

No. 686,890.

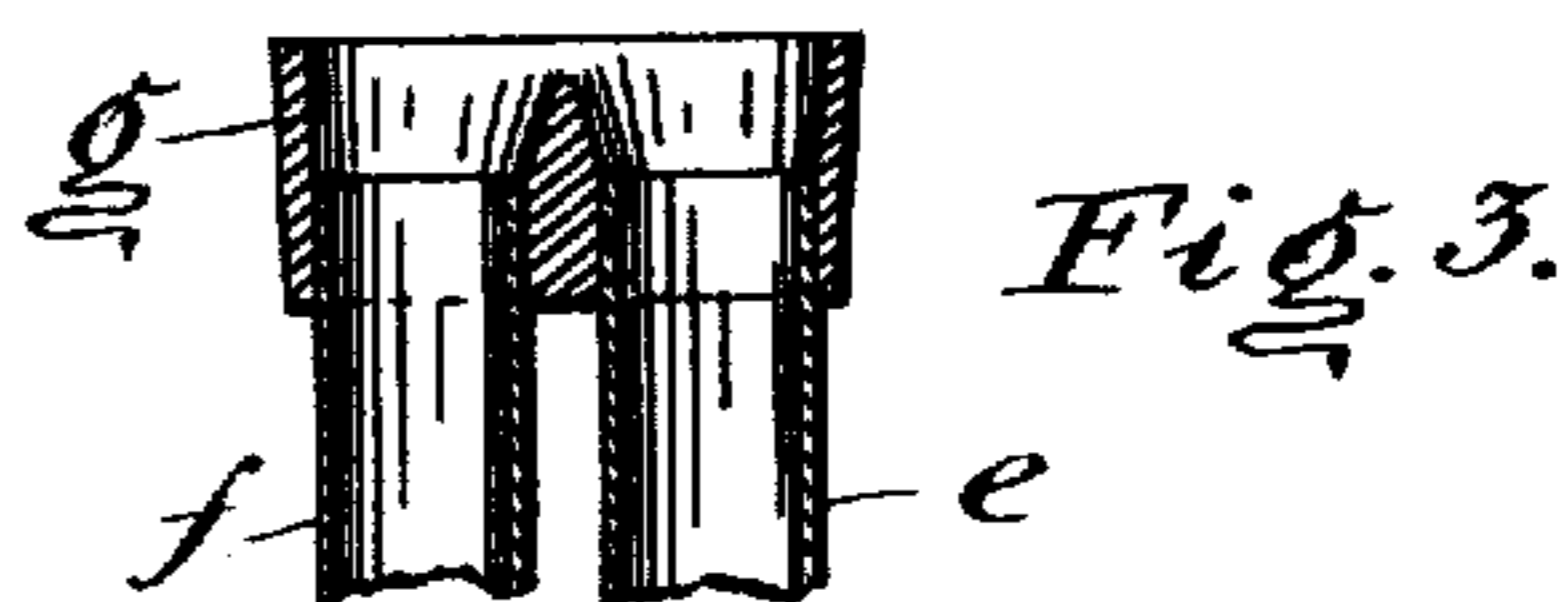
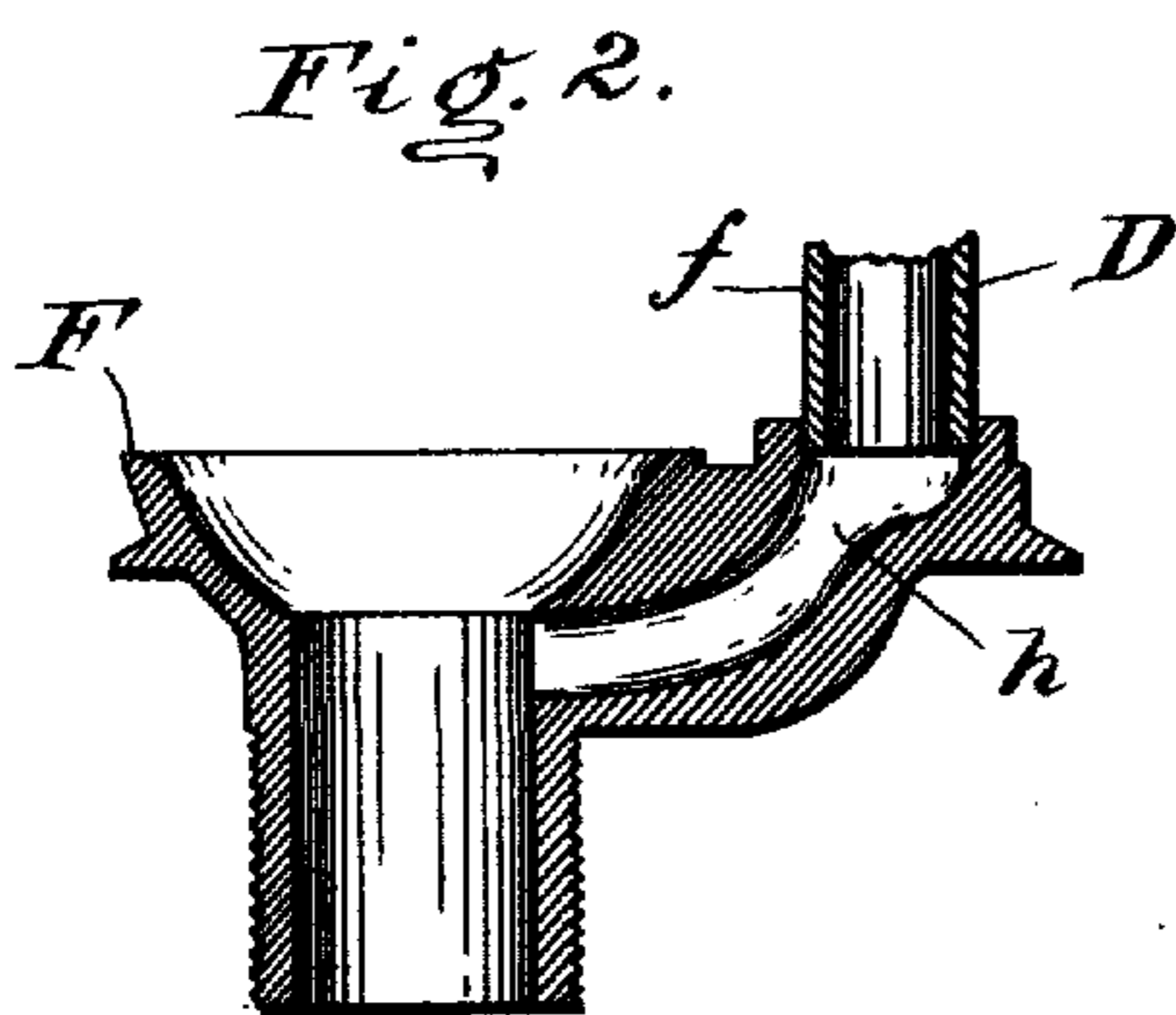
