

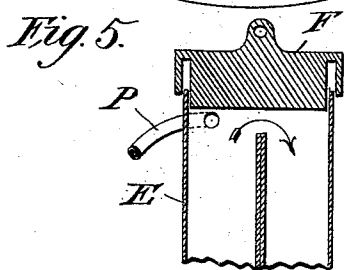
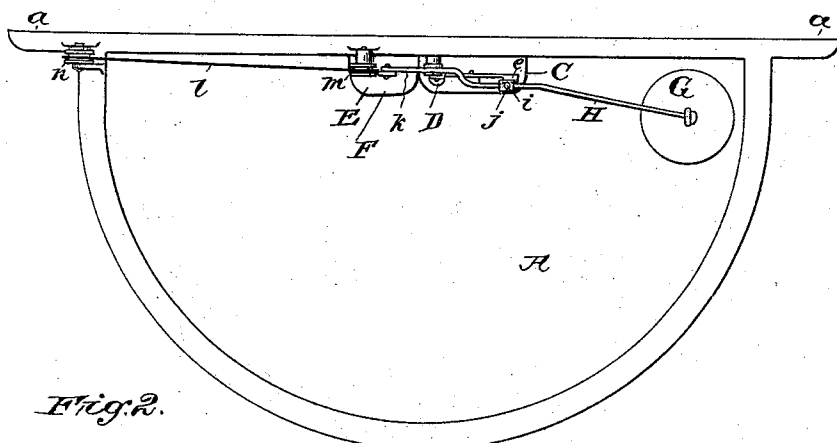
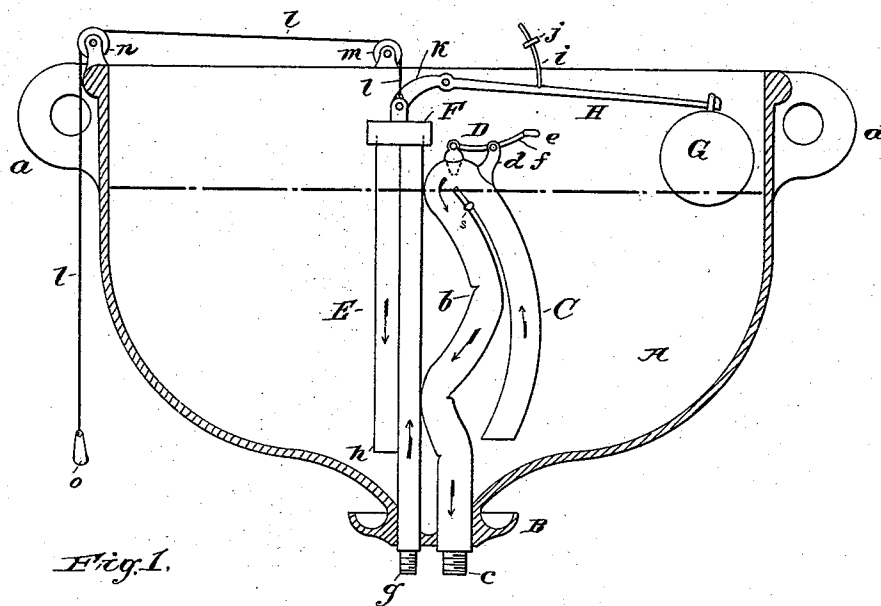
(No Model.)

2 Sheets—Sheet 1.

E. C. STOVER.
FLUSHING TANK.

No. 487,906.

Patented Dec. 13, 1892.



Attest;
L. M. Benjamin.
M. E. Butler.

