(No Model.) 2 Sheets—Sheet 1.

A. O'BRIEN.

FLUSHING APPARATUS FOR WATER CLOSETS.

No. 474,683. Patented May 10, 1892.

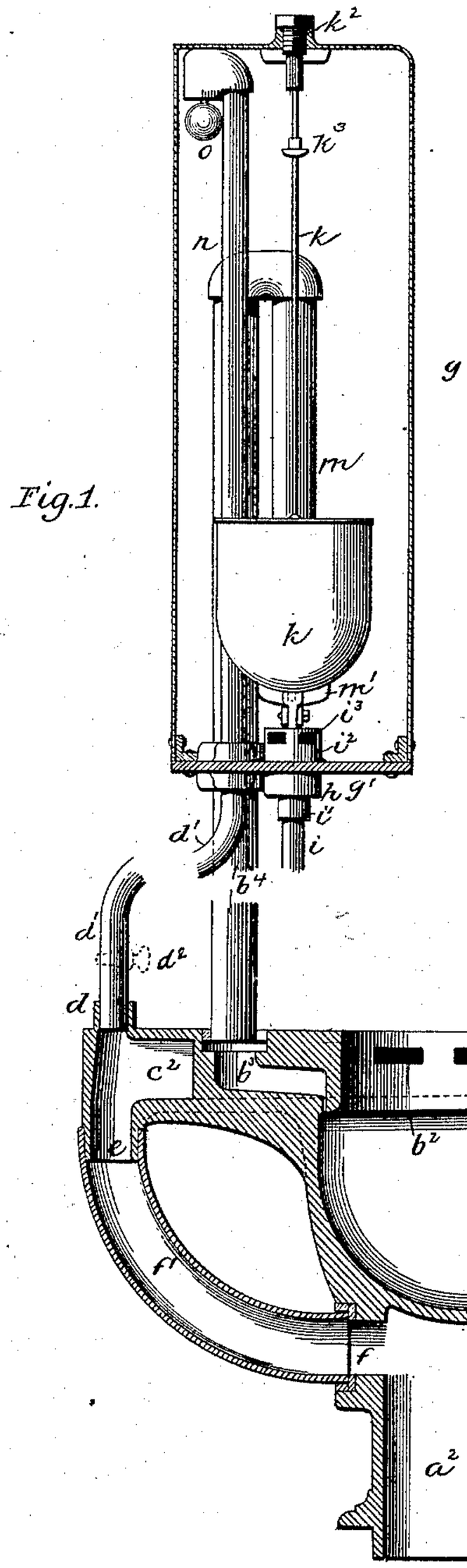

Fig. 1.

Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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Fig 2.

