(No Model.)

P. HARVEY.

Water Supply Valve.

No. 238,504. Patented March 8, 1881.

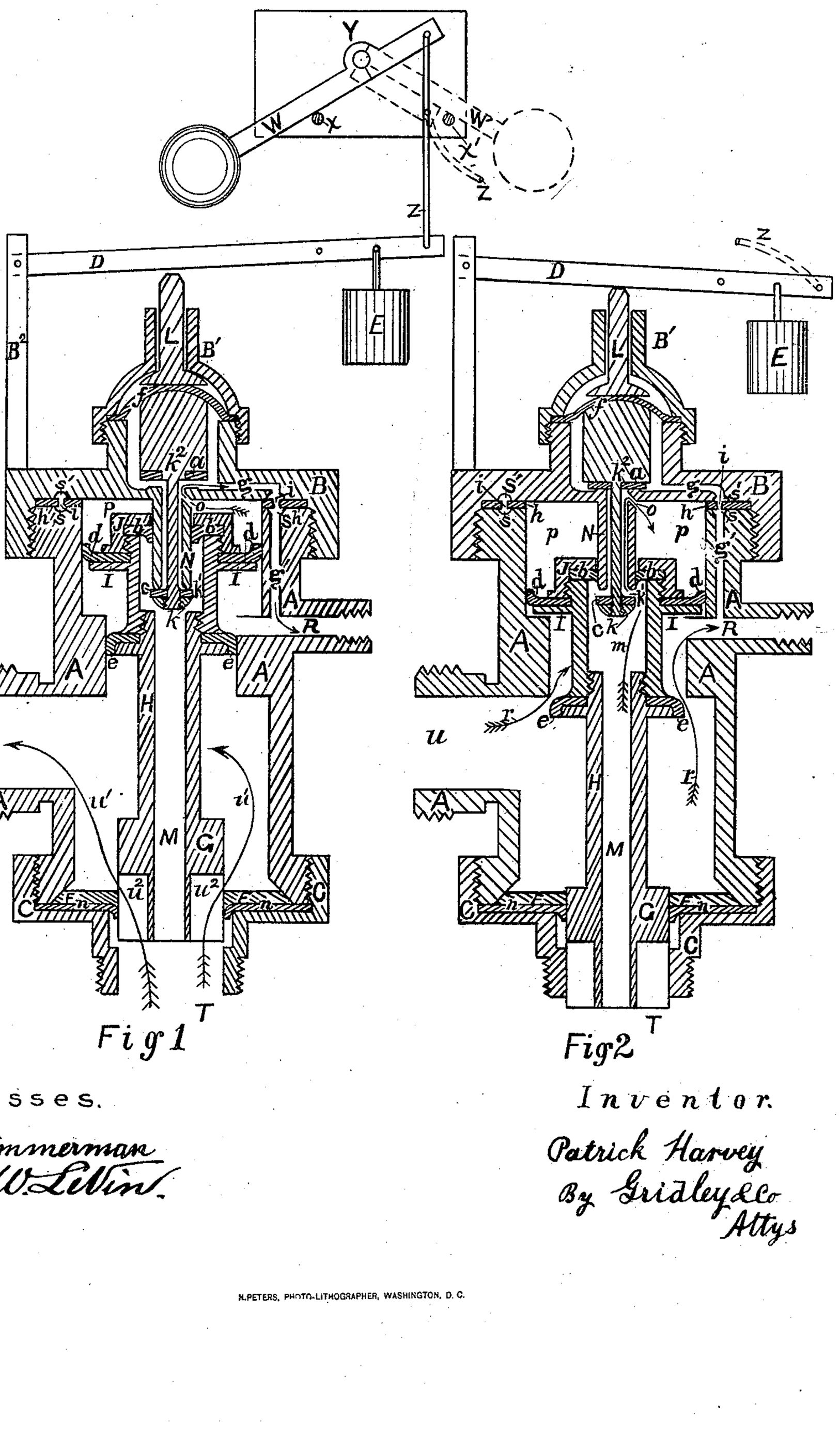

Fig 1

Fig 2

Witnesses.

Wm Zimmerman
Geo. W. Lellin.

Inventor.

Patrick Harvey
By Gridley & Co
Attys

UNITED STATES PATENT OFFICE.

