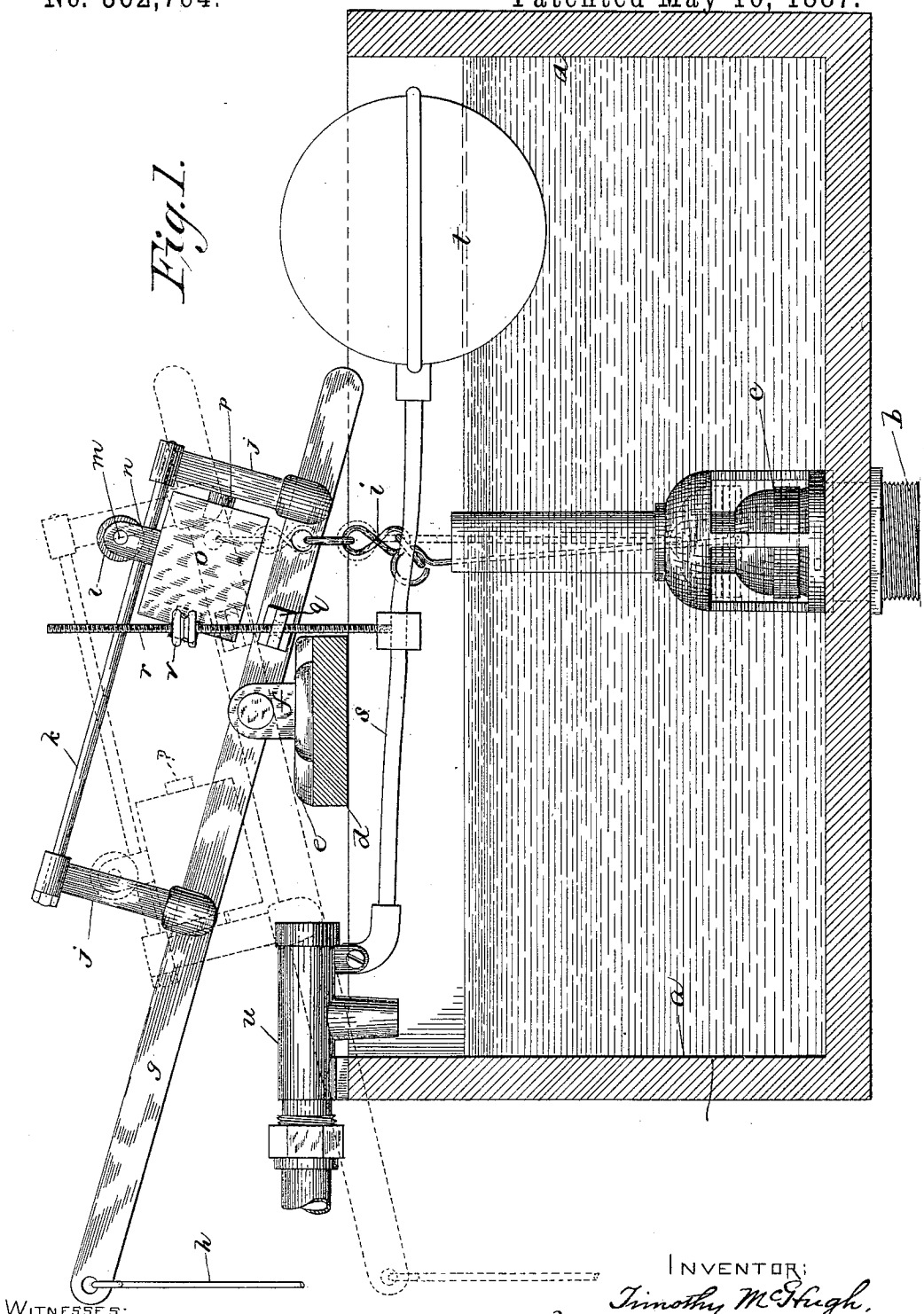
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T. McHUGH.

DEVICE FOR CONTROLLING THE OPERATION OF VALVES IN TANKS.

No. 362,764. Patented May 10, 1887.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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DEVICE FOR CONTROLLING THE OPERATION OF VALVES IN TANKS.

