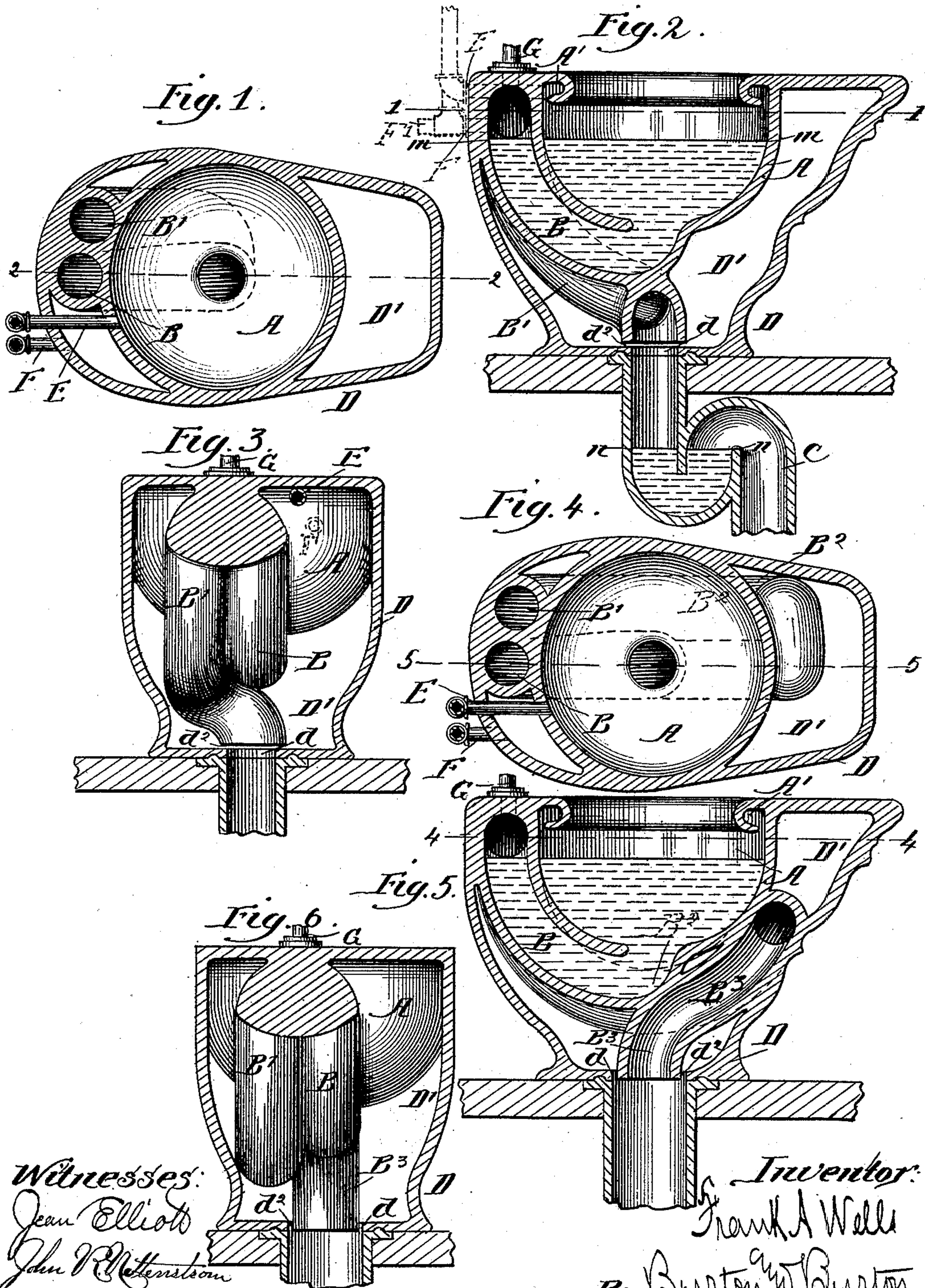


(No Model.)

F. A. WELLS.
WATER CLOSET.

No. 412,814.

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UNITED STATES PATENT OFFICE.

FRANK. A. WELLS, OF NUTLEY, NEW JERSEY.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 412,814, dated October 15, 1889.

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To all whom it may concern:

Be it known that I, FRANK. A. WELLS, a citizen of the United States, residing at the village of Nutley, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Water-Closets, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to the making of water-closet bowls of the class known as "siphon-closets," having the bowl and siphonic discharge-duct formed in one piece of metal or earthenware; and its purpose is to make such a closet and siphonic duct in what is known as the "pedestal" form—i. e., having the limbs of the siphon and all ducts and passages from the bowl developed in the form of or concealed in a pedestal which proceeds from and exteriorly appears to be the standard and sole support of the bowl, and in so doing to utilize the space within such pedestal and about the siphon-limbs for the storage or accumulation of water, which, by reason of the peculiar disposition of the discharge end of the soil-passage with relation to the eduction-mouth of such storage-space, shall constitute means for inducing the siphonic action for the purpose of discharging the contents of the bowl when the water is furnished by the direct supply admitted to the closet directly from the service-pipes, as is feasible when the pressure is sufficient, and which shall assist the siphonic action when other means are employed to induce such action, as in the familiar constructions which employ an indirect supply from a tank.

