(No Model.) 2 Sheets—Sheet 1.

W. A. EBERHART.

FLUSHING APPARATUS FOR WATER CLOSETS, &c.

No. 589,423. Patented Sept. 7, 1897.

Fig. 1

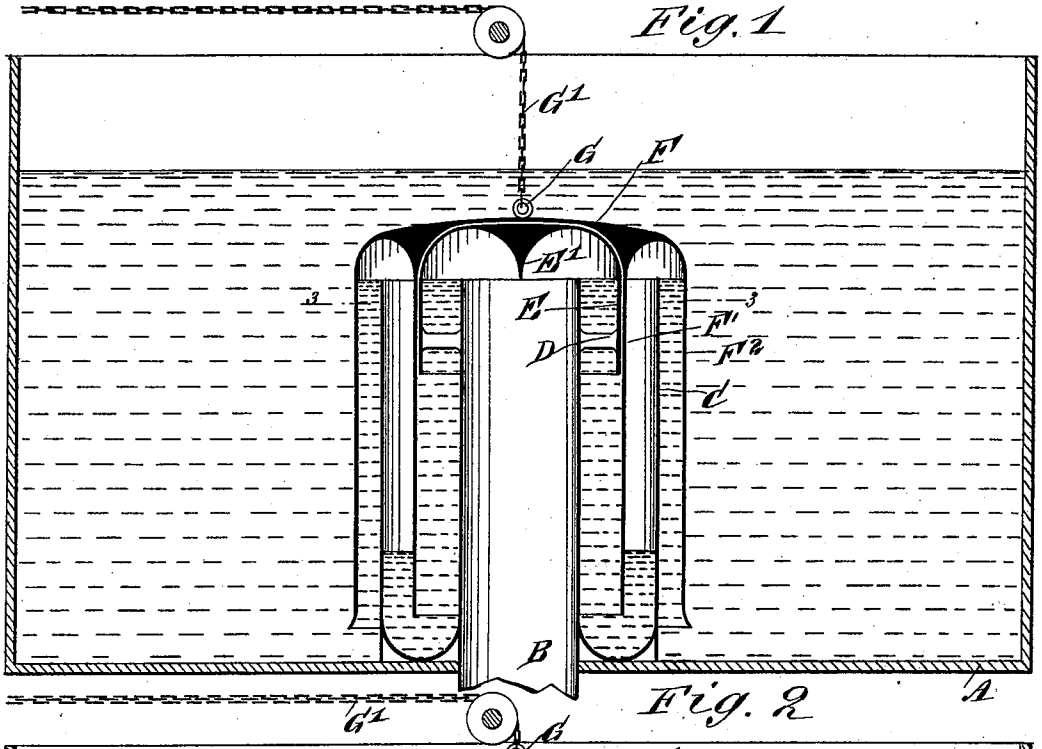
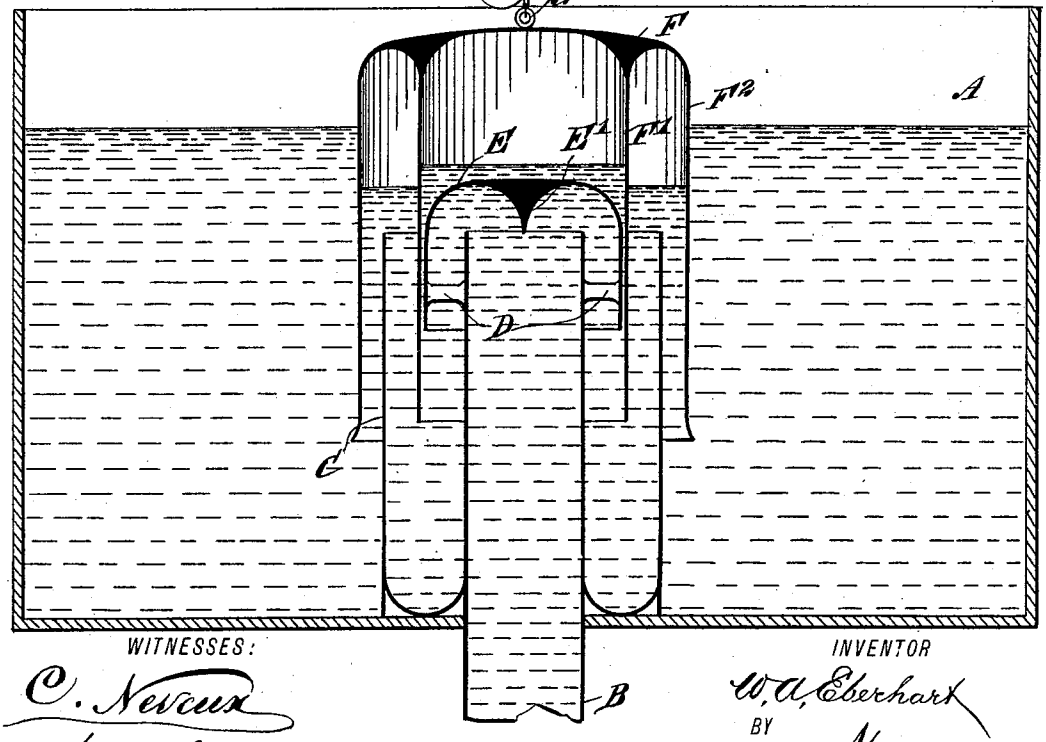


Fig. 2



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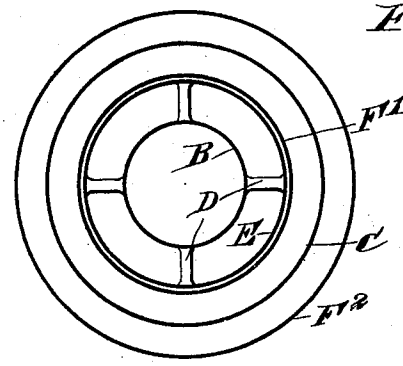
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Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM A. EBERHART, OF ASBURY PARK, NEW JERSEY.

