

No. 777,827.

PATENTED DEC. 20, 1904.

J. WILLMANN.
PUMP.

APPLICATION FILED NOV. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

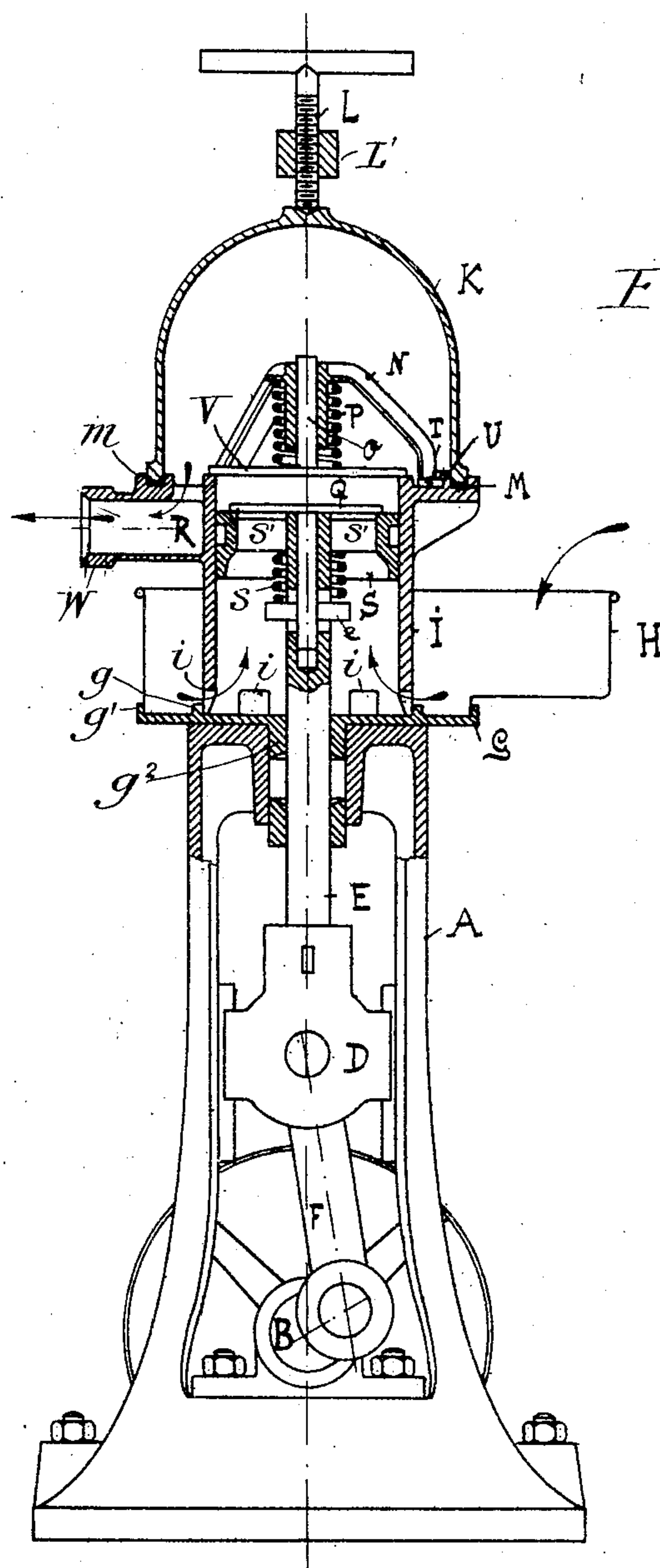


Fig. 1

Witnesses.

Arthur K. Kuhn
Arthur K. Kuhn

Inventor

J. Willmann

No. 777,827.

PATENTED DEC. 20, 1904.

