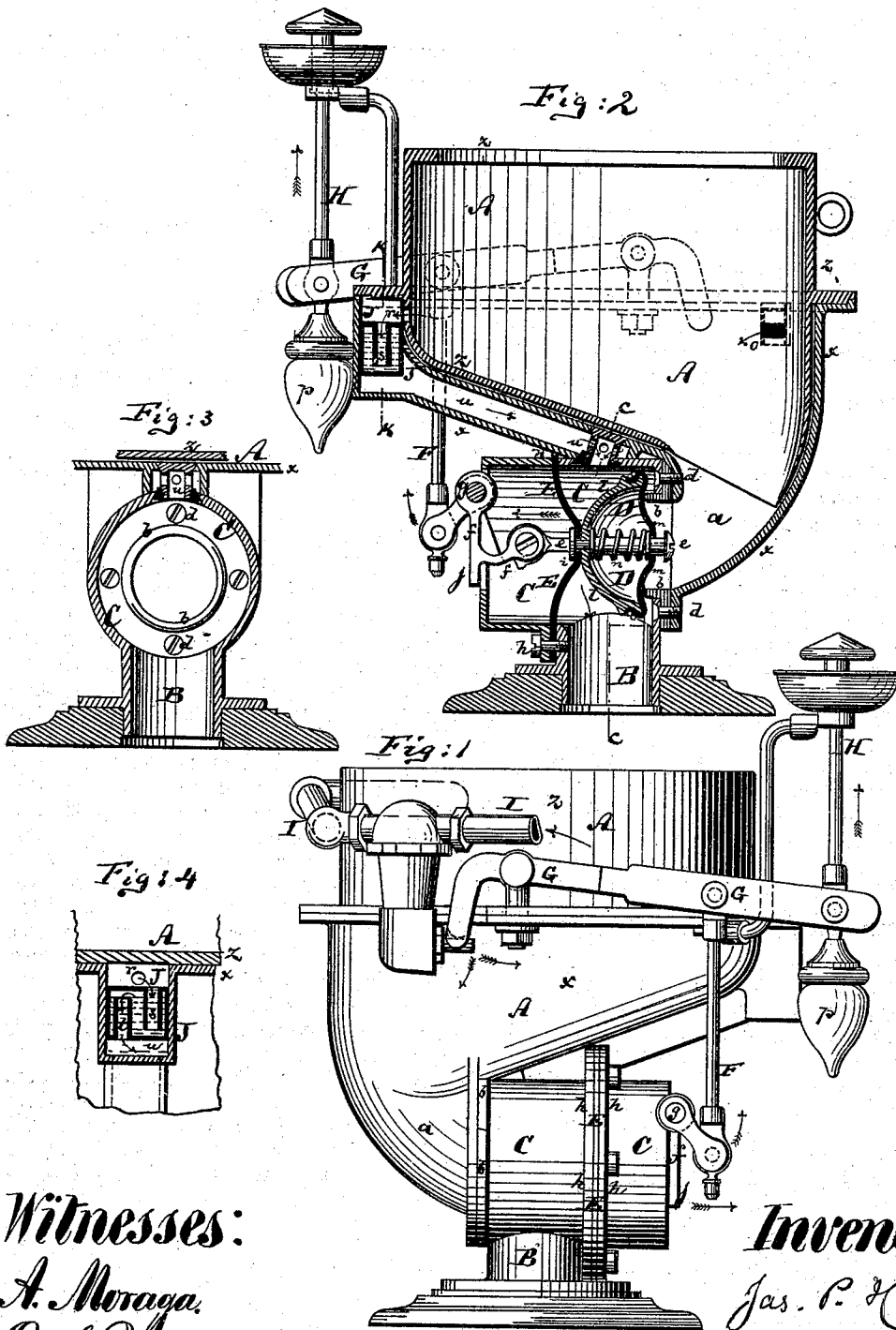


J. P. HYDE.
WATER-CLOSET.

No. 173,727.