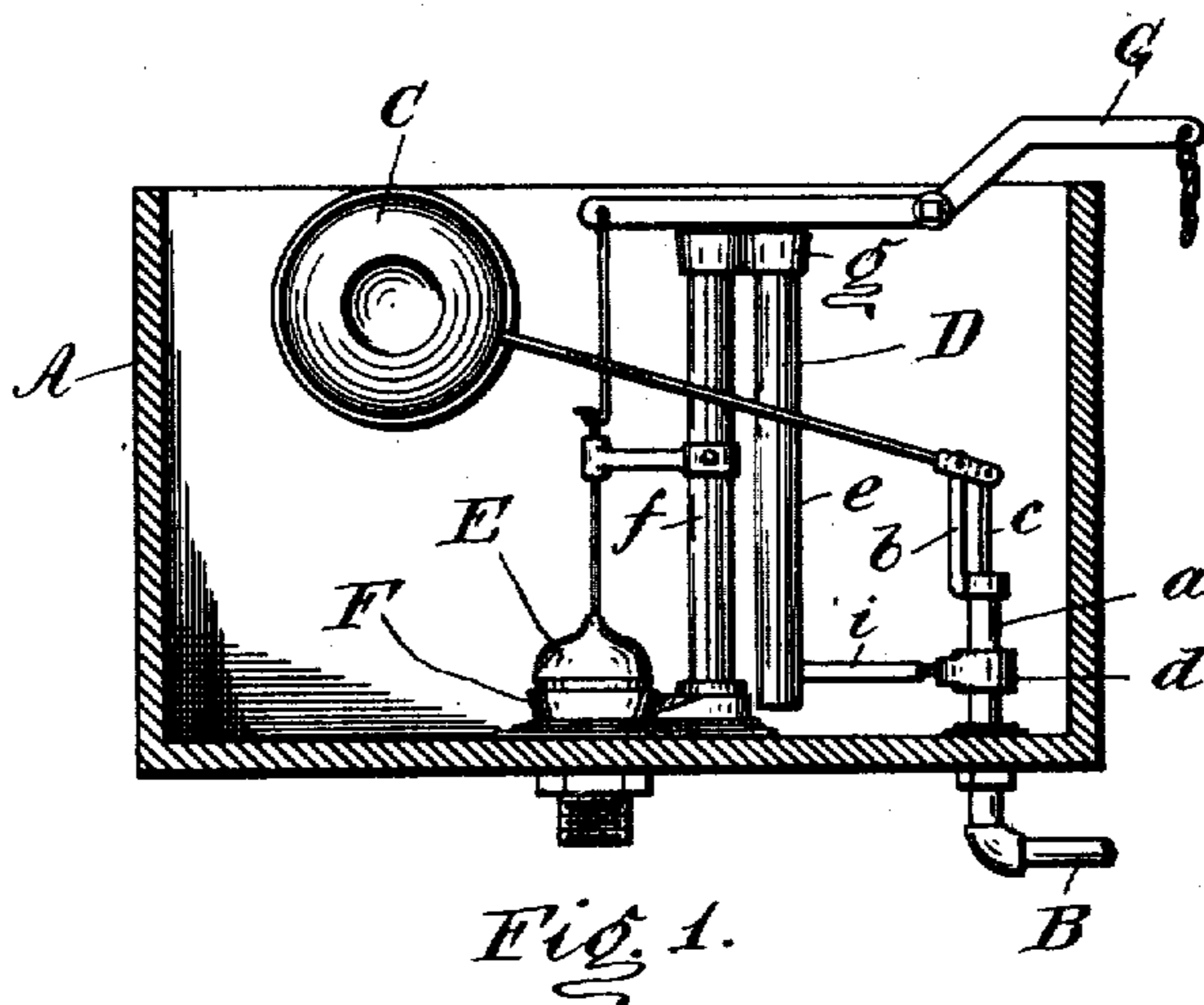
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J. DOUGLAS.

