

(No Model.)

H. B. LYTLE.
LIQUID FORCING APPARATUS.

No. 382,236.

Patented May 1, 1888.

Fig. 1.

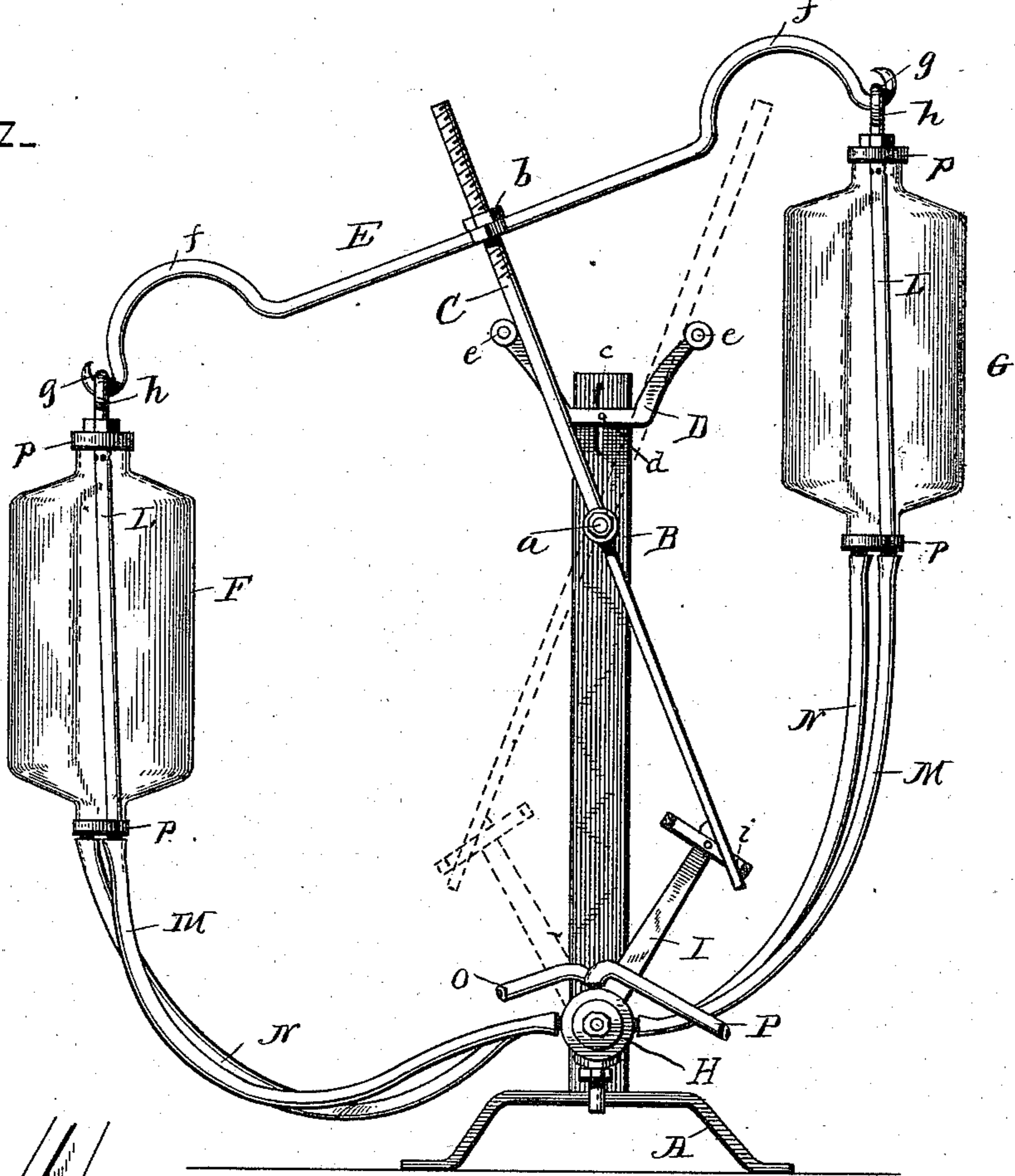


Fig. 2.