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Fig. 2

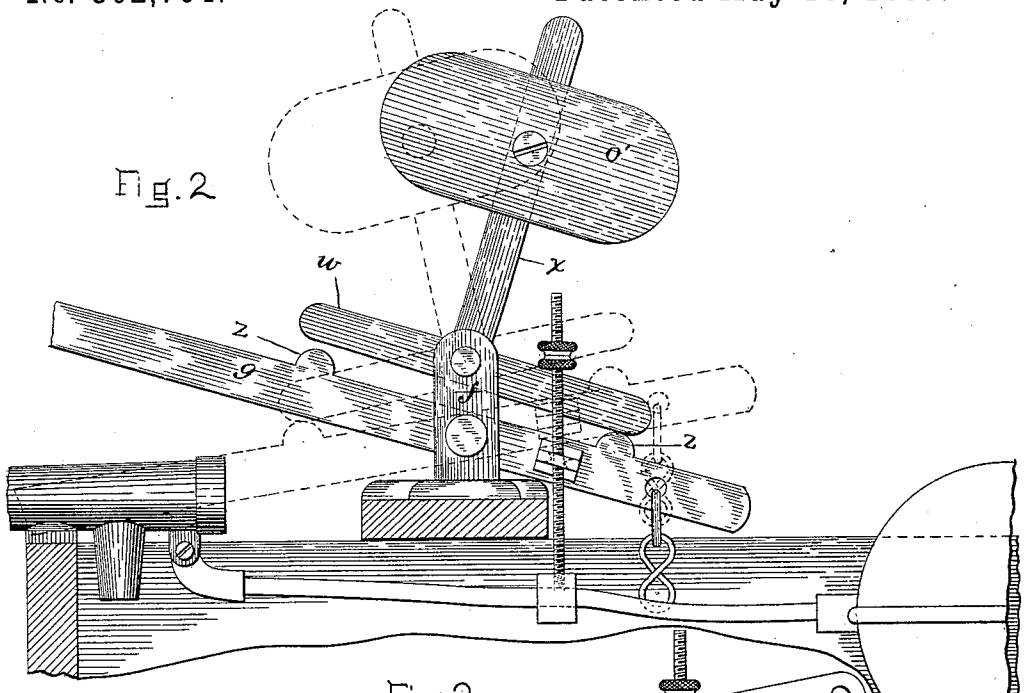
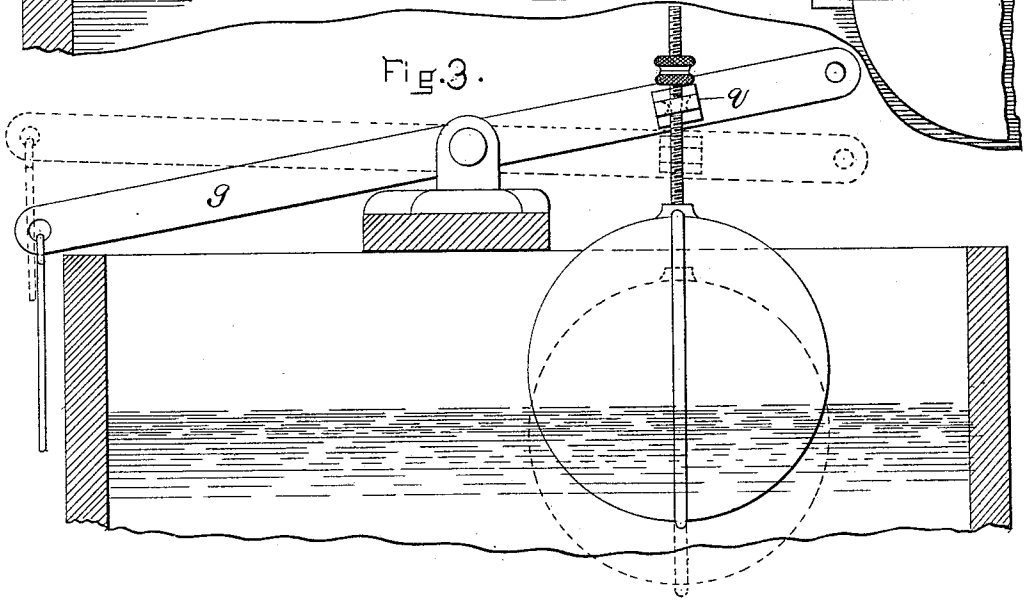


Fig. 3.



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UNITED STATES PATENT OFFICE.

TIMOTHY McHUGH, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO WARD & CURLEY, OF SAME PLACE.

