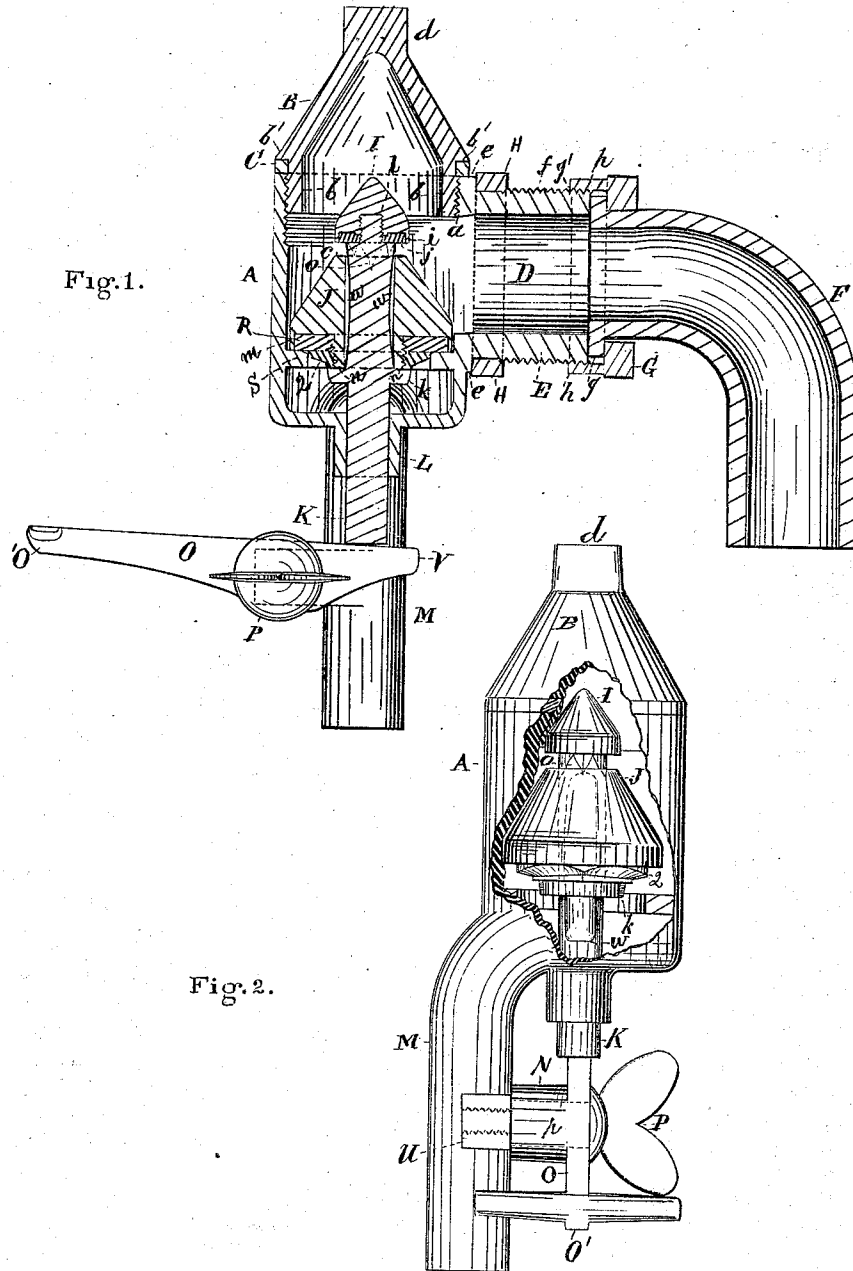


J. W. CHAMBERLAIN.
Float-Valves.

No.152,827.

Patented July 7, 1874.



WITNESSES:
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UNITED STATES PATENT OFFICE

JOSEPH W. CHAMBERLAIN, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN FLOAT-VALVES.

Specification forming part of Letters Patent No. **152,827**, dated July 7, 1874; application filed December 16, 1873.

To all whom it may concern:

Be it known that I, JOSEPH W. CHAMBERLAIN, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Float-Valves; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a vertical and central sectional view of the improved float-valve through the valve-chamber and ingress-pipe, and Fig. 2 represents a side view of the same, with the parts of the main chamber and cap broken away to show more fully the double-acting valve device.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings, the parts marked A represent the valve-case, within which is the valve or main chamber of the device, and which chambered case is provided with a conical or dome-shaped cap, B, fitted to screw into the top of said chamber, by means of a male screw-thread, *a*, on a downwardly-projecting flange, *b*, of the cap, and a female screw-thread, *c*, within the chambered case A. A washer, C, on flange *b* of the said cap, and contiguous with projecting part *b'*, and which latter extends flush with the outer rim or edge of main chamber-case, renders the cap tight-fitting. Cap B is also provided with a square projection, *d*, to facilitate the turning for detaching and attaching the same by means of a wrench or other appliance, when necessary. An inlet-way, D, with a diameter somewhat less than that of the valve-chamber in the main cylinder or case A, opens into its side, and a broad flange, E, at least an inch in width, projecting out from a very short and thick flange, *e*, at right angles to the cylinder A, serves for attaching or coupling a pipe, F, with it. Flange E is provided with a male screw-thread, *f*. Inlet-pipe F is provided with a flange, *g*, and by means of a nut, G, having a female screw-thread, *g'*, on the inner surface of its flange part *h*, which nut is first slipped onto pipe F, and up close to its

flange *g*. The said flange *g* of this inlet-pipe is brought snugly up to the rim of flange E, making a tight joint by screwing the said nut G onto the flange E of the valve-chamber. A nut, H, may also operate in conjunction with the one just mentioned, when necessary.

