2 Sheets—Sheet 1.

G. JENNINGS.

WATER-CLOSET.

No. 189,741. Patented April 17, 1877.

Fig. 1.

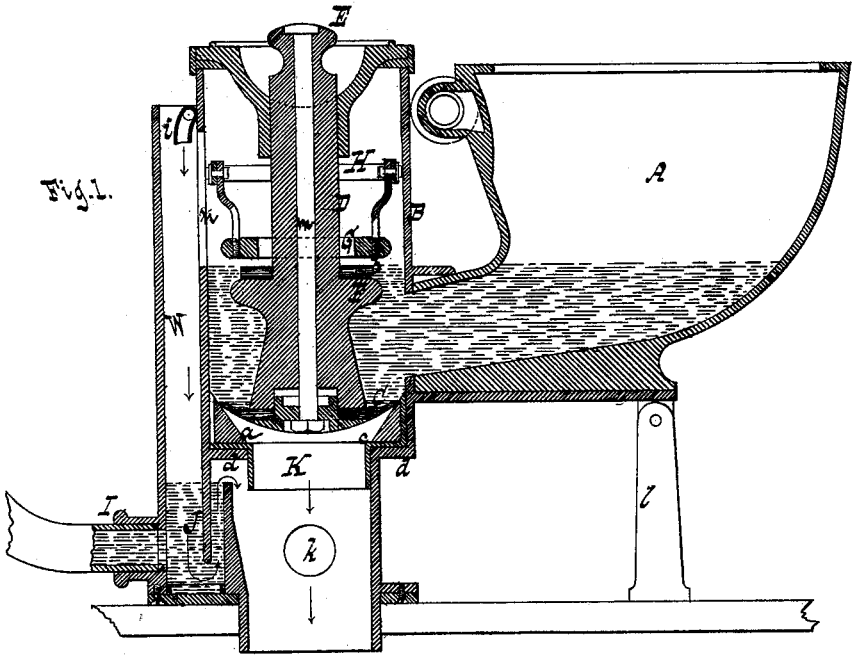
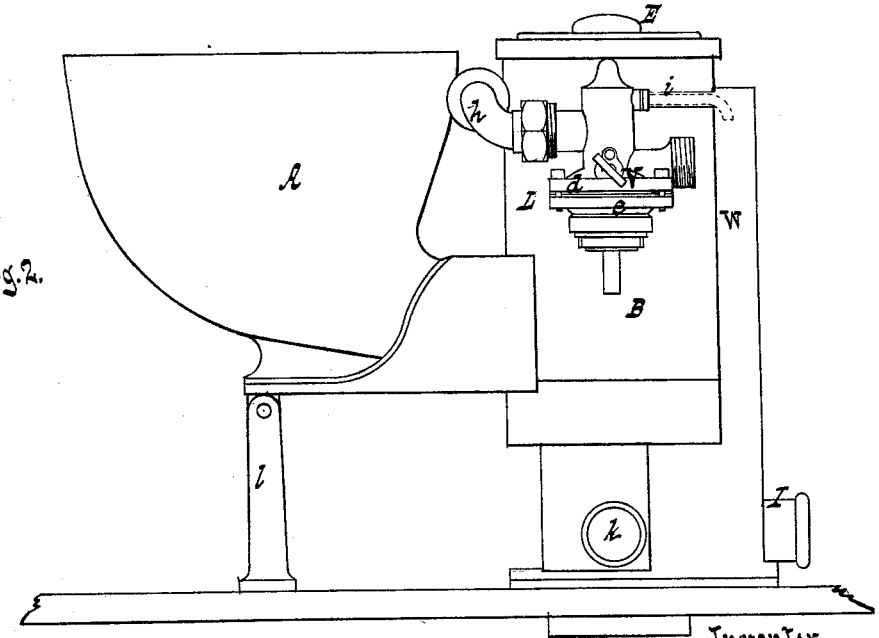


Fig. 2.



Witnesses.

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2 Sheets—Sheet 2.

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Fig. 3.

