(No Model.) 3 Sheets—Sheet 1.

E. W. CLARK & J. CRAWFORD.

WATER CLOSET.

No. 390,204. Patented Oct. 2, 1888.

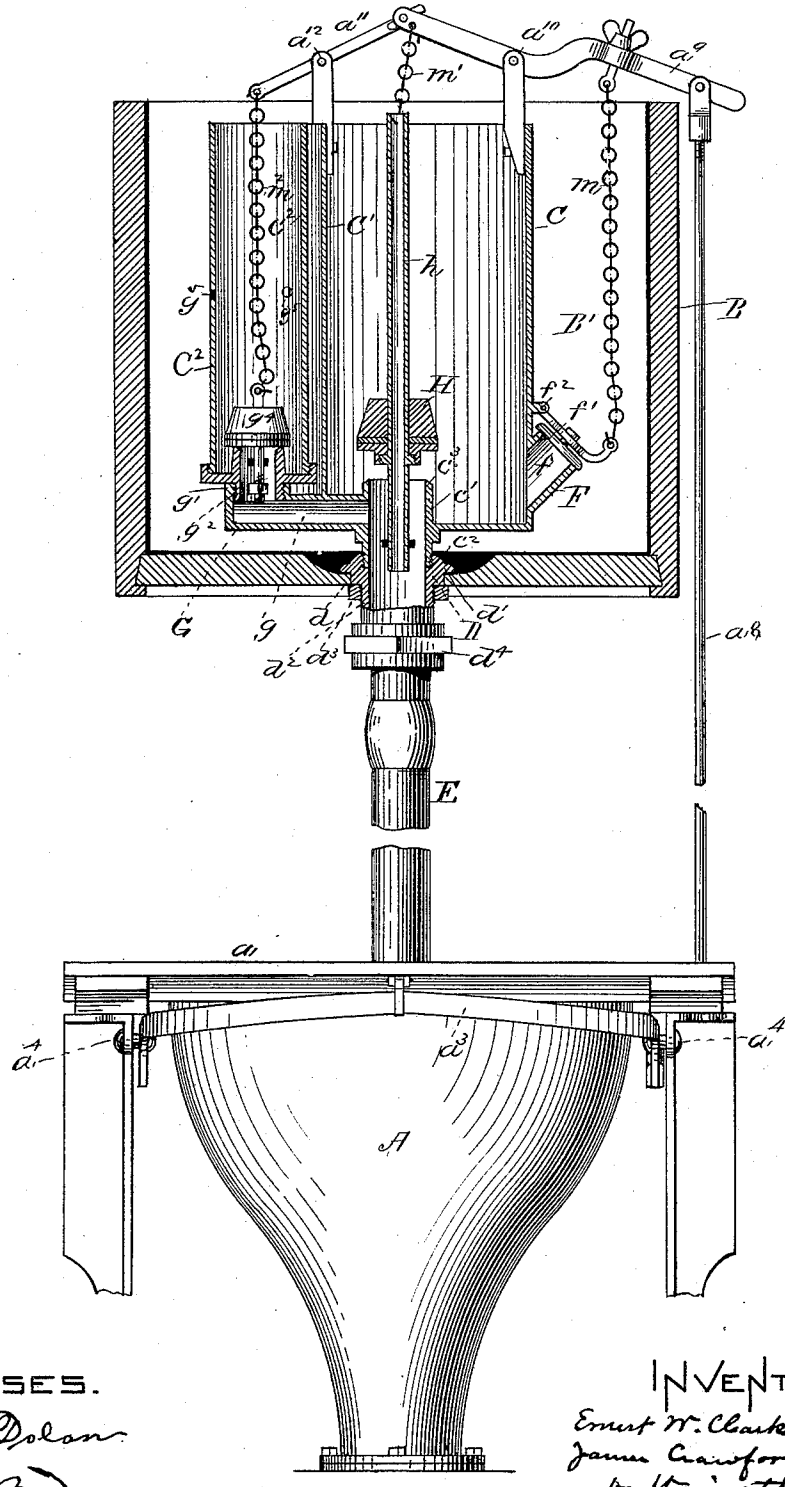

Fig. 1.