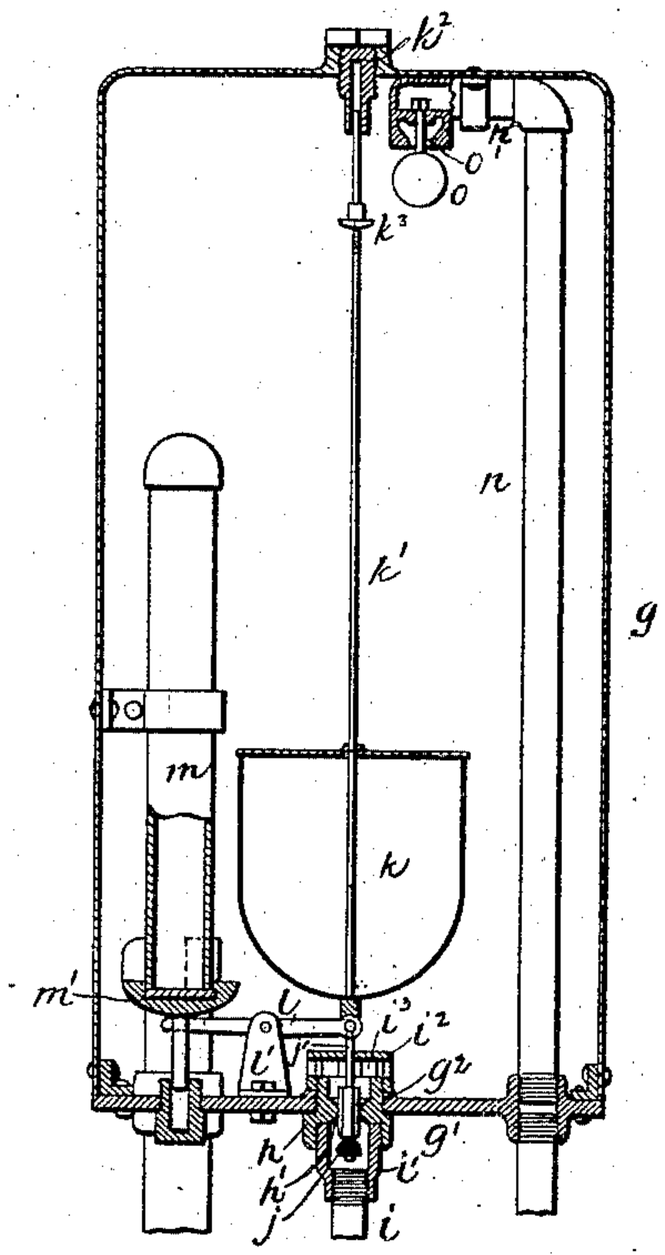
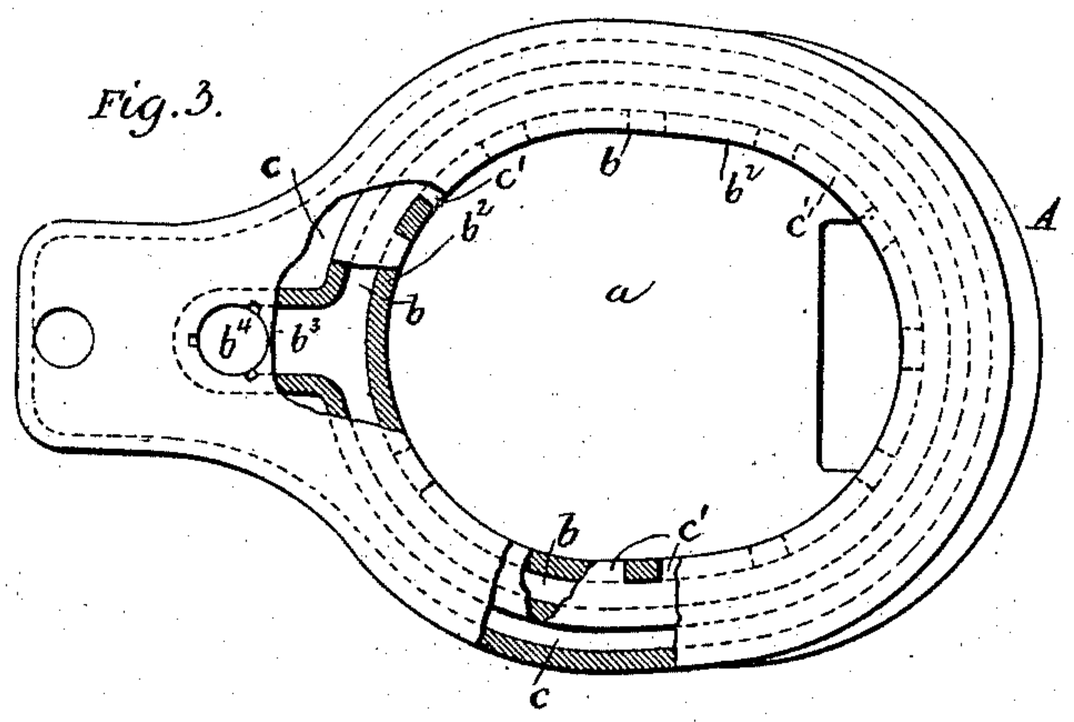


Fig. 3.



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UNITED STATES PATENT OFFICE.

ARTHUR O'BRIEN, OF HELENA, MONTANA.

FLUSHING APPARATUS FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 474,683, dated May 10, 1892.

Application filed October 26, 1891. Serial No. 409,866. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR O'BRIEN, a citizen of the United States, residing at Helena, in the county of Lewis and Clarke and State of Montana, have invented certain new and useful Improvements in Flushing Apparatus for Water-Closets; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to water-closets and to flushing apparatus therefor, the object being to improve the general construction and operation.

My invention consists in providing a closet with a series of air-vents and in a flushing apparatus wherein the inflow of the water is checked by the pressure of air within the apparatus; in a valve for releasing the said air pressure, whereby the water may continue to enter and be discharged through a valve operated by a float, and in the improved and novel construction of the several parts, their arrangement, and operation, all of which will be hereinafter fully and clearly described, and pointed out in the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 represents in vertical sectional view my improved flushing apparatus and preferred form of water-closet. Fig. 2 is a sectional view of the flushing apparatus, taken at right angles to the line of section of Fig. 1, and Fig. 3 is a plan view, partly in section, of the water-closet.

