(No Model.)

H. B. LYTLE.

LIQUID FORCING APPARATUS.

No. 382,236. Patented May 1, 1888.

Fig. 1.

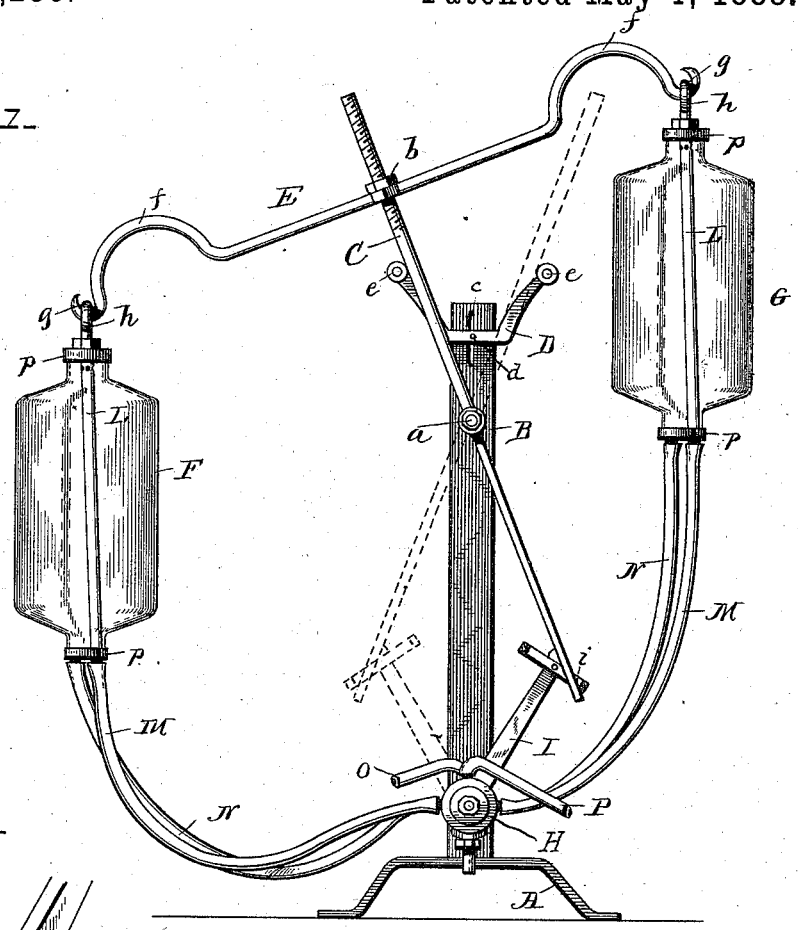


Fig. 2.

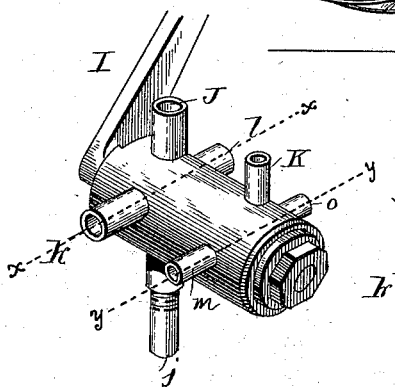


Fig. 3.

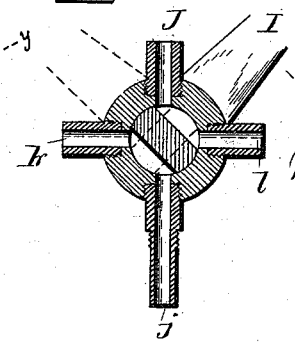
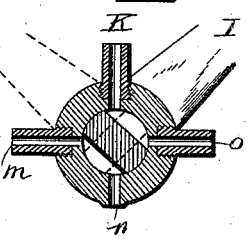


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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LIQUID-FORCING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 382,236, dated May 1, 1888.

Application filed November 14, 1887. Serial No. 255,115. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. LYTLE, a citizen of the United States, residing at Webb's Mills, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Liquid-Forcing Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

This invention relates to certain new and useful improvements in air-compressors of that class in which the movement is derived from water or other fluid, which is permitted to flow through it; and while it is designed more especially for maintaining a proper degree of air-pressure in kegs or barrels from which a fluid is to be drawn, and is intended more especially for use as a beer-pump, I do not intend to limit myself to such use, as it is evident that it is applicable to other uses where a pressure of air is required.

The invention consists in the peculiar combinations and the novel construction, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the drawings, and then specifically defined by the claims.

In the accompanying drawings, which form a part of this specification, Figure 1 represents in front elevation an air-compressor embodying my invention, the left-hand chamber being fully depressed. Fig. 2 is a perspective view of the faucet removed, showing a portion of its operating-lever and the air and fluid connections. Fig. 3 is a cross-section of the same through the line *x x*, and Fig. 4 a similar view through the line *y y*.

