

(No Model.)

M. J. SMITH.
WATER CLOSET TANK OR CISTERN.

No. 311,207.

Patented Jan. 27, 1885.

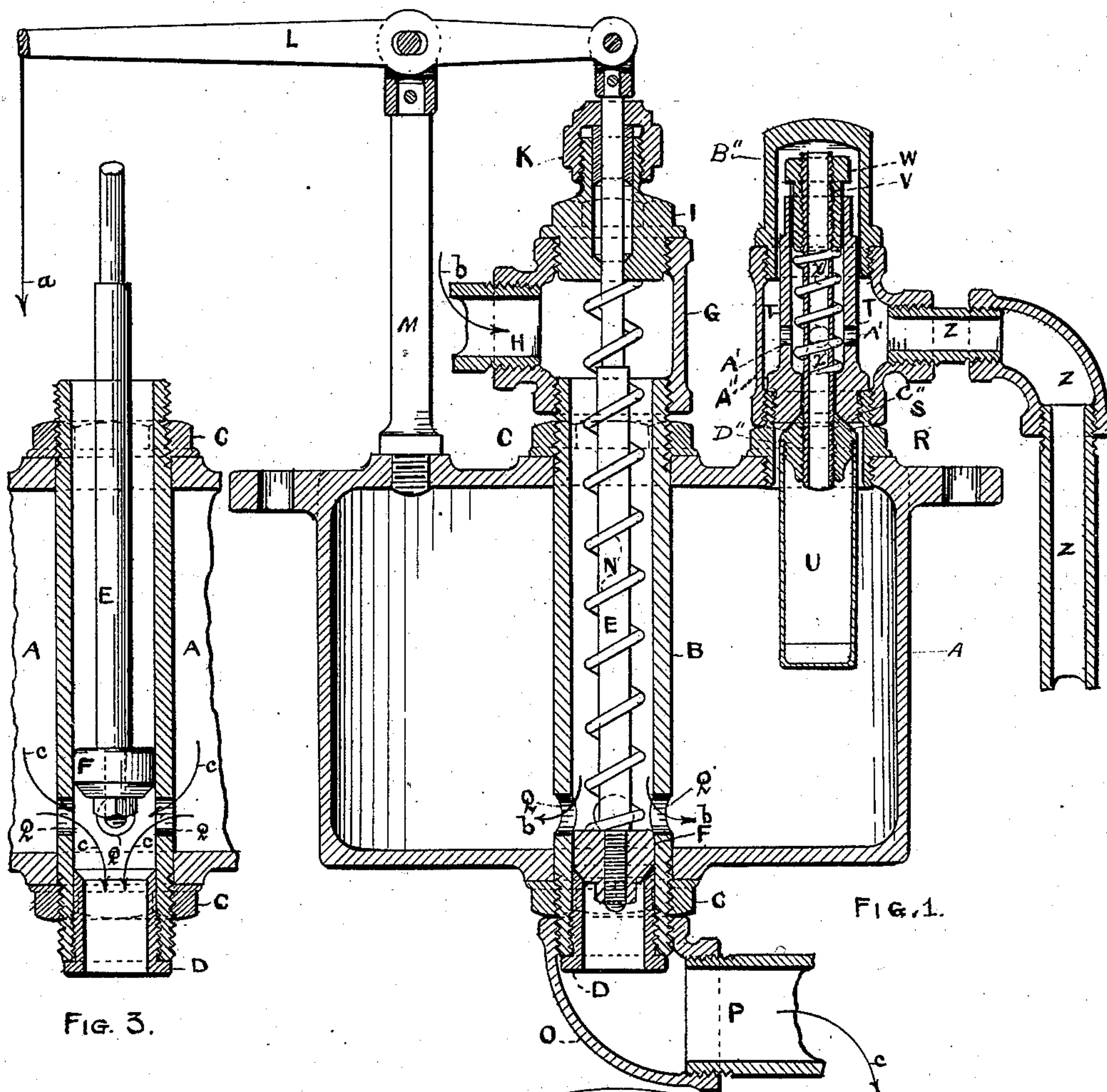


FIG. 3.

FIG. 1.

