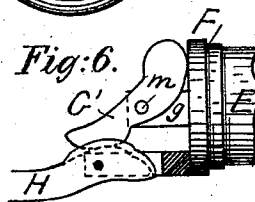
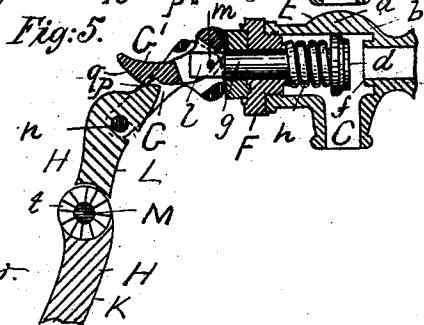
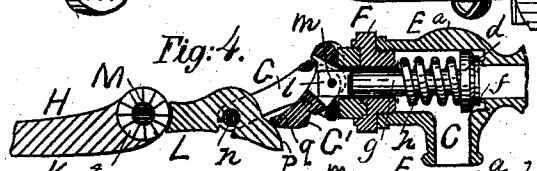
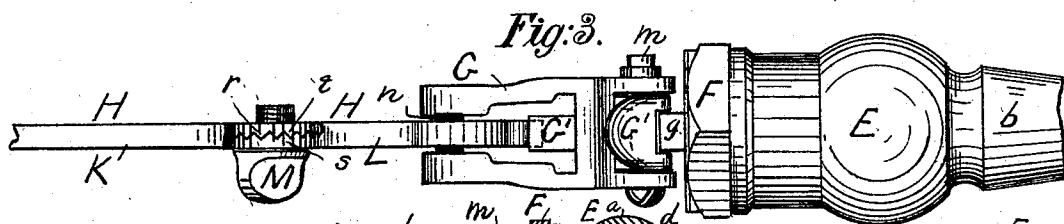
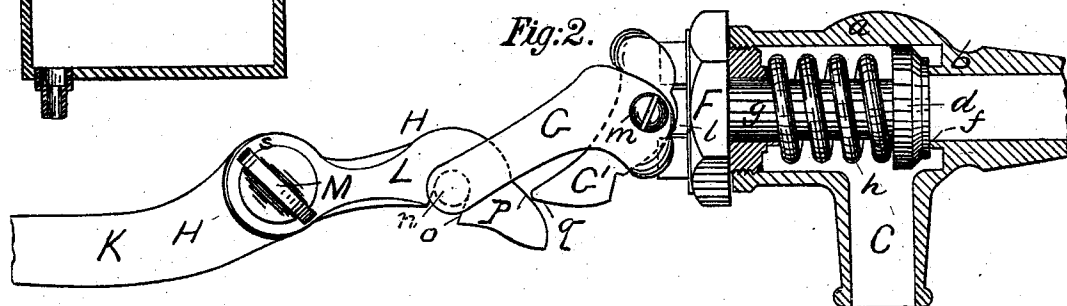
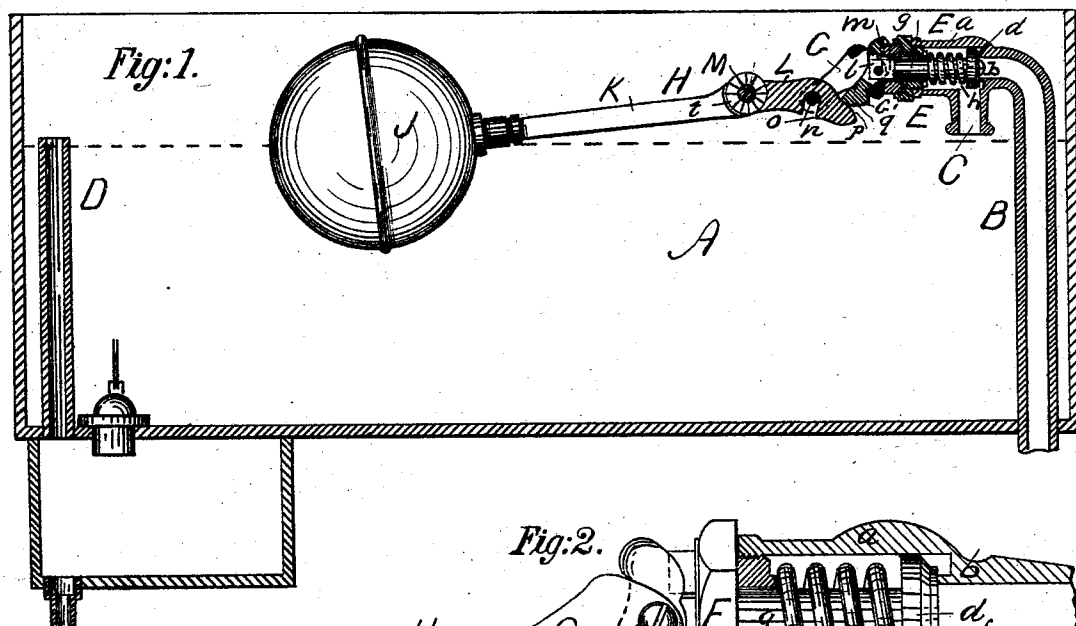


