

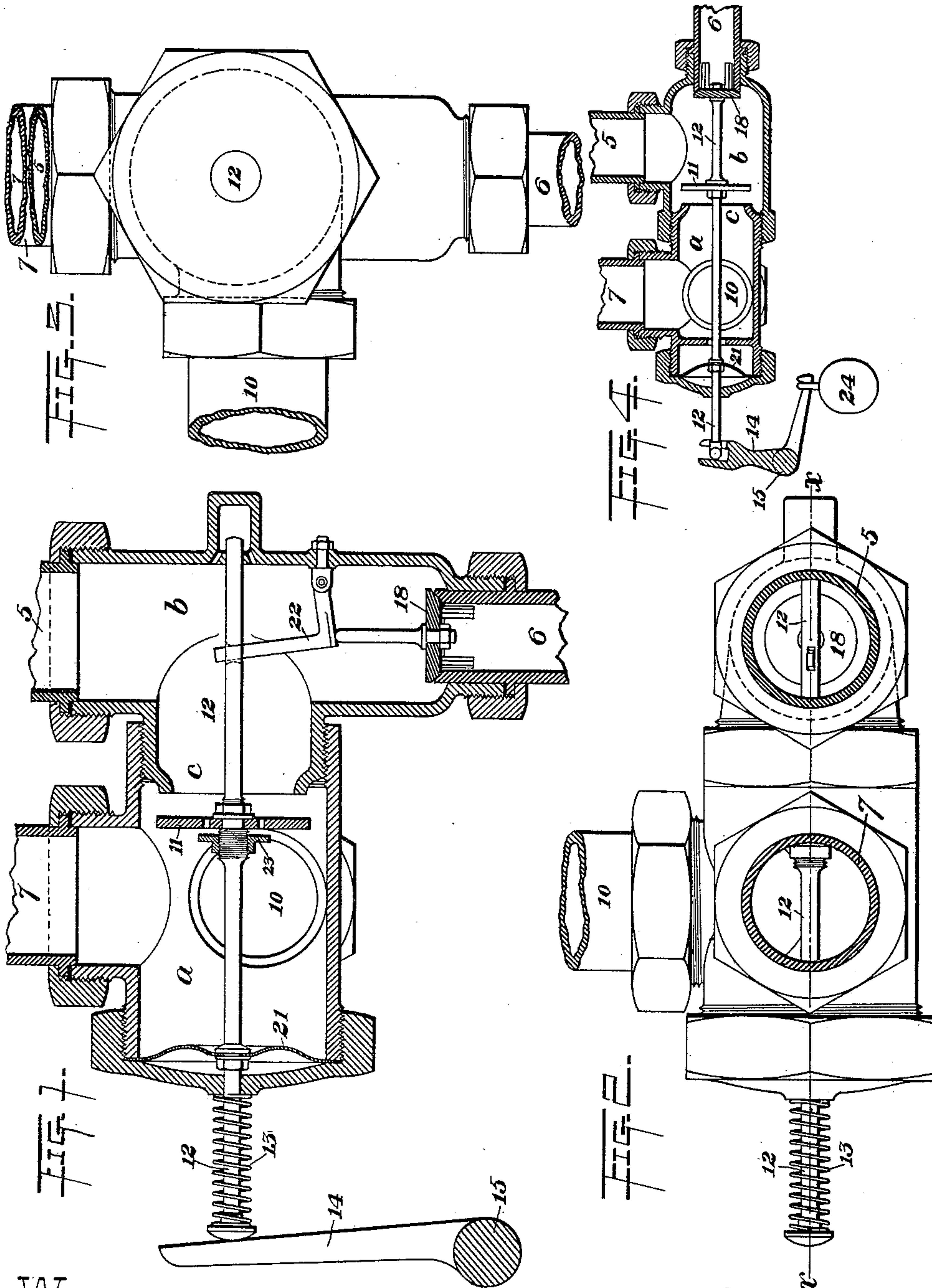
(No Model.)

2 Sheets—Sheet 1.

J. J. RICKETTS.
FLUSHING APPARATUS.

No. 405,912.

Patented June 25, 1889.



