(Model.)

2 Sheets—Sheet 1.

A. F. BLESCH.

Water Closet.

No. 238,836. Patented March 15, 1881.

Fig. 1.

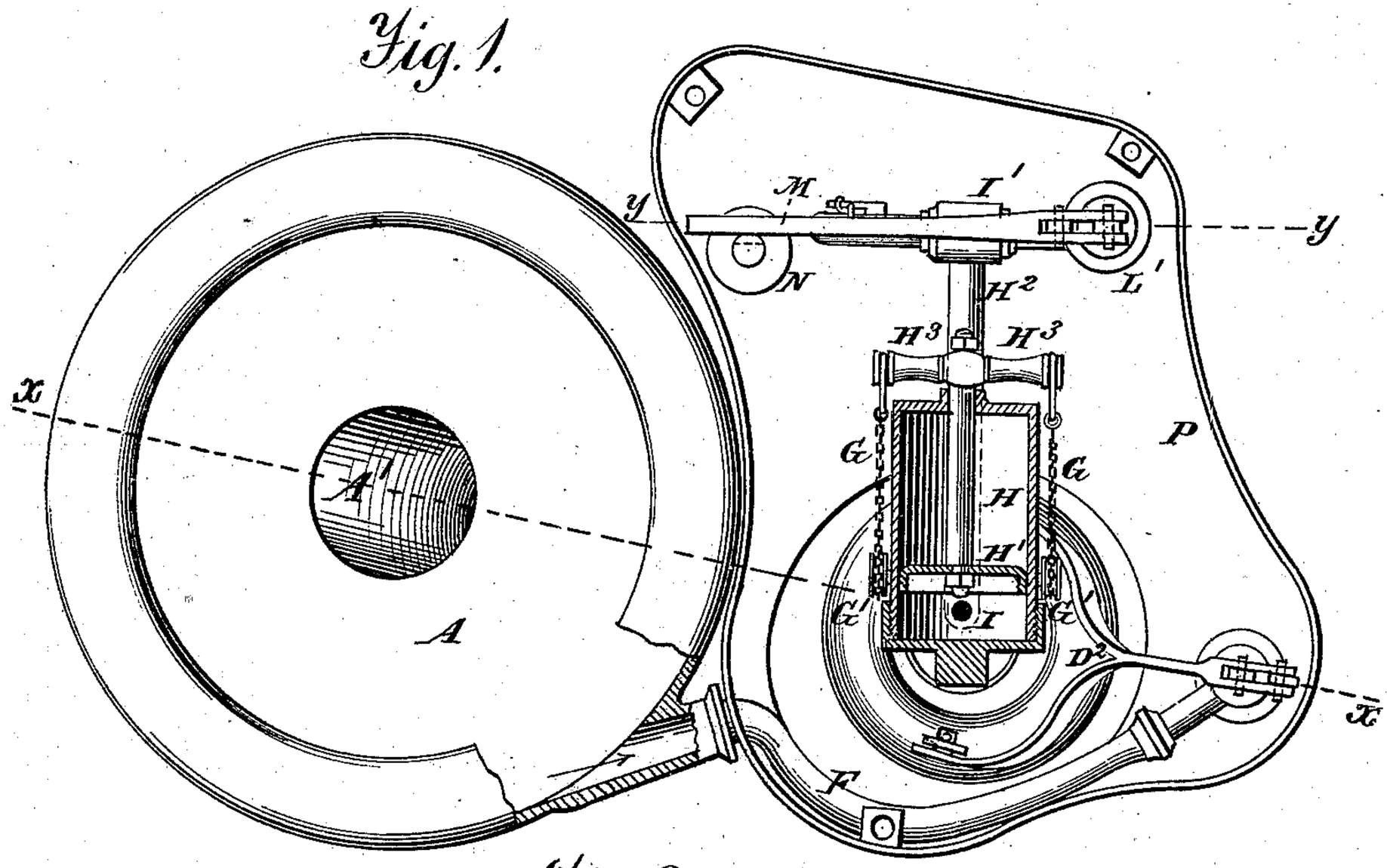
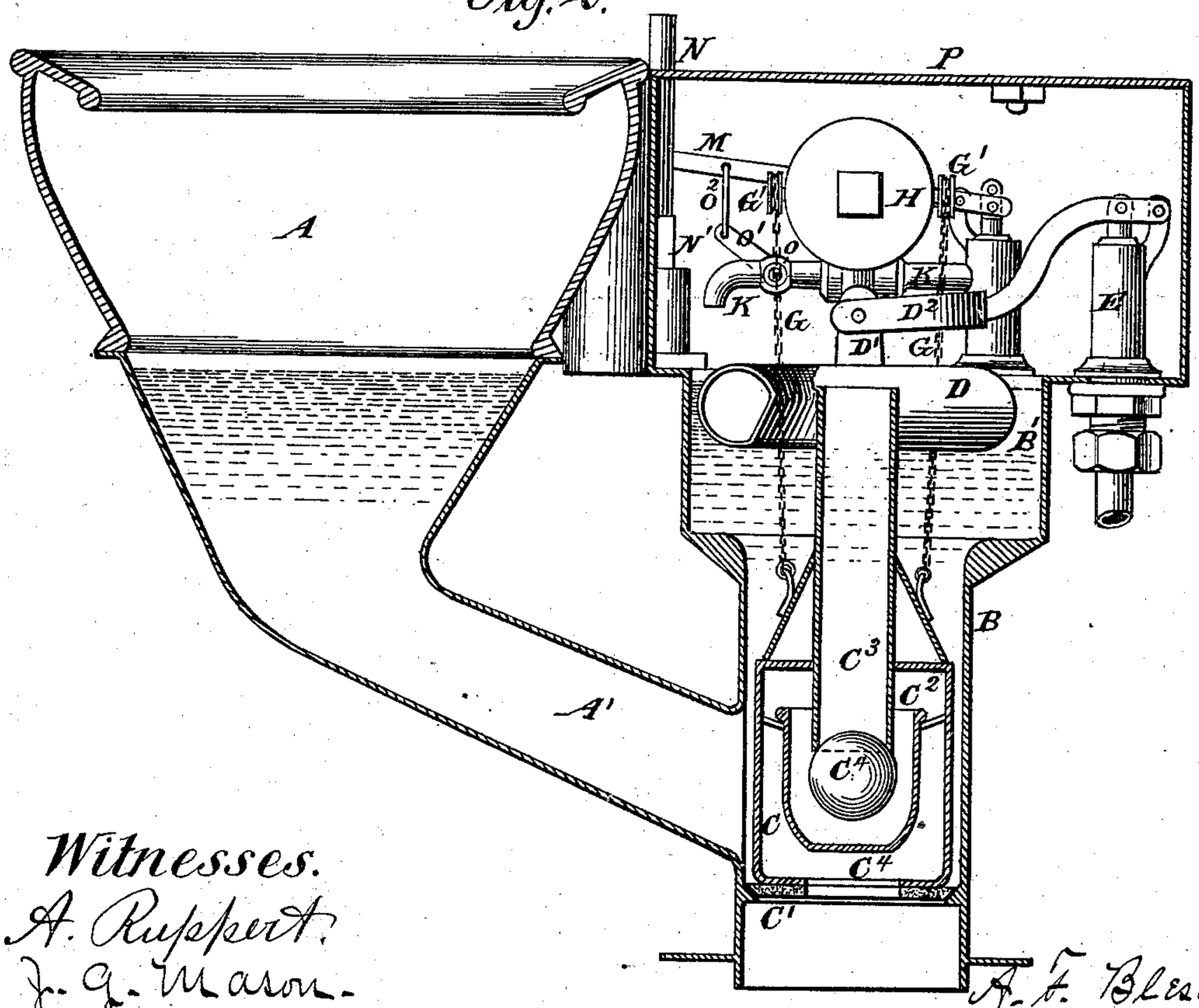