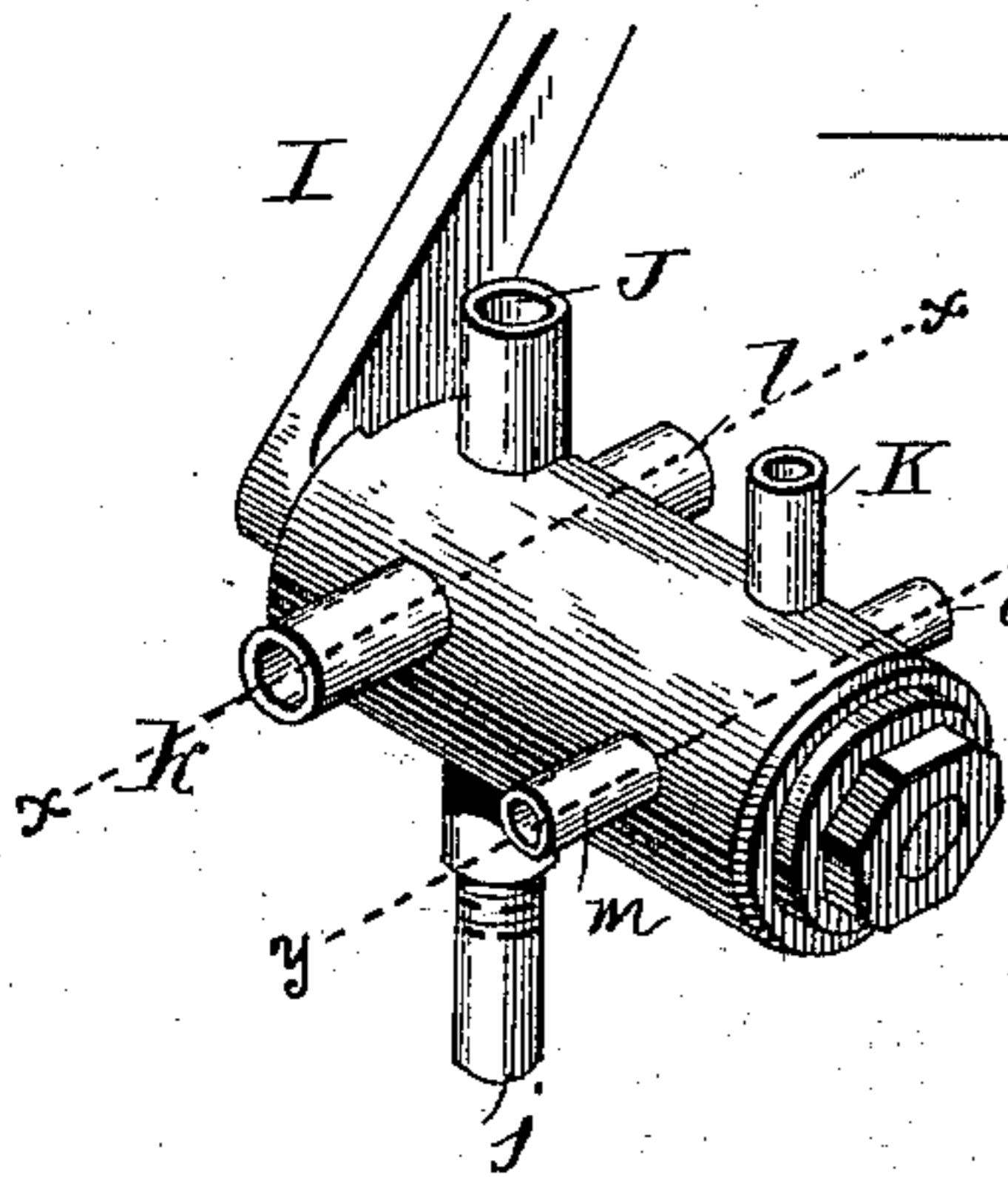


Fig. 3.

