. It is provided with a lifting-toe *u*, which is located and has a vertical vibration in the chamber M of the valve H, where it contacts with the bottom of the puppet-valve stem L and the valve H for lifting them.

When the flusher requires repairing, the valve H is gradually raised and the arm *t* gradually turned until the lifting-toe *u* takes into the exterior chamber *d*, after which said valve H and its connected parts can be lifted out of the casing by removing the screw ends or caps *a T*.

The operation of the valve is as follows: Water enters the casing through the nozzle G into the globular chamber D, and passing through the channel *b* fills the upper chamber B and serves as a pressure in keeping the slow-closing valve H on its seats *c e*. It also passes by the flexible cupped piston R to lower end, pressing upwardly against the bottom of said piston. The top area of the valve H exceeding that of the bottom, the water-pressure keeps the valve closed on its seat *c* and the piston R at the bottom of its stroke. To open

the valve H for flushing, the handle *t* is depressed, when its toe *u* vibrates against the bottom of the spindle *l* and opens the puppet-valve I, by which the water-pressure above the valve H is drained off through its ports *j k* into the toe-chamber M and the flushing-pipe L. An additional depression of the handle or lever *t* causes the toe to vibrate against the bottom of the slow-closing valve H, lift it from its seats *c e*, and the water to flow from the supply-nozzle G through the valve-seat *e* and out at the flushing-pipe L. The valve H is prevented from opening too rapidly by the valve or plug U in the channel *b*, which restricts the water flow. If the channel-flow *b* is greater than the ports *j k*, they will not drain and relieve the valve H of the top water-pressure. Consequently it will remain closed. The conical nut O is to gradually close valve-opening so as to give the required afterfill.

The closing of the valve H on its seats *c e* after the removal of the top pressure is controlled by the plug-valve U'. When said valve H rises, it carries the connected water-cushioned piston R with it, which creates an increased water-space beneath said piston. The speed of closing depends upon the discharge area through the channel *q*, which is regulated by the plug-valve U'. If it is partially open, the water will discharge and the piston descend accordingly, but if closed the water cannot escape and the piston R descend. Consequently the valve H must remain open. It will be readily seen that the descent and closing of said valve H depends

upon the bottom valve U', which chokes the flow of water from beneath the piston R, restrains its descent, and regulates the closing of the valve H.

I claim—

1. In a flusher, the combination of a flusher-casing; an exterior lifting-toe chamber, a slow-closing valve, a slow-closing-valve chamber, an exterior water-channel for producing a water-pressure on the slow-closing valve, a puppet-valve of the slow-closing valve, and a vibrating toe for operating the slow-closing and puppet valves and which folds into the lifting-toe chamber out of the line of the valve travel when said valves are removed for repairs, for the purpose shown and described.

2. In a flusher, the combination of a flusher-casing, an exterior lifting-toe chamber, a slow-closing valve, a slow-closing-valve chamber, a puppet-valve of the slow-closing valve, a water-cushion piston-cylinder at the bottom of the flusher-casing, a water-cushion piston of the water-cushion cylinder, connecting-stem between the slow-closing valve and the water-cushion piston, and a vibrating toe which operates the slow-closing and puppet valves and folds into the exterior lifting-toe chamber, for the purpose shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN M. CAMERON.

Witnesses:

FRANCIS D. PASTORIUS,
B. D. ARCHER.