

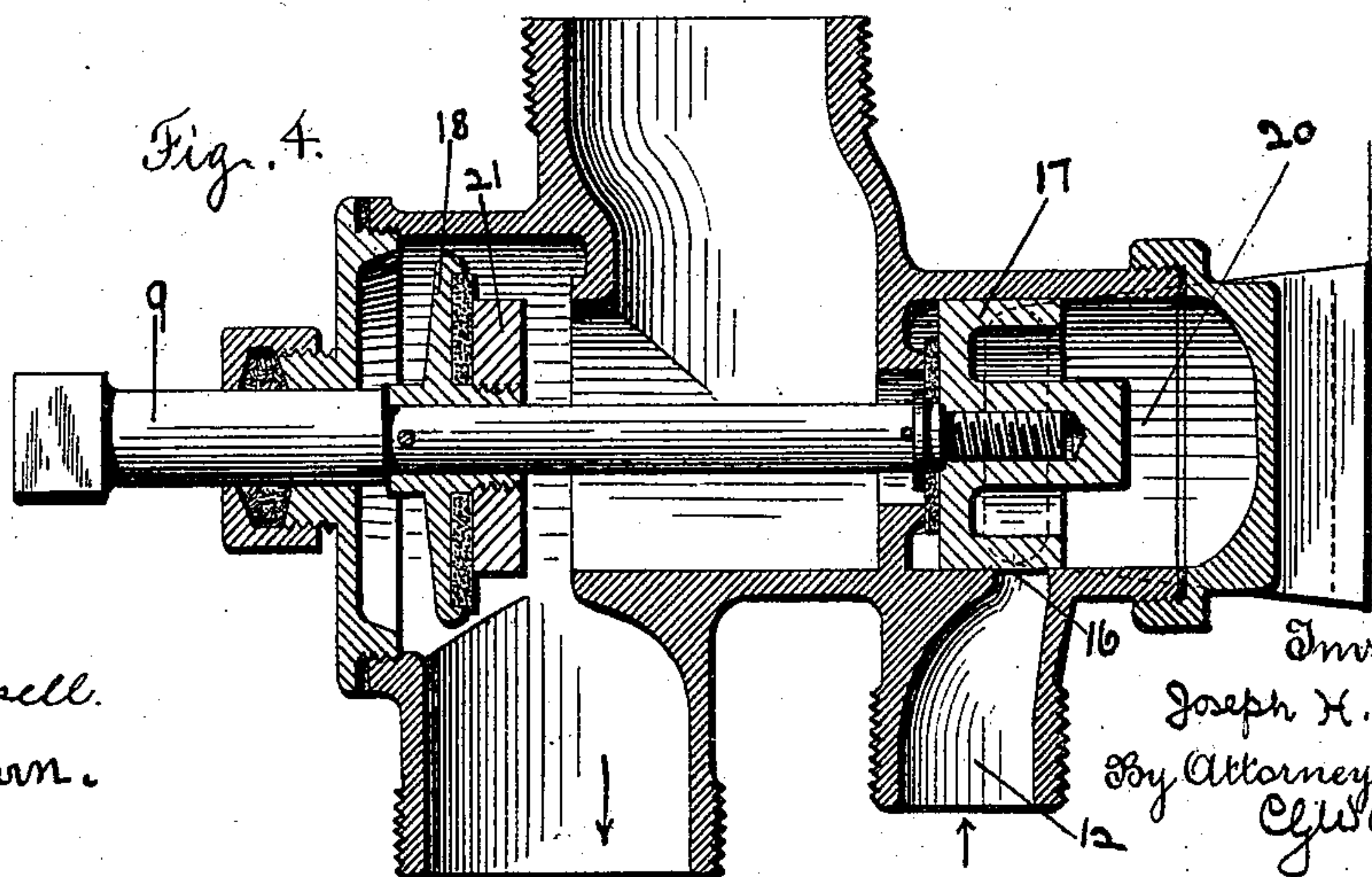