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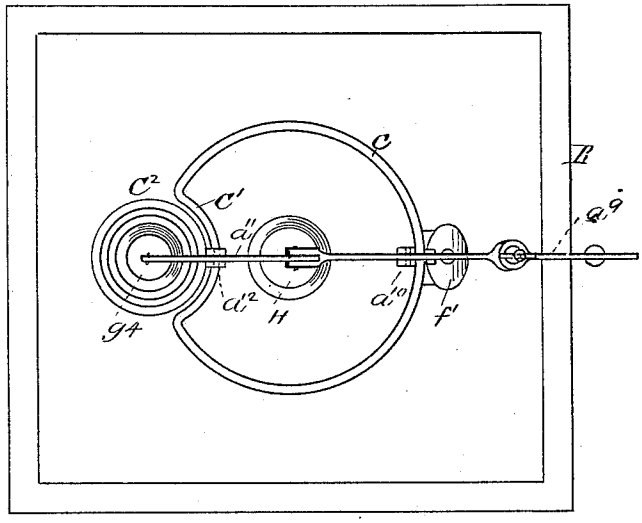

Fig. 2.

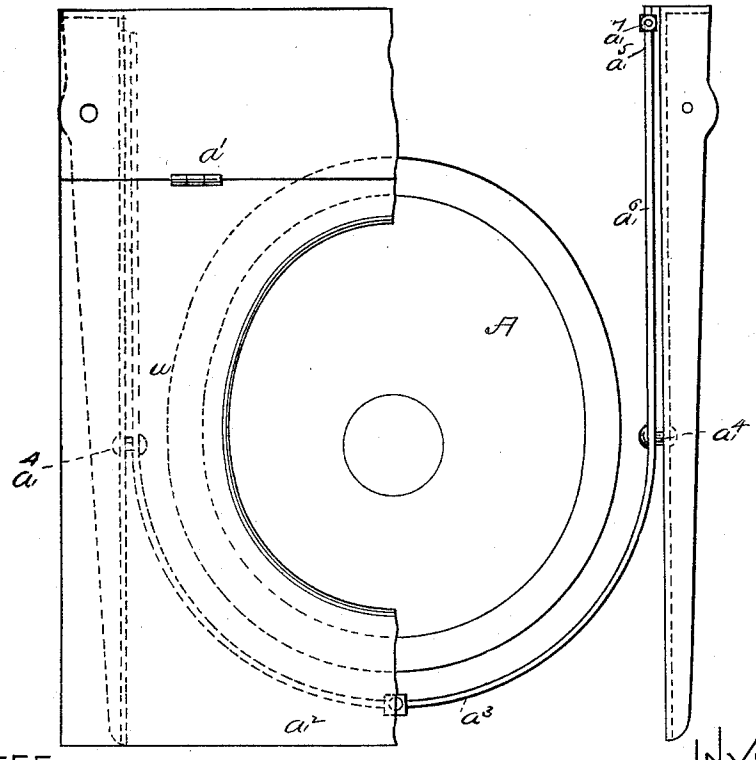

Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

E. W. CLARK & J. CRAWFORD.

WATER CLOSET.

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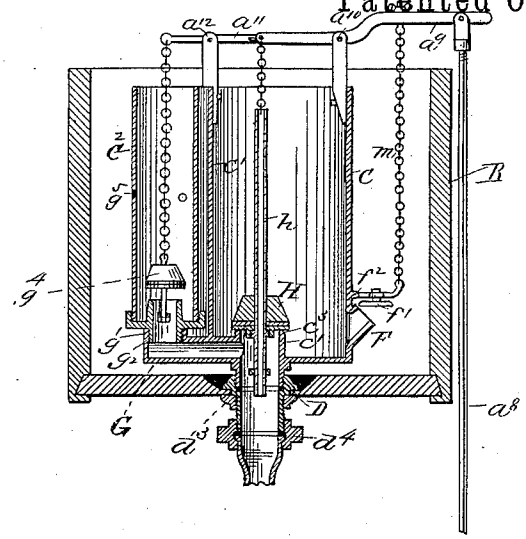

