

(No Model.)

R. FRAME.
WATER CLOSET.

No. 509,519.

Patented Nov. 28, 1893.

Fig. 1.

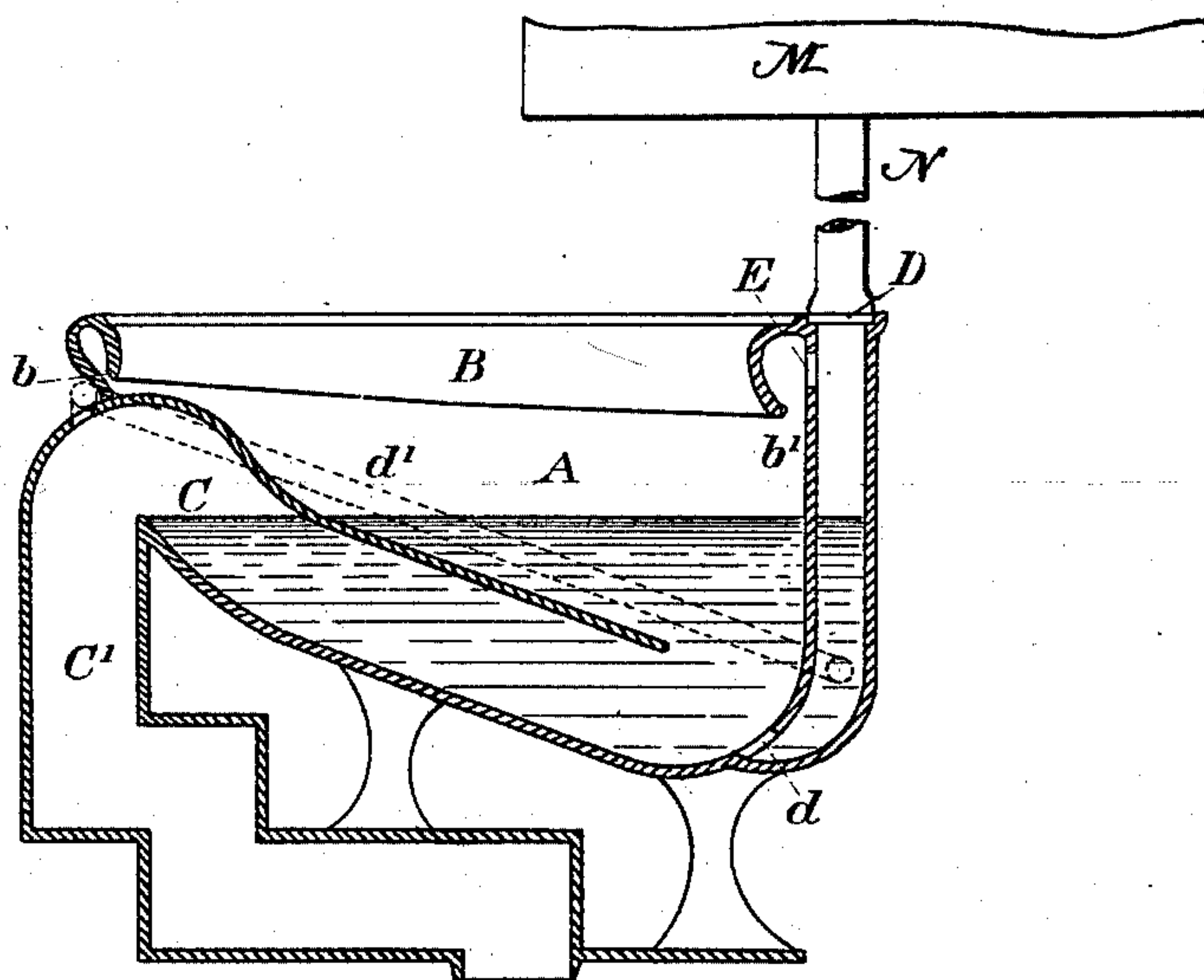


Fig. 2.