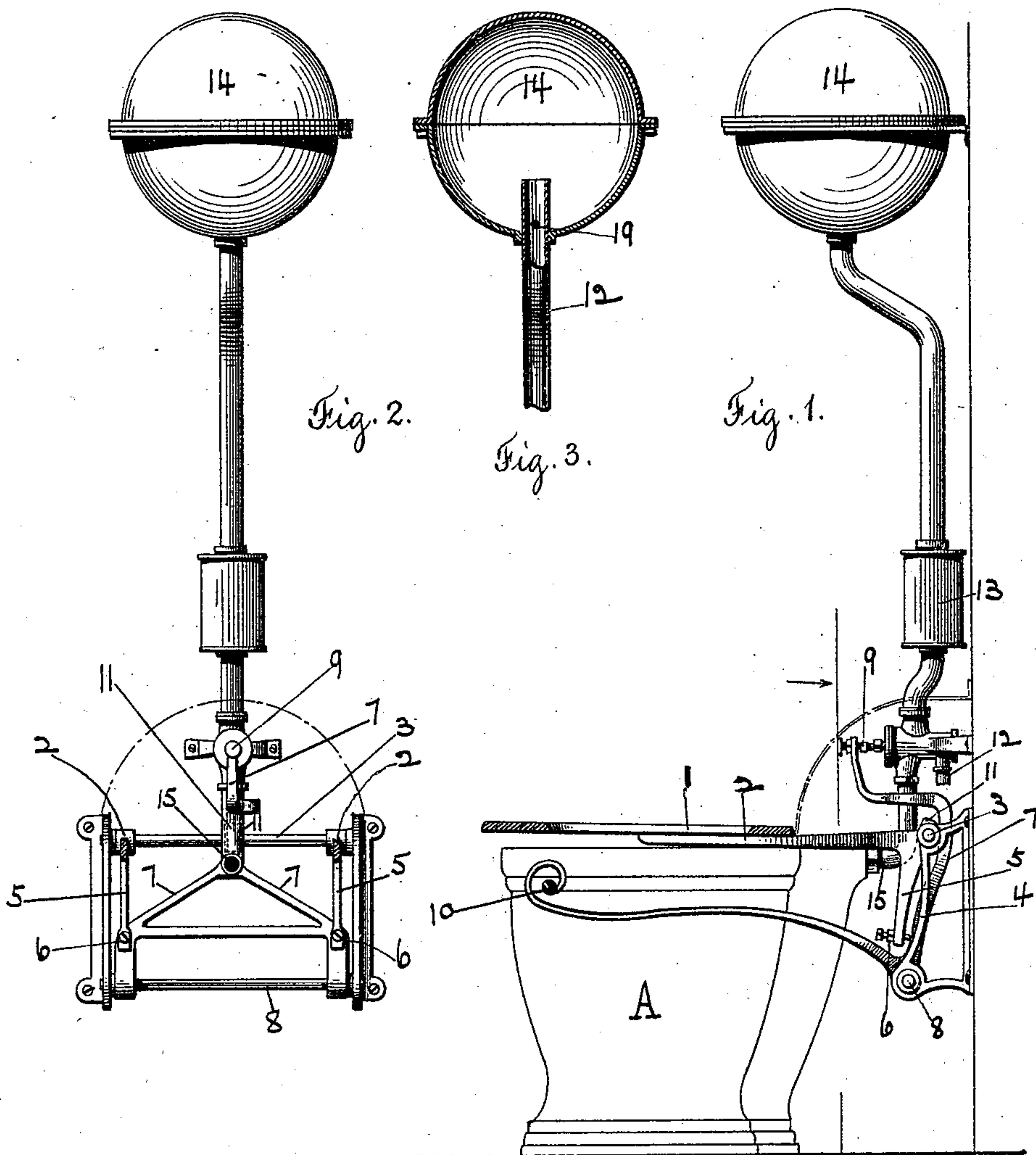
(No Model.)

