(No Model.)

A. LONG.

APPARATUS FOR REGULATING WATER SUPPLY TO CLOSETS, URINALS, &c.

No. 570,487. Patented Nov. 3, 1896.

FIG. 1.

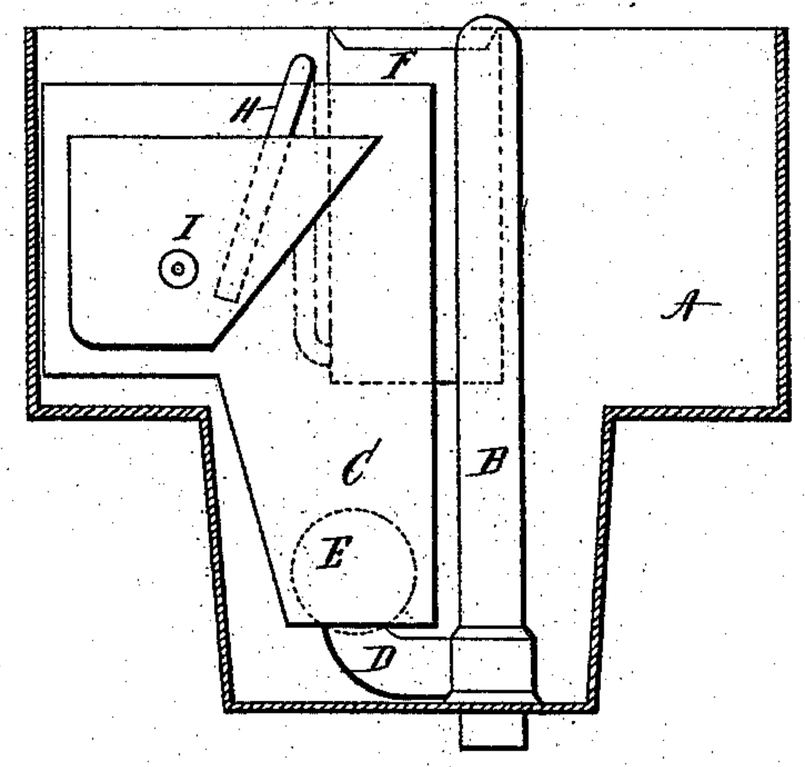


FIG. 2.

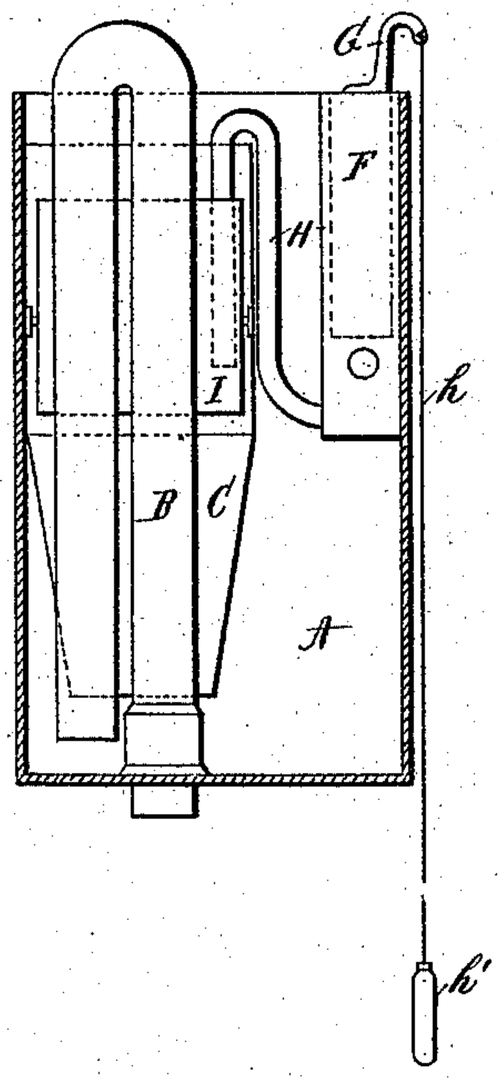
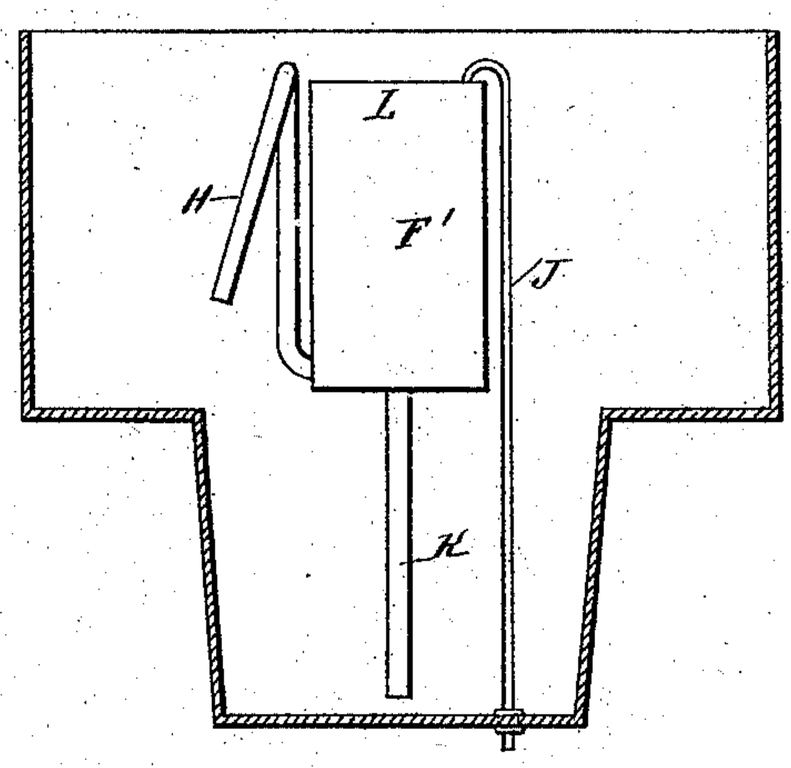


