

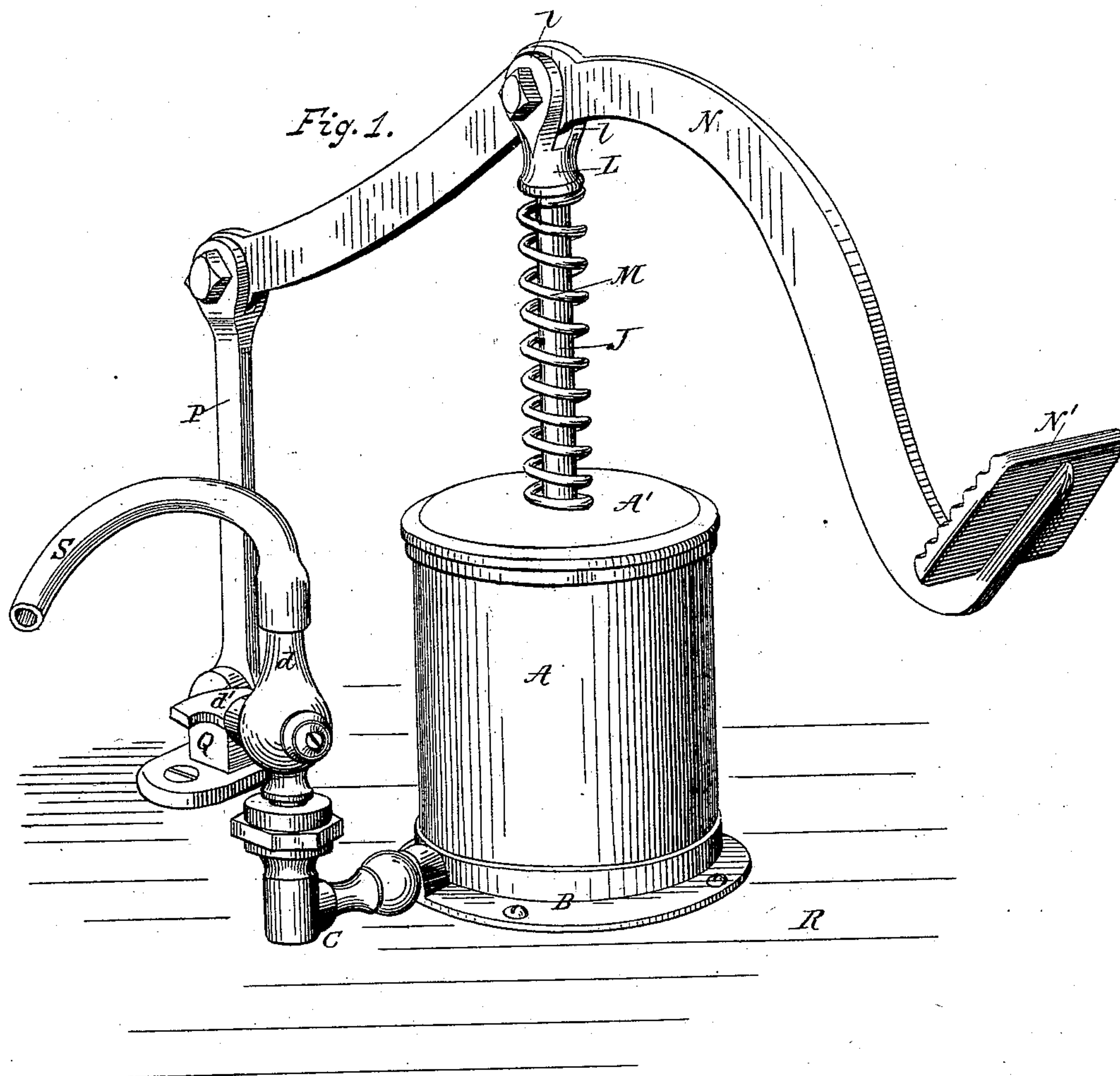
(No Model.)

