(No Model.)

G. E. MONTAGUE.

COMBINATION TANK, VENTED FLOAT, OUTLET VALVE, AND PIPE SYSTEM.

No. 576,601. Patented Feb. 9, 1897.

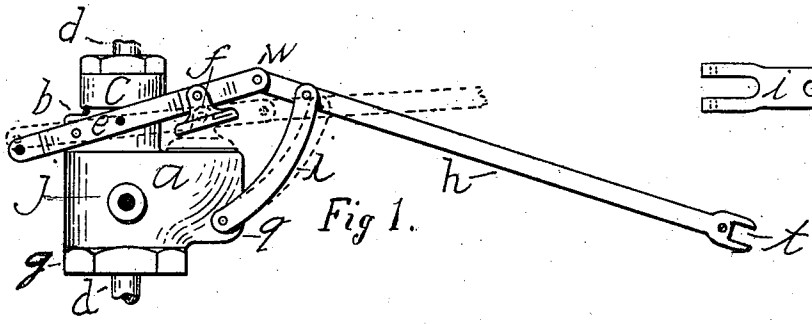

Fig 1.

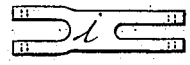

Fig 5.

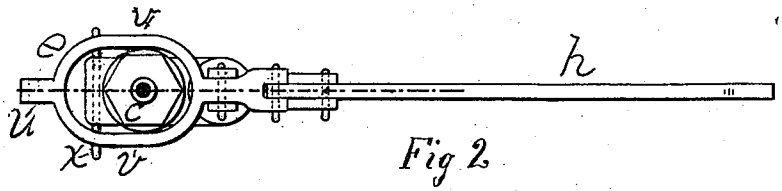

Fig 2.

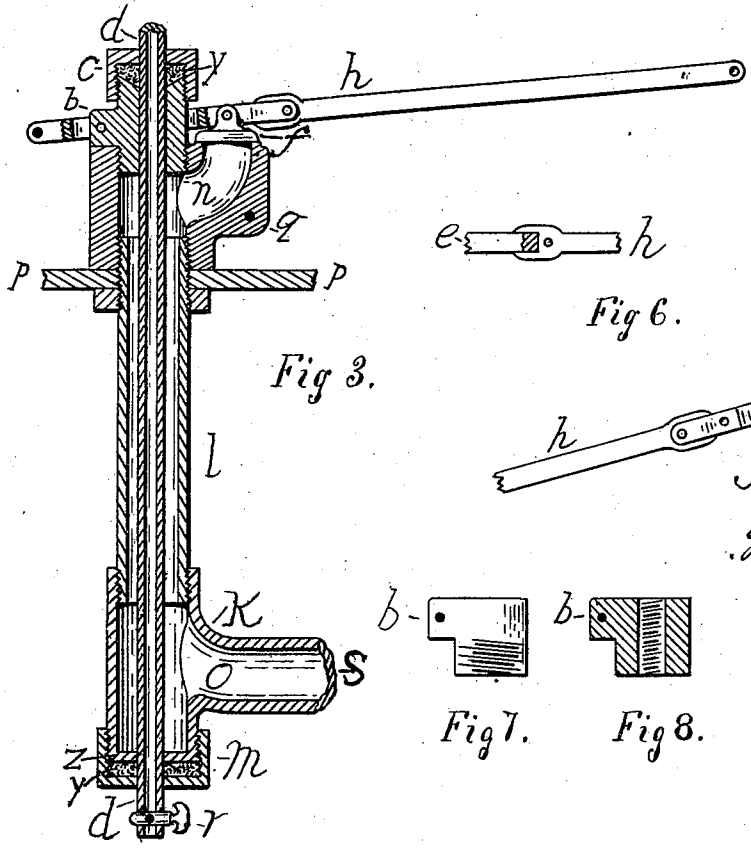

Fig 3.

Fig 6.

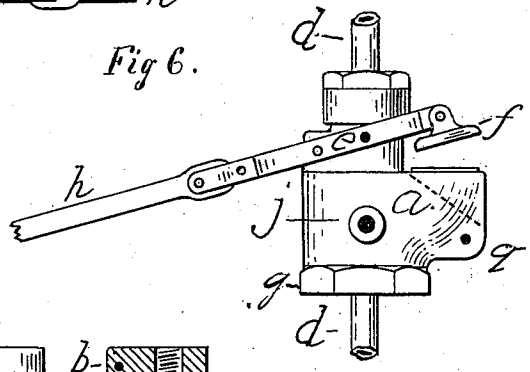

Fig 4.

Fig 7.

Fig 8.

Witnesses.
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GEORGE E. MONTAGUE, OF GRANBY, MASSACHUSETTS.

COMBINATION TANK, VENTED FLOAT, OUTLET-VALVE, AND PIPE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 576,601, dated February 9, 1897.

Application filed July 3, 1896. Serial No. 597,942. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ELIOTT MONTAGUE, a citizen of the United States, residing at Granby, in the county of Hampshire and State of Massachusetts, have invented a new and useful Combination Tank, Vented Float, Outlet-Valve, and Pipe System, of which the following is a specification.

