

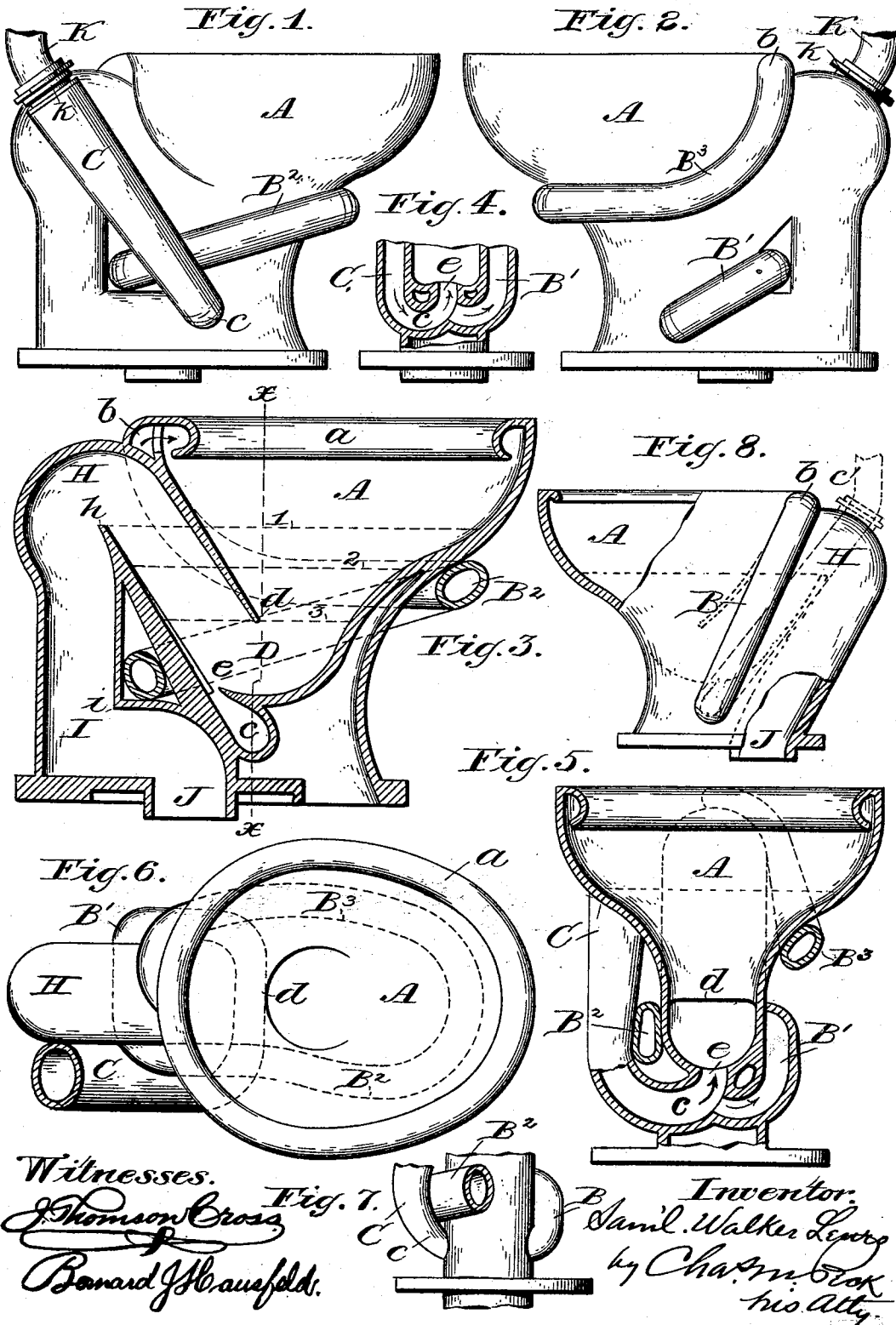
(No Model.)

2 Sheets—Sheet 1.

S. W. LEWIS.
WATER CLOSET.

No. 509,319.

Patented Nov. 21, 1893.