FLUSHING APPARATUS FOR WATER-CLOSETS, &c.

SPECIFICATION forming part of Letters Patent No. 589,423, dated September 7, 1897.

Application filed September 19, 1895. Serial No. 562,947. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. EBERHART, of Asbury Park, in the county of Monmouth and State of New Jersey, have invented a new and Improved Flushing Apparatus for Water-Closets and the Like, of which the following is a full, clear, and exact description.

My invention relates to improvements in devices for controlling the discharge of water from tanks into the bowls of water-closets and the like, and has for its object to secure a positive and reliable operation of such devices, and particularly to insure the discharge of the full quantity of water it is intended to supply at each flushing operation.

The invention consists of certain features of construction and combinations of parts hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a broken sectional elevation of one form of my improved flushing apparatus with the parts in their normal position. Fig. 2 is a like view of the apparatus with some parts thereof raised to cause the water to be discharged, and Fig. 3 is a sectional plan on the line 3 3 of Fig. 1.

As illustrated in the drawings, the flushing apparatus comprises a tank A of any approved construction. From the tank extends downward the flushing-pipe B, which leads to the bowl or other place to which water is to be supplied. The upper end of the pipe B, which projects into the tank, is surrounded by a shell or cup C, concentric with the said pipe and extending upwardly to the plane of the upper edge of the pipe.

On the upper end of the central pipe B is supported, by means of radial arms D, a cap E, the lower cylindrical portion of which extends down between the pipe B and the cup C, concentrically therewith, while the upper portion of the cup is preferably provided on its inner or lower side with a central projection E'.

It will be understood that the parts hereinbefore described are fixed relatively to the tank.

The movable part of the apparatus consists of a double inverted cup F, having an inner cylindrical portion F' of such diameter as to fit loosely around the cap E, which is made to serve as a guide for the cup F, and an outer cylindrical shell F^2, which is of greater diameter than the cup C. The two cylindrical shells F' and F^2 reach down below the upper edges of the pipe B and cup C.

Any suitable means are provided for raising the double inverted cup F. For instance, a ring G may be secured to said cup, said ring having connected to it a chain G', secured to an operating-lever. This construction being well known in flushing devices for water-closets, I have not deemed it necessary to illustrate it.

The operation of the apparatus is as follows: During the filling of the tank the water rises uniformly within and without the cup C until the upper edge thereof is reached. The water then flows inwardly over said edge into the annular space between the cup C and the pipe B. When this water rises to the level of the lower edge of the inner shell F', a body of air is trapped between the shells F' and F^2, and this body of air being compressed by the further rise of the liquid it follows that the liquid will rise higher within the tank outside the cups than in the annular space between the pipe E and the inner shell F'. The dimensions of the various parts are such that when the tank is full the water in the cups will have risen approximately to the level of the upper edge of the central pipe B, as shown in Fig. 1. It will be obvious that in this position nothing but the body of compressed air trapped between the shells F' and F^2 prevents the discharge of water into the pipe B through the siphon formed by the cups and shells. In order to destroy this arresting action of the trapped air, it is sufficient to raise the cup F, so as to move the trapped air upwardly, it being understood that the water in the cups will follow this upward movement and flow inwardly over the upper edge of the pipe B. The projection E', having curved sides, will guide the water into said pipe. It will be obvious that the siphon will be started by the above-described operation, and the discharge of water will continue until the tank is empty. If, however, the cup F was raised only for a moment and immediately released, the siphon might

not be started at all or broken as soon as the cup would come down again. In order to obviate this and to insure a reliable operation of the apparatus under all circumstances, I have provided the cap E. When the cup F is raised, air from the pipe B and sometimes also water passes up into the space between the cup F and cap E, Fig. 2, thus forming an air-cushion, which prevents the sudden dropping of the cup F and thus acts to insure and regulate the action of the siphon.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A flushing apparatus for water-closets, and the like, comprising a tank provided with a discharge-pipe, a cap secured to the upper end of the said pipe but spaced therefrom to allow the water to pass between said pipe and cap, and a vertically-movable inverted cup having guided movement on said cap, substantially as described.

2. A flushing apparatus for water-closets and the like, comprising a tank provided with a discharge-pipe, a cap secured to the upper end of the said pipe but spaced therefrom to allow the water to pass between said pipe and cap, the cap being provided on its lower side with a deflector projecting downwardly over the center of the discharge-pipe, and a vertically-movable inverted cup having guided movement on said cap, substantially as described.

3. A flushing apparatus for water-closets and the like, comprising a tank provided with a discharge-pipe and an upright cup surrounding the same, a cap secured to the upper end of the discharge-pipe but spaced therefrom to allow the water to pass between said pipe and cap, and a vertically-movable inverted cup comprising an inner shell having guided movement on said cap, and an outer shell surrounding the upright cup, substantially as described.

4. A flushing apparatus for water-closets and the like, comprising a tank provided with a discharge-pipe and an upright cup surrounding the same, a cap secured to the upper end of the discharge-pipe but spaced therefrom to allow the water to pass between said pipe and cap, the cap being provided on its lower side with a deflector projecting downwardly over the center of the discharge-pipe, and a vertically-movable inverted cup, comprising an inner shell having guided movement on said cap, and an outer shell surrounding the upright cup, substantially as described.

WILLIAM A. EBERHART.

Witnesses:
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JOHN R. DESSALET, Jr.