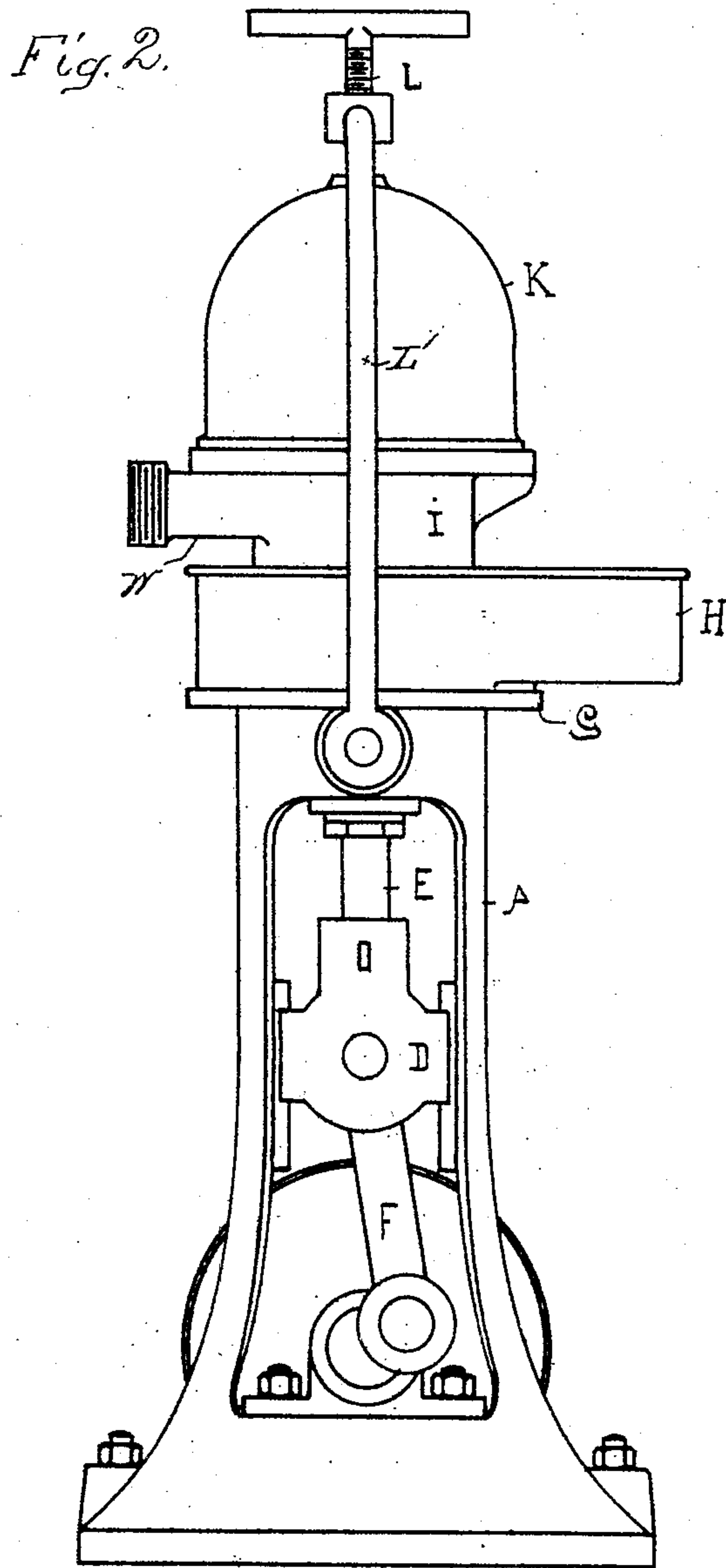
J. WILLMANN.

PUMP.

APPLICATION FILED NOV. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses.

Amos W. Akeman.

Inventor.

J. Willmann

UNITED STATES PATENT OFFICE.

JOSEPH WILLMANN, OF ROME, NEW YORK.

PUMP.

SPECIFICATION forming part of Letters Patent No. 777,827, dated December 20, 1904.

Application filed November 2, 1903. Serial No. 179,632.

To all whom it may concern:

Be it known that I, JOSEPH WILLMANN, a subject of the Emperor of Germany, residing at Rome, county of Oneida, and State of New York, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a novel construction in a pump, the object being to provide a device of this character having high efficiency and which is easily taken apart for purposes of cleaning and repairing; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a central vertical section of a pump constructed in accordance with my invention. Fig. 2 is a side elevation of the pump, showing the yoke employed for holding the cylinder and appended parts of the pump upon the base and in proper relative position.

My present invention presents certain improvements over the construction of pump forming subject of Letters Patent No. 749,248, issued to me on January 12, 1904.

Referring now to said drawings, A indicates the base of a pump constructed in accordance with my invention and in which a crank-shaft B is journaled, said crank-shaft being connected with the cross-head D, movable in vertical guides by means of a pitman F. In the upper end of said base A is a stuffing-box, through which the piston-rod E passes, which is connected at its lower end with said cross-head D. Upon the upper end of said base A is mounted a flat circular plate G of larger diameter, on the upper face of which are two concentric ribs *g* and *g'*. Said plate is provided with a central opening for the passage of said piston-rod, and surrounding said opening is a downwardly-extending annular flange *g''*, projecting into the stuffing-box and forming an annular shoulder therein, against which packing is adapted to be compressed. Fitting within the annular rib *g* and resting upon said plate G is a cylinder I, having an annular flange M at its upper end and in which a hollow trunk-piston S is movable. On the upper face and at