In the drawings I have illustrated this invention as applied to a closet having the descending limb of the siphon folded over sideways, so that it, as well as the ascending limb, lies close against the bowl.

Figure 1 is a plan, partly sectional, of a closet having one trap integral with the bowl and embodying my invention, the section being made at the line 1 1 1 on Fig. 2. Fig. 2 is a vertical section at the line 2 2 on Fig. 1. Fig. 3 is a rear elevation, the pedestal being broken away to show the bowl and the limbs of the trap within the pedestal. Fig. 4 is a sectional plan of a closet having both the traps integral with the bowl and inclosed in

a pedestal constructed according to my invention, section being made at the line 4 4 on Fig. 5. Fig. 5 is a vertical section at the line 5 5 on Fig. 4. Fig. 6 is a rear elevation of the form shown in Fig. 5 with the pedestal partly broken away.

A is the bowl. The soil-passage therefrom comprises the ascending limb B, the descending limb B', the second ascending limb B², and the final descending limb B³. The parts B² and B³ are wanting in the forms illustrated in Figs. 1, 2, and 3, their functions being performed by the ordinary plumber's trap C, which may be located beneath the floor.

D is the pedestal.

D' is a water-storage chamber comprising the space between the pedestal-wall and the bowl and soil-pipe, which are inclosed within the pedestal.

E is a water-pipe leading into the flushing-rim A' of the bowl.

F is a water-pipe, which discharges into the chamber D'.

G is an air or vent pipe at the top of the siphon, which is customary in siphon-closets which are mainly operated by the siphon-creating apparatus located in or connected with the tank, and which would be necessary in this closet when so operated.

Water is designed to be supplied at both of the pipes E and F, either from a direct supply or from a tank, and to be controlled by any of the familiar methods applicable to that purpose, the controlling-valve being operated by a pull at will, or automatically by the depression and elevation of the seat. It will be noticed that the longer limb of the siphon terminates in a position concentric with an opening d through the bottom wall of the pedestal D, and that only a small space—the annular aperture d^2 —is left between the end of said siphon-limb and said bottom wall. The opening d may be slightly greater in diameter than the siphon-limb, and the latter, in that case, may project into it, as in Fig. 5, or, the aperture being of the same diameter as the siphon-limb, the latter may terminate a little above the plane of the under surface of the bottom wall of the pedestal, as in Fig. 2, either construction producing the annular aperture d^2 between the end of the siphon and the bottom wall of the pedestal around

its discharge-aperture d . The purpose and result of this construction is that any considerable quantity of water in the chamber D' passing out into the soil-pipe must pass
5 through the annular aperture d^2 between the end of the siphon and the bottom wall of the pedestal bounding the orifice d , and will fill and seal said aperture, so as to prevent the passage of air through it while the water is
10 passing, and the water thus falling into the soil-pipe in a tubular jet around the mouth of the siphon will draw air therefrom and tend to produce a suction therein. Bearing this fact in mind, the action of the closet may
15 be understood.

Referring first to the form shown in Figs. 1, 2, and 3, the water is presumed to be standing in both traps to the full depth of the water seal provided by the structure—
20 that is, up to the line $m m$ in the bowl and first trap and up to the line $n n$ in the second trap. The long end B' of the siphon is filled with air, and is in air communication with the chamber D' through the annular
25 aperture d^2 . When the water is admitted through the pipes E and F , that which enters through the latter pipe being greater in volume than can flow out freely through the aperture d^2 , completely fills that aperture as it seeks
30 to escape past the end of the siphon, and thus seals the air communication between the siphon and the chamber D' . This tubular current of water also, as above stated, draws air from the siphon to some extent, carrying it
35 out into the sewer in fine bubbles. Meanwhile the water entering the flushing-rim through the pipe E is charging the siphon with water. Simultaneously the air is being rarefied and withdrawn from the pipe G . Both
40 currents of water are therefore operating both to rarefy the air in the siphon between the traps and to fill that space with water, and the siphon, being thus soon "primed," causes the evacuation of the bowl in the manner
45 well understood. Meanwhile, the supply of water through the pipe F being greater than could escape through the aperture d^2 , the excess has accumulated in the chamber D' until said chamber is full, and after the supply
50 through the pipe F is cut off or exhausted the water thus stored in the chamber D' continues to flow out through the aperture d^2 and the orifice d and to prolong and repeat the siphonic action. When the chamber D' be-
55 comes empty, the bowl will fill up from the afterwash in the usual manner, the shorter limb of the siphon filling up to the water-line $m m$ without hinderance from the air between the traps, because, the aperture d^2 being now
60 opened, the air-space between the traps has a vent through the chamber D' and back through the water-pipe F , now empty. The same water-pipe F may ventilate the lower trap, suitable air-connection being made up-
65 ward from said pipe F at any convenient point through a flue or to the exterior air. The branch pipe F' may make such connec-