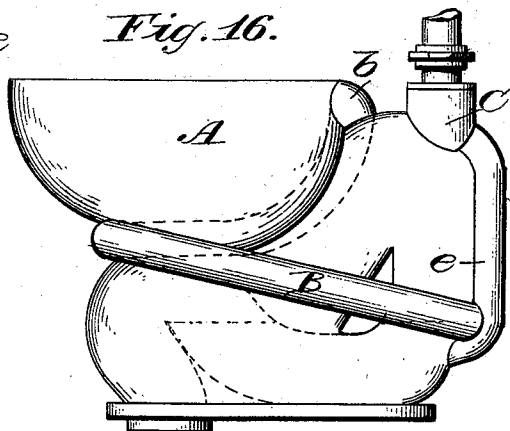
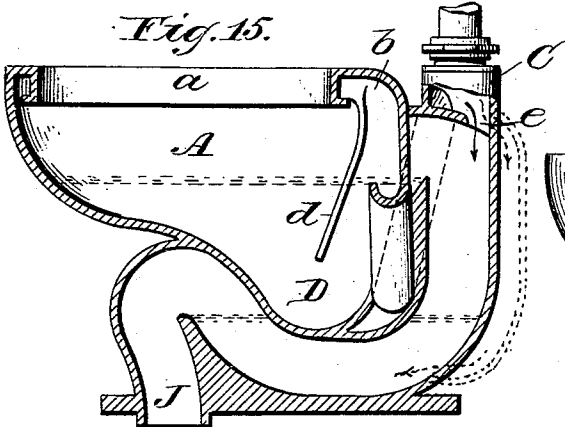
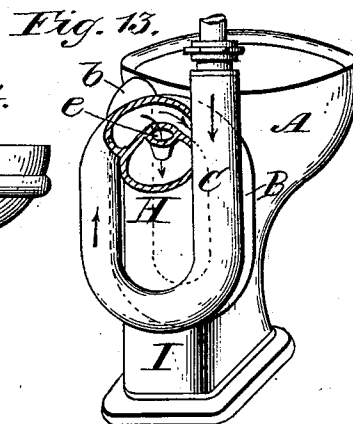
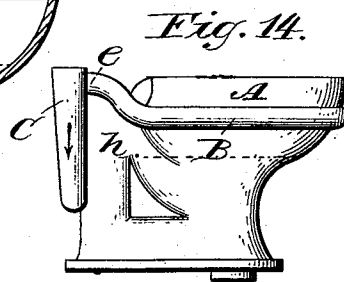
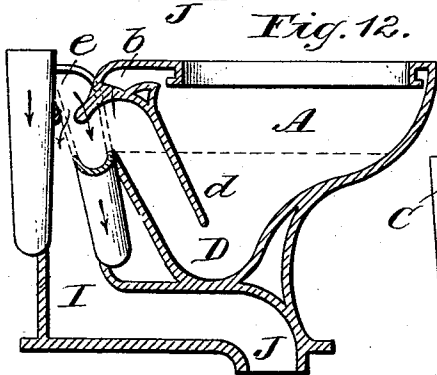
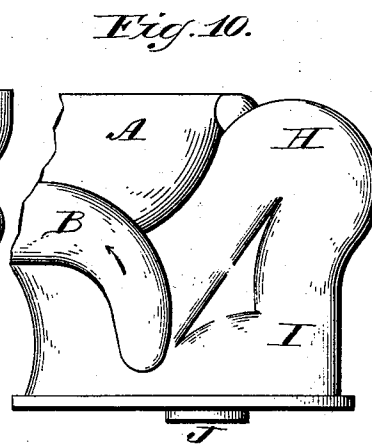
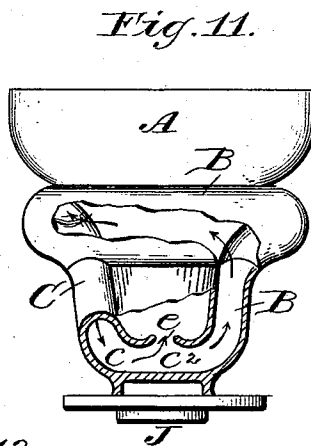
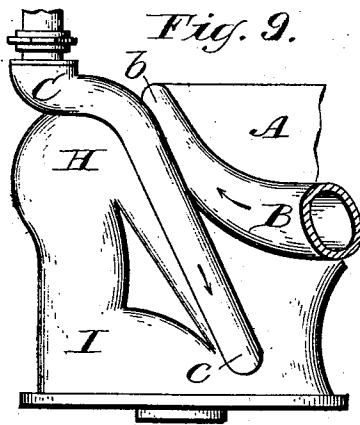
(No Model.)

2 Sheets—Sheet 2.

S. W. LEWIS.
WATER CLOSET.

No. 509,319.

Patented Nov. 21, 1893.



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UNITED STATES PATENT OFFICE.

SAMUEL WALKER LEWIS, OF BROOKLYN, NEW YORK.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 509,319, dated November 21, 1893.

Application filed March 8, 1893. Serial No. 465,150. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL WALKER LEWIS, of Brooklyn, Kings county, New York, have invented new and useful Improvements in Water-Closets and Urinal-Receptacles, of which the following is a specification.