DEVICE FOR CONTROLLING THE OPERATION OF VALVES IN TANKS.

SPECIFICATION forming part of Letters Patent No. 362,764, dated May 10, 1887.

Application filed August 25, 1886. Serial No. 211,820. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY McHUGH, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Devices for Controlling the Operation of Valves in Tanks, of which the following is a specification.

My invention relates to devices for controlling the outflow and inflow of water from and to the tanks of water-closets and water-tanks for analogous purposes.

It is the object of my invention to provide improved means for operating the valve for controlling the supply of water to the closet-bowl or the like, whereby when the operator draws upon the pull the valve will be instantly opened to its fullest extent and remain open until a predetermined amount of water has flowed from the tank, when the valve will be automatically and instantly closed, the supply-cock being at the same instant operated to refill the tank, which latter result is unaffected in its progress and completion by the valve and valve-operating mechanism first mentioned.

It is also the object of my invention to effect other improvements incidental to those above mentioned.

My invention consists in the improvements which I will now proceed to describe, so that others skilled in the art may be able to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming a part of this specification, the invention being particularly pointed out and distinctly claimed at the end of the description of its construction and operation.

Of the drawings, Figure 1 represents a side view of my invention, the tank being shown in section. Fig. 2 represents a modified form of the devices whereby the valve is caused to be suddenly or instantly opened or closed to its fullest extent when operated. Fig. 3 represents a modified manner of connecting the ball or float with the valve-operating lever, whereby the latter is given its initial movement for effecting the closing of the valve.

Similar letters of reference indicate similar parts in all of the figures.

In the drawings, *a* represents a tank provided with an outflow-pipe, *b*, controlled by a valve, *c*, preferably of the "stand-pipe" type, arranged in the bottom of the tank *a*.

d represents the usual cross-plank on the top of the tank *a*, to which the plate *e* is secured in any suitable way, which plate is provided with ears or lugs *f*, to which the valve-operating lever *g* is pivoted or fulcrumed, the "pull" chain or rod *h* being attached to one end of said lever *g*, and the chain or rod *i*, connecting it with the valve *c*, being secured to the said lever near the other end thereof.

Extending up from lever *g*, at points substantially equidistant from its fulcrum-point, are two standards, *j*, connected at their upper ends by a rod, *k*, which latter device affords a substantial track for the roller *l*, provided with journals *m*, adapted to turn in lugs *n*, attached to a weight, *o*, so that as lever *g* is rocked on its fulcrum to incline track-rod *k* in one direction or the other, weight *o* will be carried by means of truck-roller *l* to one end or the other of said track-rod, being stopped in its movements by the buffer-stops *p*, of rubber or similar material, abutting against the standards *j*, as shown.

Lever *g* is provided with a lug, *q*, on its inner portion, which lug is provided with a hole or aperture, through which extends a screw-threaded rod, *r*, connected at its lower end with the rod *s*, carrying the float *t* at one end, and connected at its opposite end with the usual supply or ball cock, *u*. A nut, *v*, is screwed upon rod *r*, which nut is adapted to come in contact with lug *q* on lever *g* as float *t* and rods *r* and *s* are lowered.

The operation of my invention as thus far described may now be explained as follows: The tank *a* being full, the valve *c* closed, and all of the parts of the device in a quiescent state, they will be in substantially the position in which they are represented in Fig. 1. It being desired to open the valve *c* to permit the flow of water from the tank, the operator draws down on the cord or chain *h*, which raises the valve, inclining lever *g* and track-rod *k* in the opposite direction, or as indicated in dotted lines in Fig. 1, when weight *o* will

be carried to the opposite end of said track-rod, suddenly tilting said lever and raising said valve to its fullest extent, and when said lever and its adjuncts are brought into this position they will be there retained by the weight *o* until the lowering of the water in the tank permits float *t* to descend to that extent that nut *v* will be brought into contact with lug *q* on lever *g*, when the weight of said float and its attached parts, being sufficient to overcome the weight of weight *o*, will lower the inner end of said lever, inclining the same and its attached track-rod in a direction opposite to that represented by dotted lines in Fig. 1, when said weight *o* will suddenly run down to the opposite end of track-rod *k* and instantly lower and close the valve. When float *t* is lowered sufficiently to operate on lever *g* to close the valve, said float will have descended far enough to operate supply or ball cock *u*, so as to permit a refilling of the tank, which operation proceeds without obstruction or influence by the mechanism for opening and closing valve *c*, rod *r* rising through the hole in lug *q*.