WITNESSES.

H. L. Gull
W. B. Corwin

INVENTOR.

James J. Ricketts
by his attorneys
W. B. Dakewell & Sons

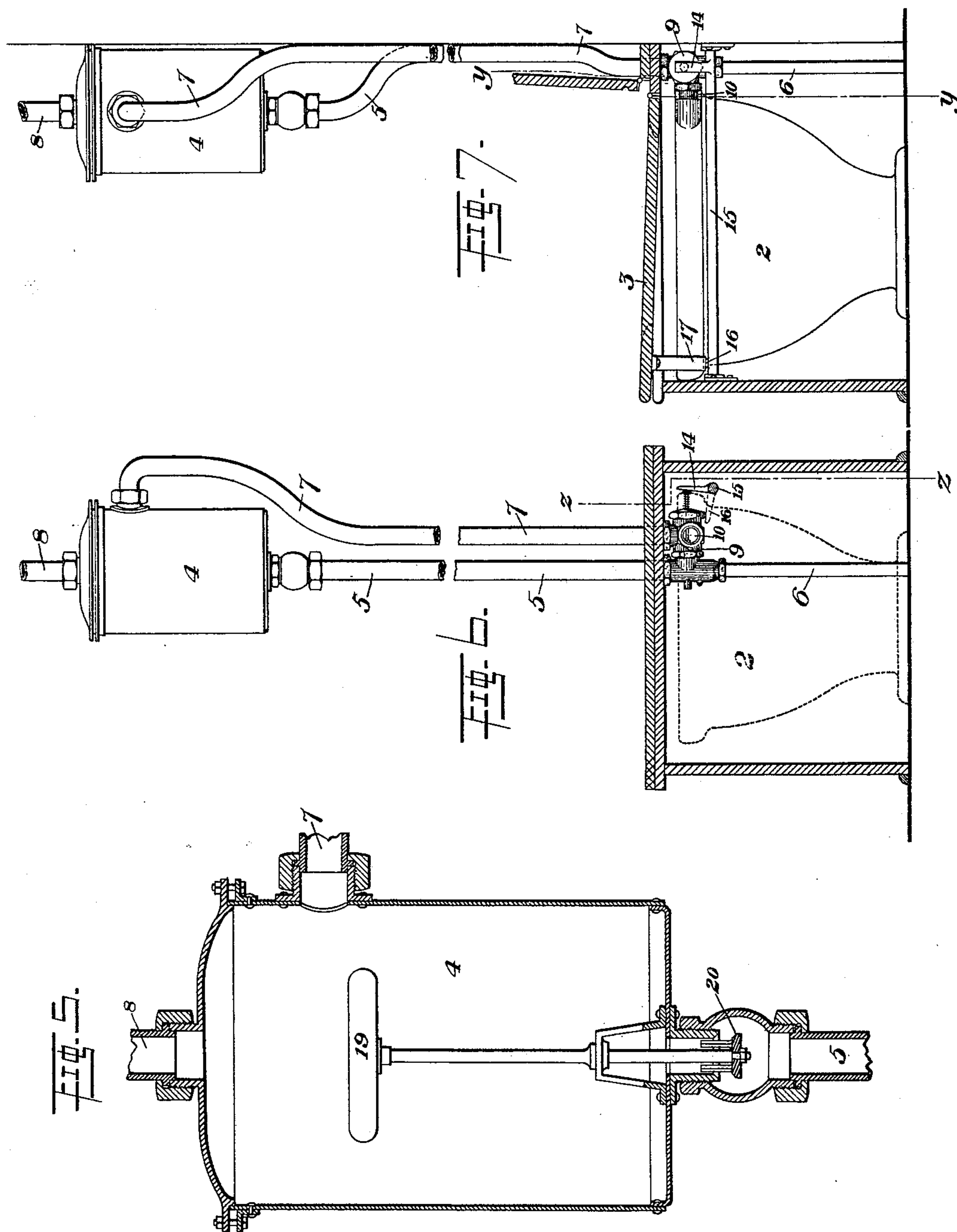
(No Model.)

2 Sheets—Sheet 2.

J. J. RICKETTS.
FLUSHING APPARATUS.

No. 405,912.