(No Model.)

P. W. DOHERTY.
Water Tank Regulator.

No. 236,311.

Patented Jan. 4, 1881.



Witnesses:

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UNITED STATES PATENT OFFICE.

PATRICK W. DOHERTY, OF BOSTON, MASSACHUSETTS.

WATER-TANK REGULATOR.

SPECIFICATION forming part of Letters Patent No. 236,311, dated January 4, 1881.

Application filed November 22, 1880. (No model.)

To all whom it may concern:

Be it known that I, PATRICK W. DOHERTY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Water-Tank Regulators, of which the following is a full, clear, and exact description.

In the water-system of houses, buildings, &c., water-tanks, as well known, are provided with a faucet for the supply of water to the tank, and with a ball-float connected to the faucet in a manner to open it to the flow of water when the water in the tank falls below a given level, and to close it when the water reaches such level in the tank.

This invention pertains more particularly to such water-tanks, and to the use therewith of self-closing faucets—that is, faucets adapted to be opened against a spring or other mechanical pressure capable of closing them against the pressure of the water when the power applied to open them is removed; but, as will be obvious from the description hereinafter given, the invention is applicable to self-closing faucets used for purposes other than water-tanks.

The invention consists, first, in the combination, with a lever or levers applied and arranged in relation to the valve of a self-closing faucet to open the same against its spring when properly operated therefor, and to allow the spring to close the faucet when the power applied to open it is released, of an arm arranged to turn upon a fulcrum, and at one end adapted for the application of power to it, and at the other end constructed and arranged when it is swung in the one direction to work the lever or levers of the faucet in the proper direction to open the faucet, and when it is swung or swings in the other and opposite direction to allow the faucet to close; second, in the combination, with a lever or levers applied and arranged in relation to the valve of a self-closing faucet to open the same against its spring when properly operated therefor, and to allow the spring to close the faucet when the power applied to open it is released, of an arm arranged to turn upon a fulcrum, and at one end carrying a weighted ball-float, and at the other end constructed and arranged when it is swung in the one direction to work the lever or levers of the faucet in the proper

direction to open the faucet, and when it is swung or swings in the other and opposite direction to allow the faucet to close; third, in the combination, with a lever or levers applied and arranged in relation to the valve of a self-closing faucet to open the same against its spring when properly operated therefor, and to allow the spring to close the faucet when the power applied to open it is released, of an arm arranged to turn upon a fulcrum, and at one end adapted for the application of power to it either by carrying a weighted ball-float or otherwise, and at the other end constructed and arranged, when it is swung in the one direction, to work the lever or levers of the faucet in the proper direction to open the faucet, and when it is swung or swings in the other and opposite direction to allow the faucet to close, and when the faucet is closed to be free to continue its movement in the same direction without strain or other effect upon the working parts of the faucet; fourth, in the formation of the arm which carries the ball-float in parts relatively constructed and joined together for the ball-float to be readily adjusted and adapted to secure any desired height of water in the tank before the flow of water to the tank is shut off through the upward movement of the ball-float.

