(No Model.) 2 Sheets—Sheet 1.

W. SCOTT.

WATER CLOSET.

No. 419,566. Patented Jan. 14, 1890.

Fig. 1.

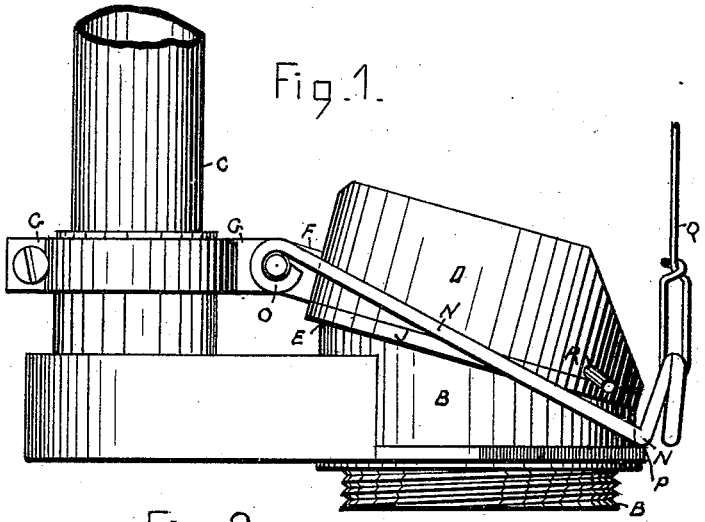


Fig. 2.

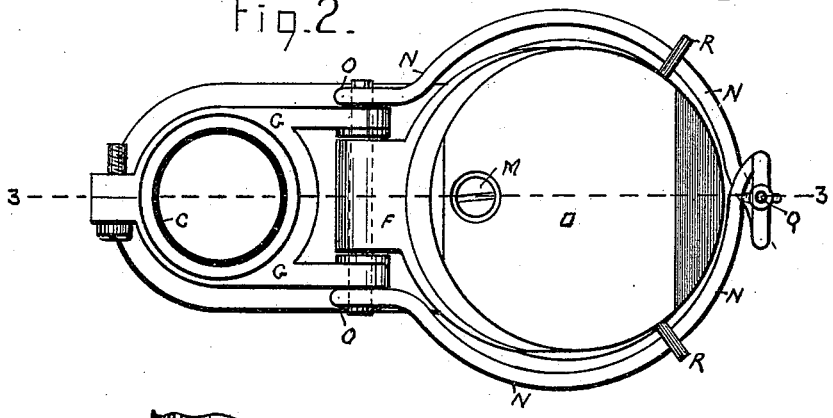
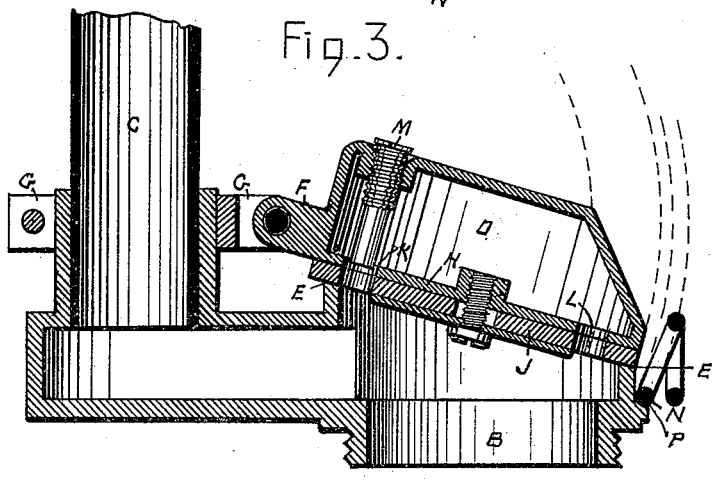


Fig. 3.



WITNESSES.

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by his Attorneys

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(No Model.) 2 Sheets—Sheet 2.

W. SCOTT.

WATER CLOSET.