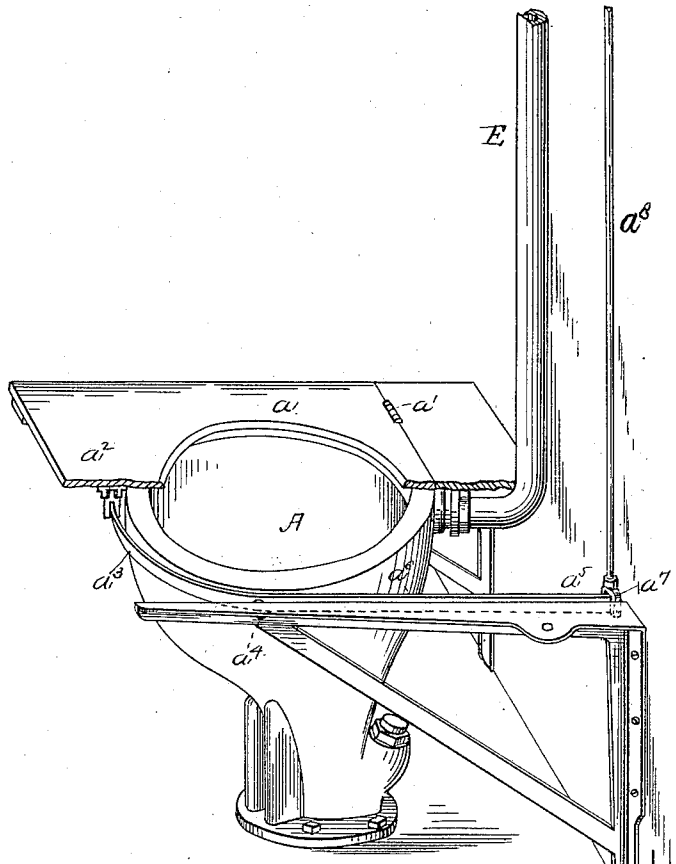

Fig. 4.

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UNITED STATES PATENT OFFICE.

ERNEST W. CLARK AND JAMES CRAWFORD, OF CAMBRIDGE, MASSACHUSETTS.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 390,204, dated October 2, 1888.

Application filed February 25, 1887. Serial No. 228,856. (No model.)

To all whom it may concern:

Be it known that we, ERNEST W. CLARK and JAMES CRAWFORD, both of Cambridge, in the county of Middlesex and State of Massachusetts, both citizens of the United States, have invented a new and useful Improvement in Water-Closets, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to that class of water-closets in which the valve or valves for controlling the flow of the rinsing and washing water from the tank are operated by the seat of the closet; and the invention relates to various details of construction and organization, all of which will hereinafter be fully described.

In the drawings, Figure 1 is a view in front elevation of the bowl and seat, and in vertical section of the tank and service-box connected therewith, showing their relation to each other, and their connection or connections with the supply-pipe running to the bowl. Fig. 2 is a view in plan of the service-box and tank. Fig. 3 is a view in plan of a portion of the bowl, and also of a portion of the seat of the closet, and of the lever adapted to be operated by the seat, and connected with the rod extending to the valve-operating apparatus. Fig. 4 is a view in perspective of the bowl and seat, and in vertical section of the tank and service-box connected therewith, showing their relation to each other, and their connection or connections with the supply-pipe running to the bowl.

Referring to the drawings, A represents the bowl. *a* is the seat, which is hinged at a', (see Fig. 3,) and has a slight vertical movement at its front end, a^2, to communicate movement to the valve-operating lever a^3. This lever is pivoted at a^4, and the inner end, a^5, of its arm a^6 is connected at a^7 with a rod, a^8, extending to the upper valve-lever, a^9. This lever is pivoted at a^{10} to a support above the tank B. The inner end of this lever is coupled to another lever, a^{11}, which is pivoted at a^{12}. The tank B contains the service-box C, which is made in two sections—the larger part or section, C′, and the smaller part or section, C^2. The main section C of the service-box is preferably of metal cast to shape, although it may be made of sheet metal. It is represented in the drawings as made by casting, and it has cast with it the sleeve c', which extends below the bottom of the box, and has a screw-thread, c^2, and also extends in the box above the bottom to furnish the valve seat c^3. The tank, preferably, is made of wood and lined with metal, and it has formed in its bottom a hole for receiving the metal coupling D. This coupling has an interior screw-thread, *d*, at its upper end for receiving the screw-threaded sleeve c', the flange d', which extends upon a countersunk section of the bottom of the tank, and a lower section, d^2, which has a screw-thread and receives the nut d^3, whereby the coupling is clamped to the bottom of the box. This end also receives the connecting-coupling d^4, used in attaching the upper end of the conducting-pipe E to the coupling D.