J. H. DEVLIN.

APPARATUS FOR FLUSHING WATER CLOSETS.

No. 562,174.

Patented June 16, 1896.



Witnesses
M. L. Russell.
R. M. Washburn.

Inventor.
Joseph H. Devlin
By Attorney
Clyde Washburn

UNITED STATES PATENT OFFICE.

JOSEPH H. DEVLIN, OF WORCESTER, MASSACHUSETTS.

APPARATUS FOR FLUSHING WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 562,174, dated June 16, 1896.

Application filed October 24, 1895. Serial No. 566,678. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. DEVLIN, a citizen of the United States, residing in Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Flushing Apparatus for Water-Closets, of which the following is a specification.

The object of my invention is to provide a flushing apparatus for water-closets which may work automatically and positively, whether the seat is depressed or elevated, and which may also be worked at the will of the operator, and so constructed as to cause a gust of air, charged with a disinfectant, to follow the main flush of water into the bowl.

In the drawings, Figure 1 is a side view of the closet and operating parts. Fig. 2 is a front view in the plane indicated in Fig. 1, looking in the direction of the arrow. Fig. 3 is a vertical sectional view of the air-chamber and water-supply pipe and egress-orifice for the water below the top of the pipe. Fig. 4 is an enlarged view of the details of the valve mechanism.

A is the bowl.

1 is the seat attached to the arms 2, which revolve with the rod 3, hung in the frame 4, which may be secured in a partition or supported in any desired manner. The arms 2 have two downwardly-projecting pieces 5, which afford a seat for the adjustable screws 6, which have bearings upon the arms 7, which revolve about the axis 8. The arms 7 unite at one extremity in an upwardly-turned end, which contacts with the adjustable valve-stem 9, and the arms 7 are also operatively connected with the handle 10. Mounted on the center of the rod 3 is the cam 11, which comes in contact with the arm 7 when the seat is elevated, and thus actuates the valve-stem 9.

12 is the water-supply pipe.

13 is the receptacle for a disinfectant, and 14 is the air-chamber.

15 is the pipe through which the water passes into the bowl.

In Fig. 4, 9 is the valve-stem which operates the ingress-valve 17 and the egress-valve 18, the water flowing in the direction of the arrows.

When the stem 9 is moved to the left, the

egress-valve 18 opens and the ingress-valve 17 closes. When the closet-seat is in its initial position, as in Fig. 1, the ingress-valve is closed and there is no water in the air-chamber. Behind the valve 17 is a recess 20, filled with water, which acts as a cushion against the back of the valve when it is opened, but which does not prevent the necessary progress of the valve as there is opportunity for the water to escape around the bearings of the valve, which are not absolutely tight. When the ingress-valve closes, a partial vacuum is formed behind it which prevents its too rapid progress, and hence the sudden checking of the inflow of water, which would have a tendency to produce a hammering noise in the pipes. When the ingress-valve is open, the water flows through it and into the air-chamber as far as the pressure will carry it, when the whole body of water is at rest.

The egress-valve 18 is provided with a collar 21, which completely fills the outlet-space and is of the same width as the discharge of the supply-pipe 12, so that, when the ingress-valve cuts off the inflow of water, the collar, receding from its seat, permits the flow to commence. This adjustment is important because it aids in preventing the sudden checking of the inflow of water, which would make a hammering noise in the pipes. The only motion in the column of water, when the inflow is being cut off, is produced by the filling with water of the space previously occupied by the receding collar 21, and this is so slight that no shock will occur in the supply-pipe when the inflow is cut off.

In Fig. 3 the supply-valve 12 is shown to project some distance above the bottom of the air-chamber, while near the base of the latter is the orifice 19 in the side of the supply-pipe through which the water between the bottom of the air-chamber and the top of pipe 12 finds a vent after the closet has been flushed. This construction insures a discharge of air into the bowl after the flush of water. The air in the air-chamber, seeking to expand, when the pressure upon it is relieved, is prevented from occupying its original space in the bottom of the air-chamber, which is now filled with water, and hence escapes through the pipe 12 into the bowl,

while the water above the bottom of the air-chamber and below the top of the supply-pipe escapes through the orifice 19.