In the accompanying plate of drawings, Figure 1 is a longitudinal vertical section of a water-tank having a self-closing faucet adapted, by connecting parts, for operation in accordance with all the features of this invention. Fig. 2 is a partial side view and a central longitudinal section, on an enlarged scale, of the faucet and operating parts therefor, as shown in Fig. 1; Fig. 3, a plan view of Fig. 2; Figs. 4 and 5, central longitudinal sections, showing in the one view the faucet closed, and in the other the faucet opened, and the operating parts in the respective positions therefor. Fig. 6 is a side view, representing the valve of the faucet as having a single lever in lieu of two levers, as in the preceding figures, for the operating-lever to work upon in opening the faucet against the spring used to hold the valve closed.

In the drawings, A represents a water-tank having a water-supply pipe, B, a water-inlet, C, and an overflow-pipe, D, all as usual.

E, a faucet, located at the upper end of the

supply-pipe B, and projecting horizontally therefrom. This faucet is of the class known as "self-closing" faucets—that is, faucets adapted to be automatically closed and kept closed by a spring against the pressure of the water, and as shown.

a is the faucet-casing, opening at *b* to the supply-pipe B, and at *C* to the water-tank; *d*, the valve; *f*, its seat; *g*, its stem, and *h* a spiral spring, which surrounds the valve-stem, and is confined, end to end, between the valve *d* and the screw-cap F of the faucet.

The valve-stem *g* projects through the screw-cap F, and such projection *l* carries two levers, G G'. These levers are in a vertical plane and diametrically opposite to each other, and are arranged to turn on a common center-pin, *m*, of the valve-stem, and each at its inner end bears upon the outer face of the screw-cap F. These bearings of the levers G G' constitute their fulcrums, and through these levers the valve is lifted against its spring from its seat, and otherwise is left free to close, all substantially as is fully shown and described in the schedule annexed to the Letters Patent of the United States issued to me, dated April 6, 1875, No. 161,768, and therefore needing no more particular description herein.

n is a cross-pin at the outer end of the lever G; and H an arm having a notch, *o*, near one end, and by this notch the arm is hung and turns upon the cross-pin *n* as a fulcrum. The arm H, at its notched end, projects toward the faucet, and lies, by its upper cam-edge, *p*, under and against the cam-edge *q* of the faucet-lever G', and this arm H, at its opposite end, carries a weighted ball-float, J. The ball-float arm H is made in two parts, K and L, which parts lap by each other and have their contiguous faces interchangeably grooved and ribbed, as at *t*, and where so grooved and ribbed they are fastened together by a shouldered thumb-screw bolt, M, which passes loosely through one part, *s*, and screws into the other part, *t*.

For water-tanks the faucet E with its levers and ball-float carrying-arm are arranged for the faucet to be closed when the ball-float is in a given horizontal plane, and for the downward swing of the ball-float from such given plane turning, by its arm H, on the fulcrum *n* of the faucet-lever G to raise the valve of the faucet against its spring from its seat, and thus to open the faucet to the flow of water through it to the tank, and for the upward swing of the ball-float toward said given plane to allow the spring of the valve to lower the valve to its seat and to secure the closing of the valve, when the ball-float reaches said given plane, and thus arrest the flow of water to the tank.

Under the arrangement and construction of the arm H and the ball-float in relation to the faucet-levers, above described, first, in the fall of the float, the float presses by its weight through its arm H downwardly upon the faucet-lever G, and upwardly against the under

edge of the faucet-lever G', and thereby swings them both, but in opposite directions, and as they are hung to the valve-stem the valve is raised and opened from the seat; second, in the rise of the float, while the arm H to the float keeps its bearing on its fulcrum of the faucet-lever G and on the lower edge of the faucet-lever G', it yet allows the valve under the action of its spring to move toward its seat, and thus to become fully closed thereon. When the ball-float has reached a plane corresponding to the height of water desired for the tank, and in a continued rise of the ball-float, if then such should occur from a leakage of the faucet or other causes, while the ball-float follows the rise of the water in the tank from such causes, yet the arm H will pass from its bearings on each of the faucet-levers, and thus avoid strain upon such levers and all parts of the faucet connected with them.