Fig. 2.



Witnesses.
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J. G. Mason.

A. F. Blesch
by Inventor.
J. R. Mason,
atty.

(Model.)

2 Sheets—Sheet 2.

A. F. BLESCH.

Water Closet.

No. 238,836. Patented March 15, 1881.

Fig. 3.

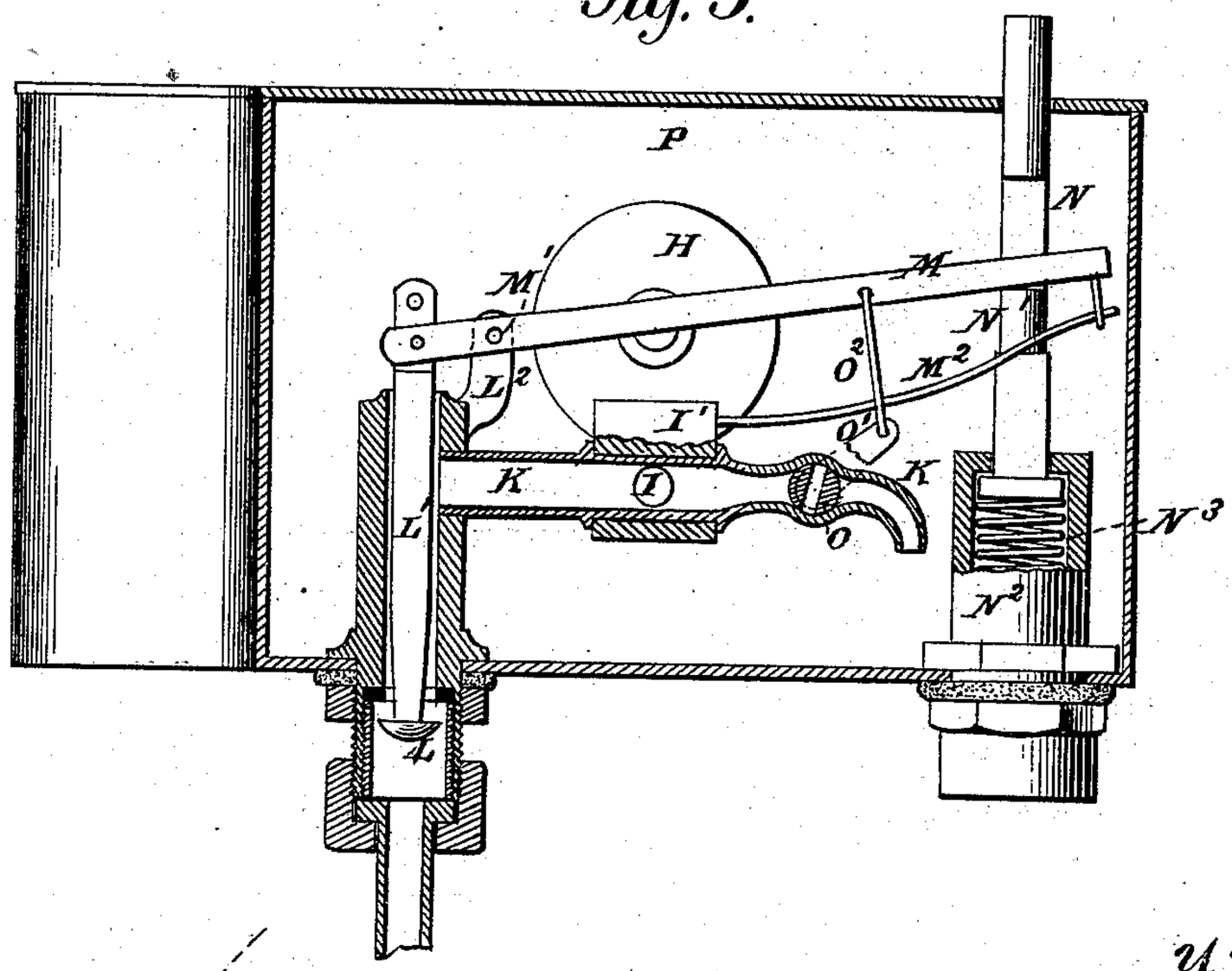
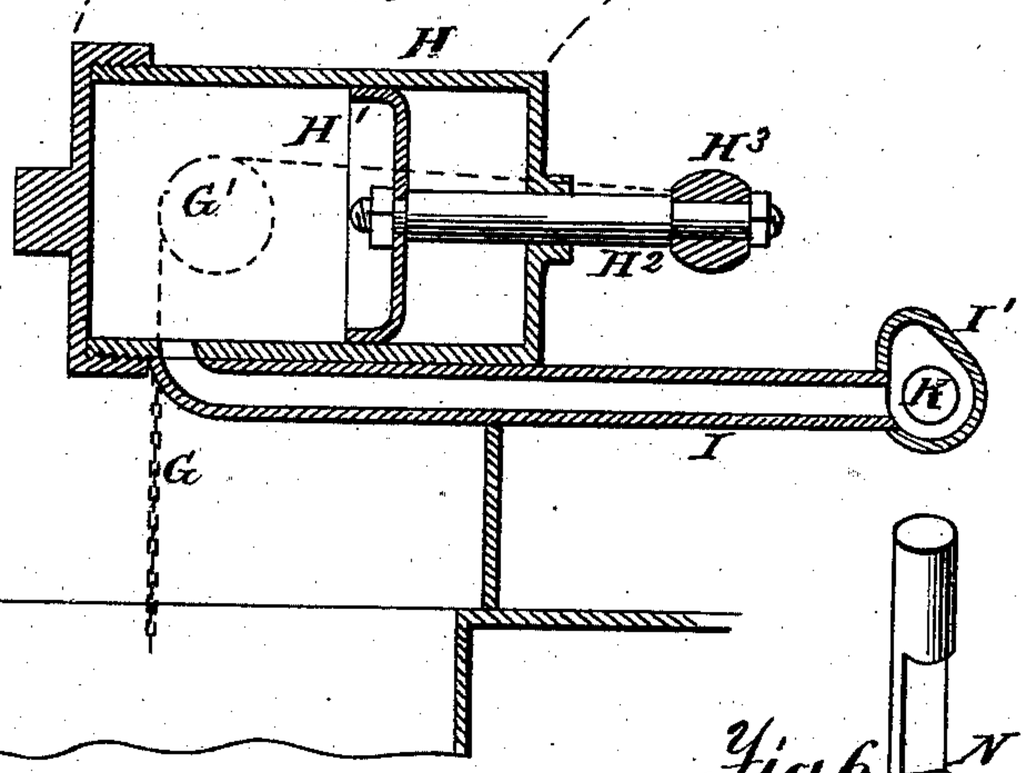


