

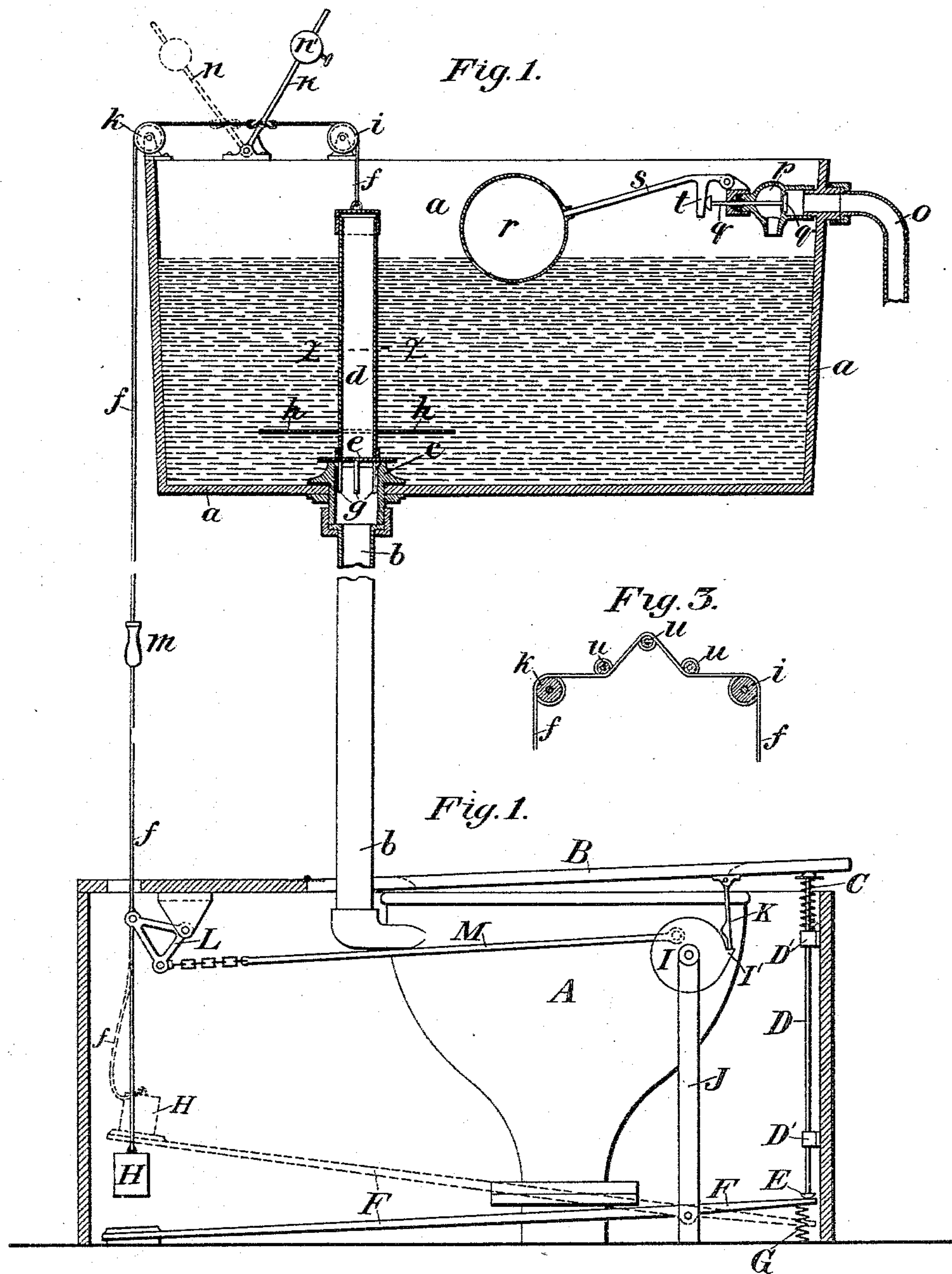
(No Model.)

