

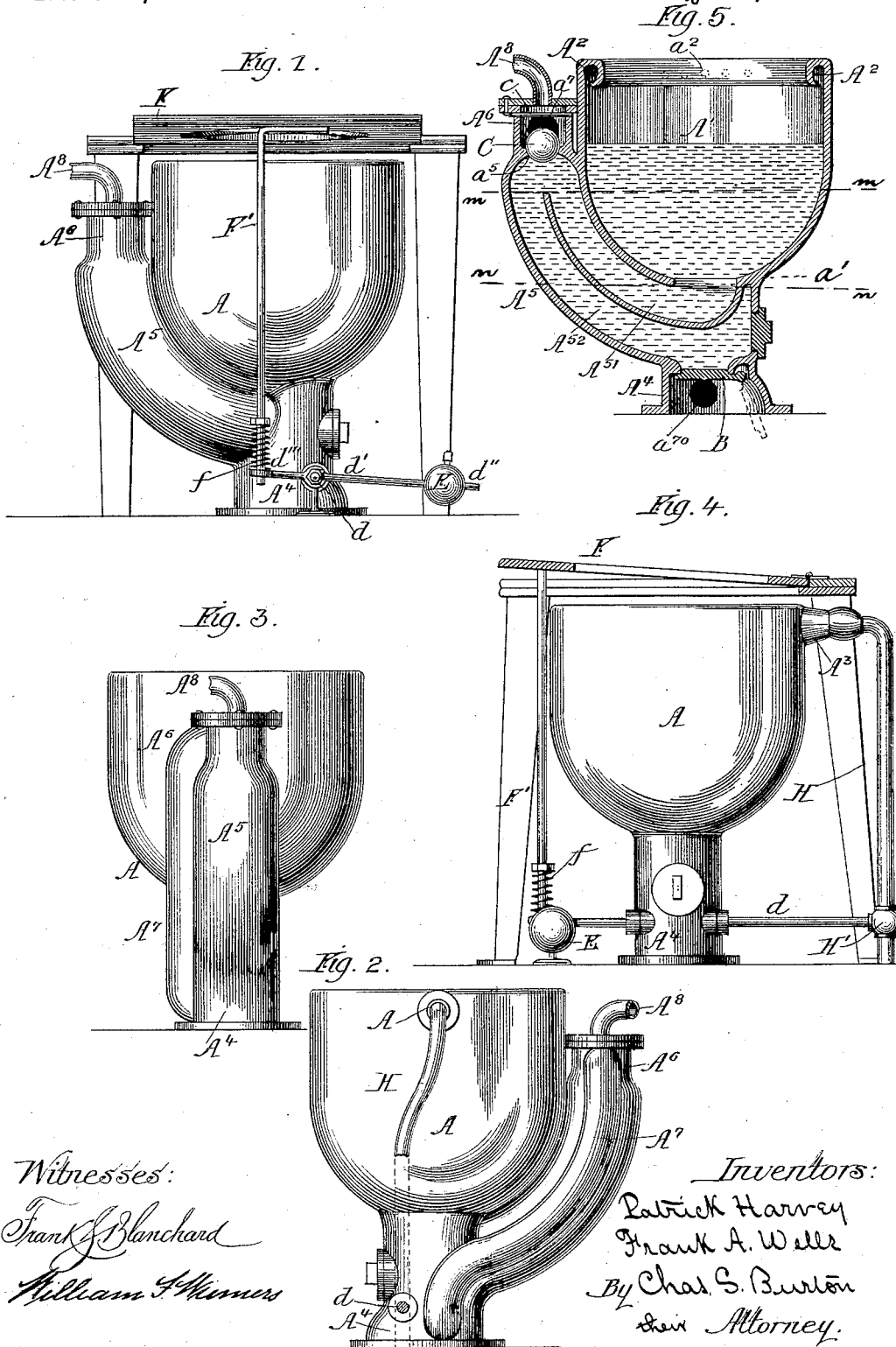
(No Model.)

P. HARVEY & F. A. WELLS.

WATER CLOSET.

No. 342,203.

Patented May 18, 1886.



UNITED STATES PATENT OFFICE.

PATRICK HARVEY AND FRANK A. WELLS, OF CHICAGO, ILLINOIS.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 342,203, dated May 18, 1886.