Fig. 5.

Fig. 4.



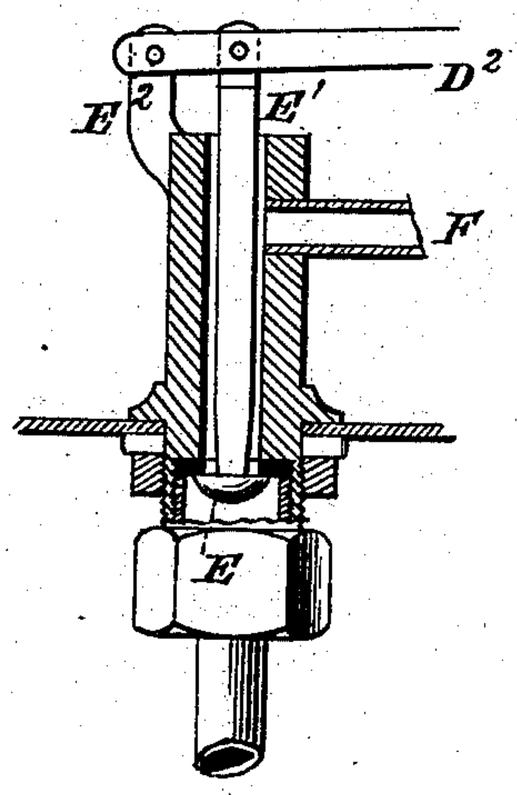
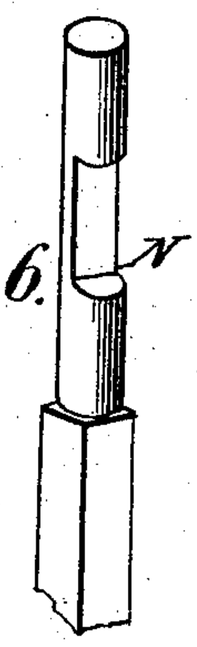


Fig. 6.