J. J. RICKETTS.

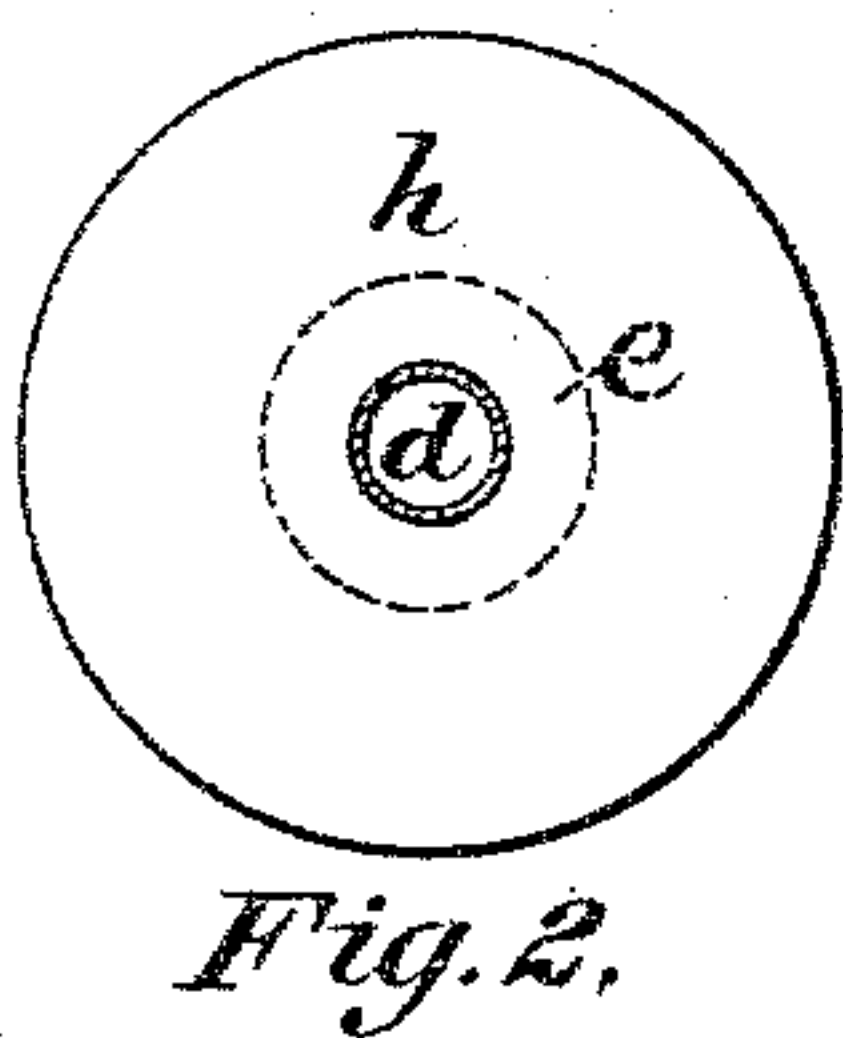
FLUSHING TANK.

No. 356,894.

Patented Feb. 1, 1887.



Witnesses.
A. L. Gill
W. B. Corwin



Inventor.
James S. Ricketts
by his attys
Bakewell & Kent

UNITED STATES PATENT OFFICE.

JAMES J. RICKETTS, OF PITTSBURG, PENNSYLVANIA.

FLUSHING-TANK.

SPECIFICATION forming part of Letters Patent No. 356,894, dated February 1, 1887.

Application filed March 1, 1886. Serial No. 193,550. (No model.)

To all whom it may concern:

Be it known that I, JAMES J. RICKETTS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Flushing-Tanks; and I do hereby declare the following to be a full, clear, and exact description thereof.

A difficulty heretofore experienced in the use of flushing-tanks for water-closets has been that the valve closed too quickly when released, so that the quantity of water discharged into the basin was insufficient for the proper flushing of the closet.

The object of my invention is to overcome this difficulty and to discharge the desired quantity of water whenever the flushing-valve is raised.

To enable others skilled in the art to make and use my improvement, I will now describe it by reference to the accompanying drawings, in which—

Figure 1 is a sectional view of the flushing-tank and its appliances. Fig. 2 is a sectional view of the valve-stem on the line *x x* of Fig. 1. Fig. 3 is a modification.