Patented Feb. 22, 1876.



Witnesses:

A. Moraga.

C. A. Weidner.

Inventor:

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN WATER-CLOSETS.

Specification forming part of Letters Patent No. **173,727**, dated February 22, 1876; application filed
January 27, 1876.

To all whom it may concern:

Be it known that I, JAMES P. HYDE, of New York city, in the county and State of New York, have invented a new and useful Improvement in Water-Closets, of which the following is a specification:

Figure 1 is a side view of a water-closet basin and mechanism containing my invention. Fig. 2 is a vertical central section of the same; Fig. 3, a vertical cross-section of the same on the line *c c*, Fig. 2; Fig. 4, a detail vertical section on the line *K K*, Fig. 2.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object to produce a water-closet mechanism which will absolutely prevent the escape of noxious gases from the sewer-pipe, and yet always leave the overflow open to carry off surplus water, and in which the usual plan will be dispensed with.

The invention consists, principally, in a new arrangement of horizontal valve-chamber leading from the basin into the sewer-pipe, in the application of a diaphragm between the valve and the levers that operate the same, and in other features of improvement, which are hereinafter more clearly pointed out.

In the accompanying drawing, the letter *A* represents the basin of a water-closet, composed of a lower metal pot, *X*, and an upper porcelain pot, *Z*, or made in one piece, if desired. *B* is the sewer-pipe of the same. The lower part of the basin is contracted at the back into a neck, *a*, which enters a horizontal chamber, *C*, as clearly shown in Fig. 2. The sewer-pipe *B* enters the lower part of the chamber *C* directly under the junction of the same with the neck *a*. The chamber *C* is made of cylindrical form, and is bolted or screwed at *d d* to the lower part of the basin, to constitute, so to say, a horizontal continuation of the lower discharge of the basin. A ring, *b*, is secured between the cylinder *C* and the basin, and forms the seat for a valve, *D*, by which the discharge end of the basin is closed. This valve is preferably of the peculiar construction hereinafter described, and is mounted upon a rod, *e*, which connects to the crank *f* of a rock-shaft, *g*, that is hung in the outer part of the chamber *C*. By vibrat-

ing the shaft *g* the valve *D* will be moved against the seat *b* or away from the same, as may be desired. The valve *D* is considerably smaller in diameter than the chamber *C*, and is, therefore, capable of a slight vibratory play therein.

The chamber *C* is made in two lengths, which are united behind the valve *D*, as at *h h*, and between these two lengths is firmly clamped a diaphragm, *E*, of leather or other material. This diaphragm extends across the chamber *C*, but is pierced by the rod *e*, and clamped between a shoulder, *i*, on said rod and the body of the valve *D*, or between two such shoulders, so as to take part in the movements of said rod. This diaphragm effectually prevents the escape of gas through the outer end or part of the chamber *C*. If it were not for this diaphragm the gas would readily escape along the bearings of the rock-shaft *g*, as I have found that every packing or stuffing box will sooner or later permit such escape; but the diaphragm is perfectly secure and reliable. The aperture through the end of the case *C*, formed for the admission of the crank *f*, is closed by a pendent plate, *j*, of said crank, which prevents the entrance of vermin and other impurities into the chamber *C*.

The valve *D* is composed of a semi-spherical cup, *l*, which connects at its center with the rod *e*, its mouth facing the annular seat *b*. Across the mouth of this cup is stretched a sheet, *m*, of leather, rubber, or equivalent material, which is tied or otherwise fastened to the outer part of the cup. The rod *e* passes through a central aperture of the flexible sheet *m*; but I prefer to leave it loose, so that the sheet can be pressed into the cup. A spring, *n*, is placed into the cup to bear against the sheet *m* and press the same toward the valve-seat. When the valve *D* is applied against the seat *b*, as in Fig. 2, the sheet *m* will bear against the annular seat *b*, and will be crowded toward the shell *l*, and the power of the spring *n* will serve to hold said sheet in positive and close contact with its seat. When the sheet *m* is made sufficiently thick to constitute its own spring the separate spring *n* may be dispensed with.