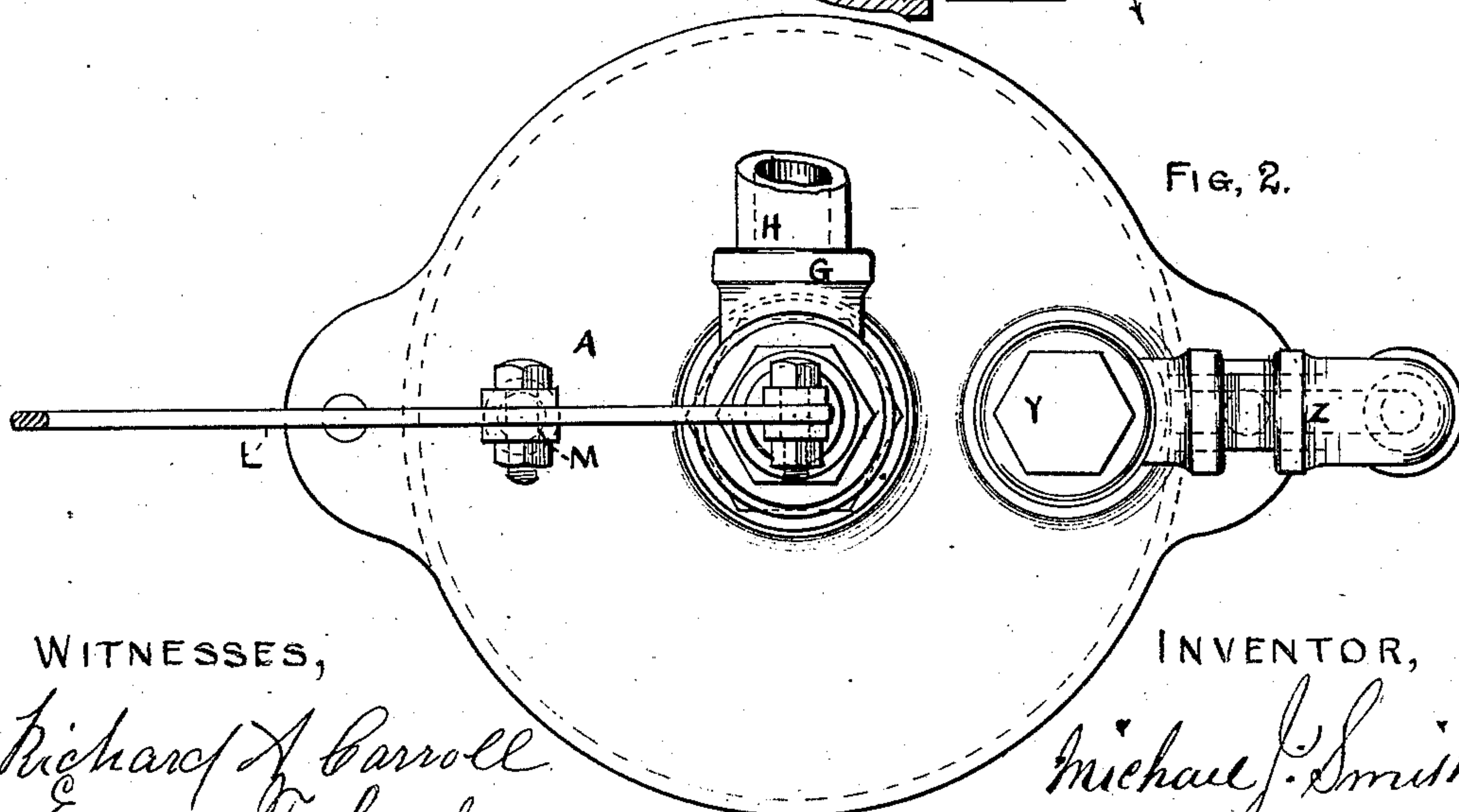


FIG. 2.

WITNESSES,

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MICHAEL J. SMITH, OF NEW YORK, N. Y.

WATER-CLOSET TANK OR CISTERN.

SPECIFICATION forming part of Letters Patent No. 311,207, dated January 27, 1885.

Application filed January 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL J. SMITH, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a new and useful Improvement in Water-Closet Tanks or Cisterns, of which the following is a specification.

My said invention consists in a closed air-tight measuring cistern or tank for flushing water-closet bowls, provided with an air-vent valve and a combined admission and discharge valve, by which, and with suitable and common pipe and operating connections thereof to any common water-supply and the water-closet bowl, the latter may be flushed at will of the operator by the alternate filling and emptying of the water-measuring cistern. I attain these objects by mechanism shown in the accompanying drawings, in which—

Figure 1 is a vertical section of my apparatus. Fig. 2 is a plan of the same; and Fig. 3 is a partial vertical section of the same, showing the combined valve lifted off its seat.