Like letters of reference indicate like parts.

The tank *a* is of any desired construction, and is provided with a discharge-pipe, *b*, which leads down to the bowl of the water-closet in the usual way. Surrounding the mouth of the pipe *b* is a tubular valve-seat, *c*. A valve-stem, *d*, carrying a valve, *e*, is suspended above the seat *c* by means of a chain or cord, *f*, and at the lower end of the valve-stem *d* are guides *g*, which extend within the valve-seat *c*. Fastened to the valve-stem *d* a short distance above the valve *e* is a broad disk, *h*, made of sheet metal. The chain *f* extends over sheaves *i k* to the side of the tank *a*, and thence downward to the seat of the closet, where it is provided with a pull or handle, *m*. Pivoted to the top of the tank *a* is an arm, *n*, having an adjustable weight, *n'*, thereon. The chain *f* is fastened to the rod *n* above its pivotal point, so that when the valve *e* is closed the rod *n* shall stand in a vertical position, and when the valve is opened or raised it shall assume an inclined position, as indicated by the dotted lines in Fig. 1. The tank is provided with a water-supply pipe, *o*, and a valve-chamber, *p*, having a valve, *q*, which closes against its

seat by the pressure of the water. The tank is also provided with a float, *r*, mounted on a pivoted lever, *s*, which lever is provided with a projection, *t*, so arranged as to come in contact with the outer end of the valve-stem *q* and to open the valve when the float *r* falls in the tank, and thereby admit the water from the pipe *o*. As the tank fills up the float *r* rises and permits the valve *q* to come to its seat and close the supply-pipe.

Thus constructed, the operation of my improvement is as follows: When the handle *m* is pulled, the weight *n'* falls, the valve *e* is raised, and the water which is contained in the tank rushes out through the discharge-pipe *b*. The valve is so supported by the weight *n'* that it will not descend of its own weight, but will remain in its elevated position until the exhaustion of the air in the pipe *b* caused by the fall of the water therethrough produces a downward pressure on and a strong downward current around the disk *h*, which overcomes the power of the weight *n'* and draws the rod *n* to a vertical position and seats the valve *e*. This takes place after the water in the tank has fallen a sufficient distance to uncover or partially uncover the disk *h*, and the quantity of water thus discharged can be definitely determined, so that the discharge of a definite and sufficient amount of water to flush the basin can be insured. The fall of the water in the tank causes the descent of the float *r*, which in turn causes the projection *t* to unseat or open the valve *q*, and thereby admit a fresh supply of water from the pipe *o* to the tank. As the water rises in the tank the float rises also until the valve *q* is relieved of the projection *t*, and is forced to its seat by the pressure of the water in the pipe *o*, and the supply cut off.

In Fig. 3 I show a modified arrangement for retarding the fall of the valve *e*. Here, instead of counterweighting the valve *e*, I put a friction on the chain or cord *f* by passing it over pins *u*, arranged between the guide-sheaves *i k*; or equivalent friction devices may be employed. These friction appliances are the equivalents of the counter-weight *n'*, and are included in the term "counterweighted" as used in the claims. The object of these provisions is to retard the descent of the valve,

and the object of the disk *h* is to make use of the suction of the discharge to overcome the retarding force and seat the valve at the proper time.

5 I make no claim to the supply devices. The pull end of the chain *f* may be fastened to the discharge-lever of the water-closet and be operated thereby, if desired.

I have illustrated an arrangement in Fig. 1 which consists in a device for automatically flushing the basin after the water-closet has been used, and in addition thereto for automatically washing or moistening the basin when the user seats himself upon the closet. The latter feature is desirable for the reason that the formation of a thin water-film upon the sides of the basin before it is used prevents it from being soiled and becoming filthy, as often happens to neglected closets.

