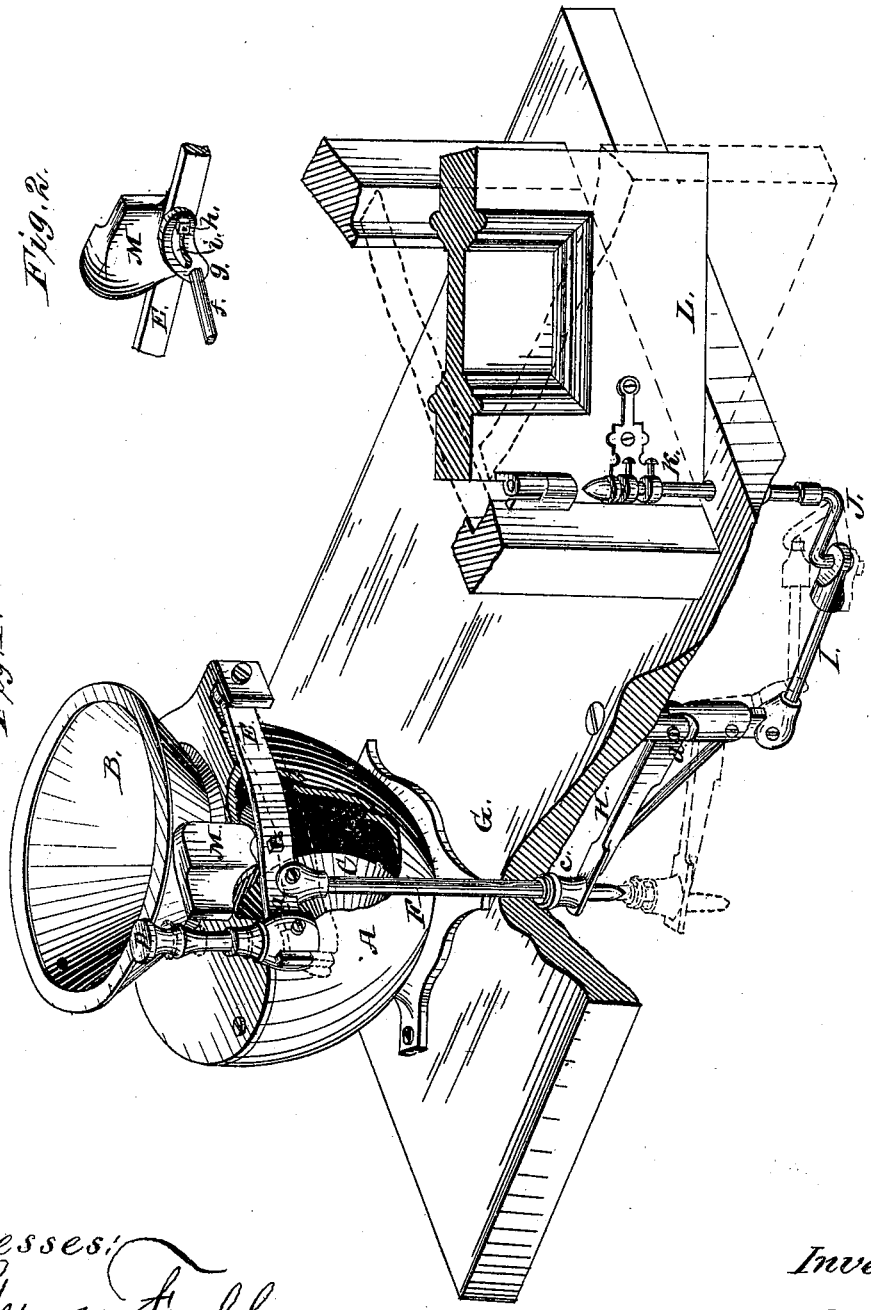
J. H. STEVENS.

WATER-CLOSET.

No. 180,439. Patented Aug. 1, 1876.

Fig. 2.

Fig. 1.



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JOHN H. STEVENS, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN WATER-CLOSETS.

Specification forming part of Letters Patent No. **180,439**, dated August 1, 1876; application filed May 1, 1876.

To all whom it may concern:

Be it known that I, JOHN H. STEVENS, of Cambridge, county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Water-Closets; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

The invention hereinafter described is an improvement upon that for which Letters Patent have been heretofore granted to me, dated July 15, 1873; and it consists in a novel arrangement of the door of the cabinet in which the commode is located with the mechanism which controls the discharge of the contents of the bowl, and the admission of water for rinsing the bowl and filling the trap, whereby the movement of the door, either in opening or in closing, will empty the bowl and put in action the water-supply, while at the same time the commode can be worked, as an ordinary water-closet, by hand. Another improvement consists in so arranging the counter-balance weight, which tends to hold the water-pan in proper relation to the bowl for forming a stench-trap, that, when the pan is tilting to a position for emptying its contents, by the movement of the door of the closet in opening or closing, or in consequence of the hand-pull being lifted for that purpose, the leverage upon which the weight acts will shorten, to diminish the increased resistance otherwise to be overcome, in consequence of the emptying of the pan of its water.

