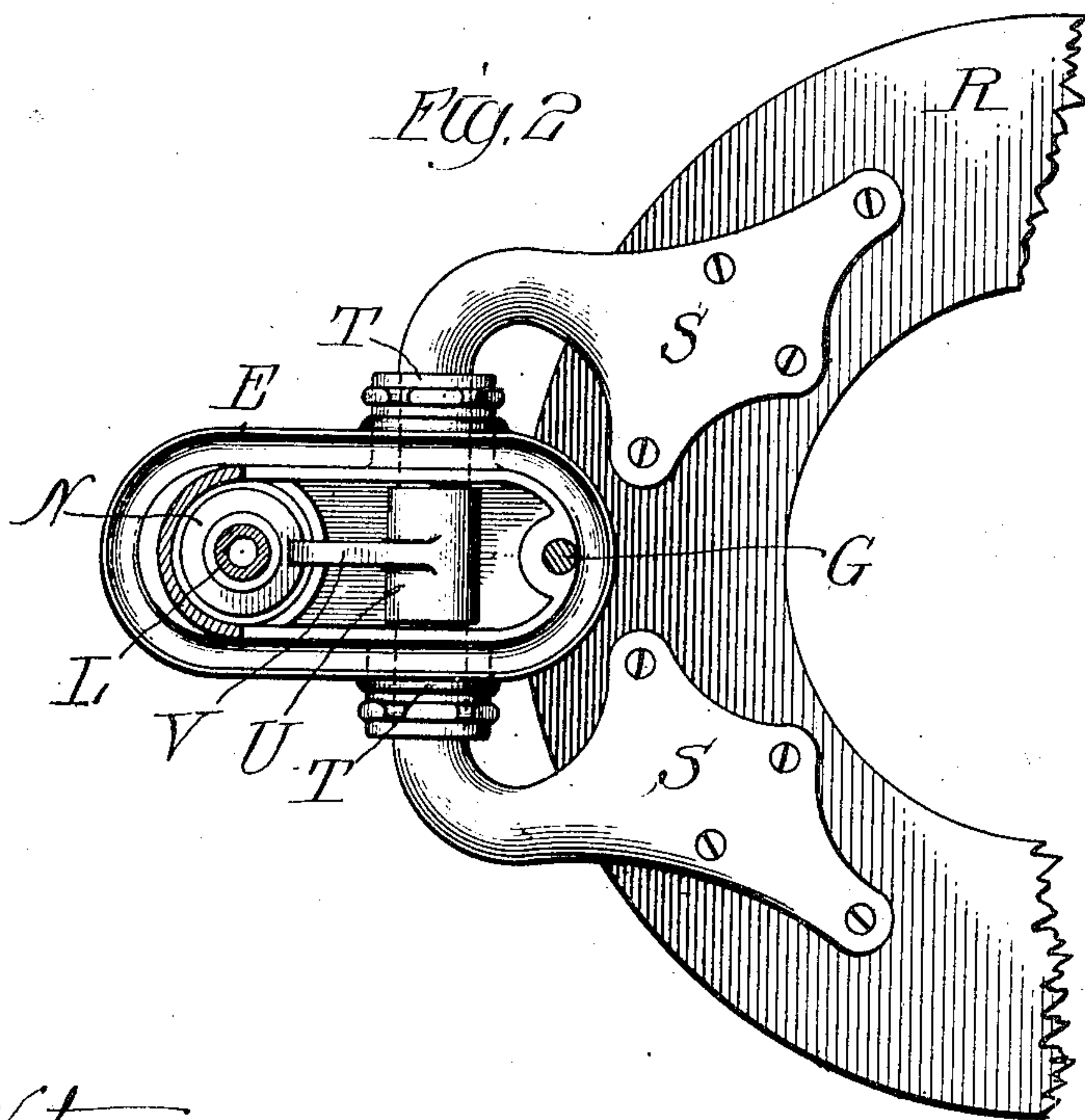