In fitting the coupling to the bottom of the box the metal lining is formed down into the countersink and solder applied to the upper surface of the shoulder d', filling the cavity at the bottom of the box about its upper edge. The service-box also has an outwardly and upwardly extending sleeve, F, at its side near its bottom, forming a passage, *f*, from the tank to the interior of the section C′ of the service-box, which is adapted to be closed by the clapper-valve f'. The section C′ of the service-box also has a horizontal extension, G, forming the passage *g*, which opens into the sleeve c'. This extension has a short upwardly-extending sleeve, g', screw-threaded and adapted to hold the screw-threaded section g^2 of the smaller section, C^2, of the service-box. This smaller section may be of any suitable metal, and I have represented it as made of cast metal and as separate from its bottom, although it may be cast integral therewith. The sleeve g^2 extends upward into the box, and its upper end, g^3, forms the valve-seat for the controlling-valve g^4. The entrance from the larger section, C′, of the service-box to the conducting-pipe is closed by the valve H, which is supported by a tube, *h*, which extends through the valve into the sleeve, and is supported in the sleeve by suitable guides. This tube ex-

tends to near the top of the box, and serves to provide air to relieve the suction caused by the water as it leaves the box and passes through the upper part of the supply-pipe, and thereby prevent an unpleasant gurgling sound. The smaller section of the service-box is supplied with water from the tank through one or more holes, g^5, in the side thereof.

The valve for controlling the inlet f to the main section of the service-box is connected with the lever a^9 by means of a chain, m. The valve H is connected with the lever a^9 by means of the tube h and a short chain, m'. The valve g^4 is connected with the lever a^{11} by means of the chain m^2.

For the perfect washing of water-closet bowls it is desirable to throw upon the surface of the bowl before it is used a small preliminary stream or body of water to cover it, and which we call a "preliminary wash," and which acts to make deposits of matter resting or lodging on the bowl more easily removed by the subsequent flushing of the bowl; and to produce this effect the connections with the seat and the valves are such that upon the first downward movement of the seat the lever a^9 is moved upward by the rod a^8, thereby causing the downward movement of the end of the lever a^{11}, which is connected with the valve g^4, at the same time causing the valve to be lifted from it seat, and at the same time the valve f' is opened to permit the flow of water from the tank into the larger section of the service-box.

While the seat is depressed a comparatively small flow of water to the bowl takes place—that is, the water contained in the smaller section, C^2, of the service-box is permitted to escape through the passage g and main conducting-pipe to the bowl. Upon the release of the seat the lever a^9 is moved down by the rod a^8, and this releases the valve f' and permits it to close the passage between the main reservoir and the service-box, and also permits the valve g^4 to close the passage g to the conducting-pipe. It also lifts the main valve H of the larger section of the service-box and holds it lifted, so that the entire contents of said box are allowed to escape through the conducting-pipe to the bowl to thoroughly rinse and wash it.

It will be seen that by this construction three valves are used for obtaining the results desired, while there is but one opening in the bottom of the tank, and that there is only one pipe for conducting both the preliminary washing-stream and the flushing-stream from the service-box; also, that all the valves are attached to the service-box and that the connection between the two sections of the box are made in the box itself, so that only one pipe extends from the box, making it necessary in the use of the apparatus to form only one connection between the service-box tank and conducting-pipe. It will also be seen that the connections are such that the service-box and valves can be removed from the tank by simply unscrewing them from the coupling D; also, that the connection with a service-box adapted to provide a small preliminary wash, and also a flushing of the bowl, is obtained by forming but one hole in the bottom of the tank and but one conducting-pipe.

Having thus fully described our invention, we claim and desire to secure by Letters Patent of the United States—

The combination, with the tank B, of the service-box consisting of the larger section, C′, and the smaller section, C^2, the larger section, C′, having an inlet, f, and an escape-passage, and the smaller section, C^2, having one or more inlets, g^5, above its bottom, and at its bottom an escape-passage, the projection or pipe G communicating with the escape-passage of the section C′, the lever a^{11}, the valve g^4, having a flexible connection with said lever, the lever a^9, connected with the closet-seat and serving to operate the lever a^{11}, and the valve H and the clapper-valve f', both having flexible connections with the opposite arms of the said lever a^9, substantially as set forth.

ERNEST W. CLARK.
JAMES CRAWFORD.

In presence of—
F. F. RAYMOND, 2d,
J. M. DOLAN.