Witnesses.
A. Ruppert,
J. G. Mason

A. F. Blesch
Inventor.
by R. Mason
Atty.

UNITED STATES PATENT OFFICE.

AUGUST F. BLESCH, OF COLUMBUS, OHIO.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 238,836, dated March 15, 1881.

Application filed December 17, 1880. (Model.)

To all whom it may concern:

Be it known that I, AUGUST F. BLESCH, of Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Improvement in Water-Closets, of which the following is a specification.

My improvement relates to that class of water-closets in which the valves are operated by the rise and fall of the seat, and it is distinguished from other water-closets of this class in this, that whereas in other cases the valves are open, so that the water flows continuously through the basin while the seat is pressed down, in mine the valves remain in their normal condition until the seat, having been occupied, is relieved from pressure, when the valves are automatically operated to first discharge the contents of the basin and then to refill it. By this means the entire operation is made purely automatic without a continuous flow of water during the occupation of the seat, and the action of the closet is assimilated to those of the other class in which the valves are manipulated by hand, and are therefore liable to be injured by carelessness or lack of skill, or by the closet being left without being flushed.

In the annexed drawings, making a part of this specification, Figure 1 is a plan view, partly in section. Fig. 2 is a vertical section on the line *x x* of Fig. 1. Fig. 3 is a section on the line *y y* of Fig. 1. Fig. 4 is a longitudinal vertical section of the cylinder and piston. Fig. 5 is a vertical section of the valve which regulates the admission of water into the basin. Fig. 6 is a perspective view of the stem upon which the seat rests and by which the mechanism is operated.

The same letters are employed in all the figures in the indication of identical parts.

In Fig. 2 the parts are represented in their normal condition, the basin A being partly filled with water, as indicated, and the chamber B′ of the discharge-pipe B being filled with water to the same level as that of the basin. This water is confined by the valve C, resting on the valve-seat C′ in the discharge-pipe B, into which the basin discharges through the pipe A′.

D is a float placed in the chamber B′, and which rises and falls with the water in said chamber. The float D is connected, by lugs D′ and a pivot, with a lever, D^2, which actuates the stem E′ of a valve, E. The fulcrum of the lever D^2 is on an arm, E^2, attached to the casing of the valve, the valve-stem E′ being attached to the lever D^2 at a point between the float and the fulcrum, so that when the float D is raised the valve E on the end of the stem E′ shall be raised against its seat, so as to prevent the flow of the water, the valve opening with the fall of the lever D^2 and its stem E′. While, therefore, the chamber B′ is full of water, the valve E will remain closed; but when the water is drawn out of the tube B, which occurs whenever the valve C is lifted, the float D falling, the valve E will be opened and the water allowed to flow through the flushing-pipe F, which enters the basin tangentially, in the usual manner, and so continue to flow as long as the valve E remains open.

In order to prevent overflow in case the action of the valve E should be interrupted, the valve C is constructed with a chamber at its lower end, in which a cup, C^2, is suspended, into which cup a pipe, C^3, descends, the upper end of which is on the floating-line of the float D, and the bottom being closed by a valve, C^4. As the cup C^2 is normally filled with water the valve C^4, which is an india-rubber ball specifically lighter than the water, will be held normally against its seat against the lower end of the pipe C^3, thus preventing effectually the escape of sewer-gas through the pipe C^3; but when the water rises so as to flow over the top of said pipe C^3 and fill the same, the pressure on the upper side of the valve C^4 being greater than that which tends to sustain it, it will be forced away from the end of the pipe, and thus permit the water to flow from the pipe C^3 into the cup C^2, and, overflowing it, pass out through the opening C^4, and this outflow will continue until the water is drawn down to the level of the upper end of the pipe C^3, when the valve C^4 will be raised by the upward pressure of the water in the cup C^2.