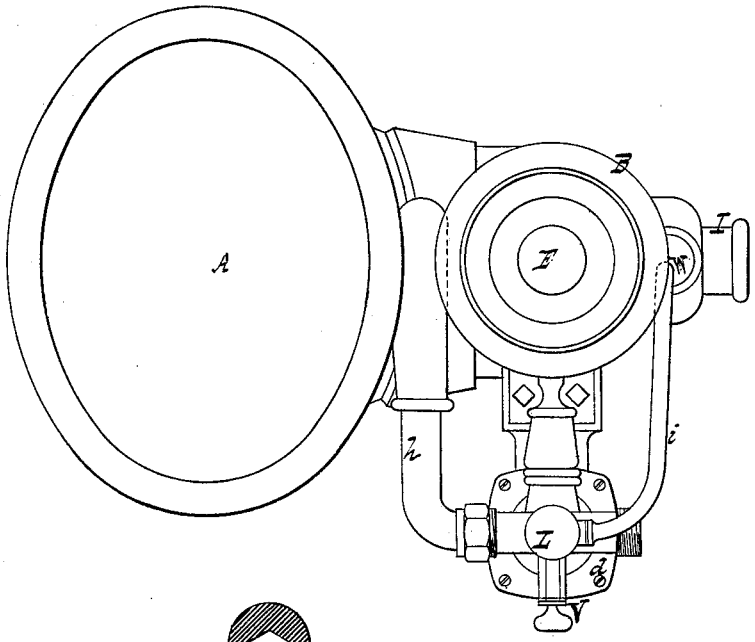
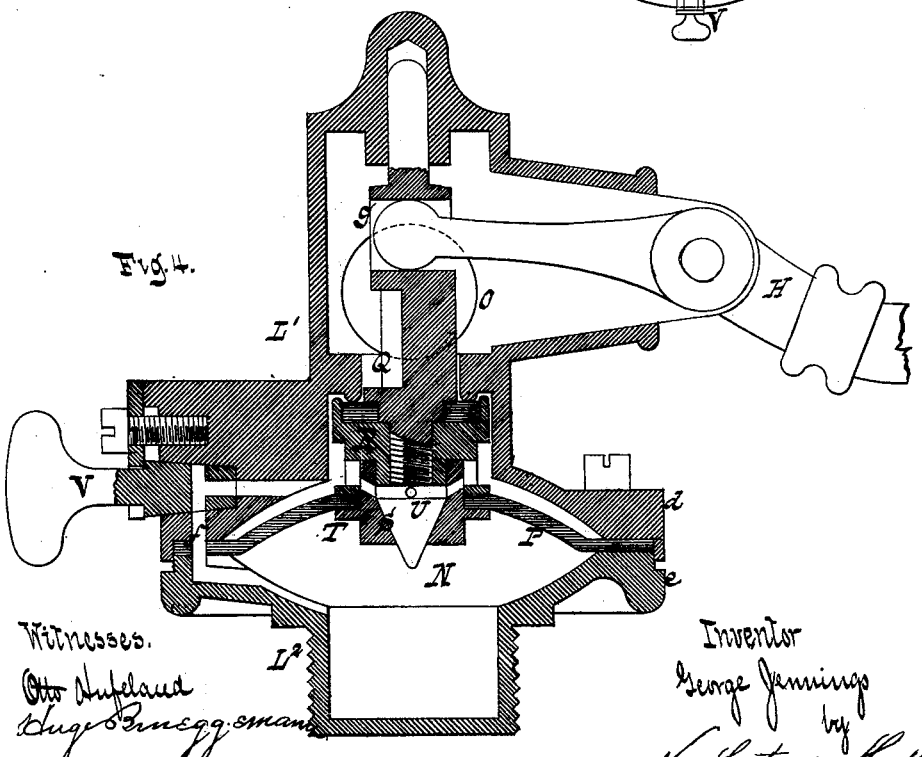


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE JENNINGS, OF LONDON, ENGLAND.

IMPROVEMENT IN WATER-CLOSETS.

Specification forming part of Letters Patent No. **189,741**, dated April 17, 1877; application filed March 28, 1877.

To all whom it may concern:

Be it known that I, GEORGE JENNINGS, of London, England, have invented a new and useful Improvement in Water-Closets, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical cross-section of a water-closet containing my improvement. Fig. 2 is a side elevation thereof. Fig. 3 is a plan or top view of the same. Fig. 4 is a vertical central section of the feed-valve on a larger scale than in the previous figures.

Similar letters indicate corresponding parts.