20 In Fig. 1, A is the basin of the closet. B is the usual hinged seat, which is normally kept a little elevated by a spring, C, which bears on the under side thereof. D is a vertical rod, which is guided by suitable brackets, D', and near its base has a collar, E, which bears upon the end of a pivoted lever, F. A spring, G, bearing on the short arm of the lever F or rod D, tends to raise them. The cord *f*, instead of terminating at the pull-handle *m*, extends down 30 into the closet-box, and has suspended to its end a weight, H, which bears upon the long arm of the lever F when raised, the short arm of the lever being the one next the rod D. The gravity of the weight H is such as to be a little less than the weight of the valve-stem *d* plus the hydrostatic pressure on the disk *h* and the valve *e*, so that normally the valve will remain seated.

The operation is as follows: The drawings 10 show the apparatus as it is when the closet is not in use in full lines, and the dotted lines show it as it is when a person is seated thereon.

When a person sits upon the seat B and depresses it on its hinges, it will push the rod D down and will raise the long arm of the lever F, and this in turn will raise the weight H and will slacken the cord *f*. The proportions of the long and short arms of the lever F are preferably such that a small depression of the short arm will raise the weight H a considerable distance. As soon as the user rises from the seat the long arm of the lever F will fall, and the weight H, being released, will drop, and in its descent will gain such momentum 15 as to overcome the inertia of the valve and its disk *h* and to raise the valve from its seat, at the same time pulling the counterweighted lever *n* away from the perpendicular. This flushes the basin just as before described.

20 After the weight H has fallen it will be gradually raised and the valve closed by the pressure of the water-exhaust on the disk *h*, but not until the basin has been well flushed. In practice it will be found easy to adjust the weight H, so that, while it may not normally

be able to unseat the valve, its sudden fall and the impetus derived therefrom may do so. After the seat B has been freed from pressure the parts are restored to their ordinary positions by the several springs, which may be replaced by suitable gravity devices. 70

The preliminary washing or moistening of the tank is accomplished by the following mechanism: A disk or bell-crank lever, I, is pivoted to a supporting-post, *j*, under the closet-seat, and has a lip or ledge, I', projecting from its periphery, on which ledge rests the end of the tongue or tappet K, which depends from the seat. At the rear of the closet-box is a bell-crank lever, L, one arm of which is connected 80 with the valve-cord *f*, and the other arm is attached to a chain or cord, M, which connects the lever L with the lever I. When a person first sits down upon the seat B, the descent of the tongue K upon the ledge I' will partially turn the lever I, and through the rod M and lever L will pull upon the cord *f* and will unseat the valve *e*, so as to permit the descent of some water into the basin from the tank *a*. After the seat B has descended a small distance, the tongue K will slip from the ledge I', allowing the lever I to return, and, the cord *f* being then released from tension, the valve will be resealed by pressure of the water on the disk *h*. The preliminary wash or flow of water therefore continues during a short time only, but is sufficient to secure the advantages above indicated. When the seat B is relieved from pressure, the tappet K will rise and re-adjust itself on the ledge I'. 100

Although I have shown and described the disk *h* as the means of closing the valve by the force of the suction, I do not desire to limit myself to its shape or form, as other of the known equivalents may be employed. 105

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

1. In combination with the flushing-tank of a water-closet, a discharge-valve and a yielding retracting device tending to hold the valve 110 unseated, but insufficient to resist the suction force tending to close the valve, substantially as and for the purposes described.

2. In combination with the flushing-tank of a water-closet, a discharge-valve and its operating mechanism and a balanced counterweight tending to retain the valve unseated when the weight is unbalanced, but insufficient to resist the suction force of the discharge on the valve, substantially as and for the purposes described. 120

3. In combination with the flushing-tank of a water-closet, a yielding retracting device tending to keep the valve open, but insufficient to resist the suction force tending to keep the valve closed, and a tripping device, substantially as described, connected with the seat, for the purpose of tripping the valve when pressure is applied to the seat, as and for the purposes specified. 130

4. In combination with the flushing-tank of
a water-closet, a valve normally unseated and
adapted to be drawn to its seat by the suction
of the outflowing water, and a yielding retract-
5 ing device connected to said valve tending to
hold the same unseated, but being insufficient
to resist the suction, substantially as and for
the purposes described.

In testimony whereof I have hereunto set my
hand this 23d day of January, A. D. 1886.

JAMES J. RICKETTS.

Witnesses:

W. B. CORWIN,

THOMAS W. BAKEWELL.