FLUSHING MECHANISM FOR CLOSETS, &c.

(Application filed Dec. 14, 1900.)

(No Model.)



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FLUSHING MECHANISM FOR CLOSETS, &c.

SPECIFICATION forming part of Letters Patent No. 686,890, dated November 19, 1901.

Application filed December 14, 1900. Serial No. 39,823. (No model.)

To all whom it may concern:

Be it known that I, JOHN DOUGLAS, a citizen of the United States, residing in Norwood, county of Hamilton, and State of Ohio, have
5 invented certain new and useful Improvements in Flushing Mechanism for Closets and the Like, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of
10 this specification.

My invention relates to flushing mechanism in connection with tanks for water-closets where the tank is usually elevated over the closet-basin and where when the valve is
15 opened the water is released, acquiring an impetus sufficient to completely flush the basin. Its advantages and purpose will be hereinafter set forth and described.

In the drawings, Figure 1 is a vertical cross-section of the tank, showing the valves and my improved connections, the float being shown in the position it assumes when the tank is filled, or almost so. Fig. 2 is a detail
20 sectional view of the outlet-valve seat and its connection with the overflow-pipe. Fig. 3 is a detail sectional view of the upper end of the overflow-pipe, showing one form of my improvement. Fig. 4 is a top view of same. Fig. 5 is a modification of Fig. 3.

