

(No Model.)

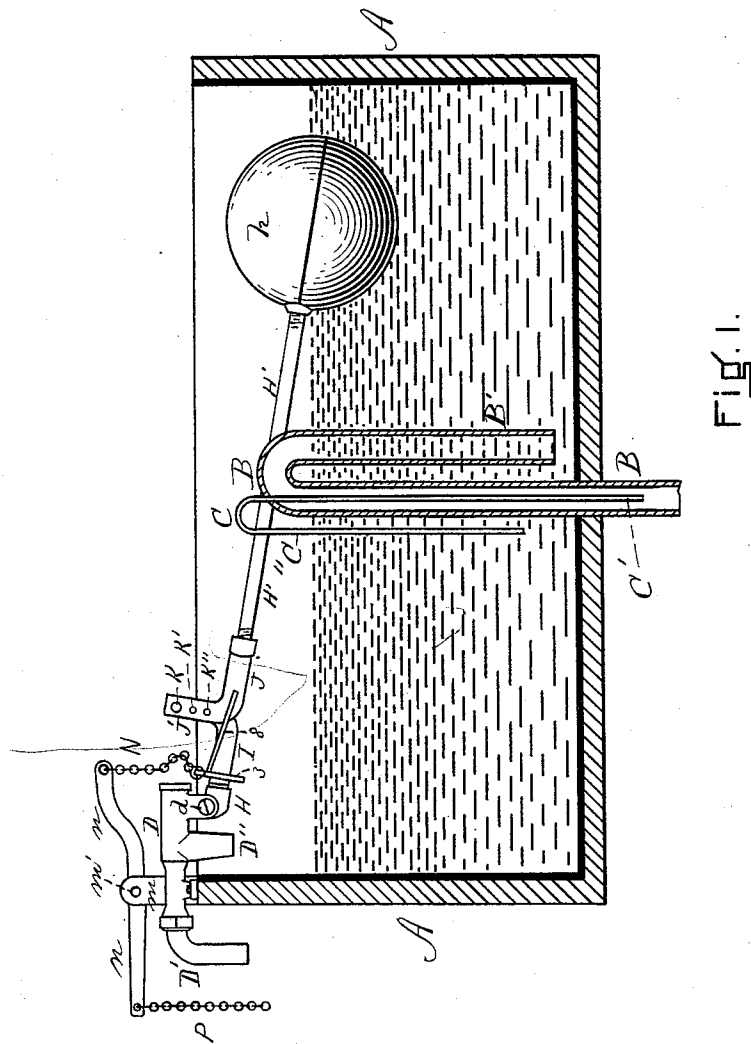
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J. L. S. CONNOLLY.

WATER SUPPLYING APPARATUS FOR WATER CLOSETS.

No. 541,072.

Patented June 18, 1895.



WITNESSES.

E. A. Woodbury.
A. K. Bouché.

INVENTOR -

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John L. S. Connolly,
By his Atty
Henry Williams.

(No Model.)

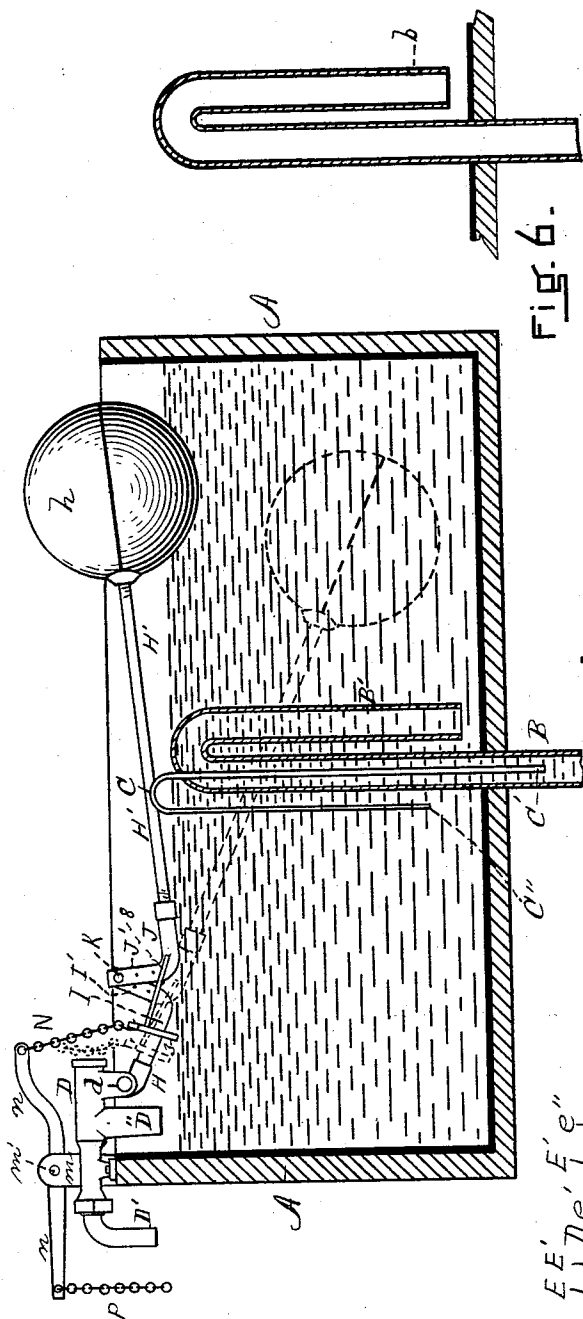
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J. L. S. CONNOLLY.