2 Sheets—Sheet 1.

J. COX.
PUMP.

No. 273,261.

Patented Mar. 6, 1883.



Witnesses:
Albert E. Robinson
Charles S. Kirk

John Cox
Inventor.
His Attorney
Alex. Selwick

(No Model.)

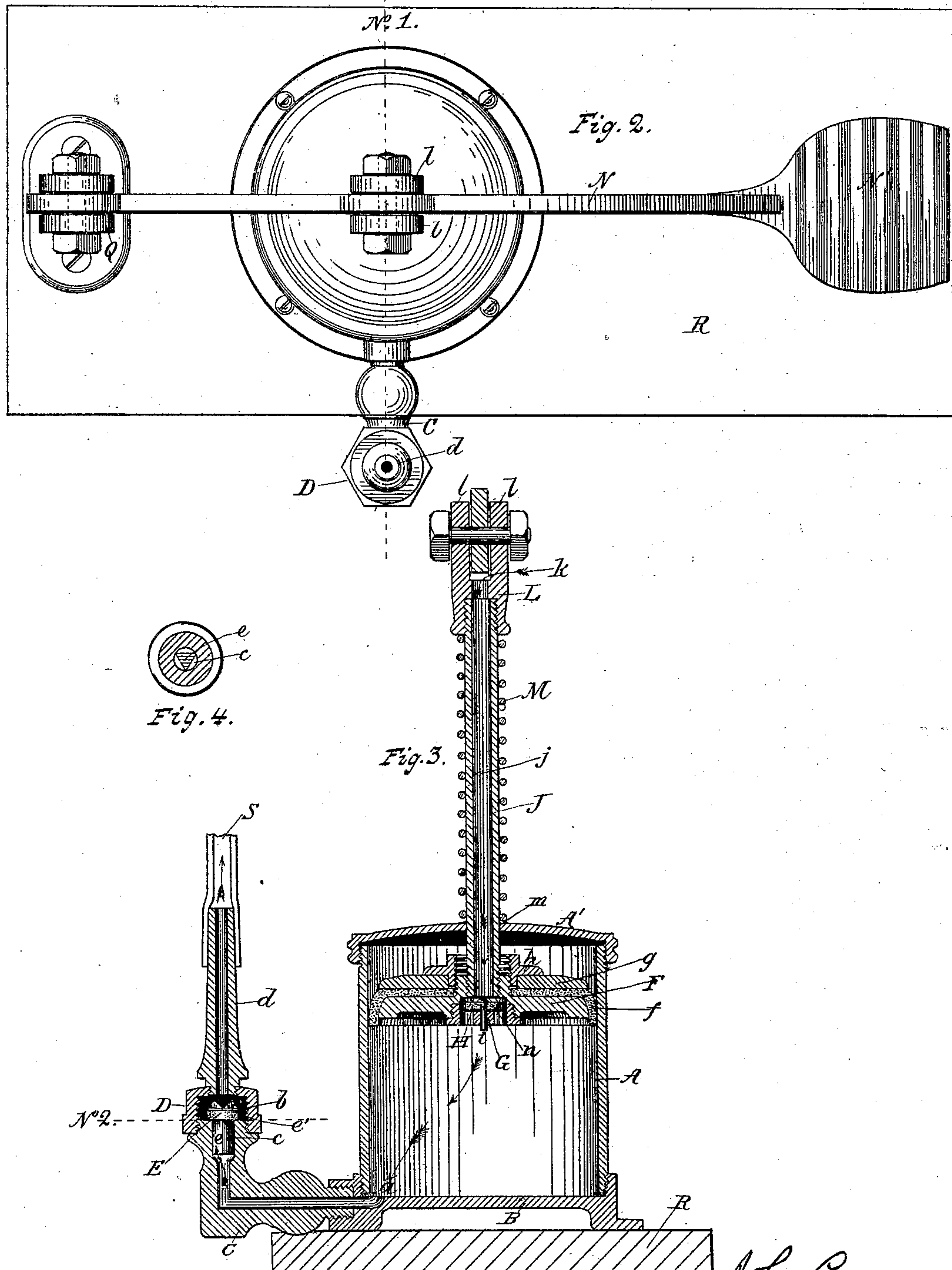
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PUMP.