Patented June 25, 1889.



WITNESSES.

H. L. Gill.
N. D. Corwin

INVENTOR.

James J. Ricketts
by his attorneys
N. Daxwell & Sons

UNITED STATES PATENT OFFICE.

JAMES J. RICKETTS, OF PITTSBURG, PENNSYLVANIA.

FLUSHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 405,912, dated June 25, 1889.

Application filed July 16, 1888. Serial No. 280,077. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. RICKETTS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Flushing Apparatus; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical sectional view of the valve of the closet, the section being taken on the line *x x* of Fig. 2. Fig. 2 is a plan view. Fig. 3 is an end elevation of the valve. Fig. 4 is a vertical section of a modified form of the valve. Fig. 5 is a vertical sectional view of the tank and its valve. Fig. 6 is a view of the supply-tank and closet, the closet being in vertical section on the line *y y* of Fig. 7, the bowl being indicated by dotted lines. Fig. 7 is a similar view, the section-plane being on the line *z z* of Fig. 6.

Like symbols of reference indicate like parts in each.

In the drawings, 2 is the bowl of the closet.

3 is the hinged seat.

4 is the flushing-tank.

5 is a pipe leading from the flushing-tank to a valve under the closet-seat.

6 is the water-supply pipe, which also communicates with the said valve.

7 is an overflow-pipe leading from the upper part of the flushing-tank to the valve, and 8 is a ventilating-pipe leading from the top of the tank to the outer air.

The valve-chamber 9 of the water-closet is shown in detail in the figures on Sheet 1 of the drawings. It is provided with ports connected with the pipes 5, 6, and 7, and with a port connected with a pipe 10 leading to the water-closet bowl. The valve comprises two parts or chambers *a* and *b* and an intervening connecting-port *c*, the ports of the pipes 7 and 10 being in the chamber *a* and the ports of the pipes 5 and 6 being in the chamber *b*. A valve 11 is arranged to control the port *c*, and for this purpose is provided with a stem 12, which projects to the outside of the valve-chamber, and is normally drawn by a spring 13 or by a weight, so as to keep the valve 11 unseated from the port *c*. The valve-stem is moved inwardly by means of a lever 14, which projects radially from a shaft 15 and bears

against the end of the stem. The shaft 15 has a short projecting arm 16, which is adapted to be engaged by a projection or arm 17 on the hinged seat 3. This arrangement of mechanism is such that whenever the seat is occupied the weight of the person turns the shaft 15 and moves the stem 12 inwardly, so as to seat the valve 11 on the port *c*.

The water-supply pipe 6 is controlled by a valve 18, which closes outwardly in a contrary direction to the flow of water, so as to prevent water-hammer, and the valve is connected with the stem 12 by an elbow-lever 22, which bears at the middle on the end of the stem of the valve 18. This arrangement of the valve is such that when the closet-seat is not occupied the valve-stem 12 is projected so as to seat the valve 18 on the supply-pipe 6 and to unseat the valve 11 from the port *c*. If, now, a person sits on the seat 3, the effect is to move the valve-stem 12 inwardly, thus seating the valve 11 and unseating the valve 18. The water then enters the valve from the pipe 6 and rises through the pipe 5 into the tank 4, within which it continues to rise until it reaches the level of a float 19 in this tank, which float is connected with a valve 20 controlling the pipe 5. The rise of water in the tank seats the valve 20 and prevents the further flow of water into the tank. Meanwhile a small stream of water flows through a hole or holes made in the valve 11 into the chamber *a* of the valve, and thence into the water-closet bowl, thus giving a forewash. The same effect may be produced by adjusting the valve 11 by means of the screw-cap 23, so that it shall not fit accurately to its seat. When the person rises from the seat, the spring 13 projects the valve-stem, thus unseating the valve 11 and seating the valve 18. The water then rushes down from the pipe 5 into the chamber *a* and into the water-closet, and the valve 20 being unseated by the suction the entire contents of the flushing-tank flow down into the bowl and carry away the soil. If for any reason the valve 20 should not act properly to shut off the entrance of water into the flushing-tank, the overflow-pipe 7 serves to conduct the surplus water down into the water-closet bowl. This pipe also performs another function, for the noxious gases in the water-closet bowl ascend through this pipe into the top of

the flushing-tank, and thence through the ventilating-pipe 8 to the outer air.