Inventor,
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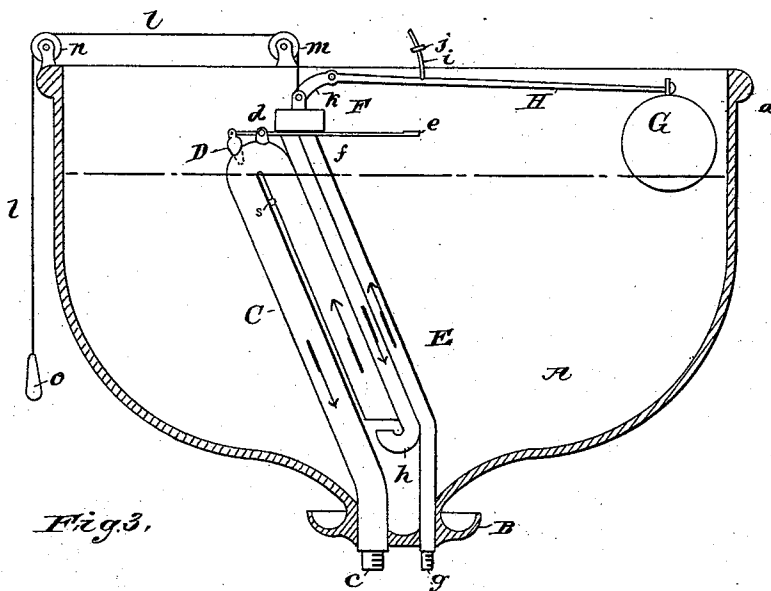


Fig. 3.

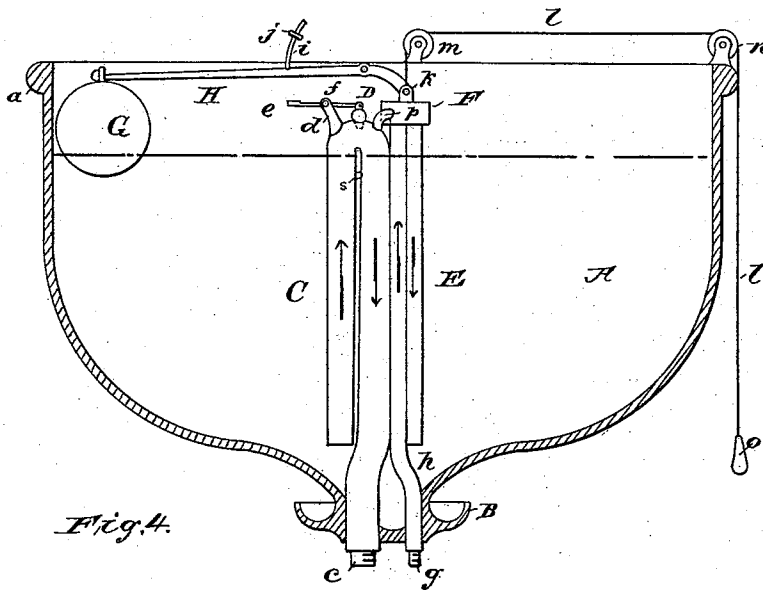


Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD C. STOVER, OF TRENTON, NEW JERSEY.

FLUSHING-TANK.

SPECIFICATION forming part of Letters Patent No. 487,906, dated December 13, 1892.

Application filed June 16, 1891. Serial No. 396,437. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. STOVER, a citizen of the United States, and a resident of the city of Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Flushing-Tanks, of which the following is a specification.

The object of my invention is to provide a flushing-tank provided with pipes, siphons, valves, and other devices as may be necessary to enable the tank to receive and discharge a proper supply of water and so constructed that all the parts which lie below the water-line are made integral with the body of the tank, the whole being a solid piece of earthenware, glass, cement, or similar substance, thus rendering the tank absolutely non-corrosive. This tank is provided with a supply-pipe and a discharge-pipe, both entering the bottom of the tank, which terminates, preferably, in a drip-saucer surrounding the said two pipes where they enter the tank and preferably cast solid with the tank.

In the accompanying drawings, Figure 1 represents the interior of the tank as provided with a form of siphon which I prefer to employ—namely, one in which the siphon is started simply by the rise of the water in the tank. Fig. 2 is a top view of the same. Fig. 3 shows my improved tank as provided with a siphon which is started by an upjet from the supply-pipe. Fig. 4 shows my improved tank supplied with a siphon which is started by means of a down-jet from the supply-pipe. Fig. 5 is a detail view of the supply-valve, showing the same open. In all these forms the supply-pipe and the siphon are made integral with the body of the tank, as before stated.

The same letters indicate similar parts in the different figures.

A is a body of the tank, which is preferably curved toward the front, but with a straight back, as shown in Fig. 2, so that the same may rest flat against the wall of the room, although this flattening of the back is not an essential of the tank, but simply a matter of convenience in supporting the tank. The tank may be supported from the wall by suitable lugs *a* or brackets or other contrivances, as desired, and if the lugs are employed it is preferable to

have them form part of the tank and cast with it, as such construction not only supports the tank better, but enables the tank structure to be stiffened at that point in the casting, thus rendering the tank itself stronger.