My invention relates to means for controlling the flow of liquids to or from tanks or reservoirs, the object being to provide improved devices for controlling the flow of said liquids; and the invention consists in the peculiar construction and arrangement of said devices, all as hereinafter fully described, and more particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side view of the valve detached from pipe system; Fig. 2, a top view of valve; Fig. 3, a vertical section of the entire valve and system. Fig. 4 is a view of the valve arranged to be used as an inlet and float-operated valve under certain conditions; Fig. 5, a plan of pivoted fulcrum-link on which lever pivots; Fig. 6, a detailed sectional view of reversible lever; Fig. 7, a view of top casing as used under certain conditions; Fig. 8, a vertical section of Fig. 7.

Similar letters refer to similar parts throughout the several views.

Referring to Fig. 1, *a* is the main body of valve.

b is top casing, which forms part of the stuffing-box *y*, also a pivot for yoke *e*.

c forms top or cap of stuffing-box. The small pipe *d* passes through this cap and casing *b*. The interior space between *b*, *c*, and *d* is filled with any suitable packing. The duty of this stuffing-box is to prevent water or liquids escaping from tank or receptacle into main pipe when valve is closed and water or liquids are withdrawn from main pipe.

The yoke *e* is fastened to the projection on casing *b* (previously alluded to) by means of a pin or bolt. The disk or cover *f* is fastened to the yoke by means of two projections on its top side. A bolt or pin passes through these and neck of yoke, thus forming a joint which will not cramp, and insures the perfect seating of disk on valve-seat. In the center of disk *f* is a small hole, threaded to receive a small screw, by means of which suitable packing may be fastened, further insuring fit of disk on seat.

The yoke *e*, to which disk is fastened, as described above, is operated by means of lever *h*, working over pivoted fulcrum-link *i*. A chain or wire for operating may be attached to hole in outer end of lever near recess at *t*. The pivoted fulcrum-link *i* (a front view of which is seen at Fig. 5) is hinged to a projection *q* directly under valve-seat. This arrangement allows freedom of movement back and forth, but effectually prevents any side vibration. The yoke *e*, lever *h*, disk *f*, and pivotal fulcrum-link *i* assume the position indicated by dotted lines when valve is closed. The arrangement of yoke, lever, and pivoted fulcrum-link produces a powerful leverage, forcing the disk *f* down on seat with absolute certainty. The entire strain of this leverage is brought to bear on the under side or heavier portions of valve, increasing effectiveness and durability.

The vent-orifice J opens laterally, is threaded on its inner surface, and facilitates the use of a horizontal check-valve, (not shown,) opening inward, the office of which is to prevent water or liquids escaping through vent-pipe when valve is used as an inlet float-valve, but freely admits air to main pipe when valve is closed and water or liquids are withdrawn from main pipe.

The internal or dry pipe *d d* (shown in sectional view, Fig. 3) passes through entire length of main or supply pipe *l*, through main body of valve *a*, top casing *b*, stuffing-box *y*, cap *c*, and above top of tank or receptacle, (the portion passing through receptacle not shown in drawings,) and also passes through T-shape fitting K, stuffing-box *y*, and cap *m* on lower extremity of said fitting K. The stuffing-box at this point is constructed similar to the one on top of valve previously described, and its office is to prevent the escape of water or liquids out of main pipe by the orifice through flange *z* and cap *m* where pipe *d* passes out. This part of system is below frost.

Water or whatever liquids used passes in or out of receptacle through the curved portion of valve *n*, main pipe *l*, and T-shape fitting K, through orifice *o*. A pipe may be

attached to the portion S of fitting K in any way desired. The curved opening in valve at *n*, also the one at *o* in fitting K, are constructed curved in the manner shown, which insures water or liquids flowing in either direction with the least possible friction.

As has already been described, the small pipe *d* passes through the interior of the entire system from the outside of top of receptacle to outside of system below frost. No water or liquids can get into this pipe from main pipe *l* or receptacle to which system is attached. This arrangement affords easy access to the interior of system at all times. Should water or liquids become frozen in main pipe *l* or at any point in valve or system, hot water or steam may be poured or forced through internal pipe *d*, the heat of which will rapidly melt any ice or frozen liquids in pipe *l* or at any point throughout the entire system. A small cock may be placed on the lower extremity of pipe *d*, as shown at *r*, for retaining hot water in said pipe until the heat is utilized.

P P illustrate a section of bottom of receptacle, to which valve and system may be attached, as shown in drawings, by means of lock-nuts and nipple or with flange and bolts. The portion of valve at *g*, Figs. 1 and 4, is threaded for pipe on its inner surface, being formed in the shape of a hexagon, so that valve may be adjusted with a common wrench. The top of cap *c* is also hexagon shape, so that cap *c* and valve may be easily removed without disturbing any of the piping.