The valve-stem 12 is preferably not provided with a stuffing-box where it passes through the head of the valve, as is the case in the valves now in common use, but passes loosely through the head and is provided with a flexible diaphragm 21, fixed to the stem at the middle, and at the edges fixed to the valve-casing. This diaphragm yields to the longitudinal motion of the valve-stem and allows free play thereto, but it effectually prevents the escape of water from the valve.

The novel features of my invention, as thus described, consist in the use of a single pipe 5 for conducting water to and from the flushing-tank, this pipe being provided with a valve which is operated automatically by rise of water in the tank. This feature of my invention is of great utility, because it simplifies the construction of the apparatus and increases its efficiency.

Second, my invention consists in providing the flushing-tank with a vent-pipe and with an overflow, both together serving as a conduit to ventilate the bowl of noxious gases.

Third, it consists in providing the valve with the flexible diaphragm or head, which prevents leakage of water, and yet does not interfere with the free working of the valve.

Fourth, it consists in leading the overflow-pipe of the flushing-tank into the valve-chamber, and, fifth, in using a longitudinally-movable valve-stem for operating the valve 11 and connecting the valve 18 therewith by a lever or levers.

In Fig. 4 I show a modified form of the valve, in which both valves 11 and 18 are arranged on the same stem, and instead of controlling the valve-stem by a spring a weight 24 is used. This arrangement of a weight instead of the spring may be applied to the valve of Figs. 1, 2, and 3. Other modifications of the invention will suggest themselves to those skilled in the art.

I claim—

1. The combination, with a water-closet flushing-tank, of a combined vent and overflow pipe leading from the tank to the closet, and a vent-pipe leading from the tank, substantially as and for the purposes described.

2. The combination, with a water-closet bowl and its flushing-tank, of a valve-shell and valve, a main supply-pipe leading to the valve, a tank supply-pipe leading from the valve to the flushing-tank, and a combined overflow and vent pipe which connects the flushing-

tank with the valve-chamber in advance or on the opposite side of said valve and is in free communication with the bowl, substantially as and for the purposes described.

3. The combination, with a water-closet bowl and its flushing-tank closed at the top, of a valve-shell, a main supply-pipe leading to the valve-shell, a tank supply-pipe leading from the valve-shell to the flushing-tank, a branch leading from the valve-shell to the bowl, valve mechanism adapted to simultaneously close the main and open the branch pipe, a ventilating-pipe leading from the closed flushing-tank, and an overflow-pipe leading from the flushing-tank to the valve-shell and in free communication with the bowl, substantially as and for the purposes described.

4. The combination, with a bowl and its supply-tank, of an interposed triple-ported T-valve shell, a supply-pipe leading from one port thereof to the supply-tank, and two valves which control the ports of the main pipe and the port leading to the bowl, the valve of the main pipe arranged to seat against the end of the said pipe, whereby it is held on its seat by the return-flow from the tank and its supply-pipe, substantially as and for the purposes described.

5. The combination, with a bowl and its supply-tank, of an interposed triple-ported T-valve shell, a supply-pipe leading from one port thereof to the supply-tank, and two valves which control the ports of the main pipe and the port leading to the bowl, the valve of the main pipe arranged to seat against the end of the said pipe, whereby it is held on its seat by the return-flow from the tank and its supply-pipe, and valves for closing two of said ports connected by stems, substantially as and for the purposes described.

6. The combination, with a water-closet bowl and its flushing-tank, of a supply-pipe leading to the flushing-tank, a branch therefrom leading to the bowl, valve mechanism adapted to simultaneously open the main and close the branch pipe, said branch-pipe valve having perforation therein for the escape of water to the bowl, and an overflow-pipe leading from the flushing-tank to the bowl, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 9th day of June, A. D. 1888.

JAMES J. RICKETTS.

Witnesses:

W. B. CORWIN,
J. K. SMITH.