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Witnesses:
Albert B. Robinson
Charles Beckwith

John Cox
Inventor.
J. H. Atkinson
Attorney.

UNITED STATES PATENT OFFICE.

JOHN COX, OF ALBANY, NEW YORK.

PUMP.

SPECIFICATION forming part of Letters Patent No. 273,261, dated March 6, 1883.

Application filed October 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN COX, a citizen of the United States, and a resident of the city of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Pumps for Forcing Air into Lager-Beer and other Vessels, of which the following is a specification.

My invention relates to air force-pumps for compressing air in vessels containing lager-beer, mineral water, and other liquids, in which a compressing-cylinder, elbow escape-pipe provided with a foot-valve, a piston provided with a check-valve, and vented piston-rod operated by a foot-lever, co-operate to alternately fill the chamber with air and force the same out through the exit-pipe, and a hose into the vessel to be subjected to pneumatic pressure, and also in which a spiral spring, foot-lever, and pivoted fulcrum-link operate to alternately depress and elevate the piston and vented piston-rod.

The object of my invention is to provide a simple and durable air force-pump by which an operator with the pressure of his foot will readily force air into vessels containing liquids, and thereby produce pneumatic pressure in the vessel for facilitating the draft of liquids from the same. I attain this object by means of the mechanism illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a perspective view of the force-pump embodying the improvements in this invention. Fig. 2 is a horizontal view from above of the same. Fig. 3 is a sectional elevation taken at line No. 1 in Fig. 2; and Fig. 4 is a cross-sectional view taken at line No. 2, Fig. 3, and illustrating the stem of the foot-valve and chambers at its sides.

The same letters of reference indicate like parts throughout the several views.

In the drawings, A represents the cylinder of the apparatus. A' is its head, and B its bottom, which head and bottom are securely connected to the body of the cylinder by screw-threads, as shown, with a gasket-packing at the foot of the cylinder, and between its lower edge and the bottom.

C is an elbow exit-pipe leading from port *a* at the bottom of the cylinder to the foot-valve chamber *b*, which foot-valve chamber is located

within coupling-nut D, connecting nipple *d* with elbow escape-pipe C. The upper end of elbow escape-pipe C is provided with a circular bore, *c*, made central therein, which operates as a seat for stem *e* of the foot-valve E. The stem of said foot-valve is made with a triangular form, as shown in Fig. 4, with its diameter corresponding with the diameter of bore *c*, so as to nicely fit within the same and freely move therein. The upper end of stem *e* of valve E is provided with a notched head, *e'*, having a rubber washer beneath. The lower surface side of said washer sets on the projecting rim of the marginal end of bore *c*, which projecting rim operates as the seat of the valve.

Working within cylinder A is the piston-head F, having its periphery covered by leather packing *f*, held in place by washer *g* and clamping-nut *h*, as shown in Fig. 3. Arranged in the lower side of piston-head F is check-valve G, having its stem supported and steadied centrally within valve-seat H, which is screwed up into the screw-threaded recess shown in the bottom side of the piston-head in Fig. 3. Beneath the head of stem *i* of the valve is a rubber washer, *n*, the lower side of which rests on the upper surface of seat H, as shown. The said washer and its stem constitute valve G, which is free to be moved vertically in the chamber above said seat.

J is the piston-rod, which rod is secured to head F by screw-threads, as shown. The said rod is made with a tubular form, with its central bore, *j*, communicating with the valve-chamber below, and its upper end open to the outer atmosphere by inlet-opening or mouth *k*.