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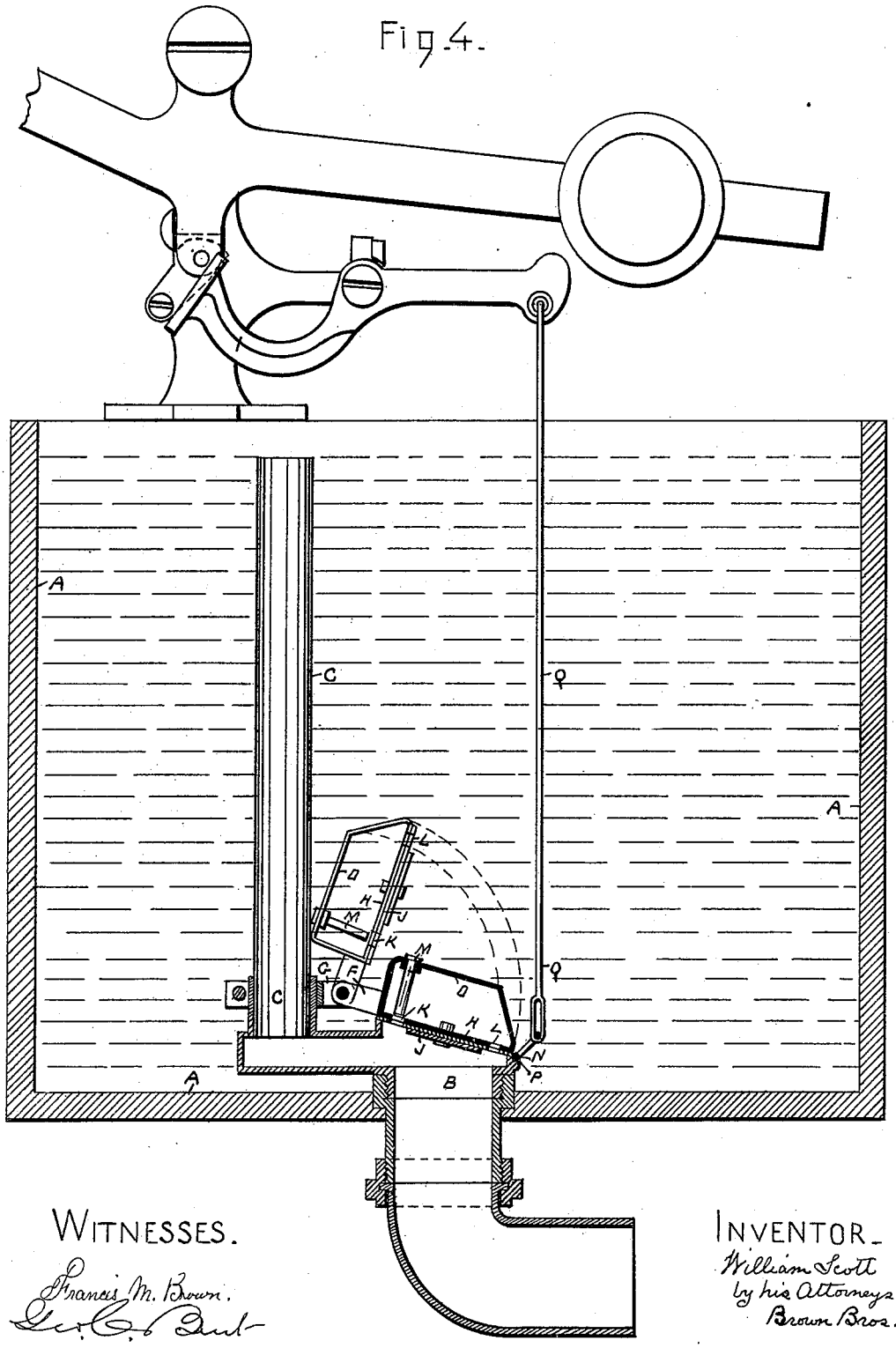
Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM SCOTT, OF MEDFORD, MASSACHUSETTS.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 419,563, dated January 14, 1890.

Application filed January 10, 1889. Serial No. 296,043. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SCOTT, a citizen of the United States of America, and a resident of the town of Medford, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Water-Closets, of which the following is a full, clear, and exact description.

This invention relates to valves more particularly intended for use in controlling and regulating the discharge of water from water-tanks in the water systems of dwelling-houses and other buildings, &c., and to mechanisms for operating the valves to open them and allow them to close.

As to the valve, the invention in substance consists in the combination, with a water-tank having a discharge-pipe leading from it, of a chambered opening and closing valve which seats across and on said pipe, made, preferably, of hard vulcanized india-rubber and otherwise of suitable character to float in the water of the tank when opened, and is hinged at one side of and opens upward from said pipe, and has openings in its seating side that with the valve closed severally make communication between the chamber of the valve and the discharge-pipe, and with the valve opened severally make communication between the chamber of the valve and the water contained in the tank, but at different heights or levels thereof, so as to act as passages for the escape of the air contained in the valve and for the inlet of water from the tank to the valve, and thereby weighting it to secure its closing, on which the water then in the valve discharges itself through said openings into the discharge-pipe, the valve remaining closed until again opened, all substantially as hereinafter described.