One part of my invention relates broadly to all forms of receptacles known as siphon jet water closets and urinals, in which one or more jets, which I will term "a jet flushing means," is employed to empty the bowl or to promote siphonic action, the object of this part of my invention being to prevent the noise when in action, caused by the unchecked rush and escape of air and water through the outlet at the rim of the bowl, and I attain this object by arranging the conduit, pipe, or delivery arm, which leads to the upper part of the bowl, in such manner that the contents of the supply or flush pipe will be carried to the jet and thence through a conduit leading from and beyond said jet beneath a water seal, preferably, though not essentially beneath the normal level of water in the bowl before discharging at or to the rim of the bowl, whereby said conduit will be water sealed between the jet and the rim delivery, so that the air in the supply or flush-pipe may escape or be expelled through said jet or jets or so far beneath the water as to be noiseless.

Another part of my invention is to produce a more gentle flushing of the upper part of the bowl and an increased force of jet action, which object I attain by increasing the length of the said conduit between the jet discharge and the rim discharge, (so that the jet outlet may be nearer to the supply than the rim outlet) preferably by turning or coiling the said conduit leading to the rim delivery, whereby the increased length or turns in the channel, or both combined, causes a frictional resistance to the flow through said conduit and consequently a more gentle flushing through the rim, thereby producing a back pressure which causes the confined fluids to pass with more velocity and force through the more direct jet outlet. This construction enables me, as a direct opposite to all previous methods, to dispense with valves or

contractions of any of the parts and to make the branch supply or conduit leading to the rim delivery of full unrestricted size throughout its entire length.

Another part of my invention consists broadly in an auxiliary water supply contained in a reservoir below the normal water line and above the seal of any closet, bowl, urinal or trap emptied by siphonage, or by means of a siphoning pipe or trap, said reservoir being formed by the conduit leading from the supply to the flushing means, the purpose of said auxiliary supply of water being to maintain a seal against siphonage or evaporation as will hereinafter appear.

In the annexed drawings, Figure 1, is an external view in side elevation of a closet bowl having a jet at the bottom of its outlet connected directly with a supply pipe by an extension entering at the side and provided with a conduit branching from said jet and leading by coils around the bowl and up to the rim delivery. Fig. 2, is a reverse view of the same showing the course of the coiled conduit. Fig. 3, is a central vertical section of same showing other details of construction. Fig. 4, is a cross section to illustrate one method of branching from and leading beyond the jet to supply the rim flushing means. Fig. 5, is a cross vertical section of Fig. 3, on the line $x-x$. Fig. 6, is a plan of Fig. 3. Fig. 7, is a broken front external view of the lower part of Fig. 5. Fig. 8, is a view partly in section, of a simple hopper form of closet without flushing rim or siphoning trap, and supplied with a submerged jet and branch conduit leading therefrom to the rim of the bowl as in Fig. 4. On Sheet 2, Figs. 9, 10 and 11, are views partly in section showing one method of arranging the coiled conduit in the form of an annular reservoir below the normal water line and above the seal and leading up to the rim of the bowl. Fig. 12, is a vertical section of a trapped closet provided with a siphon outlet and a downward directed jet above and discharging into the down leg of said siphon outlet, the conduit leading from said jet being coiled vertically. Fig. 13, is a rear view of same, partly in section, showing details of coil and jet. Fig. 14, is a modified side view

of same showing the conduit to rim delivery coiled horizontally around the front of the bowl above the normal water line. Fig. 15, is a sectional view of a double-trapped closet having a jet discharging downward into the space between the two traps, or beneath the seal of the lower trap as shown by dotted lines, or both combined, the rim supply being coiled vertically as in Fig. 12. Fig. 16 is an external view of a similar construction showing the rim supply branching from a jet at the lower trap and coiling horizontally around the bowl and up to the rim delivery.

The same letters of reference are used to indicate identical parts in all the figures.

The bowl A, Fig. 3, is trapped at *d h*, the inner wall *d* forming the seal.

l is the normal water level mentioned in the declaration of the invention and is sustained by the dam *h*.

a is a flushing rim connected to the supply at the rim delivery *b*.

K is a supply or flush-pipe connected to an extension arm C of the bowl at *k*, and branching directly to and connecting with the jet at *c*, as in Figs. 1, 3, 4 and 5.

E is a guttered channel in the back wall of the trap and *e* (as in all the sectional views) is a jet discharging into the trap.

H, I, is a long down leg extending from the trap D, H, and forming a siphon with its outlet *i* lower than its inlet at *d*, and a horizontal extension from I to its outlet J forms a siphoning device as will hereinafter appear.