A crank of the shaft *g* connects by a rod, *F*,

with a lever, G, which can be vibrated by pulling the handle and rod H. Whenever this rod H is raised the shaft *g* will be vibrated to withdraw the valve D from the seat, and at the same time the lever G will, by suitable connection, open the water-supply pipe I to the basin and allow the water to enter said basin through the aperture *o*. This water, after washing the basin, will finally escape through the neck *a* and open chamber C into the pipe B. As soon as the handle H is let go a weight, *p*, will draw it down, and thereby so vibrate the lever G as to close the water-supply, and at the same time also close the valve D. The arrangement for admitting the water should be such as to permit an afterflow, substantially as set forth in the patent granted to me on the 28th day of December, 1875, No. 171,514, so that after the valve D is closed water may accumulate in the neck *a* and prevent the escape of gases through said neck.

The overflow-opening *r* is situated in the basin on a level, substantially, with the opening *o*, and leads into a box, J, which contains a supply-pipe, *s*, that leads nearly to the bottom of said box, and a discharge-pipe, *t*, extending nearly to the top of said box, as in Fig. 4. Through the pipe *t* the overflow passes into a pipe, *u*, which leads into the chamber C between the valve D and diaphragm E, as shown in Fig. 2. Thus the overflow is always open around the valve D, and the basin can never be filled. Yet the escape of gases through the overflow-channels is prevented by the seal *J s t*. An advantage of having the overflow-opening on a level about with the opening *o* is, that some of the water supplied to the closet at each pull of the rod H will find its way into the trap-box J, thus keeping the latter properly charged, and preventing it from becoming empty through evaporation.

I desire to call particular attention to the advantage of having the basin A made with the discharge-neck *a* at the back, as shown. By this arrangement the back of the basin is nearly vertical where it discharges into the sewer-pipe. The accumulation of soil at the back of the basin will thus be prevented, and an easier washing process permitted. Heretofore the basin had the discharge either at the middle or side, and in either case the soil had to be conducted quite a distance within

the basin from the back to the discharge-pipe.

I claim as my invention—

1. The water-closet basin A, made with the contracted discharge-neck *a* at the back, said neck being directly above the sewer-pipe B, substantially as specified.

2. The combination of the water-closet basin A with the horizontal chamber C, which contains the valve D, and with the pipe B, substantially as specified.

3. The combination of the basin A, carrying the projecting ring *b* at its lower discharge-opening, with a horizontally-movable valve, D, all arranged for use on water-closets, as specified.

4. The combination of the diaphragm E with the movable valve D, and discharge-opening *a* of a water-closet basin, substantially as specified.

5. The chamber C, applied to a water-closet basin, and containing at one end the valve D, and at the other end the mechanism for operating said valve, and between said valve and said mechanism the diaphragm E, substantially as and for the purpose specified.

6. The lip *j*, formed on the crank-shaft *g*, in combination with the chamber C, which has an aperture to be closed by said lip, substantially as specified.

7. The water-closet basin A, having the water-supply opening *o* on a level with the overflow-opening *r*, and combined with the trap-box I in the overflow, substantially as specified.

8. The chamber C, open to the overflow-pipe *u*, and to the sewer-pipe B, on the inner side of its diaphragm E, substantially as specified.

9. In the chamber C, the combination of the diaphragm E and valve-seat *b* with the horizontally-movable valve D, and with the open pipes *u* and B, substantially as specified.

10. A water-closet having a valve, D, horizontally movable within a chamber, C, and over the end of the sewer-pipe B, to close against the vertical seat *b*, substantially as specified.

JAMES P. HYDE.

Witnesses:

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