The height of the water in the tank with the faucet closed is the then height of the ball-float J therein; and to regulate this height of the water with the faucet closed it is only necessary to loosen the two parts of the float-arm H, and to then place the float at the height desired, and again fasten the said parts together. The interchangeable grooving and ribbing of the two parts of the arm H locks them together when the thumb-screw is turned up to fasten them, as described, and thus insures a firm, close, and unyielding hold of the ball-float to its adjusted position.

When two faucet-levers are used, as described, the valve in opening and closing moves in a direct straight line and with even friction and wear between all parts of the valve-stem and the opening in the cap of the faucet-case, through which the valve-stem projects, and for these reasons it is preferable to have two faucet-levers; but while it is so preferable, obviously only one faucet-lever may be employed, as shown in Fig. 6, and the opening and closing of the valve secured as with the two levers. When one faucet-lever is used the ball-float arm H turns upon a fixed fulcrum-pin of the faucet-casing, as shown at *m*, Fig. 6. The lever-arm carrying the weighted ball-float may be linked or jointed directly to the faucet-lever G', instead of being, as described, arranged to simply bear upon it; but it is preferable not to link or joint it, for if they are left separate it permits, when the faucet is closed, the ball-float to further lift without straining the faucet or any of its parts.

The ball-float arm H, if desired, may be made in parts, adapted to slide upon each other, so as to lengthen and shorten it, if so desired, in addition to the construction of it herein described, for enabling the ball-float to be adjusted to give the height of water desired.

As this invention has been described in detail, the weighted ball-float J is the power which works through the arm H upon the faucet-

cet-levers to open the faucet; but obviously under this arrangement of the lever-arm H, which is shown as carrying the ball-float J, the power could be applied directly to it by the hand, or by other obvious ways than by the weighted ball-float particularly shown and described. The fulcrum-notch of the lever-arm H enables the arm to be readily removed and replaced when desired.

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

1. A self-closing faucet having a lever or levers arranged thereon to open it against its spring, and to allow it to close by its spring, in combination with a lever-arm, H, hung upon a fulcrum, and at one end adapted for power to be applied to it, and at the other end constructed and arranged to work upon the lever or levers of the faucet, all substantially as described, for the purpose specified.

2. A self-closing faucet having a lever or levers arranged thereon to open it against its spring and to allow it to close by its spring, in combination with a lever-arm, H, hung upon a fulcrum, and at one end carrying a weighted ball-float, J, and at the other end constructed and arranged to work upon the lever or levers of the faucet, all substantially as described, for the purposes specified.

3. A self-closing faucet having a lever or levers arranged thereon to open it against its

spring, and to allow it to close by its spring, in combination with a lever-arm, H, hung upon a fulcrum, and at one end adapted for power to be applied to it, and at the other end constructed and arranged to work upon the lever or levers of the faucet, and when the faucet is closed to be free to swing in one direction without effect or strain upon the lever of the faucet, all substantially as described, for the purpose specified.

4. In water-tanks, a carrying-arm, H, for the ball-float made in parts, which are jointed together, substantially as and for the purpose described.

5. A self-closing faucet having levers G G' applied to it, in combination with a lever-arm, H, turning upon a fulcrum, n, of the faucet-lever G, and at one end carrying a weighted ball-float, J, and at the other end constructed to work upon the faucet lever or levers, all substantially as and for the purposes described.

6. The lever-arm H, notched at o, in combination with the lever or levers of the faucet, all substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

P. W. DOHERTY.

Witnesses:

EDWIN W. BROWN,
W. S. BELLOWS.