The lever *h* and yoke *e* are specially designed to meet the various requirements of float and outlet valves. In Fig. 1 it will be noticed that the lever *h* has a recess at its outer end. The position of lever in this view is as arranged for an inlet-valve. The gravity of lever *h* is sufficient to raise disk *f* when an inlet-float lowers in tank. By removing pivoted fulcrum-link *i* and withdrawing pin at *w* and turning lever *h* end for end the recess *t* fits a shoulder in yoke *e*, thus forming a drop or outlet float-operated valve, as shown in Fig. 3. Fig. 6 shows a section of yoke *e* and lever *h* united in the way described.

The yoke *e* is so arranged that by removing pin *x*, Fig. 2, and reversing yoke end for end, inserting pin *x* in hole *v v*, removing pin in top of disk *f* and inserting in hole *u* in projection on rear of yoke, the lever, yoke, and valve-disk assume the position shown in Fig. 4.

The valve-seat may be constructed on any angle from horizontal to that shown by dotted lines in Fig. 4, by means of which the water or other liquid may be drawn lower in receptacle.

The top casing *b*, as illustrated in Figs. 1, 3, and 4, is threaded on each end. The lower side is adapted to screw into main body of valve, the upper side to receive the cap *c*. The top of casing *b* and inside of cap *c* form a stuffing-box, previously alluded to. When circumstances require it, the top casing *b* is constructed as shown in Figs. 7 and 8, the difference being that the casing in this view is threaded its entire internal length. Constructed in this manner the small pipe *d* is screwed into under and top sides of casing, and the stuffing-box portion is dispensed with.

The vent-orifice J opens laterally, the advantage being that a horizontal check-valve may be used without extra fittings.

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

1. A pipe-and-valve system for controlling the flow of liquids from supply-mains, and analogous purposes, comprising a stand-pipe, a connection on one end thereof, whereby said pipe has communication with a supply-main, a valve-body secured to the outlet end of said pipe, having an outlet-passage terminating at one side of the axis of said pipe, a yoke-casing attached to the upper end of said valve-body, a yoke pivoted on said casing for vibratory motion thereon, having an arm extending over the outer end of said outlet-passage, a valve connected to said arm for movement against and from said valve-body at the outer end of said passage, and an operating-lever connected to said arm, combined and operating substantially as set forth.

2. A pipe-and-valve system for controlling the flow of liquids from supply-mains, and analogous purposes, comprising a stand-pipe, a connection on one end thereof whereby said pipe has communication with a supply-main, a valve-body secured to the outlet end of said pipe, having an outlet-passage terminating at one side of the axis of said pipe, a yoke-casing attached to the upper end of said valve-body, a yoke pivoted on said casing for vibratory motion thereon, having an arm extending over the outer end of said outlet-passage, a valve connected to said arm for movement against and from said valve-body at the outer end of said passage, and an operating-lever pivotally hung on said casing and pivotally connected to said arm, combined and operating substantially as set forth.

3. A pipe-and-valve system for controlling the flow of liquids from supply-mains and analogous purposes, comprising a stand-pipe, a connection on one end of said pipe, whereby the same has communication with a supply-main, a stuffing-box on the lower end of said connection, a valve-body secured to the outlet end of said pipe having an outlet-passage terminating at one side of the axis of said pipe, a longitudinally-perforated yoke-casing attached to the upper end of said valve-body, a stuffing-box on the outer extremity of said casing, a pipe for the reception of a heating element of less diameter than the interior of said stand-pipe extending through the latter and through each of said stuffing-boxes, a yoke pivoted on said casing for vibratory motion thereon, having an arm extending over the outer end of said outlet-passage, a valve connected to said arm acting to open and close the outer end of said passage, and an

operating-lever pivotally hung on said casing, and pivotally connected to said arm, combined and operating substantially as set forth.

4. A pipe-and-valve system for controlling the flow of liquids from supply-mains, and analogous purposes, comprising a stand-pipe, a connection on one end thereof whereby said pipe has communication with a supply-main, a valve-body secured to the outlet end of said pipe, having an outlet-passage terminating at one side of the axis of said pipe, a yoke-casing attached to the upper end of said valve-body, a yoke pivoted on said casing for vibratory motion thereon, having an arm extending over the outer end of said outlet-passage, a valve connected to said arm for movement against and from said valve-body at the outer end of said passage, a pivoted fulcrum-link connected to said casing by one end, and a valve-operating lever pivotally hung on the free extremity of said link, and having one end pivotally engaging said arm, combined and operating substantially as set forth.

5. A pipe-and-valve system for controlling the flow of liquids from supply-mains, and analogous purposes, comprising a stand-pipe, a connection on one end thereof whereby said pipe has communication with a supply-main, a valve-body secured to the outlet end of said pipe, having an outlet-passage terminating at one side of the axis of said pipe, a yoke-casing attached to the upper end of said valve-body, a vent-orifice through the side of said casing, a yoke pivoted on said casing with variable pivot-points for vibratory motion thereon, having an arm extending over the outer end of said outlet-passage, a valve connected to said arm for movement against and from said valve-body at the outer end of said passage, a pivoted fulcrum-link connected to said casing by one end, and a valve-operating lever pivotally hung on the free extremity of said lever-support, and having one end pivotally engaging said arm, combined and operating substantially as set forth.

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Witnesses:

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