Fig. 8, shows a simple hopper form of bowl having a jet flushing means but without a flushing rim or trap siphoning device, in which the conduit B branches from and beyond the jet as in Fig. 4, and rising directly to the rim delivery *b* where it flushes the upper part of the bowl by means of the usual fan wash or spray. The supply pipe in Fig. 8 may connect with the jet and bowl by a coupling at *c'* or by means of a connecting extension arm as shown in Figs. 1 or 9, or in any convenient way.

Branching from the jet *e* Figs. 2, 4 and 5, is a conduit B' which coiling backward passes between the short and long legs of the siphon to the other side of the closet, thence forward under the arm C, Fig. 1, and turning again at B² coils around the front to the reverse side of the bowl as at B³, Fig. 2, and rising connects with the rim of the bowl at the delivery *b* which point of delivery may be at any convenient point in its circumference for connection with the rim of the bowl, but for purposes of convenient illustration, I have shown it in all the views as connecting with the rim at the back above the trap.

In Fig. 9, the supply extension C communicates with the jet *e* and the rim conduit B through a horizontal chamber at *c''*, Fig. 11, but if preferred this connection and branch may be made as in Fig. 4. From the jet chamber *c'* the conduit B, Fig. 10, rises and

enlarges, to form a reservoir below the normal water line and above the seal, coils horizontally around the front of the bowl as in Fig. 11, and connects with the rim delivery *b*, Fig. 9. From these constructions, even in the simple form of Fig. 8, it is obvious that the air in the supply pipe passing to or onto the entrance to the jet or carried by the current to the jet or to its entrance and there checked by frictional resistance to passage or escape through the conduit B will, obedient to the laws of gravity, follow the current, seek the nearest outlet, and naturally escape through the jet *e* and rise in bubbles to the surface in the trap. By arranging the conduit from the jet to the rim delivery in the form of coils as shown in Figs. 1 to 6, owing to the length and turns in the passage, the flow is retarded, a back pressure is produced and a greater jet force results, as heretofore set forth. If the down siphon leg from the trap Fig. 3, was a straight return from H to J, as in Fig. 8, the closet would not siphon by ordinary flushing means because the usual supply would not fill the down leg, but by the deflection H, I, J means for accelerating the siphonic action is produced, and when the water flows into the closet in the ordinary way, owing to the turns in the tortuous passage, the incoming flow gathers upon the retarded fluid which backs or fills up to the level *i* and forms a seal lower than the limb *d*. Thus a solid body of water fills the lower part of the down leg H, I, and a powerful siphon results which empties the bowl and continues until the supply is exhausted when the siphon is broken by air entering at *d*. Such action can be started by carelessly or thoughtlessly pouring a small quantity of liquid into the bowl, when the surface line 1 rises for an instant and then recedes as the fluid flows over the dam at *h*, its outgo is retarded by the turn at I, *i*, a siphon results and the bowl is emptied as before described, but there is only enough water left to barely form a seal as shown by dotted line 3, which would soon evaporate and admit sewer gas, hence the importance of my annular reservoir B between the levels 1 and 3, in connection with the bowl through an indirect or small opening, which in this instance is the jet *e* whereby the level of its contents will be the same as in the bowl. Hence it follows that when the bowl is thus emptied by siphonage, the action is so quickly over that owing to its restricted communication caused by its tortuous return passage the coiled conduit or reservoir B is not emptied and sufficient water flows back into the bowl to raise the level of the seal up to the line 2, or above it.

Thus far I have only described my preferred form of construction, a bowl with a single trap seal, a submerged jet, a water sealed conduit, preferably forming an annular reservoir below the water line and above the seal and leading preferably from the jet

to the rim delivery whereby in operation the pressure upon the confined air in the supply pipe communicated to the contents of said coiled conduit causes the water to overflow through the rim delivery and gently flush the upper part of the bowl, at the same time owing to resistance caused by said coils, the pressure is powerfully exerted upon the shorter outlet through the jet by which means the air noiselessly escapes, the water is instantly started over the dam at *h*, the siphonic action follows and the bowl is emptied, but owing to the elements of construction heretofore described, the whole operation produces no more noise than that of gently running water.

On Sheet 2, Figs. 12, 13 and 14, I illustrate a closet having a single trap seal, a siphoning trap, H, I, J, and a downward directed jet at the top of the trap at H. In closets of this form it is usual to trap the supply pipe before communicating with the jet as shown by the outside coils of said figures, and which I do not claim and these figures are only introduced to show the application of my invention to such construction by supplying the rim flushing means of the bowl through a water sealed conduit leading from and beyond the jet to the rim delivery whereby the air must escape or be blown out through the jet as shown by the vertical coil trap leading from the jet, in Figs. 12 and 13, down beneath the legs of the siphon and up to the rim discharge.