30 Like letters of reference indicate identical parts in the various figures.

A is a tank of any convenient construction located, of course, at a point higher than the pipes or vessel to be flushed, so as to secure
35 the necessary fall of the water. B is the inlet-pipe, provided with an automatic valve, which comprises the vertical cylinder *a*, having the upwardly-extending arm *b*, and *c* is the plunger, adapted to move up and down in the
40 cylinder *a*. These parts being of the well-known construction a further description in detail is unnecessary. The plunger *c* when completely depressed shuts off the inflow of water. Pivotaly secured to both the up-
45 wardly-extending arm *b* and the plunger *c* by means of its connecting-rod is the usual float C. The vertical cylinder *a* is constructed in the usual manner, being provided with ports which permit the water to flow into the chamber formed by the ring *d*. This chamber *d*
50 is provided with several outlets which permit the water to flow into the tank A and also

into the overflow-pipes D, the water which flows into the tank coming through ports in the under surface of the chamber *d*, causing
55 the float C to rise, which by reason of its pivotal connection with the upwardly-extending arm *b* depresses the plunger *c*, and when it has reached its limit of rise it will completely shut off the inflow of water through pipe B
60 and the ports in the standard *a*.

E is a ball-valve resting upon or within its seat or cup F and is attached to the releasing-lever G by the usual links or in any other
65 suitable manner.

The features thus far described are of the usual construction and form no part of my invention, which relates, however, more especially to the construction of the overflow-pipe and its connection with the inlet-valve
70 chamber, as will be more specifically hereinafter pointed out.

As illustrated in Fig. 1, the overflow-pipe D comprises the two members or legs *e* and *f*, both of which are open at their top and preferably united by the cup or coupling *g*. The
75 member or leg *f* at its lower end is secured to the cup-casting F, its orifice being brought adjacent the port *h* in the cup-casting F, which port opens into the outlet-pipe beneath
80 the ball-valve E. The other member or leg *e* of the overflow-pipe D is closed at its bottom, but has a pipe connection *i* with the inlet-chamber *d*. The water entering through inlet-pipe B and filling chamber *d* will a por-
85 tion of it pass through the ports in the under surface of the chamber *d* out into the tank, and the remaining portion passes through the tube or pipe *i* into the member or leg *e* of the overflow-pipe D. The quan-
90 tity of water that passes through pipe *i* is such in proportion to the capacity of the member or leg *e* that the column of water therein rises faster than it does in the tank, so that an overflow into the other member or leg *f*
95 takes place considerably before the tank has been filled. The purpose of having this overflow take place is to refill the basin or bowl after the same has been flushed. By having the connecting-pipe *i* enter at or near the bot-
100 tom of member or leg *e*, any varying or increased pressure in the water-supply, which often occurs in different localities and at different periods, the spurting or rushing effect,

which would occur should the pipe *i* lead to the top of the overflow-pipe or direct into the leg or member *f*, is offset by the column of water in the leg or member *e* above the point of inflow, producing a "head" or pressure on the water flowing in through pipe *i* and breaking its force, so that when the leg or member *e* is full, the jet of water playing in the lower end of the leg *e*, beneath the column of water, will cause a slow and gradual overflow from the leg *e* into the leg or member *f*, and down through the outlet-port, and refill the vessel after its flushing and before the tank is again filled and the inflow of water through pipe *B* is shut off. As soon as the tank has been filled to the predetermined point and the inlet-valve is closed by the float *C*, and thereby shutting off the stream or jet of water through pipe *i*, the column of water in member or leg *e* immediately recedes to the level of the water in the tank, the water passing into the tank through the ports in the under surface of the inlet-valve chamber *d*, and any waste of water is thus entirely prevented. Should anything occur to prevent the inlet-valve from being entirely closed to shut off the inflow of water before the ball-valve *E* should be unseated, the tank is prevented from overflowing by reason of the exit the water may have through the overflow-pipe *D* into the port in the outlet-pipe beneath the ball-valve *E*.