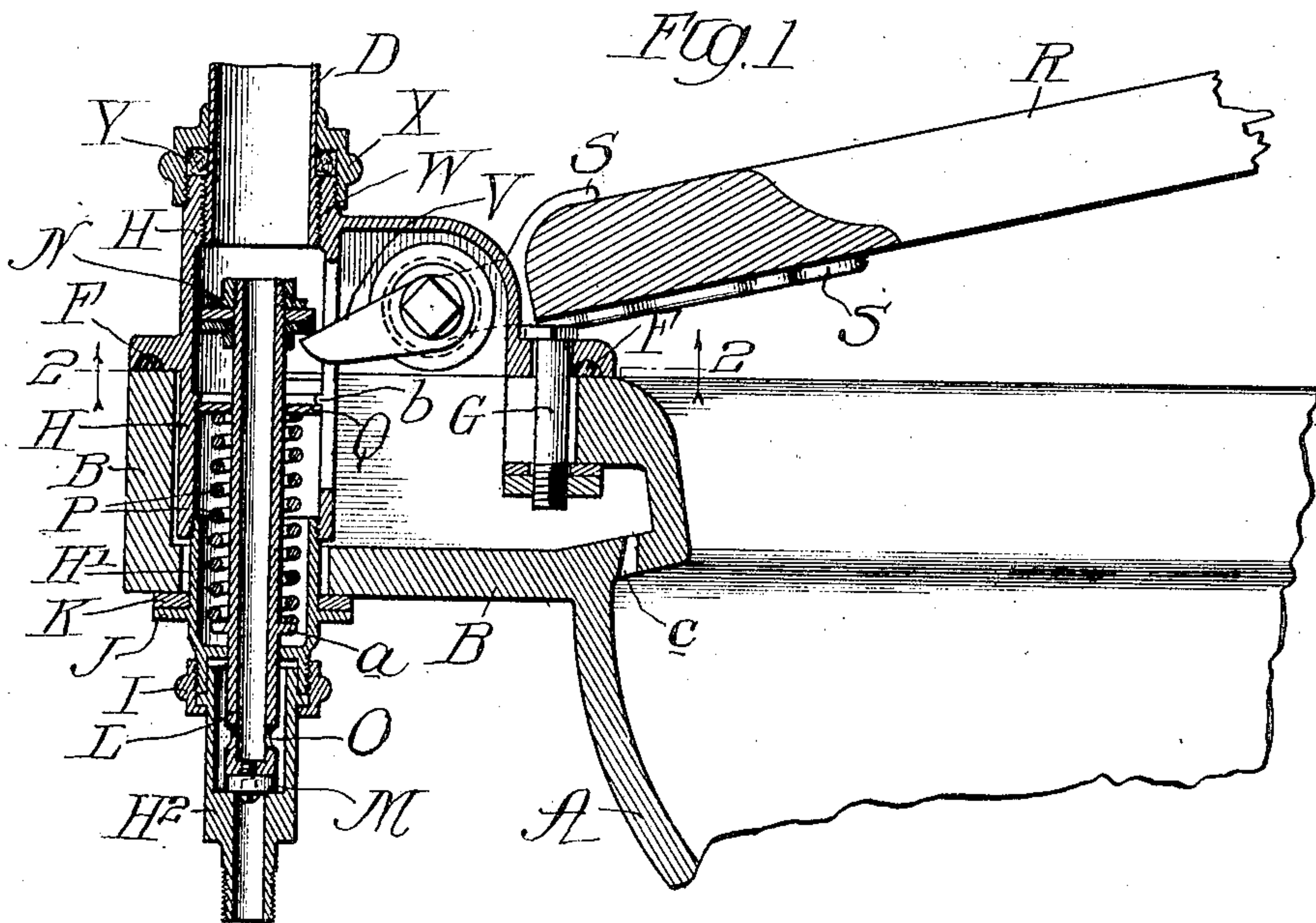