My invention consists in combining, with the bowl of a water-closet, a tube or upright limb, which is placed laterally thereof, and communicates with said bowl, and a discharge-valve, which is made solid, and arranged on a suitable seat in said tube, below the point where it communicates with the bowl, while the stem of said valve extends up through the tube in such a manner that by opening the valve the contents of said bowl can be allowed to discharge into and through the tube, while, when said valve is shut, it prevents the entrance of foul air to the bowl or the room in which it is situated, and hence I am enabled to dispense with the trap usually employed for this purpose. The bowl is supported partly by the tube or upright limb, and by an arm placed beneath it on the side opposite to said tube. The stem of the discharge-valve is made, together with its handle, of a single piece of earthenware, so that it is rendered non-corrosive, and can be easily kept clean. In the upper part of the tube or upright limb is situated a circular weight, which is affixed to one end of a lever, which extends through the side of said tube, and the other end of which is connected to a feed-valve, and, at any suitable point below such circular weight, the discharge-valve is provided with a shoulder containing a cushion of india-rubber or other soft material, so that when said stem is raised the shoulder comes in contact with said circular weight, and thereby the latter, as well as the end of the lever, is raised, while, by reason of the cushion, no unpleasant noise is produced during this operation, and the parts are not liable to become jarred or broken. The lateral tube or limb has a socket, to permit of connecting thereto the waste-pipe of a wash-basin, bath-tub, or other vessel, and a trap, which communicates with said tube, and serves to prevent the entrance of foul air from the sewer; and with these parts is combined a thimble, which is arranged in the interior of the lateral tube below the discharge-valve, and which extends below the point where the said trap communicates with the tube, so that the substances discharging from the bowl into and through the tube are effectually prevented from entering the trap. The thimble just mentioned is provided with an outwardly-projecting flange, while the tube or upright limb is provided with an inwardly-projecting flange or shoulder, so that by said two flanges the thimble can be conveniently secured in place, while the flange of the thimble, moreover, is adapted to receive and hold an earthenware or other seat for the discharge-valve situated in the lateral tube, so that said valve-seat, together with the thimble, can be removed, if desirable.

The feed-valve of my closet is closed by the action of a lever and weight, hereinbefore referred to, and with this valve is combined a diaphragm of india-rubber or other appropriate material, which is secured to the stem of the valve, and situated in the induction-chamber thereof, in the side of which chamber is formed a channel, which extends from a point above said diaphragm to below it, so that when the valve is opened the water that may be contained in the induction-chamber is displaced by the diaphragm, and circulates through said channel, while, when the valve is allowed to become closed by the action of said weight, the movement of the parts is retarded by the action of the diaphragm, and hence a certain quantity of water is allowed to escape before the valve becomes closed.

The said diaphragm of the feed-valve is provided with a central opening containing a conical plug, which latter is displaced by the action of the water, and allows the same to pass when the valve is opened, and thus a quick motion of the parts is allowed to take place when the valve is opened.

The feed-valve is constructed with two branches, one of which is connected to the

bowl of the closet, while the other is connected with the trap, so that both the bowl and the trap can be simultaneously supplied with water.

In the drawing, the letter A designates the bowl or pan of my closet, to the lower end of which is connected a tube or upright limb, B, so that the latter communicates directly with the bowl. This tube B is placed alongside the bowl A, and within it is arranged a seat, *a*, for a discharge-valve, C, such seat being situated below the point where the tube is connected to the bowl. The valve C is made solid, in contradistinction to the discharge-valves commonly used in that class of water-closets in which the bowl discharges into a lateral tube or limb, as in the present example, such valves being usually made in the form of a cylinder, which is connected to a vertical stem, by which it is raised from its seat, and which allows the water to overflow when it reaches a certain height in the bowl, but does not prevent the entrance of foul air. Hence the tube must be bent, so as to form a trap. By using the valve C I obviate the use of such trap, inasmuch as, when said valve is closed, the entrance of foul air to the bowl is prevented. The stem or plug D of the valve C extends up through the tube B, and is made of earthenware, its top end being made in the form of a handle, E. The valve-stem D is provided with a shoulder, F, to receive a cushion, *b*, of india rubber or other soft material, and above this cushion is situated a circular weight, G, which is connected to one end of a lever, H, the other end of which is connected with a feed-valve, hereinafter described. The object of the cushion *b* is to deaden the noise, and to prevent jarring or breakage of the parts of the valve when the valve-stem D is raised and the shoulder F comes in contact with the weight G.

At any convenient point below the valve C, on the lower part of the tube B, is formed a socket, I, by means of which the waste-pipe of a wash-basin, bath-tub, or other vessel, can be connected to said tube, and with this socket is combined a trap, J. To prevent the substances which are discharged from the bowl A from entering the trap J, I arrange in the tube B a thimble, K, in such a manner that this thimble extends and carries said substances down below the point where the trap J communicates with the tube, as clearly shown in Fig. 1. On the top edge of the thimble K is formed an inwardly-projecting flange, *c*, which rests on a flange or shoulder, *d*, formed on the interior of the tube B. The flange *c* forms a means for securing the thimble K in position, and it also serves to support the valve-seat *a*, so that this seat can be removed and replaced by a new one, or for any other purpose.