The mode of operation of the flushing apparatus is as follows: The seat being in its initial position is either depressed or raised, and in either case acts, through the arm 7, upon the valve-stem 9, which opens the ingress-valve 17 and closes the egress-valve 18. The inflowing water flows into the air-chamber 14 and compresses the air. When the seat is restored to its initial position, where it is held by the weight of the handle 10, the ingress-valve 17 closes and the egress-valve 18 opens, as shown in Fig. 4, and the water in the air-chamber, actuated by the pressure of the compressed air behind it and the force of gravity, is expelled through the bowl, which it thoroughly flushes. The water between the top of pipe 12 and the bottom of the air-chamber finds a vent through the orifice 19 and flows down into the bowl, as it may do, because, when the seat is in its initial position, the valve 18 is open. After the main flush of water, as explained above, a volume of air charged with a disinfectant may be expelled from the air-chamber into the bowl. The disinfectant is placed in the receptacle 13, and the air, in passing through, becomes charged with it and passes into the bowl.

The disinfectant need not be used, and is not essential to the working of the flushing apparatus; but if the disinfectant is not used, the pipe 12 may be cut off level with the bottom of air-chamber.

It will be seen that the closet-seat need not be operatively connected with the valve mechanism, which can be controlled independently by raising and depressing the arm 10, Fig. 1, and if operatively connected, as shown, the flush can be independently induced by simply raising the handle 10.

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

1. In a flushing apparatus, the combination with a flushing-valve of a pivotally-mounted seat-frame, provided with a plurality of projections and suitable connecting and operating mechanism, whereby the closet may be flushed when the seat is raised or depressed from its initial position, substantially as described.

2. In combination with a closet-seat, a frame supporting it, mounted upon a rod, a cam upon said rod adapted when the seat is raised to contact with a lever adapted to actuate valve mechanism, a lever, suitable valve mechanism, an arm depending from said frame adapted when the seat is depressed to contact with said lever actuating the valve mechanism, an air-chamber and water-supply pipe whereby, when the seat is returned to its initial position, a flush may be induced, substantially as described.

3. In a flushing apparatus, the combination

of an air-chamber closed excepting as to the water-supply pipe and water-supply pipe and ingress and egress valves rigidly fixed relatively to each other, and a lever operating said valves and a properly-proportioned projection connected with said egress-valve adapted to fill the outflow-passage, whereby the outflow of water will not begin until the inflow of water is cut off, and the ingress-valve noiselessly closed, substantially as described.

4. In a flushing apparatus, the combination of an air-chamber closed excepting as to the water-supply pipe and water-supply pipe projecting into said chamber, said pipe having an opening in its side within the chamber, and an ingress and egress valve, and operating mechanism therefor, and a receptacle adapted to hold a disinfectant, whereby the flow of water may be controlled, and a gust of disinfecting-air forced into the bowl of the closet, substantially as described.

5. In a flushing apparatus, the combination of an air-chamber closed excepting as to the water-supply pipe and water-supply pipe projecting into said chamber, said pipe having an opening in its side within the chamber, and an ingress and egress valve, with their lines of action coincident and a lever operating said valves and a properly-proportioned projection connected with said egress-valve adapted to fill the outflow-passage, and a receptacle adapted to hold a disinfectant, whereby the flow of water may be controlled, and the outflow of water prevented before the inflow is cut off, and the ingress-valve noiselessly closed, and a gust of disinfecting-air forced into the bowl of the closet, substantially as described.

6. In a water-closet, the combination of a bowl and seat with an air-chamber closed excepting as to the water-supply pipe and water-supply pipe projecting into said chamber, said pipe having an opening in its side within the chamber, and receptacle for holding a disinfectant, and intermediate valve mechanism, operatively connected with said seat, whereby, when the seat is raised or depressed, the air-chamber may be supplied with water and a flush induced when the seat is returned to its initial position, and a disinfecting gust of air forced into the bowl of the closet, substantially as described.