Referring now to the details of the drawings, A represents a suitable base or stand from which rises the upright or standard B, to which is pivoted at a point above its center, as at *a*, the arm C, which is screw-threaded at its upper end and is provided with an adjusting-nut, *b*, as shown.

D is a bracket on the upper end of the standard B, and made vertically adjustable thereon in any suitable way—such as, for instance, by means of the slot *c* and thumb-screw *d*. This bracket carries the arms *e*, which project in the path of the arm C and serve as stops therefor, and in order to lessen the shock occasioned by said arm C coming in contact therewith the arms *e* are preferably covered with rubber or some analogous substance.

Carried by the upper end of the arm C is the cross-bar E, preferably curved near its ends, as shown at *f*, to add strength thereto, and its ends turned up or hooked, as shown at *g*, on which hooked ends are hung, by means of suitable eyes, *h*, the fluid or water chambers F G, preferably of glass, to enable the water therein to be readily seen, and may be of any suitable shape, although I prefer to make them as cylinders, as shown.

H is a valve or faucet located near the base of the standard, the lever I of which faucet or cock extends upward, as shown, and at its upper end is formed with an elongated transverse slot, *i*, within which works the lower end of the arm C, as shown. This cock is provided with a port, J, designed to be in communication with a constant supply of fluid, preferably water, and also with the outlet-port *j*, diametrically opposite the supply-port, and with the water-ports *k l*, arranged at right angles to the supply and outlet ports and in line with each other. The cock is also provided with air channels or ports arranged in the same relation to each other as the water-ports above described, and in the drawings are lettered, respectively, K *m n o*.

The tops and bottoms of the water-chambers are closed by means of suitable plates or heads, *p*, which may be of any suitable material and so fitted as to be perfectly air-tight. Extending up through each chamber is a pipe, L, which is perforated at its upper end, and its lower end, which is extended through the bottom of the chamber, is connected by means of a flexible tube, M, with the transverse air-ports *n o* of the cock. The transverse water-ports *k l* communicate by means of the flexible pipes N with the bottom of the chambers. The plug of the cock to which the lever I is attached is provided with inlet-ports for the passage of air and water to and from the chambers through the medium of the pipes and ports above described.

The operation is simple and apparent. With the parts in the position in which they are shown in Fig. 1, in which position the ports of the cock and its plug are in the position in-

dicated by full lines in Figs. 3 and 4, and water being admitted through the pipe O and port J, it passes through the port J, through the appropriate channel in the plug of the cock, through the port *l*, and thence through the pipe N into the water-chamber G. As the water rises in said chamber, it compresses the air therein, which finds its way out through the pipe L and pipe M, port *o*, and port K into the pipe P, which is designed to communicate with the beer-keg or other receptacle. (Not shown.) As soon as the water in the chamber G is sufficient to counterbalance that in the chamber F the former descends and the latter ascends, which movement causes the arm C to vibrate on its pivot, and its lower end, engaging the lever I, rocks the same and throws it into the position shown in dotted lines, which movement reverses the plug of the cock into the position shown in dotted lines in Figs. 3 and 4, when the water from the filled chamber escapes through the pipe N, port *l*, the channel in the plug, and into the outlet-pipe *j*, which should be connected with a sewer or other suitable means for conducting it away. As the water in the chamber G flows out, air enters to take its place through the ports *m* and *o* and pipes M and L. At the same time water is entering the chamber F through the ports J and *k* and the pipe N. This operation is repeated as long as the water is supplied to the device.

Importance is attached to the limited loose connection between the arm C and the lever I, for by this construction the arm C has a slight movement as the water-chamber begins to descend before it operates on the lever, and thus when it does strike the lever it has its own momentum, aided by the increasing weight of the chamber, which enables it to act more positively and more gradually and without any tendency to jar.

What I claim as new is—

1. The combination, with the standard B, of the arm C, pivoted thereto near its upper end and extended upon opposite sides of its pivot and screw-threaded at its upper end, the cross-bar E on the upper end of said arm, curved near its ends, as at *f*, and formed with hooks *g*, the nut *b*, the water-chambers F G, suspended from said hooks, the valve, flexible connections between said chambers and valve, and the lever I of said valve formed with an elongated slot engaging the lower end of said arm C, substantially as and for the purpose specified.

2. The combination, with the base A, standard B, arm C, pivoted to said standard, the valve having ways, as described, and the water-chambers carried by said arm and connected with the ways of the valve, of the bracket D on the upper end of said standard and formed with arms *e*, serving as stops for the arm C, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

HENRY B. LYTLE.

Witnesses:

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