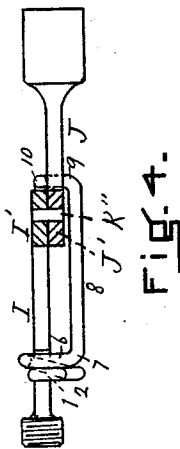
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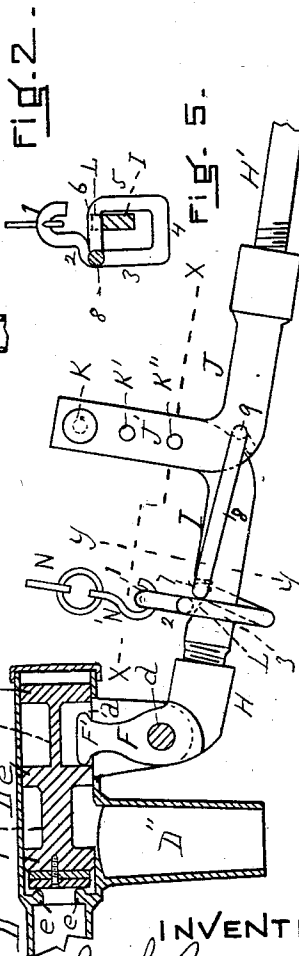
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UNITED STATES PATENT OFFICE.

JOHN L. S. CONNOLLY, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO PATRICK J. MOONEY, OF SAME PLACE.

WATER-SUPPLYING APPARATUS FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 541,072, dated June 18, 1895.

Application filed September 24, 1894. Serial No. 523,862. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. S. CONNOLLY, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Water-Supplying Apparatus for Water-Closets, of which the following is a specification.

This invention relates to the supply tank and the apparatus contained in and connected therewith, whereby water is supplied to the tank and from it to the water-closet, by means of a siphon; and it consists in the novel construction and arrangement of parts herein-
after described and illustrated in the accom-
panying drawings, in which—

Figure 1 is a longitudinal vertical section of my device in its normal condition. Fig. 2 is a similar view showing the valve open and the water just beginning to flow down through the siphon to the water-closet. Broken lines in said figure show the position of the apparatus when the water has been emptied to its lowest point. Fig. 3 is an enlarged view, partly in elevation and partly in longitudinal vertical section, showing the valve and a portion of the operating-lever in its normal position. Fig. 4 is a plan view and section on line *x*, Fig. 3. Fig. 5 is a section taken on line *y*, Fig. 3, looking toward the left. Fig. 6 is a vertical section showing a modification of the siphon.

Similar letters and figures of reference indicate corresponding parts.

35 A represents the supply tank.

B is a siphon, one branch of which extends down to and supplies the water-closet, while the shorter branch B' extends down to a point which is a short distance above the bottom of the tank A. This siphon is in diameter greater than the supply pipe through which water is supplied to the tank. An auxiliary siphon C is provided, the longer arm C' of which is secured in the longer arm of the siphon B, as shown, and extends down through it to a point below the bottom of the tank. The shorter arm C'' of this auxiliary siphon extends down on the outside of the siphon B to a point somewhat above the lower end of the shorter arm B' of the siphon B. The diameter of the auxiliary siphon C, is very
50 much less than that of the main siphon B.

D is a casing or shell into which water is supplied from the street main through the supply pipe D', and from which it is supplied to the tank through the nozzle D''. The casing or shell D is provided with a valve E which is held normally upon its seat *e*. The stem E' of this valve is provided with disks *e' e''* which serve not only as guiding disks, but also are the means of engagement with the actuating lever, as below described, whereby the water is let on and shut off. This casing is secured to the tank in any suitable manner, and hinged to it at *d* is an actuating elbow lever, the shorter arm F of which has a head F' which extends up through an opening *b'* in the lower side of the shell or casing D, between the disks *e' e''*. The long arm of this lever consists of the parts H and H', to the lower end of the latter of which is secured the ball or float *h*. These parts H H' are connected by a pair of elbows I I', J J'. The arm I of the elbow I I' is secured rigidly to the outer end of the part H, and the arm J of the elbow J J' is secured rigidly to the inner end of the portion H'. The nearly vertical arms I' and J' of the elbows are pivotally secured together at K; K' and K'' being additional points at either of which said arms may be pivoted, if desired, in place of the point K. The portions H H' of the long arm of the elbow-lever and the parts I J of the elbows are kept rigidly in line, so that they all constitute normally a single arm of an elbow-lever of which F is the short arm, by means of a wire bent into substantially the shape shown in Figs. 3, 4 and 5. This wire consists of a hook 1 bent outward at 2 and extending down at 3 in front of and to a point below the part I, at 4 passing beneath it and at 5 up on the rear side thereof, and extending at 6 horizontally through a notch, shown by broken lines L in Figs. 3 and 5. At 7 the wire is bent rearward and extends at 8 along in front of the part I and is bent horizontally through a corresponding opening in the part J at 9, and thence is bent downward at 10 at the rear of said part J, next the rear end of the part I, forming a stop for such part at that point. The pressure of the water against the valve E causes the disk E' to press the head F' of the short arm F of the float-lever with sufficient force to partially submerge the float *h*, as shown in Fig. 1, and