Chamber A contains a set of valves, I J, arranged on a stem, K, and which valves are double-acting, by means of a combined lever, O, and float device, to be attached to the latter. Stem K is a cylindrical piece of metal, having parings carved off on three sides, *w*, above and to a short distance below three projections or knobs, *k*, nearly half-way between the opposite ends of said stem K. Valve I is much smaller than valve J, is conical or dome-shaped, and has a downwardly-projecting flange, *i*, which incloses a washer, *j*, placed in a slot of the valve, and through which washer passes a small stem, *l*, of metal piece K, which little stem is provided with a screw-thread, by which means valve I is screwed onto it, or rather this stem *l* is screwed into a socket of the said valve-piece I. Valve J is somewhat similar in shape to valve I, being conical or dome-shaped, with its apex cut off, and provided with a round groove or hole through its center, and it is also slotted out so as to leave a downwardly-projecting flange, *m*, and one, *n*, provided with a screw-thread, by which means a nut, Q, is screwed on, thereby keeping in place a washer, R, within the said slot. This valve J is first slipped onto the stem K, and then valve I and combined washer *j* are screwed onto the small screw-stem *l* of piece K, when, if the said stem K is held in an upright position, it will be seen that the larger valve falls onto the knobs *k*, leaving a small space between its top rim and the bottom edge or rim of valve I, and also that three notches, *o*, are cut through the edge or rim of the upper end of stem K, to communicate severally with the grooves down the sides of the said stem K.

When this valve device is in position within the chambered case A the flange part *m* of valve J rests upon a flange, S, projecting from the walls of the main chamber at right angles to the flange M, and the small valve I rests upon the top rim of this larger valve J, the stem K attached to it projecting or hanging

down from it through a cylindrical neck, L, of the main chambered case A, and coming in contact thereby with a lever, O. Lever O is pivoted on the smooth shaft *p* of a thumb-screw, P, which has a smaller shaft or of less diameter than the former, provided with a screw-thread, by which means it is fitted to a shoulder, U, cast as a part of outlet-pipe M. This lever O has a tubular part or thimble, N, cast on it, as shown in Fig. 2, which thimble or tubular part of said lever turns on the smooth shaft part *p* of thumb-screw P. To one arm O' of lever O is attached a float, which, with the rising or falling of the water in the tank, operates the stem K up or down, as the case may be. Outlet-pipe M opens into the side and bottom of valve-chamber below the flange S of said chamber. A continual pressure of water through inlet-way D is exerted upon both valves, sufficient to prevent any escape of water through outlet-pipe M, though in case a little did escape it would do no harm or prevent the otherwise perfect operating of the valve device. When the water in the tank falls, or the water-line lowers the float attached to arm O' of lever O, the arm V of said lever raises the stem K of the valve device, and consequently raises valve I attached thereto, until knobs *k* of said stem come in contact with the nut Q, attached to larger valve J, thus allowing water to enter the intervening space between said valves and pass through notches *o*, leading into the channels or ducts in the sides of stem K, which allow the water to flow down between the inner wall of grooved valve J and said grooved-surface stem K, and thence into and through outlet-pipe M into the tank. If the water in the tank continues to lower, valve J is raised up from and off of flange S of main chamber A, on and by knobs or projections *k* of said stem K, which action admits of the passage of a much greater quantity of water, both valves now being open; and whether there be greater or less pressure of water through inlet-pipe D the flow of water into the tank will be

regulated perfectly with the rising and falling of the float.

I do not claim the coupling mechanism F, G, and E herein described.

From the foregoing description it will be seen that my float-valve is well adapted to be used in small as well as large tanks, and also for the admission of water into such tanks under both great and small pressure. For instance, if the pressure is great, a sufficient quantity of water will enter the tank when the small valve I is open, and it can be opened by a short lever and a comparatively small float, which can be conveniently used in a small tank. Then, again, if the pressure of water is not great the same float and lever will be quite sufficient to raise both valves, thus admitting the proper supply of water to the tank under a low pressure.

It will be seen, therefore, that my float-valve can be readily applied to the various-sized tanks, and the operation be satisfactory, whatever the pressure of water may be, thus obviating the objections to float-valves as heretofore constructed, which have to be adapted and arranged to the size of the tank and the pressure of the water. This will be understood by reference to Fig. 1, where, if only the large valve were used under considerable pressure of water, the length of lever and size of float would be insufficient to raise the valve. If preferred in any case, two or more valves, movable on the stem-valve the same as valve J, may be employed.

Having described my improvements in float-valves, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

The combination, with chambered case A, of the inlet-way D, outlet-pipe M, valve-stem K, and valves I and J, substantially as and for the purposes set forth.

JOSEPH W. CHAMBERLAIN.

Witnesses:

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