Similar letters refer to similar parts throughout the several views.

The vessel A is an air-tight tank or cistern for receiving and discharging its capacity of from one to three gallons of water, as may be desired for a single flushing of the water-closet to which it is connected. A tube or pipe, B, passes through the top and bottom plates of cistern A, and is made air-tight at its joints therein by top and bottom clamping-nuts, C C. In the lower end of tube B is fixed a short tube, D, with a conical valve-seat formed on its upper end. A valve-stem, E, placed centrally in tube B, carries at its lower end a combined tubular and conical valve, F, seating at its conical bottom on tube D and fitting at its cylindrical side in the tube B.

Transverse holes Q Q Q Q in the tube B serve to admit supply-water into cistern A, as shown by arrows *b b*, when valve F is seated on D. (See Fig. 1.) When valve F is lifted, as shown in Fig. 3, said holes in tube B serve to discharge the measure of water in cistern A, as shown by arrows *c c c*, out through tube D and its connecting-elbow O, pipe P, down to flush the water-closet bowl below. At the same time valve F, in being lifted, shuts off the flow of supply-water from tube B into the cistern A, so that as valve F is alternately

raised and lowered or opened and closed the cistern A will be alternately filled and emptied of its water-capacity charge. On the upper end of tube B is fixed a common pipe-T, G, having on one side a pipe, H, leading to any common reservoir or hydrant-water supply. In the upper end of the T G is fixed a cap, I, with attached stuffing-box K, for the valve-stem E. A lever, L, attached to the top of valve-stem E and fulcrum-pivoted on a standard, M, fixed in the top plate of cistern A, is connected at its outer end by wires, as commonly done, to the water-closet below, so that by a pull below on the water-closet handle for flushing the bowl the lever L will be pulled down in direction of arrow *a* to lift valve F. A coiled spring, N, on valve-stem E serves to reseal the valve F.

The described apparatus requires an air-vent valve, which may be of any common form of float or air-vent valve suitable to discharge air from tank A when it is being filled with water and to admit air into the tank when it is being discharged of its measure of water; but I prefer, and have designed and shown, in combination with my said tank, a new form of air-vent valve in my said patent-application drawings, not claiming the same herein, but reserving to myself to make separate patent application therefor, which I have done in an application filed May 12, 1884, Serial No. 140,775. Said air-vent valve consists of a short tube, R, fixed in the top plate of cistern A, and having attached to its upper end a common pipe-T, A'', covered by a cap, B''.

In the tube R is fixed a tube, T, extending centrally up through it, as shown in the drawings, with air-vent holes A' A' A' A' made transversely in it near its base. Tube T has a conical valve-seat, C'', formed in its lower end, on which seats upward a valve, D'', formed on the upper end of a float or cylinder, U, to which is attached a tubular valve-stem, V, carrying at its upper end an adjustable spring-compression screw-nut, W, which slides freely in tube Y. A coiled spring, X, on tube V, resting in tube Y and abutting upward against the screw-nut W, serves to lift and counterbalance almost all of the weight of float U, valve-stem tube V, valve D'', and nut W, so that when cistern A is nearly or quite full of water the float U will be lifted and buoyed up by

the water in cistern A, so as to seat its valve D'' on its seat C''.

The operation of said valve is as follows, viz: When cistern A is empty and water is admitted to it through tube B and valve F, the valve D'' will by gravity force be kept open and allow full vent of air out of cylinder A, and when cylinder A is nearly or quite full of water, then the float U is lifted and buoyed up by the inflowing water and closes valve D'' and its outward-vent connections, shutting off overflow and escape of water from cistern A. On the other hand, when cistern A is being discharged of its measure of water through pipe B and valve F, the air-vent valve D'' is released from its seat C'' by gravity force and admits air through it into tank A, so that the measure of water therein may be freely discharged therefrom.

Tube Z, fixed in the air-vent valve-case, per-

mits inlet and outlet of air to and from the air-vent valve shown and described, and by commonly - known suitable connections provides for overflow of water from tank A in case of the valve D'' failing to seat tight on its seat C''. 25

I claim as of my invention and desire to secure by Letters Patent—

In a water-closet cistern, the combination of the tank A, tube B, connected with the water-supply pipe H, and having openings o o, and valve F, operating in said tube to admit water to the tank, and also to open communication between the tank and receptacle to be flushed, substantially as and for the purpose set forth. 30

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Witnesses:

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