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WATER CLOSET.
APPLICATION FILED JULY 20, 1908.

914,539.

Patented Mar. 9, 1909.



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UNITED STATES PATENT OFFICE.

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WATER-CLOSET.

No. 914,539.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed July 20, 1908. Serial No. 444,461.

To all whom it may concern:

Be it known that I, EARL G. WATROUS, a citizen of the United States, residing at Chicago, in the State of Illinois, have invented a certain new and useful Improvement in Water-Closets, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to what are known as seat-actuated, closed-tank closets, being closets in which the depression of the seat opens a valve which admits the water supply to a closed tank, which fills with water while the seat is depressed; and then discharges into the closet when the pressure on the seat is removed.

It has for its principal object an improved construction and operation of the valves which control the admission of the water supply to the closed tank and its subsequent release and discharge therefrom.

In the accompanying drawings, Figure 1 is a middle vertical section of the rear portion of the closet and the valve casing and valves supported thereon; and Fig. 2 a bottom plan view, partly in section, of the parts immediately above the dotted lines 2-2 of Fig. 1.

The same letters of reference are used to indicate identical parts in the several views.

As shown in Fig. 1, the closet bowl A is provided at its upper rear side with an integral earthenware extension B, which constitutes the seat-shelf and the support for the valves controlling the admission of water to and its discharge from the closed tank (not shown) which is located in the usual position above the closet and connected to the latter by the pipe D. The extension B of the closet bowl is in the form of an open-top elliptical chamber, upon which is seated a correspondingly shaped metal cap piece E, Fig. 2, a tight joint between the two being secured by a packing ring F, Fig. 1. The front end of this cap piece E is secured to the closet bowl by a bolt G, while its rear portion has formed integral with it a vertically disposed tubular casing H, the lower end of which has screwed into it the upper end of a depending supplemental casing H' which extends downward through a circular opening in the bottom wall of the chamber B. The lower end of this supplemental casing H' has coupled to it, by a coupling nut I, a further depending casing H² whose extreme lower end is exteriorly

threaded for connection with the water supply pipe. The casing H² is provided beneath the chamber B with a flange J between which and the bottom of the chamber B is confined a packing ring K, the parts being clamped together by screwing the casing H² upward into the lower end of the casing H.

Extending vertically through the casing composed of the parts H, H' and H² is a tubular valve stem L which carries at its lower end a valve M controlling the admission of the water supply through the lower end of the casing H², and carrying at its upper end a second valve N which coöperates with the lower end of the pipe D leading to the tank and controls the discharge of water from the latter. The valve M at the lower end of the valve stem L normally rests upon an annular seat formed for it at the bottom of the chamber within the casing H², and is yieldingly held against such seat by a coiled spring P which surrounds the valve stem L and is confined between an annular shoulder a formed thereon at the lower end of the spring and a diaphragm Q against which the upper end of the spring bears, said diaphragm fitting loosely within the casing H and abutting against an annular shoulder b formed upon the inner surface thereof.

When the valve stem L and its valves M and N are lifted, against the resistance of the spring P, until the valve N seats against the lower end of the pipe D leading to the overhead tank, the valve M at the lower end of the valve stem will be carried away from its seat and the water supply will enter the chamber in the casing H² and pass around the lower end of the tubular valve stem and thence through ports O formed therein to the interior of the stem, and thence upward through the latter and the pipe D into the overhead tank, filling the latter to the extent permitted by the volume of air confined and compressed (by the pressure of the water) in the upper end of said tank. When the valve stem L is thereafter lowered to normal position, the water supply will be cut off by the seating of the valve M, and the water in the overhead tank and pipe D will be released by the unseating of the valve N and rush down into the chamber B and thence through the openings c leading therefrom into the closet bowl.

For the purpose of lifting the valve stem L and the valves M and N, to fill the tank, and

to subsequently release the parts and permit the tank to discharge its contents into the closet bowl, the valve stem is connected with the closet seat R, to which end the hinges S S of the latter are extended through stuffing boxes T T in the sides of the cap piece E, to the interior thereof, Fig. 2, and their inner ends are squared and have fitted upon them a hub U which carries a rearwardly extending arm V which projects beneath the valve N carried by the upper end of the stem L. In the normal position of the parts the seat is slightly elevated, and when it is depressed the rear end of the arm V will be swung upward, and will carry with it the valve N, stem L and valve M, thereby opening the valve M and closing the valve N against its seat at the lower end of the pipe D leading to the tank, the adjustment of the parts being such that the seat will come to rest upon the closet bowl when the valve N has been firmly seated against the lower end of the pipe D. Upon the pressure on the seat being relieved the spring P surrounding the valve stem L will restore the parts to normal position and cause the contents of the tank and pipe D to be discharged through the chamber B to the closet bowl.

The connection of the lower end of the pipe D with the cap piece E is such as to permit of adjustment of the lower end of the pipe D with relation to the valve N, so that the proper seating of the valve N at the moment the closet seat comes to rest upon the closet bowl may be effected. To this end, the lower end of the pipe D is exteriorly threaded (being in the present instance thickened or provided with an exteriorly threaded sleeve firmly secured upon it) and screwed into an interiorly and externally threaded connection W formed upon and projecting from the cap piece E. A flanged coupling nut X screwed upon the exterior of this connection W serves to confine a packing Y between its flange and the upper end of the connection W, so as to effect a tight joint between the pipe D and the parts surrounding it, while permitting said pipe to be turned for the purposes of the adjustment described. The connection of the upper end of the pipe D with the tank is likewise of a suitable character to permit this turning of the pipe D.

Having thus fully described my invention, I claim:

1. In a water closet of the character described, the combination, with a closet bowl having a rearwardly-extending chamber, of a tubular valve casing extending vertically through said chamber and having a supply pipe connection at its lower end and a tank connection at its upper end, a valve stem located in said casing and carrying a valve at its lower end for controlling the water supply connection and a valve at its upper end for controlling the tank connection, and a

hinged seat connected to said valve stem and valves for operating the same; substantially as described.