As to the mechanism for operating the valve to open it, this invention in substance consists in the combination, with a water-tank having a discharge-pipe leading from it and an opening and closing valve which seats across and on and is hinged at one side of and opens upward from said pipe, of a yoke hinged independently of said valve to swing upward and downward and on its upward swing to engage said valve and carry it with it and then to leave it, and on its downward swing to swing independently of and separate from said valve, and thus to return to its normal position, leaving the valve free to its own movement for returning to its seat, all substantially as hereinafter described.

In the drawings forming part of this specification the contrivances of this invention are illustrated.

Figure 1 is a side elevation of a valve having all the features of this invention and of the swinging yoke for opening it and leaving it free to close. Fig. 2 is a plan view. Fig. 3 is a central vertical section, line 3 3, Fig. 2. Fig. 4 is a vertical section of a water-tank and its discharge-pipe with a valve of this invention applied to said pipe and shown in its closed and opened positions.

In the drawings, A is a water-tank—such, for instance, as used for water-closet bowls in the water systems of dwelling-houses, buildings, &c.

B is the discharge-pipe of the tank to be connected to a water-closet bowl, and C is the overflow-pipe of the tank in communication with the discharge-pipe B, all as well known, and therefore needing no particular description.

D is an opening and closing valve for the discharge-pipe and seating on and across its end E, opening to the tank. The valve D is chambered, and it is made of hard vulcanized india-rubber, by which the utmost lightness, combined with all the necessary strength and stiffness, is secured, and, compared with metals of which chambered valves have heretofore been made, also economy in material and reduction in size requisite to impart to it the buoyancy and floating capacity desired.

F is an ear projection at one side of the valve D and pivoted to a stationary part G of the overflow-pipe, and with it making a hinge of the valve for the valve to be opened upward from its seat on the discharge-pipe. The bottom wall or seating side H of the valve D has a washer J, of india-rubber, leather, or other suitable material, for packing and securing close joint between it and the discharge-pipe.

K L are two openings through the seating

side H and packing J of valve, and at opposite sides of the center of the valve in a line intersecting the axial line of swing of the valve.

M is a plug screwing through the top wall of the valve and in line with one K of the openings K L, for the purpose of regulating the extent or area of said opening. With the valve closed both openings K L are open to the discharge-pipe of the tank. Again, with the valve opened both openings K L are open to the water contained in the tank, and the opening K the nearer to its hinge F G is at a height or level in the tank lower than that of its other opening L, the farther from its hinge, by means of which, as the pressure of water at the lower opening is obviously greater than that at the upper opening of the valve, because of the greater height of water-column at the lower opening as compared with that at the upper opening of the valve, the valve becomes charged with water from the tank, entering it at the lower opening, and the contained air of the valve escaping at the upper opening, and thus the valve, otherwise capable of floating, is weighted to a degree to secure its closing, on which the water with which the valve was charged then passes from the valve into the discharge-pipe, and the valve becomes ready for another opening and closing, as before.

N is a ring or yoke encircling the valve and at the hinged side of the valve hinged, as at O, and opposite thereto, in its normal position, at rest on a ledge P of the discharge-pipe of the tank and there connected—as, for illustration, by a rod or wire Q—to a suitable lever mechanism, Fig. 1, by which to swing said yoke upward and leave it free to fall.

Various forms and arrangements of lever mechanisms for lifting the yoke may be employed—for example, such as embraced in Letters Patent of the United States, issued to me, No. 277,455, Reissue No. 10,653, No. 331,556, No. 331,557, No. 331,558, and No. 384,087—or other suitable kinds of lever mechanism The lever mechanism, however, forms no part of this invention.

The yoke as it is swung upward abuts against side projecting horizontal pins R R of the valve, and thus the valve is carried with it and opened and so left, while the yoke returns to its normal position.

From the above, plainly, the valve, after being opened and while closing and closed, is absolutely free of all connection with the valve-lifting mechanism—a quite important advantage, avoiding, as it necessarily must, all possible hinderances to its free action.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, with the discharge-pipe of a water-tank, of a chambered valve to open and close said discharge, and hinged at one side and in its seating side, having openings at opposite points thereof and at unequal distances from the axial line of its swing, substantially as described, for the purpose specified.

2. The combination, with the discharge-pipe of a water-tank, of a valve to open and close said discharge, hinged at one side, and a yoke N, independently hinged and adapted to engage the valve to open it and leave it free to close, substantially as described, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM SCOTT.

Witnesses:
ALBERT W. BROWN,
FRANCES M. BROWN.