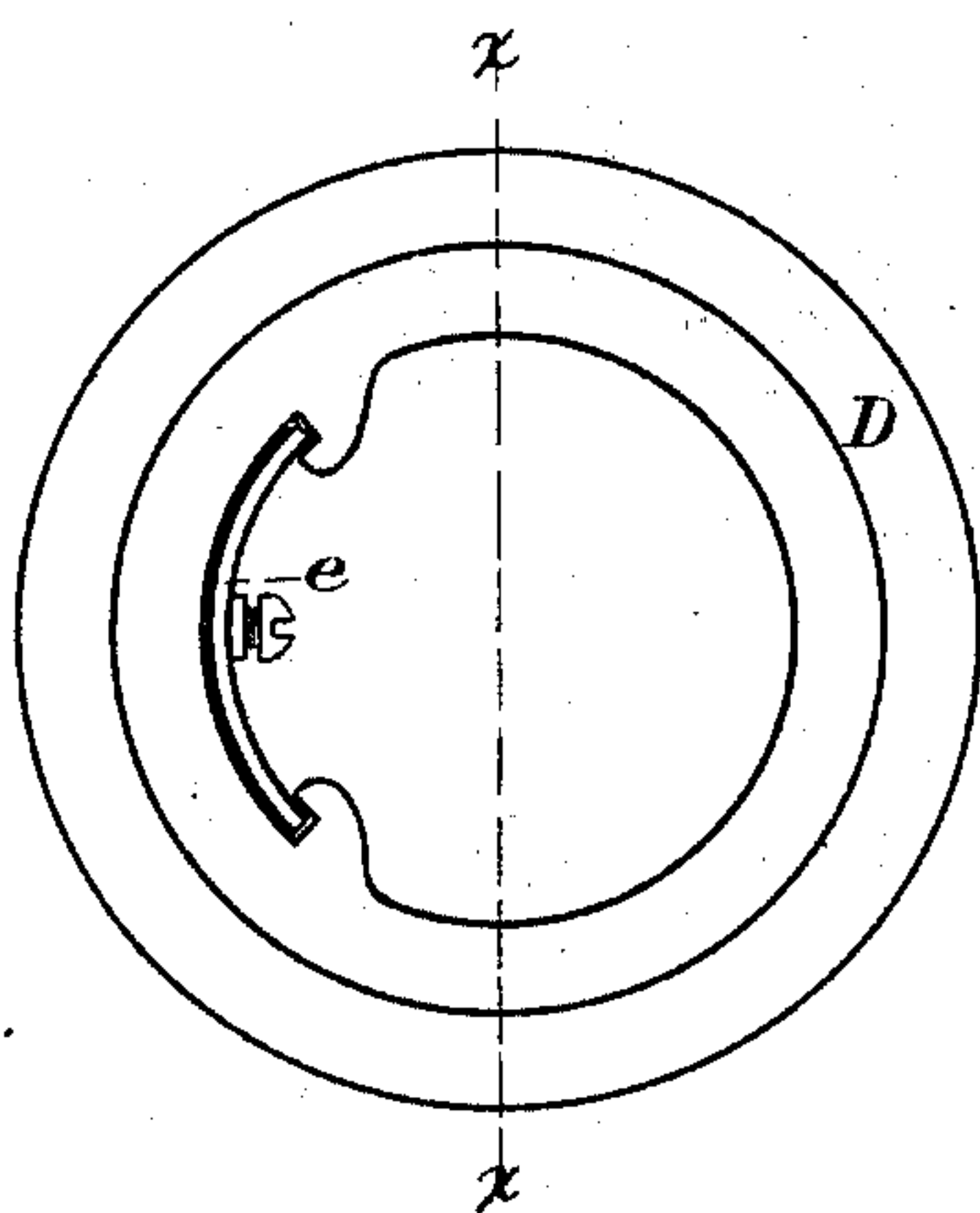