tion, or it may be made from a tank or service-box, from which the pipe F is supplied when the construction is such as to make this
70 admissible.

Referring to the forms shown in Figs. 4, 5, and 6, the action of the device is not materially different, but is as follows: The water-
75 pipes E and F operate as above described in all respects, except that the water which will pass out through the annular aperture d^2 will have no opportunity to draw air from be-
80 tween the traps, but will have some tendency to draw the water in the second trap over, and thereby to produce some suction upon the water in the first trap. The action will be in other respects the same until the siphon is primed and the closet evacuated by means
85 of its action, and when both traps and the intermediate space are full of water, as when the siphon is in action, the entire extent of the soil-passage acts as a simple single siphon, notwithstanding the loop which constitutes
90 the trap intermediate the shorter limb and the end of the longer limb—that is to say, the end of the limb B^3 . The water which has been stored in the chamber D' in the same manner as first above described in respect to
95 Figs. 1, 2, and 3 continuing to flow after the supply through the pipe F is exhausted, will exert a pull upon the water flowing through the siphon and trap and increase the effectiveness of the siphon in evacuating the bowl, and will
100 also somewhat prolong that action—that is, after the water has fallen to the point at which air will be admitted from the bowl into the ascending limb B , which will "break" the siphon, the water will not immediately recede from
105 the limb B , because the pull of the water flowing out through the orifice D^2 upon the continuous body of water filling both traps will hold it up for an instant, and thereby the air in the bowl will be drawn over to a greater
110 extent than would otherwise be the case before the afterwash closed the air communication at the bottom of the bowl, thus tending to carry off a greater proportion of foul
115 gases than would otherwise be the case. A further value of the overflow from the chamber D' consists in the fact that thereby the soil-pipe is flushed with clean water after the evacuation of the bowl is entirely completed.

I claim—

1. In a water-closet, in combination, substantially as set forth, the bowl having a siphonic soil-passage leading therefrom and a pedestal inclosing both the bowl and the soil-passage, leaving a cavity or chamber within the pedestal around the bowl and soil-pas-
125 sage, the pedestal being apertured at the lower part and the soil-passage of the bowl discharging through such aperture, a flushing-pipe communicating with the bowl, and a water-pipe discharging into the chamber
130 within the pedestal surrounding the bowl.

2. In a water-closet, in combination with the closet-bowl having a siphonic soil-passage leading therefrom, said soil-passage com-

prising two traps, and a pedestal inclosing the bowl and its soil-passage, including both traps thereof, and forming a chamber about them and having in its base an aperture through which the soil-passage discharges, a flushing-pipe communicating with the bowl, and the water-pipe communicating directly with the chamber in the pedestal surrounding the bowl and traps, substantially as set forth.

3. A water-closet bowl having a siphonic soil-passage leading therefrom, said soil-passage and bowl being formed integrally, and a pedestal also formed integrally with the bowl and soil-passage and inclosing them both, leaving a cavity or chamber within said pedestal and around the bowl and soil-passage, the bottom wall of said pedestal being apertured and the soil-passage terminating concentrically with said aperture, so that it may discharge through it, an annular space being left between the end of the soil-passage and the margin of the aperture through the pedestal-base, a flushing-pipe communicating with the bowl, and a water-pipe discharging

into the chamber in the pedestal, in combination, substantially as set forth.

4. A water-closet bowl having a siphonic soil-passage leading therefrom, said bowl and soil-passage being formed integrally, the soil-passage comprising two traps, and a pedestal also integral with the bowl and its soil-passage and inclosing them both, forming a chamber about them, and having an aperture in its base concentric with the terminus of the soil-passage, an annular aperture being left between the end of the soil-passage and the margin of the aperture in the pedestal-base, a flushing-pipe communicating with the bowl, and a water-pipe communicating directly with the chamber in the pedestal about the bowl and traps, in combination, substantially as set forth.

In testimony whereof I have set my hand, in the presence of two witnesses, at Nutley, New Jersey, this 22d day of January, 1889.

FRANK. A. WELLS.

Witnesses:

S. R. ROGERS,

W. A. ROGERS.