FIG. 3.



WITNESSES:

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALFRED LONG, OF LONDON, ENGLAND.

APPARATUS FOR REGULATING WATER SUPPLY TO CLOSETS, URINALS, &c.

SPECIFICATION forming part of Letters Patent No. 570,487, dated November 3, 1896.

Application filed November 2, 1895. Serial No. 567,741. (No model.) Patented in England January 13, 1895, No. 2,209.

To all whom it may concern:

Be it known that I, ALFRED LONG, a citizen of Great Britain, and a resident of 22 Aylesbury street, Walworth, London, in the county of Surrey, England, have invented certain new and useful improvements in means or apparatus for the detention, regulation, and controlling of the supply of water to closets, urinals, and drains for flushing the same, (for which I have obtained a patent in Great Britain, No. 2,209, dated January 13, 1895,) of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to flushing-tanks for use in water-closets and similar places; and the object thereof is to provide means for the detention of the water in the flushing-tank and the consequent postponement of the flushing operation for the space of a quarter of a minute, more or less, after the action of the apparatus has been started, thus allowing ample time for the occupant of a closet or other place of convenience to retire unobserved before the flushing operation takes place or any appreciable noise is produced.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a partial sectional side elevation of my improved apparatus; Fig. 2, a similar view at right angles to Fig. 1; and Fig. 3, a view similar to that of Fig. 1, with a portion of the apparatus removed.

In carrying my invention into effect I employ the well-known form of flush-tank A, a ball-valve E, a tipping reservoir I, a displacer receptacle F, and a cistern in which the same is located, a flushing-siphon, as B, provided with a side inlet such as is now in frequent use, and I inclose the aperture of the said side inlet within the inner cistern or compartment C, the size of the lower portion of which is preferably about three inches square, and the same being gradually enlarged up to the height of about five inches, at which point it is about four and one-half inches square, and is again enlarged on one of its sides to eight inches or thereabout, and its depth in the deepest part is about eleven inches. The side inlet of the flushing-siphon is designated by D and communicates with this compartment C, so that no water can enter from the flush-tank except through a small siphon C, which will be hereinafter described.

In the upper or enlarged portion of this cistern I place the tipping reservoir I or flush-starting receptacle, which is mounted on pivots in the usual way, and in the lower or smaller part I employ a light ball of about twice the diameter of the aperture of the side inlet, which ball is capable of easily floating in water, for which purpose it is preferably made hollow and of india-rubber, and the said ball acts as a valve when in use.