As earthenware and glass vessels containing cold water are apt to condense the moisture of the surrounding atmosphere on the outer surface of the vessel, the drip-saucer B is provided near the center of the bottom of the tank, and preferably cast integral therewith, as such construction strengthens the tank at the point where the supply-pipe and the discharge-pipe enter the same; but, if desired, a separate drip-saucer may be employed, the bottom of the tank being simply tapered, so that the products of condensation above referred to will flow into said saucer and be there retained and prevented from following the pipes down to the closet and discoloring the same or discoloring the adjacent wall.

The siphon C is made of earthenware, being a suitably-shaped bent tube cast integral with the body of the tank, preferably forming a part of the back of said tank, as shown in Fig. 2, and the bend or bridge rising slightly above the water-line in the tank. The longer leg of the siphon is connected by a suitable coupling *c* to the bowl of the water-closet or other device to be flushed, and is preferably bent, as shown in Fig. 1 at *b*, where the siphon is designed to start itself, as by reason of said bend the air is more likely to be driven out of the longer leg, or said leg is "primed," as it is termed, by the water rising above the water-line and falling over from the shorter leg of the siphon. Such bend is not necessary when the priming is accomplished by an upward or downward jet, as shown in Figs. 3 and 4. The shorter leg of the siphon is open near the bottom of the tank. The siphon is broken at any desired point automatically by means of the valve D, mounted upon the lug *d* on the top of the siphon and opened by a device carried on the arm of the float, as hereinafter described, striking the stop *e* at the outer end of the lever *f*. Of course as soon as the valve D is opened the rushing of air into the siphon through said valve prevents any further action of said siphon and allows the tank to fill up again. The time of opening the valve may be automatically set, as hereinafter explained, so

that it takes place when the tank is half empty or two-thirds empty or at such other time, as may be found desirable. The supply-pipe E is connected by a suitable coupling *g* with a
 5 suitable source of supply—such as the main pipe from the street—and discharges the water into the tank near the bottom at *h*, the bend of the pipe at the upper part of the tank being closed and controlled by what is known
 10 as a “ball-valve” *f*, so constructed and controlled by means of the ball *G* that when the valve is closed no water can enter the tank through the pipe E, and when the valve is
 15 opened or raised the water coming up in the longer leg of the supply-pipe is turned back from the valve down into the tank through the shorter leg, except in the device in Fig. 4, wherein an added function is attributed to
 20 this valve, as hereinafter described. When the tank is full, the ball-valve *F* is kept closed by reason of the float or ball *G*, to which it is connected by the arm *H*, being supported by
 25 the water under it, the said arm *H* being pivoted at some point between *F* and *G*, as usual. As the water is drawn out of the tank the falling of the float *G* raises the ball-valve *F* and permits the water to again enter the tank through
 30 the supply-pipe E. The arm or lever *H* carries a projecting rod *i*, on which a pin or finger *j* is adjustably mounted in line with the stop *e* at the outer end of the lever *f*, so that
 35 when the ball *G* has fallen to a predetermined point—in other words, when the water in the tank has been exhausted by the siphon *G* to the extent desired—the siphon is broken by
 40 the opening of the valve *D* and the water ceases to flow out through the siphon, while at the same time by reason of the opening of the ball-valve *F* water comes in to supply the
 45 tank through the supply-pipe. The ball-valve *G* is also adapted to be opened independently of the float by means of a chain *l*, which passes over the pulleys *m* and *n*, and is provided with a pull-knob *o*. The connection between the
 50 ball-valve *F* and the lever *H* is made by the toggle-joint *k*, which not only permits the ball-valve to be raised without disturbing the position of the ball *G*, but also enables the
 55 falling of the ball *G* to raise the valve *F* in a straight line, so that it does not bind on the sides of the supply-pipe in which it is set. The rising of the ball *G* when lifted up by
 60 the water in the tank always closes the valve *F*, no matter how the same was opened. When it is desired to flush the closet, the
 65 pull-knob *o* is pulled in the ordinary way, and the valve *F* is thereby raised, thus re-establishing communication between the two legs of the supply-pipe, and the water passing
 through the said supply-pipe into the tank gradually raises the water-line both in the tank and in the siphon *C*, until the longer leg of the siphon is primed, when the flushing at
 once takes place and continues until the water in the tank has been reduced to the predetermined amount, when the siphon is broken,