To the outer side of the tube B is secured a feed-valve, L. This valve is composed of an induction-chamber, N, and an eduction-chamber, O. (See Fig. 4.) In the induction-chamber N is situated a diaphragm, P, of india-rubber or other appropriate material, which is held in place by being clamped between two flanges, *d e*, formed respectively on the edges of two sections, L^1 L^2, composing the valve-shell. The diaphragm P is secured to a stem, Q, to which is secured the valve proper, R, and which is guided in a suitable way formed in the upper part of the valve-shell. Those portions of the induction-chamber N situated above and below the diaphragm P are connected together by a channel, *f*, formed partly in the section L^1 and partly in the section L^2 of the valve-shell. In the upper part of the valve-stem Q is formed a slot, *g*, for the reception of the end of the lever H, hereinbefore referred to. The diaphragm P is provided with a central opening, S, which is formed in the coupling T, being made to taper toward its lower end. In the opening T is fitted and placed loosely a conical plug, U.

The valve proper, R, opens downward, and when the lever H is actuated by the stem of the discharge-valve C, as before stated, the said valve R is opened or moved away from its seat. When this valve R is opened the water which collects in the lower part of the induction-chamber N, when the valve is put to actual use, raises or displaces the conical plug U, and is thus admitted to the upper part of said induction-chamber. When the valve R is allowed to follow the action of the weight on the lever H the movement of the parts is retarded by the action of the water on the diaphragm P, and thus a certain quantity of water is allowed to escape before the valve becomes closed. The quantity of water which is allowed to escape can be regulated by a cock, V, arranged in the valve-channel *f*.

It will thus be seen that the diaphragm P answers a similar purpose as the piston used in the feed-valve described in my Letters Patent of September 19, 1876, No. 182,447; and I hereby disclaim anything described in said patent.

From the eduction-chamber of the feed-valve L extend two branches, *h i*, one of which is connected with the bowl A, while the other is connected with the trap J. By this means both the bowl A and the trap J are simultaneously supplied with water, and the trap especially is kept full at all times. In some cases I form a side opening, *k*, in the tube B, for the purpose of ventilating said tube, and which serves also to obviate the liability of the trap J being emptied by suction when the contents of the bowl A are discharged.

Beneath the bowl A is situated an arm, *l*, which, in the example shown, is hinged, and forms a support for the bowl when it is put up, the bowl being also partly supported by the tube B.

The valve C is fastened to its stem D by means of a bolt, *m*, which is made to pass through the stem D, as shown in Fig. 1.

The trap J is extended upward alongside

the tube or upright limb B, as at W, and this upper portion of the trap communicates with the tube or upright limb B through an opening, *n*, formed in the side of the latter. The water which is fed to the bowl A is allowed to overflow into the trap through said opening *n*, when it reaches the level of the lower edge of said opening in the bowl A, and thus the height to which the water is allowed to rise in the bowl A is regulated. This last-named feature forms an important part of my invention.

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

1. The stem or plug D of the discharge-valve C, when made, together with the handle E and shoulder F, of a single piece of earthenware, substantially as and for the purpose described.

2. The combination, with the stem or plug D of the discharge-valve C, and with the weighted lever H and feed-valve R, of the shoulder F and cushion *b*, all constructed and arranged to operate substantially as and for the purposes described.

3. The combination, with the tube or upright limb B, the socket I, and trap J, of a detached thimble, K, arranged in said upright limb, substantially as and for the purpose described.

4. The combination, with the tube or upright limb B and thimble K, of flanges *c d*, substantially as and for the purpose described.

5. In combination with the bowl A, the induction and eduction chambers L^1 and L^2, the valve R, and the diaphragm P, provided with the channel *f* and central opening S, all constructed and arranged to operate substantially as described.

6. In combination with the bowl A, the upright limb B, and the feed-valve L, the trap J, connected with said feed-valve by a branch pipe, *i*, and the thimble K, the lower end of which terminates below the discharge-opening of the trap, to prevent the entrance of the matter discharged from the bowl into said trap, substantially as set forth.

7. The combination, with the bowl A and upright limb B, of the trap J, provided with an extension, W, communicating, by means of an opening, *n*, with the limb B above the valve C, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 8th day of December, 1876.

GEORGE JENNINGS. [L. S.]

Witnesses:

A. I. RAGGATT,

JOHN W. MCCOY.