7. In a water-closet, the combination of a bowl and seat with an air-chamber closed excepting as to the water-supply pipe and water-supply pipe projecting into said chamber, said pipe having an opening in its side within the chamber, and receptacle for holding a disinfectant, and intermediate ingress and egress valves, with their lines of action coincident and operatively connected with said seat by a lever, whereby, when the seat is raised or depressed, the air-chamber may be supplied with water and a flush induced, when the seat is returned to its initial position, and a disinfecting gust of air forced into the bowl of the closet, substantially as described.

8. In a water-closet, the combination of a bowl and seat with an air-chamber closed excepting as to the water-supply pipe and water-supply pipe projecting into said chamber, said pipe having an opening in its side within the chamber, and an ingress and egress valve, with their lines of action coincident, and operatively connected with said seat by a lever, and a properly-proportioned projection connected with said egress-valve, adapted to fill the outflow-passage, whereby the outflow of water will not begin until the inflow of water is cut off, and a receptacle adapted to hold a disinfectant, whereby, when the seat is raised or depressed, the air-chamber may be supplied with water and a flush induced, when the seat is returned to its initial position, and a gust of disinfecting-air forced into the bowl of the closet, and the ingress-valve noiselessly closed, substantially as described.

9. In a water-closet, the combination of a bowl and seat mounted upon two angle-arms secured to a revoluble rod, the seat being attached to one of the members of said arms, and the other member extending downwardly and affording a seat for a screw, and said rod having a cam mounted upon it, with an air-chamber and water-supply pipe, and ingress and egress valves, with their lines of action coincident and actuated by a lever, which is operated by contact with the screws seated in the downwardly-projecting members of said angle-arms, when the closet-seat is depressed, and by said cam when the closet-seat is elevated, said lever having an arm adapted to hold the seat in its normal position, and a properly-proportioned projection connected with said egress-valve adapted to fill the outflow-passage, whereby the outflow of water will not commence until the inflow of water is cut off, whereby, when the seat is raised or depressed, the air-chamber may be supplied with water and a flush induced when the seat is returned to its initial position, and the ingress-valve noiselessly closed, substantially as described.

10. In a water-closet, the combination of a

bowl and seat mounted upon two angle-arms secured to a revoluble rod, the seat being attached to one of the members of said arms, and the other member extending downwardly and affording a seat for a screw, and said rod having a cam mounted upon it, with an air-chamber and water-supply pipe projecting into said chamber, said pipe having an opening in its side within the chamber, and an ingress and egress valve, with their lines of action coincident, and actuated by a lever which is operated by contact with the screws seated in the downwardly-projecting members of said angle-arms, when the closet-seat is depressed, and by said cam when the closet-seat is elevated, said lever having an arm adapted to hold the seat in its normal position and a properly-proportioned projection connected with said egress-valve adapted to fill the outflow-passage, whereby the outflow of water will not begin until the inflow of water is cut off, and a receptacle adapted to hold a disinfectant, whereby, when the seat is raised or depressed, the air-chamber may be supplied with water and a flush induced when the seat is returned to its initial position, and a disinfecting gust of air forced into the bowl of the closet, and the ingress-valve noiselessly closed, substantially as described.

11. In a flushing apparatus, the combination of an air-chamber, closed excepting as to the water-supply pipe, ingress and egress valves rigidly fixed relatively to each other, means for operating said valves, and a water-cushion behind the ingress-valve, substantially as described.

12. In a flushing apparatus, the combination of a reservoir, ingress and egress valves rigidly fixed relatively to each other, means for operating said valves, and a water-cushion behind the ingress-valve, substantially as described.

JOSEPH H. DEVLIN.

Witnesses:

G. W. BUCK,
R. F. HOLLY.