The drawing, Figure 1, shows, in perspective view, a water-commode combined with the door of the apartment in which the commode is located, and suitable for use in hotels or public buildings, where, in many cases, it is arranged for the doors of the cabinets to stand open when the cabinets are vacant.

A represents the trunk; B, the bowl; C, the water-pan. The pan is tilted by means of the common lever-and-crank mechanism in use, which may be worked by the hand-pull D, or by opening or closing the door of the cabinet, as hereinafter described.

The pan-lever E has pivoted to it at *a* the rod F, which extends vertically downward through the floor G of the apartment and passes loosely through a hole near the end of the long arm of a bell-crank lever, H. The hand-pull D can be worked as if this combination of the pan-lever with the bell-crank did not exist. When the pan C is in a horizontal position the face of a stop, *c*, (which may be made adjustable in position,) rests on the top face of the long arm of the bell-crank H. This bell crank is hinged at *d*, as shown. To the lower end of the short arm of the bell-crank there is attached a swivel-pin, and to this pin a link, I, is pivoted at one end. The other end of the link I is connected by a loose joint with the crank J attached to the rod K, and which latter, being set in the line of the joint-pins of the door-hinges, turns on its axis when the door L of the cabinet is opening or closing.

It will be observed that the crank J is set at an angle of about forty-five degrees with the plane of the door L. Hence, when the door of the cabinet is fully open, the crank will be in the position shown by dotted lines, and when the door is closed the crank will stand in a line which is about at right angles with its position when the door is open. It follows that the movement of the crank from one position to the other (whether the door be opening or closing) will cause the bell-crank lever to be vibrated so that its longer arm will be moved first upward to tilt the pan for discharging its contents and admitting water to rinse the bowl, and then downward, to permit the counter-balance weight to bring the pan again to the horizontal position.

By this arrangement described the door of the cabinet may be provided with a spring to hold it open when the cabinet is vacant, as is preferred for hotels and public buildings, or the door may be arranged to close itself by a spring when the the cabinet is entered or vacated. By either arrangement the bowl will be rinsed before the commode is used as well as afterward, by the act of either closing or opening the door. For hotel-closets, or those connected with public offices, the rinsing of the bowl prior to its use is important for the preservation of cleanliness, for the reason that deposits are less liable to adhere to a freshly-wetted surface and are more easily removed upon the second rinsing.

At Fig. 2 of the drawings is shown a de-

tached view of the shaft *f*, to which the water-pan is attached. It has been customary heretofore to counterbalance the water-pan by means of a weight attached to or connected with the lever E. When the pan is emptied there is no resistance to the gravity of the weight, and, in case the commode has the mechanism for tilting the pan combined with the door of the cabinet, the pull exerted upon the door will be very considerable. To improve a water-closet in this respect I have so combined the counter-balance weight with the water-pan shaft and the mechanism which tilts the pan that the gravity of the weight will diminish as the water discharges from the pan, and increase as the pan is filling again. I accomplish this effect by attaching a counter-balance weighted arm, M, to the pan-shaft *f*. The form or arrangement of the weighted arm is such that its center of gravity will be in a line which falls outside of the shaft and tends always to rock the pan-shaft, so as to bring the pan up to the bowl. The lever E is combined with the crank *g*, for rocking the pan-shaft, by means of the usual pin *h* and curved slot *i*. It is apparent that when the lever E is rising upward for tilting the pan, the resistance of the weight M will diminish in proportion as the effective leverage or the distance between the pin *h* and the pan-shaft *f* diminishes; and, on the other hand, the effective power of the weight will increase as the pan is returning to the horizontal position and filling with water. Hence the strain upon the door of the cabinet or the resistance to be overcome by the hand-pull, if the closet is not connected with the door, will be maintained at all times nearly uniform.

Under the name of water-commode I mean to include any of the forms of known ship or house water-closet, slop-hoppers, or urinals, to which my improvements may be applicable.

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

1. The combination, with the common mechanism for operating a water-commode, of a system of lever-connections, substantially as described, by means of which the closet can be worked by the door of the cabinet without interfering with the working of the closet by hand in the ordinary way, substantially as specified.

2. In combination with the door of the cabinet and lever-connections, substantially as described, for working the water-commode, so arranging the crank J or equivalent device for communicating motion to the said lever-connections that the door of the cabinet, both in opening and in closing, will cause the mechanism which operates the commode to be fully worked, substantially as specified.

3. The combination, with the tilting-pan and rocking-shaft of a water-commode, of a variably-compensating counter-balance weight connected therewith, substantially as described.

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Witnesses:

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