The upper portion of the legs or members of the overflow-pipe *D* is provided with an opening or orifice to permit the water when the pressure is such that the quantity passing into leg or member *e* is greater than need flow down through leg *f* to flow over the top or side walls of the overflow-pipe and into the tank, thus assisting the filling of the tank and preventing a waste of water. This object may be obtained by the overflow-pipe *D* being constructed in various ways, the preferred form being illustrated in the drawings, Fig. 1, in which the overflow-pipe *D* is, as before stated, provided with the cup or coupling *g*, which may either be made integral with said members or the top might be provided with screw-threads and the members *e f* screwed into said cup or coupling. This cup *g* is preferably constructed with a central or dividing ridge or wall *g'*, which is slightly smaller than the side walls of said cup, and thus permits or guides the water before overflowing the side walls to flow over and down through member *f* into the port *h*, emptying beneath the ball-valve *E*. The purpose of permitting a portion of water to pass into the outlet-pipe *D* is to provide the bowl or basin after it has been flushed with a sufficient quantity of water for various reasons—as, for instance, to prevent the inflow or escape of sewer-gases, &c. With the cup or casting *g* open at the top should the pressure increase and too much water flow into the member *e* of the overflow-pipe *D* a portion of it can flow over the side walls thereof and assist in filling the tank,

and thus prevent a waste of water, as would be the case should the upper portion of the overflow-pipe be closed and all the water entering into the member *e* under such circumstances be forced to flow down through member *f*.

Instead of constructing the overflow-pipe as heretofore described it might be made by bending the pipe into **U** shape and inverted, having the bend or elbow uppermost, and providing this elbow with an opening of sufficient size to permit of the escape of the water when the pressure is too great and a larger quantity of water is entering into the leg of the overflow-pipe through its connection with the inlet-valve than is required to merely act as a "refill" and also to permit of the escape of water from the tank should the inlet-valve fail to work and shut off the inflow. This opening in the overflow-pipe should be at a point slightly above the inner circumference or wall of the **U** or elbow, so that the water may first be guided and allowed to flow into the other leg or member to the outlet-port. I do not, however, wish to limit myself to the construction shown; but

What I claim, and desire to secure by Letters Patent, is—

1. In a flushing-tank, the combination with the inlet and outlet valves, of an overflow-pipe comprising two members or legs united together, with an opening at or near the top of said pipe, one leg having direct communication with the inlet-valve and the other leg connected with the outlet-port, substantially as and for the purpose specified.

2. In a flushing-tank, the combination with the inlet and outlet valves, of an overflow-pipe, consisting of two members or legs one leg of which has direct connection with the inlet-valve, and the other leg communicating with the outlet-port, and an opening provided in said pipe in the upper or elbow part thereof at a point slightly above the inner circumference of said elbow or juncture of the adjacent walls of said legs, substantially in the manner and for the purpose specified.

3. In a flushing-tank, the combination with the inlet and outlet valves, of a vertically-arranged two-legged overflow-pipe, one leg of which has direct connection near its bottom with the inlet-valve, and the other communicating with the outlet-port, said overflow-pipe provided at its top with an orifice whose side walls are slightly higher than the wall at the juncture of said legs, substantially in the manner and for the purpose specified.

4. In a flushing-tank, the combination with the inlet and outlet valves, of a vertically-arranged overflow-pipe, one member of which has direct communication with the inlet-valve, the other communicating with the outlet-port, said members having orifices at their top and provided with slightly-flaring walls extending beyond the orifices to form a cup, substantially as shown and for the purpose described.

5. In a flushing-tank, the combination with the inlet and outlet valves, of a vertically-arranged overflow-pipe comprising two members, one of which has direct communication
5 near its bottom with the inlet-valve chamber, and the other communicating with the outlet-port, said members having orifices at their top and surrounded by a cup whose side walls extend slightly beyond the orifices, the cup
10 provided with a wall intermediate the orifices and smaller than the side walls to permit the water to flow from one orifice into the other before overflowing the side walls, substantially as shown and described.

15 6. In a flushing-tank, the combination with

the inlet and outlet valves, of an overflow-pipe comprising two vertical members, the one member having direct connection at its lower end with the inlet-valve and the other communicating with the outlet-port, said 20 members arranged in juxtaposition and coupled at their top, an opening provided in said coupling at a point slightly above the orifices of said members, substantially as and for the purpose specified.

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