2. In a water closet of the character described, the combination, with a closet bowl having a rearwardly-extending chamber, of a tubular valve casing extending vertically through said chamber, a tubular valve stem extending longitudinally through said casing and carrying a valve at its lower end for controlling a water supply connection and a valve at its upper end for controlling a tank connection, the water passing from the supply connection to the tank connection through said tubular valve stem when the latter is lifted, and a hinged seat operatively connected with said valve stem for lifting the same; substantially as described.

3. In a water closet of the character described, the combination, with a closet bowl A having a chamber B, of a tubular valve casing extending vertically through said chamber and having a water supply connection at its lower end and a tank connection at its upper end, a tubular valve stem L extending longitudinally through said casing and having ports O near its lower end, valves M and N carried by the opposite ends of said valve stem for controlling the water supply connection and the tank connection, respectively, a coiled spring P surrounding the valve stem and operating to press the latter downward, and a hinged seat R operatively connected with the valve stem for lifting the same; substantially as described.

4. In a water closet of the character described, the combination, with a closet bowl A having a chamber B, of a tubular valve casing extending vertically through said chamber and having a water supply connection at its lower end and a tank connection at its upper end, said casing being composed of three parts H, H' and H², a tubular valve stem L extending longitudinally through said casing and carrying a valve M at its lower end for controlling the water supply connection and a valve N at its upper end for controlling the tank connection, a loose diaphragm Q surrounding the valve stem L within the casing part H, a coiled spring P confined around said valve stem between the diaphragm Q and the flange α formed upon said stem, and a hinged seat R operatively connected with the valve stem for lifting the same; substantially as described.

5. In a water closet of the character described, the combination, with a closet bowl A having an open top chamber B, of a metal cap-piece E forming a cover for said chamber a tubular valve casing formed integral with said cap-piece and extending vertically through the chamber and having a water supply connection at its lower end and a tank connection at its upper end, a valve stem extending through said casing and

carrying a valve at its lower end for controlling the water supply connection and a valve at its upper end for controlling the tank connection, and a seat R hinged to the cap-piece E and operatively connected with the valve stem and valves for lifting the latter; substantially as described.

6. In a water closet of the character described, the combination, with a closet bowl A having an open top chamber B, of a metal cap-piece E forming a cover for said chamber a tubular casing H formed integral with said cap-piece and extending vertically through said chamber, a supplemental casing H' screwed at its upper end into the lower end of the casing H and provided with a flange J for clamping the parts together, a packing ring K interposed between said flange and the bottom of the chamber B, a valve stem extending longitudinally through the valve casing and provided at its lower end with a valve controlling the water supply and at its upper end with a valve controlling a tank connection, and a seat R hinged to the cap-piece E and operatively connected with said valve stem and valves for lifting the same; substantially as described.

7. In a water closet of the character described, the combination, with a closet bowl A having an open top chamber B, of a cap-piece E forming a cover for said chamber, a valve casing H formed integral with said cap-piece and projecting above and below the same, a casing H' screwed at its upper end into the lower end of the casing H, a casing H² coupled to the lower end of the casing H' and constituting a water supply connection, a tank pipe D connected to the upper end of the casing H, a tubular valve stem L extending through said casings and carrying a valve M at its lower end and a valve N at its upper end, a diaphragm Q surrounding said valve stem within the casing H, a coiled spring surrounding said valve stem and confined between the diaphragm Q and the flange a on the valve stem, and a seat R

hinged to the cap-piece E and operatively connected with the valve stem and valves for lifting the same; substantially as described.

8. In a water closet of the character described, the combination, with a closet bowl A having a chamber B, of a tubular casing extending vertically through said chamber and having a water supply connection at its lower end, a tank pipe D adjustably secured to the upper end of said casing and having its lower end arranged to constitute a valve seat, a tubular valve stem located in said casing and carrying a valve at its lower end for controlling the water supply connection and a valve at its upper end cooperating with the lower end of the adjustable tank pipe D, and a hinged seat operatively connected with said valve stem and valves, for lifting the latter; substantially as described.

9. In a water closet of the character described, the combination, with a closet bowl A having an open top chamber B, of a cap-piece E forming a cover for said chamber, a tubular casing H formed integral with said cap-piece and extending above and below it, an internally and externally threaded connection W at the upper end of said casing H a tank pipe D screwed at its lower end into the upper end of the casing H and arranged to constitute a valve seat, a packing ring Y confined around said pipe by a nut X, casings H' and H² forming depending extensions of the casing H, tubular valve stem L extending longitudinally through said casings and carrying valves M and N at its opposite ends, a coiled spring P surrounding the valve stem L and pressing the same downward, and a seat R hinged to the cap-piece E and operatively connected with the valve stem and valves for lifting the latter; substantially as described.

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Witnesses:

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