In a convenient place in the flush-tank I employ another small cistern or compartment F, about three and one-half inches in width and about seven inches deep, and provided with a hole or tube in the lower part of about three-eighths of an inch in diameter, and this cistern is attached to the inside of the flush-tank in such position that the top of it is about two inches above the surface of the water in the latter when ready for discharging. Near the bottom of this cistern I insert one end of the small siphon H, which is about three-eighths of an inch in internal diameter, and the top of this siphon is about one and one-half inches above the point to which the water rises in the flush-tank, and the other end terminates in the tipping reservoir, near the bottom thereof, in such a position as not to hinder its freedom of action. In this small cistern or compartment I employ a light water-displacer or float F′, about five inches in depth and only as much smaller than the cistern itself as will leave it perfectly free to rise or fall by the action of the water or when pulled downward by means of a cord or other appliance which is connected therewith by means of an arm G, and which depends outside of the flush-tank, as clearly shown in Fig. 2 at *h*, and to this I attach a handle *h′*, said cord or handle being sufficiently light to be easily supported by the float when the cistern is charged in the ordinary way.

In another form of construction I employ, instead of the displacer hereinbefore described, for the purpose of forcing the water through the small siphon, compressed air in the following manner: I construct the top of

the smaller cistern in such a manner as to be air-tight, all but a small pin-hole, (shown at L, Fig. 3,) and not more than an inch above the water-line in the flush-tank, and near to or in the top of this compartment I insert the end of a tube J, also shown in said figure, about one-eighth of an inch in internal diameter, which terminates at the other end in a compressible air-tight ball of india-rubber, which is not shown, but which is used for compressing the air within the cistern or chamber aforesaid, and instead of the hole in the bottom of the chamber I sometimes employ a tube of about the same size as a small siphon, as shown at K, and extending to within one-half of an inch of the bottom of the flush-tank.

The action of the apparatus is substantially as follows: The flush-tank A having been charged with water by the ordinary means through the ball-valve, the water will then stand at the same level in the small displacer-cistern F, and the displacer and the arm G will be in the highest attainable position, when, the cord and handle being pulled downward, the float in the small cistern will be lowered, the water-level therein will be raised, so as to pass through the bend of the small siphon H, the action of which will thus be started and the tipping reservoir will commence filling; or, when the compressible ball, hereinbefore described as connected with the rod J, is operated so as to compress the water in the said chamber, the water will be forced through the bend of the small siphon, and the action of the apparatus will thus be started, as above described, but without any perceptible noise. Of the two methods of starting the action of the apparatus, I prefer that of the compressed air, as it more nearly approaches absolute silence.

Immediately after starting the action the person may leave the closet and all will remain quiet for a space of a quarter of a minute, more or less, after which the tipping reservoir I will become sufficiently charged with water to be overturned, and the water therefrom will instantly dislodge and raise the ball E from its seat, and the greater portion of it will pass into the large siphon B through the side inlet D, and the ball E will again descend with the remainder of the water and at the right moment close the aperture, and the complete flushing action will thus be started.

I employ the floating ball E in preference to "the float or other shaped valve," and I also use the compressible ball, or the displacer and cistern with the small metal siphon, in preference to a "flexible siphon," as I have found them to be more effectual in operation and in every way more suitable for the purpose intended.

My invention is not limited to the exact form, construction, and arrangement of parts shown and described, and I therefore reserve the right to make all such alterations therein and modifications thereof as fairly come within the scope of the invention.

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

1. The combination with a flushing-tank of an apparatus for controlling the flow of water therethrough for the purposes set forth, consisting of an inner cistern or tank; a tipping reservoir within said inner cistern; a water-displacer in the main tank outside of the inner tank, a siphon connecting the tipping reservoir and the water-displacer; and pipes and valve constructed and arranged, substantially as herein shown and described.

2. In a flushing apparatus, the combination of a main flushing-tank, a cistern or receptacle placed therein, a main flushing-siphon which communicates with said cistern or receptacle, a tilting cistern or receptacle placed within the cistern with which the flushing-siphon communicates, a ball-float for controlling the communication between said cistern and the flushing-siphon, and a cistern also placed within the main flushing-tank, and provided with a smaller siphon which communicates therewith near the bottom thereof, and with a tilting cistern or receptacle, and means connected with said last-named tank or receptacle for operating the same, substantially as shown and described.

3. In a flushing apparatus, the combination with a main flushing-tank, a cistern or receptacle placed therein, a main flushing-siphon which communicates with said cistern or receptacle, a tilting cistern or receptacle placed within the cistern with which the flushing-siphon communicates, a ball-float for controlling the communication between said cistern and the flushing-siphon, and a cistern also placed within the main flushing-tank, and provided with a smaller siphon which communicates therewith near the bottom thereof, and with a tilting cistern or receptacle, and means connected with said last-named tank or receptacle for operating the same, consisting of a displacer located therein, and a depending cord or other device connected therewith, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 30th day of September, 1895.

ALFRED LONG.

Witnesses:
GEORGE MILLSON,
JOHN SARGENT.