Application filed October 5, 1885. Serial No. 178,995. (No model.)

To all whom it may concern:

Be it known that we, PATRICK HARVEY and FRANK A. WELLS, citizens of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Closets, which are fully set forth and described in the following specification.

This invention relates to the so-called "siphon-closets," which are so constructed that the contents of the bowl are withdrawn therefrom by the siphonic action of the discharge duct or pipe; and the purpose of the invention is to provide simpler means than heretofore employed to charge the longer limb of the siphon, and especially to induce the siphonic action of the siphon by means which shall avoid and prevent the discharge into the room through the bowl or otherwise of the foul air which fills the longer limb of the siphon when not in operation, and which has to be drawn or driven from it to render it operative.

In the drawings, Figure 1 is a front elevation of the seat and valve operating devices. Fig. 2 is a rear elevation of the bowl and connection. Fig. 3 is a right side elevation, and Fig. 4 is a left side elevation, of the same. Fig. 5 is a vertical section through the line *x x* in Fig. 2.

A is the bowl, preferably cast or molded of one piece.

A' is the water and soil cavity.

A² is the flushing-rim; A³, the flushing-pipe connection.

a² a² a² are the discharge-apertures from the flushing-pipe into the water and soil cavity A'.

A⁴ is the soil-pipe connection.

A⁵ is the siphon, by which the water and soil cavity is evacuated. It comprises the receiving-limb A⁵¹ and the discharge-limb A⁵². Its receiving-limb A⁵¹ communicates with the cavity A' at the center of the bottom through the orifice a', and its discharge-limb A⁵² communicates with the soil-pipe, said communication being controlled by the clack-valve B, which closes the lower end of the limb A⁵², and is operated as hereinafter described. Above the crest of the siphon A⁵ is provided the chamber A⁶, which communicates with the siphon through the orifice a⁵, and from which the overflow-duct A⁷, communi-

cating with the said chamber through the orifice a⁷, leads down in the rear of the siphon A⁵ to a point below the valve B, and enters the soil-pipe connection through the orifice a⁷⁰. From the chamber A⁶ a vent, A⁸, to allow the escape and entrance of air, is extended to any convenient ventilating-flue. The orifice a⁵ is closed by a check-valve, C, opening outward from the siphon. A wire, c, is preferably secured in the chamber A⁶ above the valve C, to prevent the latter being carried over to close the mouth a⁷ of the overflow A⁷. The clack-valve B is secured to a rock-shaft d being in stuffed boxes D', through which said shaft extends to the outside of the bowl, and is provided with a lever-arm, d', which is connected with suitable mechanism for operating the valve.

The mechanism illustrated is as follows: On one end, d'', of the lever-arm d' is fixed a weight, E, tending to hold the valve open, and from the closet-seat F is extended the rod F', whose lower end is provided with a yielding connection with the end d''' of the lever d' opposite that on which the weight E is fixed. When the seat is depressed, as when the closet is in use, the rod F', depressing the end d''' of the lever-arm d', rocks the shaft d, lifts the weight E, and closes the valve B. When the user rises from the seat F, the weight E causes the shaft d to rock in the reverse direction, lifts the seat, and opens the valve B. The yielding connection, by means of the spring f, coiled around the rod F' and bearing on the lever-arm d', insures the seating of the valve without unduly straining the lever-arm, as by making it sustain the entire weight of the user while the closet is in use.

Instead of operating the valve B by the seat, it may be arranged to be operated by hand in any well-known manner.

Whatever the means adopted for operating the valve B, the mechanism for operating it should preferably be connected with the mechanism for operating the valve which controls the admission of flushing-water to the bowl, in such manner that the opening of the latter and the closing of the former shall be approximately simultaneous. It is only essential, however, that the valve D should be closed long enough before the flow through

the flushing-pipe ceases to allow the limb A³² of the siphon A⁵ to become filled, so as to induce the necessary siphonic action.