The valve C is actuated in the following manner: It is hung upon chains G G, which pass up over sheaves G′ G′, placed on the exterior of the cylinder H. This cylinder contains a piston, H′, the rod H^2 of which passes out

through a stuffing-box in one of the heads of the cylinder, and carries a cross-head, H^3, to the ends of which the chains G G are fastened, so that when the piston H′ is forced from its normal position, which is that shown in Fig. 1, it will draw upon the chains G G, and so lift the valve C from its seat and permit the discharge of the water from the basin and the pipe and chamber B B′. When the piston returns to its normal position the valve C drops back on its seat. This piston is operated in the following manner: I is a tube, which opens into the cylinder H between its solid head and the piston H′, for the admission of water to that end of the cylinder, for the purpose of forcing the piston to the other end of the cylinder, and so, by the means described, raising the valve C. The pipe I is attached to a chamber, I′, turning on the pipe K, so as to permit the cylinder H to be thrown up, swinging upon said pipe K as a center, as indicated by the dotted lines in Fig. 4. The object of this freedom given to the cylinder is to permit it to be swung out of the way when any repairs to the valve C or the float D may become necessary.

The pipe K is the outflow-pipe. A valve, L, in its normal condition is closed by being lifted against its valve-seat, as shown in Fig. 3, the valve-stem L′ being actuated by the lever M, being a lever of the first order, having its fulcrum at M′ upon an arm, L^2, intermediate between the valve-stem L′ and the free end of the lever, which is actuated by the vertically-sliding rod N, being held down normally by the tension of the spring M^2. The rod N is notched at N′, and the tension of the spring M^2 is so applied that it shall tend to draw the lever M not only downward, but also laterally against the rod N, so that whenever the rod N is forced down so as to bring the lever opposite the notch, the tension of the spring will draw the lever into the notch and there hold it until it is forcibly disengaged. The lower end of the rod N enters a cylinder, N^2, and rests upon a spiral spring, N^3, placed therein, the tension of which is sufficient to lift the rod N and the seat which rests on the upper end of the rod.

The valve O is placed in the pipe K at a point intermediate between the exit of the branch pipe I and the open end of the pipe K. This is an oscillating valve actuated by the lever O′, attached to its stem, and which is connected by the rod O^2 with the long arm of the lever M. The arrangement of the valves L and O is such that when the valve L is open, as shown in Fig. 3, the valve O shall be closed, and vice versa, the object of which arrangement is, that as the pipe I serves both as an induction and eduction pipe for the cylinder H, when the valve L is open, the water will flow through the pipe K into the cylinder H, forcing the piston to the other end of the cylinder and projecting the piston-rod H^2, which is placed in such relation to the lever M that when the piston-rod is fully projected it will strike against the side of the lever M and force it away from the rod N, detaching it from the shoulder of the notch, when the spring M^2 draws it down, closing valve L and opening the petcock O, and allowing the water to escape from the cylinder and the return of the piston to its normal position, to which it is drawn by the weight of the valve C.

The working mechanism is inclosed in a casing, P, which is the upper extension and enlargement of the pipe B, being covered with a cap, through a hole in which the rod N projects, and which is therefore the only part of the operative mechanism in sight or within reach until the cap is detached and removed.

The operation of the entire mechanism is as follows: In its normal condition the basin and pipe B are filled with water to the level of the upper end of the pipe C^3, the water being retained by the valve C resting on its seat C′. The float being raised, the valve E is closed against its seat. The long arm of the lever D^2 being raised, the valve L is also closed against its seat, the long arm of the lever M being drawn down by the tension of the spring M^2. This arrangement of the parts not being disturbed by the pressing down of the rod N, the only change thereby produced is, that the long arm of the lever M is, by the tension of the spring M^2, drawn into the notch N′, so that the shoulders of the notch will engage the under side of the lever and lift it whenever the pressure is taken off of the upper end of the rod N. When this occurs the spring N^3 will force up the rod N, lifting the lever M into the position shown in Fig. 3 and opening the valve L, at the same time closing the valve O, so that the water will flow in through the pipe K into the cylinder H, forcing the piston H′ to the other end of the cylinder, thereby, through the medium of the cross-head H^3 and the chains G G, lifting the valve C, so that the entire contents of the basin and connected pipes will be discharged through the soil-pipe. The discharge of the water from the pipe B will cause the float D to fall, thereby, through the lever D^2 and stem E′, depressing and thereby opening the valve E, which admits the water through the tangential pipe F into the basin. This flow will continue until the valve C is closed, thereby preventing the escape of the water, and until the chamber B′ is filled, so as to raise the float D, and thereby close the valve E against its seat.