Fig. 14, shows a modification wherein the trapped conduit leading from and beyond the down turned jet coils around the front of the bowl above the normal water level *h*.

Fig. 15 shows a double trapped closet with jet at top or at bottom as indicated by dotted lines, or with both top and bottom jets combined and my trapped rim supply leading from the jet delivery to the rim delivery, as in Fig. 12, by a vertical coil. Fig. 16 shows a similar construction with the jet also directed against or under the contents of the lower trap, and the rim conduit B branching from such lower jet and coiling horizontally around the bowl up to the rim delivery as in Figs. 1, 2 and 14. I prefer to trap the conduit leading from the jet flushing means to the rim flushing means, beneath the normal level of water in the bowl, but said conduit can be coiled or trapped above said water line and below the rim of the bowl in such manner as to be normally full of water. Hence I do not limit my invention to the precise forms of construction shown, as it is evident similar modifications will accomplish the same results, provided the supply pipe communicates first with the jet and thence by a conduit normally full of water which branches from and leads beyond said jet to supply the rim flushing means, whereby the air in the supply pipe may escape through the jet flushing means and be prevented by the intervening and more slowly moving body of water constituting the seal in

said conduit from escaping at the rim of the bowl. Nor do I limit the application of the coiled or trapped conduit to a receptacle having a tortuous outlet forming a siphoning device, as it is obvious it could be used with a bowl like Fig. 8 having only a straight return trap and outlet. Furthermore I do not limit the invention to the precise forms shown for connecting the supply pipe to the receptacle or jet flushing means as any convenient method will answer the purpose.

Throughout the specification by the term "supply pipe" I mean the conduit, no matter how constructed, which carries the water to the jet.

Matter shown and described herein but not claimed, forms the subject matter of my divisional application, Serial No. 485,773, filed September 19, 1893.

Having thus fully described my invention, I claim—

1. A receptacle for water closet and urinal purposes provided with a jet flushing means, and a rim flushing means, a supply conduit leading directly to the jet, and a conduit leading from and beyond the jet to the rim flushing means, whereby the contents of the supply conduit will reach the jet and the air will escape therefrom before entering said rim conduit or discharging at the rim, substantially as described.

2. A receptacle for water closet and urinal purposes provided with a rim flushing means, and a submerged jet flushing means discharging upward into the trap, and a supply conduit leading directly to the jet, and thence forming a second conduit leading from and beyond the jet to the rim flushing means, whereby the contents of the supply pipe will reach the jet and the air can escape therefrom before entering said second conduit or discharging at the rim, substantially as described.

3. A receptacle for water closet and urinal purposes, provided with both jet and rim flushing means, a supply conduit leading directly to the jet, and a water sealed conduit leading from and beyond the jet to the rim flushing means, the jet flushing means being between the supply conduit and said water sealed conduit, whereby the contents of the supply conduit will reach the jet before entering said water sealed conduit or discharging at the rim, substantially as and for the purposes described.

4. In combination with a receptacle for water closet and urinal purposes, having both jet flushing means and rim flushing means, a supply conduit leading directly to the jet, and a coiled conduit, to normally contain a body of water, leading from the jet at a point beyond its entrance to supply the rim flushing means, substantially as and for the purpose described.

5. The combination with a trapped receptacle for water closet and urinal purposes

provided with a siphon outlet and means
formed in the outlet passage to accelerate
the siphonic action, of an auxiliary water sup-
ply beneath the normal water line and above
5 the seal and an annular reservoir for said
auxiliary water supply formed by the con-
duit leading from the source of its supply to

the rim flushing means, whereby the seal may
be maintained against siphonage and evap-
oration, substantially as described.

SAML. WALKER LEWIS.

Witnesses:

C. IRA KREBS,

S. H. LEWIS.

Corrections in Letters Patent No. 509,319.

It is hereby certified that in Letters Patent No. 509,319, granted November 21, 1893, upon the application of Samuel Walker Lewis, of Brooklyn, New York, for an improvement in "Water-Closets," errors appear in the printed specification requiring correction, as follows: In line 18, page 2, the reference letter "1" should be 1; and in line 73, same page, the word "outo" should read *into*; and that said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 19th day of December, A. D. 1893.

[SEAL.]

JNO. M. REYNOLDS,
Assistant Secretary of the Interior.

Countersigned:

JOHN S. SEYMOUR,
Commissioner of Patents.