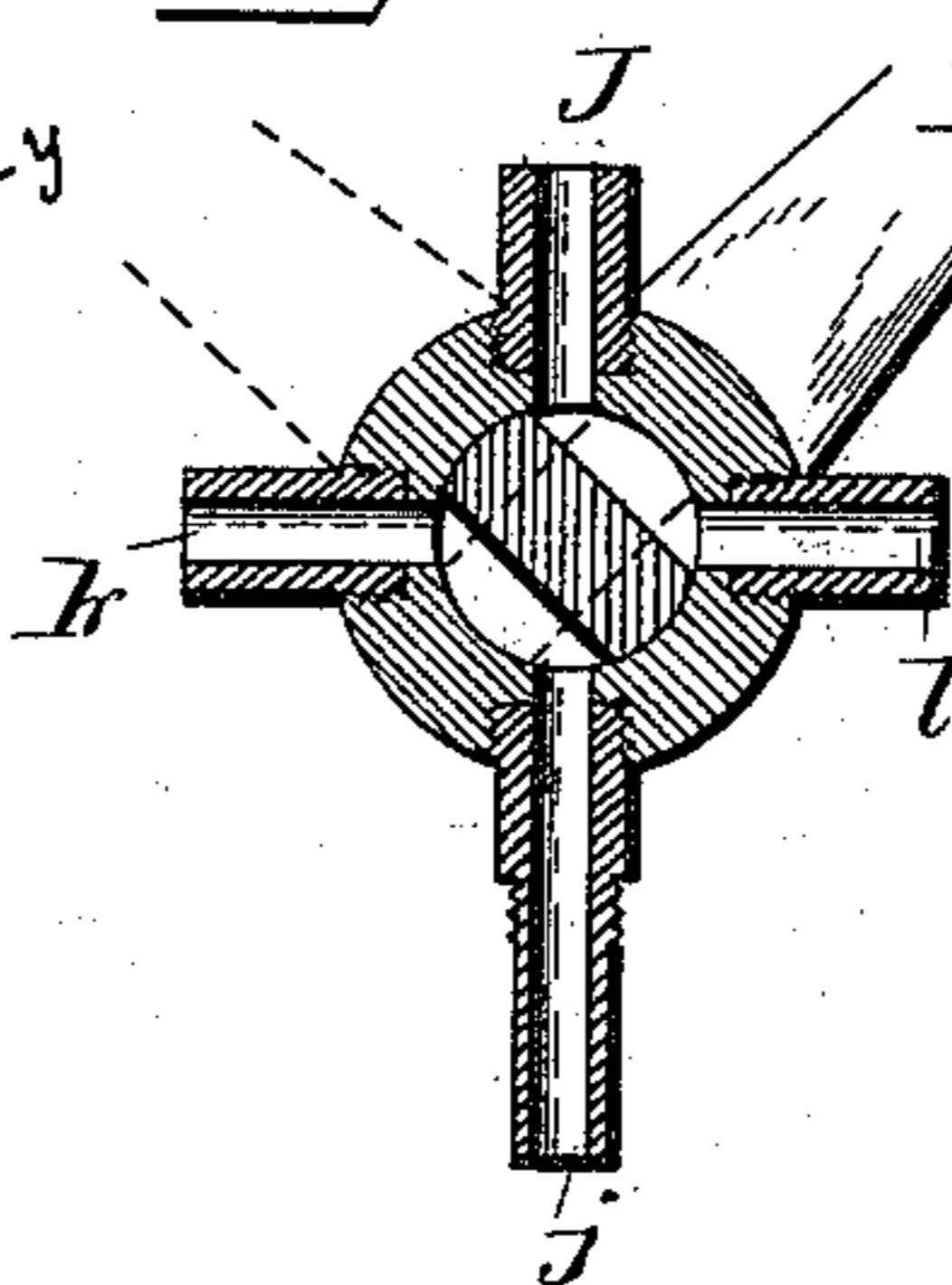
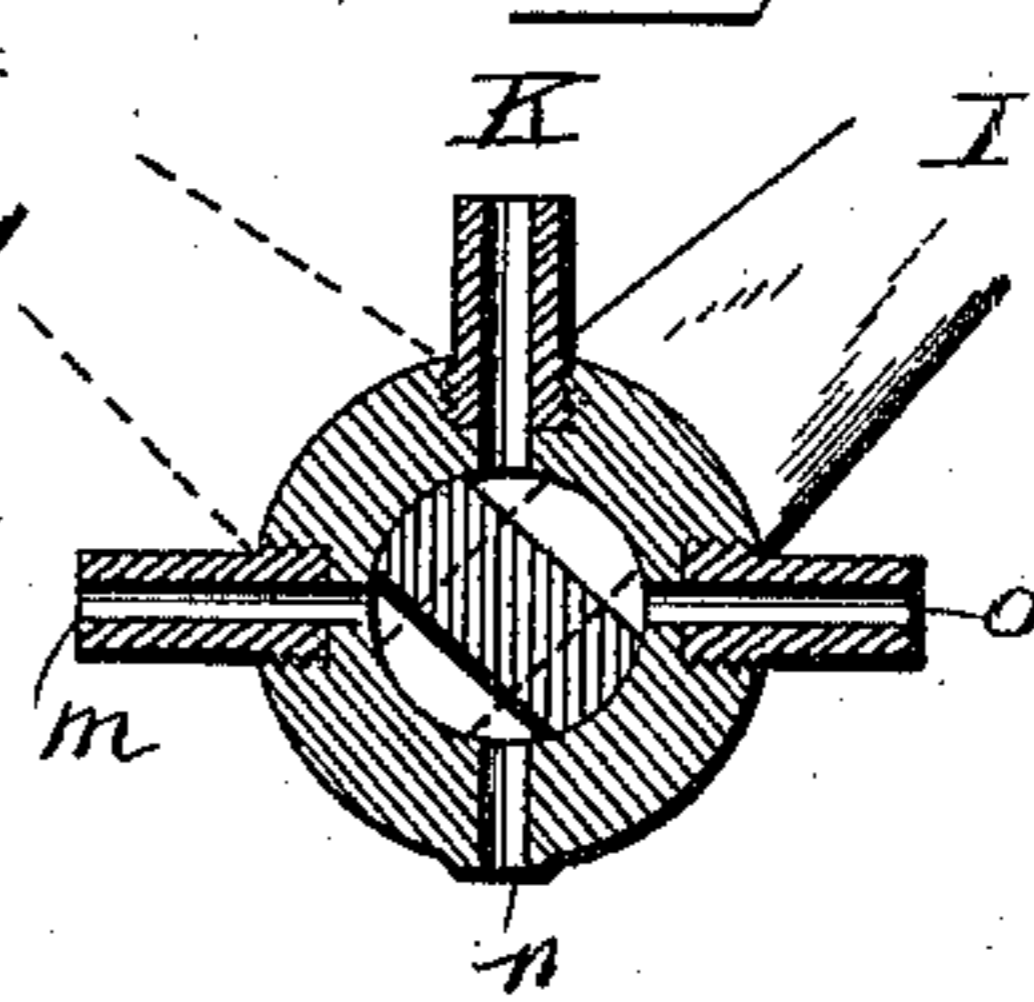


Fig. 4.



Witnesses

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By *his* Attorney

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UNITED STATES PATENT OFFICE.

HENRY B. LYTLE, OF WEBB'S MILLS, NEW YORK.

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 *xx*, and Fig. 4 a similar view through the line *yy*.

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-

5 indicated 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 ap-
 propriate channel in the plug of the cock,
 10 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,
 15 which is designed to communicate with the
 beer-keg or other receptacle. (Not shown.)
 As soon as the water in the chamber G is suf-
 ficient to counterbalance that in the chamber
 20 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 move-
 25 ment reverses the plug of the cock into the po-
 sition 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
 30 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
 35 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
 35 movement as the water-chamber begins to de-

scend 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 posi-
 40 tively 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 45
 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, sus-
 50 pended 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
 55 specified.

2. The combination, with the base A, stand-
 60 ard B, arm C, pivoted to said standard, the
 valve having ways, as described, and the wa-
 ter-chambers carried by said arm and con-
 nected with the ways of the valve, of the bracket
 65 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 65
 of two witnesses.

HENRY B. LYTLE.

Witnesses:

THOS. M. REED,
 M. P. CALLAN.