Like letters of reference refer to like parts in the several figures of the drawings. I will first describe with reference to the form of water-closet preferably employed.

The letter A represents the bowl, which is formed with the usual basin a, trap a', and soil-pipe a^2. The flushing-rim b is inclined slightly from front to rear, its chamber b' having connection with the interior of the bowl through an annular passage b^2. This chamber terminates at its rear in a branch b^3, to which is connected the water-supply-pipe b^4.

c is an annular channel formed integrally with the bowl and located above the flushing rim. It has connection with the interior by means of a series of openings or passages c' and terminates in a branch chamber c^2, which leads to two passages, one of which d forms a vent and communicates with a vent-pipe d'. The other passage e extends downward and communicates by means of a pipe f' with a vent f in the soil-pipe.

I will now describe the construction of flushing apparatus preferably employed in connection with the aforesaid construction of closet.

g denotes the outer casing, which is secured in any suitable manner to a wall or upright and above the closet. In the center of the base g' is an opening g^2, which is screw-threaded to permit of the insertion of a hollow screw-threaded plug h, having a valve-seat h'. The main water-supply pipe is shown at i, and is connected with the said plug by means of the coupling i'. The upper reduced end of the plug extends a short distance above the base and serves as a means for connection therewith of a cap i^2, formed with a series of openings i^3, to permit of the escape of the water trom the pipe i. The valve j is conically shaped and has a stem j', which passes through an opening in said cap. This valve is operated by the action of the float k, which is loosely mounted on a rod k', having connection at its lower end with the valve-stem, and the upper end enters a recess formed in a screw-plug k^2 in the top of the casing.

k^3 is a stop on the rod, which engages with the float when the water has reached a certain level. The lower end of the rod has hinge connection with a lever l, which is pivoted in a bracket l', bolted to the base. The other end of this lever is connected with a stop-valve m', which is operated thereby simultaneously with the valve j.

m is the siphon discharge-pipe, the return bend of which terminates at a point near the bottom of the casing, and is normally closed at this point by the valve m'. The bend of the siphon is located at a point a short distance below the normal position of the stop k^3, and the lower end is connected with the closet supply-pipe b^4.

n is the air-pipe, which is provided with a short section n', having a seat o' therein, which is adapted to be closed by a float-valve o when by reason of leakage the water rises to a point

above the predetermined level, which prevents the passage of water into and through the air-pipe. The lower end of the air-pipe is connected by means of the pipe d' with the vent-passage d and the air-channel and passages in the bowl. This pipe d' has a suitable stop-cock d^2.

The operation is as follows: The parts being in the position shown in the drawings the stop-cock d^2 is closed. The water from the main enters through the main supply-pipe at a pressure of, say, thirty pounds, and continues to flow until the pressure of the air within the casing equals the pressure of the water, the inflow of which is then checked. The parts are now in their normal condition. When it is desired to flush the closet, the stop-cock is opened and the pressure from the air being relieved the water again flows into the casing until the float engages the stop and operates the rod and lever. This movement closes the valve in the supply-pipe and opens the siphon-valve and the water is carried by said siphon to the closet in the usual manner. The discharge of the water continues until the descending float operates the lever and shifts the valves to their normal position. The air-pipe cock is then closed and the parts are in position for the next operation.

If by reason of leakage or otherwise the inflow of water is not checked by the action of the compressed air, the water will upon reaching a certain level close the air-pipe float-valve and prevent the water from entering said pipe, as has been already stated.

It will be evident from the foregoing that I have improved the systems heretofore employed in flushing water-closets and in such a manner as to render the operation perfect. My invention is also simple in construction and operation, has but few parts, and is not liable to get out of order.

I claim as my invention—

1. In a water-closet and flushing apparatus therefor, the combination, with a bowl having a flushing-rim and air-passages above said rim, of a flushing apparatus comprising a water-supply, a water-discharge leading to the flushing-rim, an air-pipe leading to said air-passages, valves for said water supply and discharge, adapted to be simultaneously operated by a float and a valve in the air-pipe, the combination being and operating substantially as set forth.

2. In a water-closet and flushing apparatus, the combination, with a bowl having a flushing-rim and air-passages, as described, of a flushing apparatus consisting of a water-supply adapted to compress the air within the apparatus and be checked by the said compression, a water-discharge leading to the flushing-rim, an air-pipe leading from the apparatus to the air-channel and passages in the closet and having a stop-cock, as described, and valves for controlling said water-supply and discharge and adapted to be simultaneously operated by a float, all substantially as and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR O'BRIEN.

Witnesses:

WILL T. NORTON,

ARTHUR BROWNING.