It is obvious that the valve C cannot fall as long as the cylinder H is filled with water under pressure from the main between its inlet-pipe and the piston; but this pressure is cut off and the water is permitted to escape by an automatic action when the piston is forced to the other end of the cylinder, so that the end of the piston-rod H^2 strikes against the side of the lever M with sufficient force to disengage the lever M from the notch N′, when the long arm of the lever is instantly drawn down by the tension of the spring M^2, thereby closing the valve L to cut off the further admission of water from the main and open the petcock O, through

which the water from the cylinder H will flow through the pipe I, now become an eduction-pipe. As the piston is retracted by the weight of the valve C, applied to the piston-head, through the chains G G, cross-head H^3, and piston-rod H^2, the water, escaping through the petcock, runs off into the chamber B′. By this means the contents of the basin are discharged and the basin refilled with water whenever the seat, having been depressed, is relieved from pressure.

The discharge-valve C, I do not claim to be of my invention, it being the form of valve known as the "Bower Patent Plunger for Water-Closets."

I do not claim, broadly, a valve automatically operated by a float, for I am aware that such devices have been used for preventing overflow and other purposes.

I am aware that in water-closets a float has been used to operate a valve employed to admit water from the main, which water, when so admitted, acted automatically on a second valve connected by its stem with another valve which controlled the admission of water to flush the basin. My invention is distinguished from the former in its combination, and from the latter in the omission of the intermediate valves, which are not necessary in my water-closet, because the valvular construction which prevents the sudden closing of the inflow-pipe is otherwise organized so as to secure the gradual closing of the flushing-valve.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a water-closet, in combination with the flushing-valve E, a lever and float, D, a chamber, B, inclosing the float and connected with the discharge-pipe, and a valve, C, automatically operated so as to settle slowly on its seat, and so cause a gradual rise of water in the chamber and consequent slow movement of the valve E in closing, substantially as set forth.

2. The combination, in a water-closet, of an automatic discharge-valve, C, and automatic flushing-valve E, substantially as set forth.

3. The combination, in a water-closet, of a water-induction pipe, a cylinder, and piston for actuating the discharge-valve C, and a connecting-pipe, I, so jointed as to permit the cylinder to be swung vertically out of the way without breaking connections, substantially as set forth.

4. In combination with the valve C, the chains, cylinder, and piston for raising said valve, substantially as set forth.

5. In a water-closet, the combination, with the cylinder H and piston H′, of the pipes I and K and automatic valves L and O, for admitting and discharging the water to and from the cylinder by the movement of the lever M, substantially as set forth.

6. The combination of the valve-actuating cylinder and piston, the pipes I and K, valves L and O, lever M, actuating said valves, and the rod N, actuating the lever, substantially as set forth.

7. In combination with the rod N, lever M, and spring M^2, the cylinder and piston, said parts being placed in such relation to one another that when the lever is raised, admitting water to the cylinder, the projection of the piston-rod disengages the lever, substantially as set forth.

8. In combination with the hinged seat of a water-closet, the projecting rod N, spring N^3, lever M, pipe K, and valves L and O, which, by their movement, regulate the inflow and outflow of a stream of water applied to operate the discharge and flushing valves automatically, substantially as set forth.

9. In combination with the basin and discharge-pipe of a water-closet, two water-induction pipes, one introducing water for operating automatically the valve of the discharge-pipe, and the other being also automatically controlled for the introduction of water for flushing the basin, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of December, 1880.

AUGUST F. BLESCH.

Witnesses:

JAS. FINLEY BROWN,

ANDREW SCHWARZ.