L is the head of the piston-rod, and is provided with ears *l l*. Arranged around the tubular piston-rod and between head A' of the cylinder and the lower end of head L of said rod, is a stiff openly-coiled spiral spring, M, made with sufficient strength to carry the piston-head and its adjunctive parts upward through the entire vertical height of the chamber of cylinder A when relieved of pressure. The piston-rod J and its attached piston-head F are steadied in their vertical movements alternately up and down by the former working through a central perforation, *m*, made in head A' of the cylinder, and the piston-head bear-

ing against the surface of the bore of said cylinder.

N is a foot-lever pivoted to the ears of the head of the piston-rod, as shown. The forward end of said lever is made to curve downward, and has its lower end provided with step-piece N'. The rear end of the lever is pivoted to the link-fulcrum P, which link-fulcrum is made with a length considerably greater than the height of cylinder A, and is pivoted at its lower end to the ears of joint-connection piece Q, which is to be secured to the floor or to a board or bottom piece, R, to which is also secured cylinder A.

The nipple *d* may be provided with a stop-cock, *d'*, as shown in Fig. 1.

The manner in which the parts of my above-described apparatus operate is as follows: The nipple *d* is made to enter one end of hose S, which communicates by its other end to the vessel of liquid to be subjected to pneumatic pressure by compression of air within. If nipple *d* is provided with a stop-cock, *d'*, which is advantageous when operating with vessels containing mineral waters, the stop-cock is to be turned open. The operator will then, with his foot placed on step N' of lever N, depress said lever, when the rear end of the same will be held from rising by the link-fulcrum, while the piston-rod and piston-head will be forced down to the bottom of the chamber of cylinder A. The piston-head and its rod being steadied, as before described, will descend vertically, while the link-fulcrum will be oscillated to a small distance backward from the cylinder, with its lower end moving on the pivot of its joint-connection Q. When the piston begins to descend the check-valve G will, by the pressure from the air beneath, be forced upward against the lower end of piston-rod J, and effectually close the lower end of its bore, while at the same time the air will be made to escape from the chamber of the cylinder through port *a*, and pass thence through elbow-pipe C and through the chambers *v v v* at the sides of the triangular-shaped valve-stem *e*, (shown

in Fig. 4, and as indicated by arrows in Fig. 3,) when the foot-valve E will be raised in its chamber *b*, and the air will enter said chamber and pass thence through the notch of the notched head *e'* at the top of said foot-valve, and escape thence through nipple *d* and hose S into the vessel to be charged with compressed air. When the foot-lever is released from the pressure of the operator's foot the spiral spring M will force the piston upward, when check-valve G, relieved of its upward pressure, will drop down on its seat below and away from the lower end of the bore of the tubular piston-rod, while at the same time the foot-valve E will drop down on its seat at the upper end of the elbow escape-pipe and close the same against the return of the air to the cylinder, and the air will pass from the outer atmosphere down through the bore *j* of the piston-rod, and thence into the chamber of cylinder A, as indicated by arrows in Fig. 3. By the alternate depression and elevation of the piston the chamber of cylinder A will be alternately filled with air and emptied of the same by its forced passage into the vessel to be charged.

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

1. The combination, with cylinder A, provided with head A', and a piston-head having a stationary piston-rod standing central and vertical in relation to said piston-head, of foot-lever N, pivoted to link-fulcrum P, which has its lower end pivoted to connecting-joint piece Q, substantially as set forth, for operations described.

2. The combination, with cylinder A, provided with head A', and having piston-head F, provided with a rigid and vertically-fixed piston-rod, of spiral spring M, foot-lever N, and a link-fulcrum, P, pivoted to a joint-connection, all for operation substantially as set forth.

JOHN COX.

Witnesses:

ALBERT S. ROBINSON,
CHARLES SELKIRK.