The drawings illustrate a simple means of connecting the two valves when the flushing-water is furnished directly from the supply-pipe, H being such supply-pipe, and H' an ordinary valve controlling the flow through it into the bowl. Said valve H' is secured to the same rock-shaft or valve-stem, d, which carries the valve B, and is opened by the same movement which closes the latter. When the seat F is depressed by the user, the valve B is closed and the valve H' is opened. The flushing-water enters the soil-cavity A' through the orifices a² a² a² and first fills the said cavity and the limb A³¹ of the siphon to the height shown in Fig. 5, and then overflowing the partition between the limbs of the siphon fills the limb A³² of the siphon A⁵, the air passing out under the check-valve C and through the air-vent A⁸. The siphon being filled with water, any surplus passes out through the orifice a³, under the valve C, into the overflow-duct A⁷, by which it reaches the soil-pipe below the valve B. When the user rises from the seat F, the valve B being opened by the weight E, the siphon A⁵ being fully charged, will cause evacuation of the cavity A' down to the line n n, Fig. 5, at which point air being admitted the siphon itself will be emptied, and if an after-wash is provided by any of the well-known methods the bowl-cavity A' and the limb A³¹ of the siphon will be filled up to the line m m and a water seal or trap formed at the bottom of the bowl.

We claim—

1. In combination with the soil-cavity discharging at the bottom, the siphon communicating with the soil-cavity at its discharge-orifice, having its crest higher than said orifice and its discharging-mouth lower than said orifice, and provided with a vent, and an automatic valve to close the same, and the valve to close its discharging-mouth.

2. In combination with the soil-cavity discharging at the bottom, the siphon communicating with the soil-cavity at its discharge-orifice, having its crest higher than said orifice and its discharging-mouth lower than said orifice, and provided with an air-vent, and an automatic valve to close the same, the valve to close the discharging-mouth and the overflow-duct communicating with the soil-cavity extending to a point as high as the crest of the siphon, provided with an air-vent above that point, and discharging into the soil-pipe beyond the siphon closing valve.

3. The soil-cavity, the siphon, and the overflow-duct, said siphon and duct both discharging into the soil-pipe, the highest point of the duct being as high as the crest of the siphon, in combination with the cavity A⁶, communicating with the crest of the siphon and with the said duct, and having an automatic valve to close the former communication, and hav-

ing the air-vent A⁸, whereby the said air-vent serves as such for both the siphon and the duct.

4. In combination with the soil-cavity, the siphon communicating with it at the bottom, having its crest above the point of such communication, and discharging into the soil-pipe below the said point of communication, the valve to close the lower end of the siphon, the chamber or cavity A⁶ above the crest of the siphon and communicating with it, the valve C, opening outward from the siphon to control said communication, and the overflow-duct leading from said chamber and discharging into the soil-pipe below the discharging-mouth of the siphon, and the air-vent leading from the chamber A⁶.

5. In combination with the soil cavity, the siphon adapted to evacuate it, discharging into the soil-pipe, the overflow communicating with the crest of the siphon and with the soil-pipe, the flushing supply-pipe, a valve to close the discharge end of the siphon, a valve to control the entrance of flushing-water to the bowl, the closet-seat and connecting-rod therefrom to the flushing-valve and siphon-closing valve, to open the former and close the latter when the seat is depressed, substantially as and for the purpose set forth.

6. In combination with the soil-cavity, the siphon communicating with it at the lower part and having its crest higher than such communication, and provided with a vent and an automatic valve seating inward to close said vent, the valve to close its discharge end provided with an exterior stem, the seat pivoted above the soil cavity, and suitable connection from the seat to the exterior valve-stem, whereby the depression of the seat closes the valve, substantially as and for the purpose set forth.

7. In combination, substantially as hereinbefore set forth, the soil-cavity, the flushing-pipe, the evacuating-siphon and its vent, and the automatic valve which controls the same, the valve which closes its discharge end, and the valve which controls the flow through the flushing-pipe, and the connection between said last two valves, whereby the latter is opened by the same movement which closes the former.

8. In combination, substantially as hereinbefore set forth, the soil-cavity, the flushing-pipe, the evacuating siphon and its vent, the valve which closes its discharge end, the valve which controls the flow through the flushing-pipe, the seat pivoted above the the soil-cavity, and suitable connections from the seat to the said valves, whereby the depression of the seat closes the first-named valve and opens the latter.

In testimony whereof we have hereunto set our hands, in the presence of two witnesses, at Chicago, Illinois.

PATRICK HARVEY.

Attest: FRANK A. WELLS.

CHAS. S. BURTON,

WILLIAM F. WIEMERS.