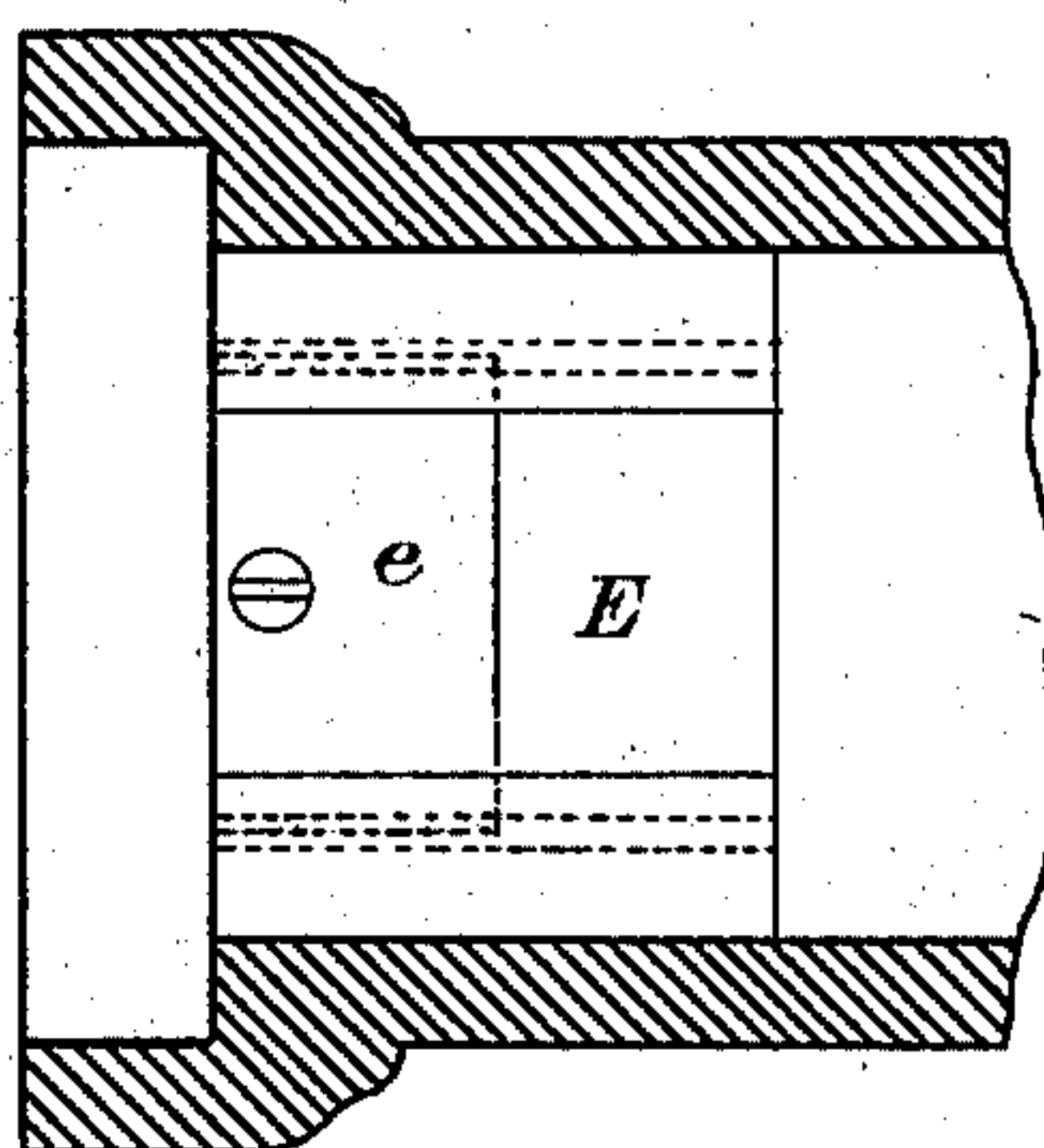