also cause the right hand end of the notch L (which is vertical at that portion) to press hard against the portion 6 of the wire, thus keeping it firmly in place in the notch, and as said wire extends across the joint between the elbows I J, holding the parts H I J H' in line and constituting of them a rigid, straight float-arm.

Pivoted at *m'* to a bracket or standard *m* supported by the tank, is a lever *n*, one end of which is provided with a pull-chain P and the other end of which is connected by a chain N with a suitable hook N' (Fig. 3) which engages the hooked end 1 of the wire above described.

The operation is as follows: When it is desired to flush the water-closet, the chain P is pulled with the effect of lifting the chain N and raising the portion 6 of the wire out of the notch L. This immediately relieves the float-arm so that it "breaks" at the joint between the parts I J and allows the float to rise to the surface, as shown in Fig. 2, the wire slipping from the position shown in Fig. 1 into the position shown in Fig. 2. This operation of course relieves the portion H of the elbow-lever, and the pressure of the water against the valve E forces back the short arm F of the lever and allows the water to pass through the nozzle D'' into the tank. The water instantly rises from the position shown in Fig. 1 to that shown in Fig. 2, when the siphon B B' being full immediately begins to operate and, as it is larger in diameter than the inlet D', it quickly empties the tank of water to the level of the lower end of its short arm B', bringing the float and float-lever into the position shown in broken lines in Fig. 2. The tank is then filled again by the inflow of the water through the nozzle D'', and the wire drops again into the notch as the lever and float rise, until the position shown in Fig. 1 is reached, where the float-arm is again rigid and the sustaining power of the float holds the valve closed, and the pressure of said float and valve hold the wire firmly in the notch and prevent the float-arm from breaking until the pull-chain P is again operated.

The auxiliary siphon C, whose long arm extends down into the arm B of the main siphon to a point below the lower end of the arm B' and whose short arm extends to a point above the lower end of the arm B', is for the purpose of preventing the intermittent working of the siphon, by cutting off or supplying air to said siphon and thus cutting it off after it has worked once in the manner above described. While this is the main purpose of the auxiliary siphon, it is also useful in acting as a trap to prevent the rise and escape of foul air.

In this apparatus, the effect is to cause the water at the beginning of the operation to start slowly, then go out with a rush and then ease up a little at the end of the outflow, the operation as a whole however being very rapid. There being no valves in the tank,

leakage is practically impossible, while in case of water leaking into the tank the siphon will act as an overflow.

In the modification shown in Fig. 6 there is no auxiliary siphon, but the main siphon is provided with an air hole *b* whose object is to break the siphon in the same manner as accomplished by the auxiliary siphon above described. The auxiliary siphon however is preferred as its operation is more perfect, the only advantage of the modification shown in Fig. 6 being its cheapness.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a water supplying apparatus for water-closets, a supply pipe for the tank provided with a shut-off valve, a jointed lever connecting said valve with the float, a locking device extending across the joint and normally holding said lever rigid and in line, and a releasing mechanism whereby the locking device may be drawn out of engagement with the lever and cause it to break at the joint, substantially as set forth.

2. In a water supplying apparatus for water-closets, the shut-off valve E E', the elbow lever F H engaging with said valve, the float-arm H' provided with a float or ball, the elbows I I' J J' having their parts I J rigidly secured respectively to the elbow lever and float-arm, and their parts I' J' pivotally secured together, and a locking wire extending from the arm H' to the elbow lever and caught upon the latter and held in engagement by the pressure of the water under the float and against the shut-off valve, and a mechanism for releasing said wire and thereby allowing the parts I' J' to swing on their pivotal connection, substantially as described.

3. The combination with the portions I J of the elbows I I' J J', said elbows being pivoted at their upper ends at K and having their lower and outer ends rigidly connected respectively with the elbow lever H and float arm H', said portion I being suitably notched on its upper side; of the wire 1 to 10 inclusive and consisting of the hook portion 1 engaged by the pull chain, the portions 2, 3, 4 and 5 extending down in front of, beneath and up on the rear side of the portion I of the elbow I I', the portion 6 bent to extend horizontally through said notch, the portions 7, 8 and 9 extending rearward along in front of the portion I across the joint and horizontally through an opening in the portion J in the elbow J J', and the portion 10 bent downward at the rear of the part J next the rear end of the portion I forming a stop for the latter at that point, whereby the two portions I J of the elbows are held normally rigid and in line, substantially as set forth.

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Witnesses:

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E. A. WOODBURY.