PATRICK HARVEY, OF CHICAGO, ILLINOIS.

WATER-SUPPLY VALVE.

SPECIFICATION forming part of Letters Patent No. 238,504, dated March 8, 1881.

Application filed June 18, 1880. (No model.)

To all whom it may concern:

Be it known that I, PATRICK HARVEY, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Supply Valves; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof, in which—

Figure 1 represents a vertical central section, with the valves in position for supplying water from the main. Fig. 2 represents the same with the valves closed against the main or supply, and discharging the water above the same into the waste.

Like letters of reference indicate like parts.

The object of my invention is to provide a water-supply valve for water-pipes and hydrants that may readily and easily be operated from any desired place, and which shall be less liable to wear and consequent leakage than the check and waste stop-cock commonly used; and my invention consists in combining with a water-supply or main valve, a check-valve which controls the operation or action of the main valve by means of the water-pressure, substantially as herein shown and described.

In the drawings, A represents the casing forming the chamber containing the operating parts, to the lower end of which is screwed a cap, C, provided with an inlet or induction, T, and to the upper end is screwed a cap, B, provided with a chamber containing the valve k^2, and a tubular stem, N, through which passes the stem of the valve k^2, to the lower end of which is attached a valve, k, provided with a packing, c, to fit against the valve-seat k' at the lower end of the tube N. The opening of the chamber of the valve k^2 is closed by a rubber diaphragm, f, and said diaphragm is held in place by the cap B′ screwed upon it, as shown. Through the cap B′ passes a stem, L, the lower end of which is provided with a broad foot resting upon the diaphragm f. The casing A is also provided with an outlet or eduction, u, to which the pipe furnishing the supply is attached, and a waste, R, to which the pipe for conducting away the waste is attached.

Within the casing A* is a main valve, G, provided with wings or guides u^2 at its lower end, which guide and hold it in place in its motions through the guide-plate F and leather packing n, and a stem, H, provided with a water-way, M, and a flange near its upper end, on which rests the packing e, forming a valve which moves through the contracted part of the casing or chamber A, as shown.

To the upper end of the hollow stem H is screwed a short tubular stem, which securely holds the packing e in place, and forms a chamber for the valve k to play in, and large enough to leave a free water-way around it. To the outside of said stem is secured a flange, I, upon which rests a packing, d, and upon the top thereof is a packing, b, working against N. Both of the packings b and d are held in place by the cap J screwed upon the upper end thereof.

The cap B is also provided with a small tubular opening, g, leading from the chamber of the valve k^2 to an annular groove, s', and said groove s' is opposite a corresponding groove, s, in the upper end of the casing A, and between the casing A and cap B is placed an annular washer, h, for the purpose of securely packing the joint; and at intervals holes or slots i are cut through said washer h, so that water passing from the channel g into s' may find its way through the openings i into the annular channel s, with which the vertical channel g' is connected, and discharges into R. The object of the annular channels $s\ s'$ and holes i in washer h is to afford a passage for the water into g', no matter at what point the outer end of channel g may stop when the cap B is screwed upon A.

Near the base of the hollow stem N is a small orifice, o, which opens a water-way from M through k' into the chamber p.

To the cap B is also attached a post B^2, forming the fulcrum of the lever D.

To lever D is attached a weight, E, and connecting-wire z, which, at its other end, is attached to a weighted lever, W, which is both jointed and pivoted at Y, and said lever W is arrested in its motions around Y by stops $x\ x'$, as shown. The lever D of Fig. 2 is shown depressed, and the lever W and wire z are shown dotted, the wire z being shown broken away

from the depressed lever, and the end pointed in the direction indicating the position described and shown in Fig. 2.