It will be seen that by raising or lowering nut *v* on rod *r* the time at which said nut will operate on lug *q* to close the valve may be varied, and that after valve *c* is opened water will flow therefrom until said nut operates on the lug *q* of lever *r* to tilt it toward its full-line position, as shown in Fig. 1, when said valve will be suddenly and automatically closed, so that a predetermined quantity of water may be caused to flow from the tank each time that valve *c* is operated, and this quantity can be regulated to suit the circumstances of particular cases.

Buffing-stops *p* are designed to prevent undue noise and jar in the operation of the devices.

Instead of providing weight *o* with a truck-roller, *l*, and constructing the parts so that said weight may move from end to end of track *k*, a lever, *w*, in the form of an inverted T, as shown in Fig. 2, may be pivoted in the upper end of ears or lugs *f* above the fulcrum-point of lever *g*, to the upper end of the vertical arm *x* of which lever a weight, *o'*, may be secured, so that as said lever *g* is rocked on its fulcrum to bring the center of gravity of said weight *o'* to one side or the other of its fulcrum-point it will suddenly tip to that side, causing the ends of the lateral arms of the lever *w* to strike projections *y* on lever *g* and operate the latter in the same manner and upon the same principle as weight *o*. (Illustrated in Fig. 1.)

In instances where it is desired not to have the devices for operating the outflow-valve connected with the ball-cock regulating the supply of water to the tank, the float *t* may be connected to the lower end of a screw-threaded rod, *z*, similar to rod *r*, which rod *z* operates through the hole in lug *q* in an obvious manner.

Other changes may be made in the form and arrangement of the devices comprising my improvements, within the limits of mechanical skill, without departing from the nature or spirit of the invention—for example, the float might be connected to the rod supporting the valve, and the overflow-pipe be placed to one side of the valve-seat, as is common in some constructions of valves.

Having thus described the construction and operation of my invention, what I claim is—

1. A tank, a valve for regulating the outflow of water from the tank, a lever for operating said valve fulcrumed on the tank, a float adapted to be raised and lowered by the water in the tank, a screw-threaded rod connected with said float, and loosely connected with said lever, an adjusting-nut on said rod constructed to engage said lever as the float is lowered, and to lower one end of said lever as the water is lowered in the tank, and to regulate the time when this operation shall take place, and also to permit the float to rise without affecting the position of the lever, and a weight arranged on said lever to have its center of gravity brought to one side or the other of the fulcrum-point of said lever as the latter is rocked upon its fulcrum or pivot, to suddenly close the valve after a predetermined amount of water has flowed from the tank, the whole combined, arranged, and operating as and for the purposes hereinbefore set forth.

2. The tank, a valve for regulating the outflow of water from said tank, a ball-cock for supplying water to the tank, a lever for operating said valve connected therewith and fulcrumed on said tank, a float adapted to be raised by the water in the tank and to be lowered as the water is lowered therein and operatively connected with said ball-cock to close and open the same as said float is raised and lowered, a screw-threaded rod connected with said float and loosely connected with said lever, an adjusting-nut on said rod to lower one end of said lever as the water is lowered in the tank and regulate the time that this operation shall take place, and to permit the float to rise without affecting the position of said lever, and a weight arranged on said lever to have its center of gravity brought to one side or the other of the fulcrum-point of said lever, as the latter is rocked upon its fulcrum or pivot, the whole constructed, combined, arranged, and operating as and for the purposes hereinbefore set forth.

3. The tank, a valve for regulating the outflow of water from said tank, a lever, *g*, for operating said valve, and connected therewith and provided with the lug *q*, float *t*, a rod connecting said float with said lug, nut *v*, standards *j j*, track-rod *k*, roller *l*, and weight *o*, all combined and operating as and for the purposes hereinbefore set forth.

4. The tank, a valve for regulating the outflow of water from said tank, a lever, *g*, for operating said valve, and connected therewith

and provided with a lug, *q*, float *t*, rod *s*, ball-cock *u*, rod *r*, nut *v*, standards *j j*, track-rod *k*, roller *l*, and weight *o*, all combined and operating as and for the purposes hereinbefore set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of August, A. D. 1886.

TIMOTHY McHUGH.

Witnesses:
C. F. BROWN,
ARTHUR W. CROSSLEY.