as before explained. It will thus be seen that the first effect of opening the valve *F* by means of a pull-knob *o* is to tend to overflow the tank instead of to empty it, as is generally the
 70 case in flushing-tanks. In fact were it not for the siphon the tank would undoubtedly overflow, and it will thus be seen that in the arrangement shown in Fig. 1 the longer leg
 75 of the siphon becomes primed, as the result of the attempt of the water entering by means of the supply-pipe, seeking an avenue of escape, situated somewhat below the top of the tank, the entrance of water being no longer
 80 shut out by the ball *G*, which is temporarily rendered inoperative on the valve *F*. The same thing is true of the modifications shown in Figs. 3 and 4. In which cases, also, the
 85 priming of the siphon is quickened and aided by turning the incoming water from the supply-pipe directly into the siphon by means of the pipe, either up into the shorter leg, as
 90 shown in Fig. 3, or down in the longer leg, as shown in Fig. 4. The valve *F*, once opened by means of the pull-knob *o*, which, as before stated, deprives the float or ball *G* of its
 95 control of the valve *F*, remains open until the ball *G*, by falling below the predetermined point and opening the siphon, as before explained, again takes control of the valve *F*
 and shuts it in rising in the manner usual to ball-valves.

Instead of a double-legged supply-pipe made of earthenware and rising to a considerable distance inside the flushing-tank, some
 100 other usual form supplying the tank with water may be adopted, if desired, without departing from that part of my invention, which consists in forming the body of the tank and the siphon in one solid piece; but the tank
 105 will be more nearly an approach to what is known as a “noiseless” tank, if an earthenware supply-pipe of the form shown in the drawings is used to admit the water near the bottom of the tank. An aperture *s* is provided for after flowing the closet or other article to be flushed.

I do not herein claim the structure involving the downward jet of water, as I have made the same the subject-matter of another application now filed.

I claim—

1. A flushing-tank for water-closet bowls and similar articles, which consists of a tank-body and siphon made of one solid piece of
 120 earthenware or similar substance and in which all the parts below the water-line are of non-corrodible material, and in which the valves and other metallic parts are set above the water-line, substantially as shown, and
 125 for the purposes specified.

2. A flushing-tank for water-closet bowls and similar articles, which consists of a tank-body, supply-pipe, and a siphon, all made of one solid piece of earthenware or similar substance and in which all the parts below the
 130 water-line are of non-corrodible material, and

in which the valves and other metallic parts are set above the water-line, substantially as shown, and for the purposes specified.

3. A flushing-tank provided with a suitable supply-pipe, which is cut off by the filling of the tank in the usual manner, a supply-valve which opens and closes said supply-pipe, a pull-cord by which the supply-valve is mechanically forced up and the supply-pipe opened against the action of the float after the tank is filled, a suitable siphon connected with the flushing-pipe, and a valve engaged by the float-arm, whereby the siphon is broken when the water allows the float to drop to a predetermined level, substantially as shown and described.

4. A flushing-tank provided with a suitable supply-pipe, which is cut off by the filling of the tank in the usual manner, a supply-valve which opens and closes said supply-pipe, a pull-cord by which the supply-valve is mechanically forced up and the supply-pipe opened against the action of the float after

the tank is filled, a suitable siphon connected with the flushing-pipe, and a valve engaged by the float-arm, whereby the siphon is broken when the water allows the float to drop to a predetermined level, and with an upwardly-projecting pipe which sends an upward jet of water into the shorter leg of the siphon from the supply-pipe, substantially as shown and described.

5. A flushing-tank for water-closet bowls, which consists of a tank-body, a siphoned flushing-pipe, a supply-pipe, and a drip-saucer for receiving and holding the products of atmospheric condensation on the outside of the tank, all formed in one solid piece of earthenware and provided with suitable devices for supplying the tank and flushing the bowl, substantially as shown and described.

EDWARD C. STOVER.

Witnesses:

DANIEL H. FREAS,
E. W. TAYLOR.