the outer edge of said annular flange M is an annular rib *m*, within which the lower edge of a dome-shaped air-chamber K fits, the latter being held securely in place and in turn holding said cylinder in place by means of a set-screw L, mounted in a yoke or inverted-U-shaped arm L', pivotally mounted at its ends on trunnions on said base A and bearing upon the upper end of said air-chamber K. On said plate M inwardly of said rib *m* are a plurality of inverted-L-shaped projections U, adapted to receive projections T on the lower ends of the arms N of a tripod carrying the valve V, which seats upon the upper end of said cylinder I, the stem O of said valve fitting the sleeve carried by said tripod and being normally held upon its seat by means of the spring P. The said trunk-piston S is hollow and open at both ends, its upper end being normally closed by a valve Q, the stem of which enters a central opening in the upper end of the piston-rod E, said trunk-piston S being preferably integral with said piston-rod and of skeleton form. The said valve Q is held normally closed by means of a spring *s*, bearing at its upper end against the arms *s'* of the piston and at its lower end against a cross-head *e*, mounted in a transverse opening in said valve-stem and projecting at its ends through longitudinal slots in said piston-rod E. In the lower edge of said cylinder I are a plurality of recesses *i*, forming inlet-ports for the liquid, the latter being received in a vessel H, the lower edge of which fits within the annular rib *g'* on the upper face of said plate G. Cast integral with said cylinder I is a radial pipe W, which does not communicate with said cylinder I directly, but communicates with said air-chamber K through an opening R in said flange M of the cylinder I, said pipe W serving as the delivery-port.

The operation of my pump is as follows: The liquid to be transported is fed into the receptacle H and is drawn into said cylinder I, in which the piston S is reciprocated at high speed. The valve Q opens at every downward stroke of said piston and closes as soon as said piston has begun its upward stroke, while the valve V opens as soon as said piston begins its upward stroke and

closes as it begins its downward stroke. The fluid is discharged by the upward stroke of the piston into the air-chamber K and at each downward stroke a partial vacuum is formed
 5 in the chamber between said valves Q and V, which is filled from the lower end of the cylinder I, as will be obvious. The liquid discharged into said air-chamber K compresses the air therein, which forms a cushion to prevent
 10 pounding and also prevents foaming of the liquid which flows from said chamber K through the opening R and pipe W.

By reason of the large area of the openings afforded by the valves Q and V, their close
 15 proximity to each other, and the little resistance offered thereby I obtain maximum efficiency. I also obtain the advantage of transporting liquid with very little agitation, the flow being smooth and uniform, thus
 20 making my pump particularly well adapted for the transportation of milk. The ease of taking the pump apart and the ready access to all parts for cleaning also render it advantageous for use in dairies.

25 I claim as my invention—

1. In a pump, the combination with a base, a cylinder mounted thereon, an air-chamber superimposed on said cylinder and communicating therewith, a hollow trunk-piston in
 30 said cylinder, a suction-valve carried thereby, an inlet-port, a check-valve controlling the communication between said cylinder and said air-chamber, and a frame removably mounted on the upper end of said cylinder within said
 35 air-chamber and receiving the stem of check-valve to guide the same.

2. In a pump, the combination with a cylinder, a hollow reciprocating trunk-piston therein, a suction-valve carried thereby, an
 40 exhaust-port, an air-chamber interposed between said cylinder and said exhaust-port, a check-valve controlling communication be-

tween said cylinder and said air-chamber, and a guide in which said check-valve is movable removably mounted in said air-chamber. 45

3. In a pump, the combination with a base and means carried thereby for imparting reciprocatory motion to a piston, of a plate mounted on said base and carrying a central sleeve through which the piston-rod passes, 50 said sleeve forming part of a stuffing-box, a receptacle for liquid to be transported carried by said plate, a cylinder open at its ends and provided in its lower end with apertures forming inlets for liquid, a hollow trunk-piston in
 55 said cylinder, a suction-valve carried thereby, a check-valve seating on the upper end of said cylinder, a frame removably mounted on said cylinder in which said check-valve is movable and an air-chamber inclosing said frame and
 60 having a delivery-opening for the liquid.

4. In a pump, the combination with a base and means carried thereby for imparting reciprocatory motion to a piston, of a plate mounted on said base and carrying a central
 65 sleeve through which the piston-rod passes, said sleeve forming part of a stuffing-box, a receptacle for liquid to be transported carried by said plate, a cylinder open at its ends and provided in its lower end with apertures forming
 70 inlets for liquid, a hollow trunk-piston in said cylinder, a suction-valve carried thereby, a check-valve seating on the upper end of said cylinder, an air-chamber above said cylinder having a discharge-opening for the liquid, a
 75 yoke pivotally mounted on said base and overhanging said air-chamber, and a set-screw in said yoke bearing on said air-chamber to hold same and said cylinder in position relatively to each other and to said base.

J. WILLMANN.

Witnesses:

ARTHUR WHYTE,
 A. M. WAKEMAN.