The operation of my improved water-supply valve is as follows, to wit: Into any convenient part of the house, preferably at the spigot over the sink, is attached to the wall, the weighted lever W, from which, by means of the wire or wires *z*, provided with bell-cranks in the usual manner, the weighted lever D of the stop-valve, placed in the cellar or under ground far enough to be secure against frost, is reached. The supply-pipe from the main is secured to the cap C, the distribution-pipe to the outlet *u*, and a waste-pipe, connecting with a drain, to the waste R. When the lever W is turned into the position shown in dotted outline in Fig. 2 it causes the lever D to press the valve k^2 onto its seat, and thereby open the passage or water-way through *k'* from M, and thence through *o* into the chamber *p*, and, by the pressure derived from the head of the supply produced therein, moves and holds the valves *d*, *e*, and G in the position as shown in Fig. 2. When the lever W is turned into the position as shown in Fig. 1, it raises the lever D, which thereby relieves the pressure upon the valve k^2, which is then caused to rise by the water-pressure, and a current of water is at once formed from M through *g*, which, by means of its motion, carries the valve *k* with it against its seat and holds it, thereby instantly closing the passage through *k'*, and so takes away the water-pressure in the chamber *p*, and consequently relieving all downward pressure upon the valve G, which, being acted upon by the pressure from the main through T, is raised, as shown, opening the channels for the water-supply, indicated by the arrows *w'*. When it is desired to shut off the supply from the house, the lever W is turned into the position W', which then releases the weighted lever D, the weight E of which is made heavy enough to overcome the upward pressure of the water on *k*, which then depresses the stem L, diaphragm *f*, and valve k^2, until it rests upon its seat in the cap B, thereby closing the channel *g*, and forcing the valve *k* to open against the pressure of the water, and thus form a current from M through *k'* into N, and through *o* into the chamber *p*, which, as is shown, is considerably larger in end area than that of the valve G, and consequently when so arranged will press with greater force upon the area of the piston *d* and cap J than against the piston G, and consequently cause it to descend until the piston G closes the inlets *w'* and is arrested in its descent by the flange I, resting upon the shoulder formed in the casing A by the smaller bore thereof for the piston *e*, and the piston *e* passing below the lower end of its chamber or bore allows a free exit of the water around it from *u* through the waste R, as shown by the arrows *r*. The water entering the chamber *p*, as shown by the arrow *m*, and receiving its pressure direct from the main, will hold all parts in the position as shown in Fig. 2, until the weight E is raised, as previously explained, when the valve *k* will at once close and raise the valve k^2, which opens an outlet from the chamber *p* through *o g s' i s* R, through which it is emptied as the pistons G, *e*, and *d* are caused to rise by the pressure of the water from the main against the piston G, which opens the water ways or inlets, as shown by the arrows *w'*.

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

1. In a water-supply valve, the shell A, provided above the waste R with an enlarged chamber, *p*, cap B, provided with tubular stem N and orifice *o*, valves *k* and k^2, and channels *g s*, in combination with the packings or pistons *b* and *d*, substantially as and for the purpose specified.

2. In a water-supply valve, the shell A, provided above the waste R with an enlarged chamber, *p*, cap B, provided with a tubular stem N and orifice *o*, in combination with the valves *k* and k^2, channels *g s' s g'*, and weighted lever D, substantially as and for the purpose specified.

3. In a water-supply valve, the shell A, provided with the reciprocating-pistons G *e d*, connected with a tubular stem, so as to form a water-way, M, whereby the reciprocating motion of said pistons alternately opens and closes the supply and waste, substantially as herein shown and described.

4. In a water-supply valve, the chambered shell A, provided with water-ways T, *u*, R, *g'*, and *s*, cap C, annular disk F, and packing *n*; chambered cap B, provided with channels *g* and *s'*, and tubular stem N, with orifice *o*, and perforated packing *h*, in combination with the reciprocating pistons G *e d*, operated by water-pressure, water-way M, and valves *k* k^2, diaphragm *f*, and stem or piston L, operated by a weighted lever, D, all constructed and operated substantially as herein shown and described.

5. The herein-described water-supply valve, operated by a weighted lever, D, in combination with the jointed, pivoted, and weighted lever W, and wire *z*, substantially as herein shown and described.

6. The cap J and piston-packings *b* and *d*, arranged and combined with stem N and shell A, substantially as herein shown and described.

7. The tubular stem N, provided with orifice *o*, in combination with the valves *k* k^2, diaphragm *f*, piston L, and weighted lever D, substantially as herein shown and described.

8. The channels *g g'*, in combination with the annular channels *s s'* and perforated washer *h*, substantially as shown and described.

PATRICK HARVEY.

Witnesses:
N. COWLES,
WM. ZIMMERMAN.