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

ROBERT FRAME, OF NEWPORT, RHODE ISLAND.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 509,519, dated November 28, 1893.

Application filed July 6, 1891. Serial No. 398,493. (No model.)

To all whom it may concern:

Be it known that I, ROBERT FRAME, of Newport, in the county of Newport and State of Rhode Island, have invented a new and useful Improvement in Water-Closets, of which the following is a specification.

My improvement relates to siphon closets and will be fully understood by reference to the drawings, in which—

Figure 1 is a vertical section of the closet embodying my invention, Fig. 2 being an enlarged plan of the water inlet where it joins the supply pipe, and showing a gate, which, owing to the small size of Fig. 1, is not shown therein. Fig. 3 is a section on line x, x , of Fig. 2.

A is the bowl of the closet which is provided with a rim B of peculiar construction, indicated in Fig. 1. The water channel of the rim B inclines from a point b in both directions downward to the point b' . The purpose of this inclination is to drain all the water from the rim, after the closet has been used. This prevents the disintegration of the material of which the rim is made which may be caused if water be continually held in the rim, more especially when the closet is liable to be exposed to the action of frost.

C is the outlet which is constructed to form the short leg of the emptying siphon. The long leg C' of the siphon is shaped in the form of a double right angle as shown, so that any water supplied to the leg C' will strike its horizontal surface, and splashing up more or less, will absorb and carry into the sewer much of the air contained in this leg.

Water is supplied to the closet by the inlet D at the bottom of which is a small hole d located to throw a jet of water from the inlet D into the short leg of the siphon. The rim of the bowl is supplied through a vent E. By adjusting the size of the vent E, the force of the jet through d may be adjusted. For this purpose I provide a gate e sliding in suitable ways in the side of the inlet D (see Figs. 2 and 3), in which the gate is shown wide open. It may be held in place by a set screw, or in any other convenient way. This has been found very desirable in order to enable closets of the same proportions to be adapted

to varying degrees of pressure and heads of water.

The operation of this closet is as follows: Water being introduced from the supply, a jet is established through the hole d which tends to throw the water from the short leg of the siphon out over the lip, and start siphonic action. The instant the column of water in the inlet D has become solid, water overflows into the rim and from it into the bowl. At the same time a stream is started through the pipe d' which assists also to drive the air out of the long leg C' of the siphon and so start the siphon. Three forces are therefore active to this end, viz:—the jet from the hole d , the overflow from the bowl resulting from the discharge into the rim B, and the stream from the pipe d' the relative proportions of which are adjusted by gate e . When the supply of water is substantially exhausted, the water in the rim begins to drain down toward the end b' and into the bowl so that the rim becomes dry, this of course happening during the refilling of the bowl. I prefer to use the pipe d' but it may be omitted if thought best without rendering my closet inoperative.

It will be noticed that the siphon in this closet is placed in the opposite end from that to which water is supplied, the water inlet being in the back wall of the closet, and the short limb of the siphon pointing toward the front of the closet. It will also be noticed that the water supply passage is vertical and terminates in a water inlet D which is upon the upper or horizontal surface of the basin, and forms the upper edge of the cylindrical water passage, which leads from the jet upward. This allows the water inlet D to be placed in the upper surface of the rim of the bowl immediately under the supply tank M and to be fed therefrom by a straight vertical supply pipe N. This construction enables the closet to be operated with a smaller head and with less water than if there were angles between the tank and the jet opening d . In this construction my closet differs from any closet heretofore known by me. While I am aware that in other closets the water passage has been located on a side opposite to the side

of the closet containing the short leg of the siphon, in none of these closets has it been possible for the connection to be made with the tank by a vertical pipe without an elbow, and it is of course apparent that wherever there is an elbow or angular joint, the force of the waterflow is materially reduced. As shown, the jet opening is opposite to and in line with the longitudinal axis of the short leg of the siphon, and the turn which the stream of water makes in passing through the opening d is the only turn it need make from the time it leaves the tank until its work of emptying the closet, is done.

What I claim as my invention is—

1. A water closet bowl formed with a siphon, the short leg of which projects from the rear of the bowl forward and upwardly and with a water passage D extending from the upper surface of the rim of the bowl downwardly in a straight or substantially straight line, at the rear of the bowl and provided with a small orifice at its lower end opposite the inner end of the short leg of the siphon, the long leg of the siphon extending downwardly in front of the bowl and changing its direction as described, in combination with a water supply tank and a straight or substantially straight pipe connecting the tank with the

channel D at the upper surface of the rim of the bowl, all substantially as and for the purposes set forth.

2. In a water closet, in combination with a siphon located to empty it, a vertical water passage provided with a jet opening d located in its bottom and opening opposite to the opening to the short leg of said siphon, and the pipe d' , one end of which is located to empty into the crown of said siphon, the other end being connected with said water passage below the normal water level of said closet, as and for the purposes set forth.

3. In a siphon water closet, a vertical water passage provided with a jet hole located opposite to the opening of the short leg to the siphon, the pipe d' , one end of said pipe being connected with the crown of the siphon, its other end connected with said water passage below the normal water level of the closet bowl, in combination with a vent E provided with a sliding gate, as set forth.

In testimony whereof I have hereunto subscribed my name this 2d day of July, A. D. 1891.

ROBERT FRAME.

Witnesses:

GEORGE O. G. COALE,
EVA A. GUILD.