

**J. HORN.
PUMP.**

(Application filed Mar. 6, 1900.)

(No Model.)

Fig: 1

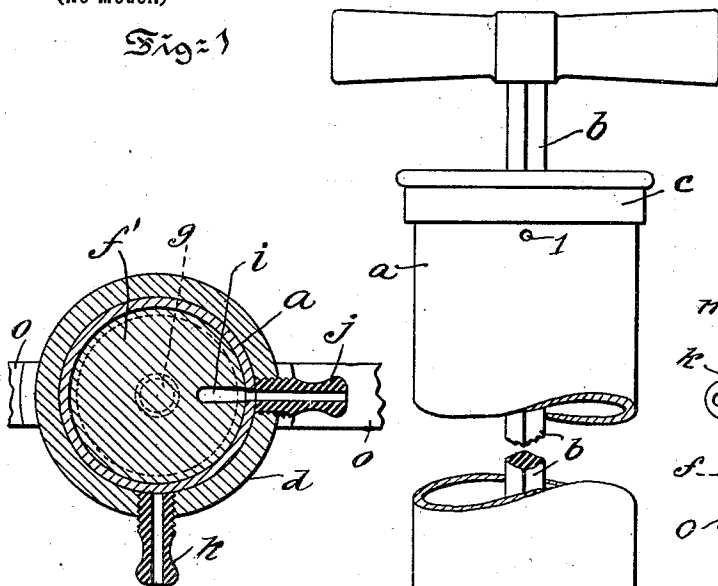


Fig: 4

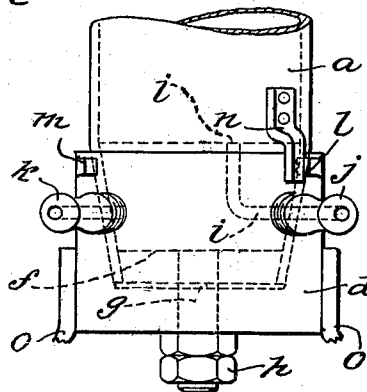


Fig: 2

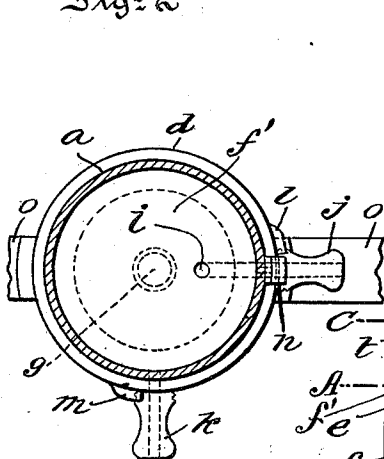


Fig: 5

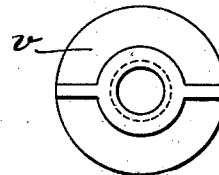


Fig: 3

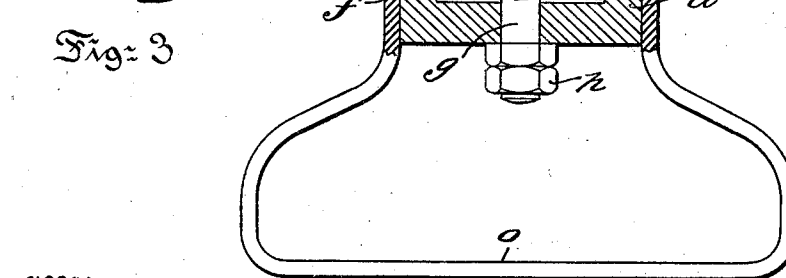
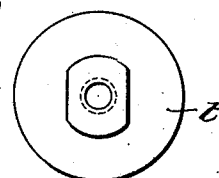


Fig: 6



Witnesses:
W. A. Schaefer.
Harry Shields

Inventor.
Joseph Horn.
By his attorney Chas. A. Rutter.

UNITED STATES PATENT OFFICE.

JOSEPH HORN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
NAPPEL PUMP COMPANY, OF HARTFORD, CONNECTICUT, A CORPO-
RATION OF CONNECTICUT.

PUMP.

SPECIFICATION forming part of Letters Patent No. 686,939, dated November 19, 1901.

Application filed March 6, 1900. Serial No. 7,502. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HORN, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

My invention relates to improvements in pumps; and the object of my invention is to furnish a means whereby the leather cups of the pistons may be at any time adjusted to bear more or less tightly against the barrel in order to increase the efficiency of the pump.

In the accompanying drawings, forming part of this specification, and in which similar letters of reference indicate similar parts throughout the several views, Figure 1 is partly a side and partly a central sectional elevation of my improved pump; Fig. 2, a section of Fig. 1 on line A B; Fig. 3, a section of Fig. 1 on line C D; Fig. 4, a side elevation of the lower end of the pump; Fig. 5, a plan of wing-nut adapted to hold in place and operate the expanding-plug, which distends the cups of the piston; Fig. 6, a plan of nut for securing the lower cup of piston to the piston-rod.

a is the barrel of my pump; *b*, the piston-rod; *c*, a cap closing the top of the barrel; *d*, a base which carries the lower end of the barrel. The lower part of the barrel *a* is tapered, as shown at *e*, and the base *d* is furnished with a correspondingly-tapered hole, in which the part *e* fits.

f is a plug closing and filling the tapered lower end of barrel *a*; *g*, a screw secured centrally to plug *f* and passing out through base *d*; *h*, nuts on screw *g*, which, together with the screw, prevent the barrel from being lifted from the base.

i is a port opening through the tapered side of barrel *a* and up through and to the top of plug *f*; *j k*, ports in the sides of base *d*.

In the drawings the plug closing the bottom of the barrel is shown constructed in two pieces *f f'*; but in practice it can be constructed in a single piece, if desired.

The piston-rod *b* is angular and passes through a hole in cap *c* of corresponding form. Hence by turning this rod the barrel *a* can be

turned so as to bring the port *i* into register with either of the ports *j k*, suitable stops *l m*, carried by base *d*, and a stop *n*, carried by barrel *a*, limiting the rotary movement of the barrel.

o is a stirrup to enable the pump to be held by the foot while it is being operated.

The pump may be operated to draw in liquid through one port, as *j*, and by turning the barrel to discharge it through the other port *k*. It may be operated to both lift and discharge through the same port or as a test-pump, as desired.

The bottom of the pump-barrel being tapered and entering and working in a tapered hole in base *d*, the former tends to grind a seat for itself in the latter, and after long use the joint between the barrel and seat is as tight as it was in the first place.

In order that the lower end of the piston may expel all the air or liquid from the barrel when at the bottom of its stroke, the lower or tapered end of the barrel *a* is completely filled with a plug *f* or is made solid, with the exception of the port *i*, the lower end of the piston being adapted to engage the top of this plug when at the bottom of its downward stroke.

In order to insure a satisfactory operation of the piston, it is constructed as follows: *p q* are leather cups placed back to back, the sides of the former extending upward and the sides of the latter extending downward. *r* is a stop carried by the piston-rod *b*, the lower end of which engages the cup *p* and the upper end of the shanks of which is cylindrical and threaded and the lower end of which is conical in form. *t* is a washer-nut carried on lower end of piston-rod *b*, which serves to force the bases of the cups *p q* together and against the base of the stop *r*. *u* is a tapered washer placed small end downward on the stop *r*, the periphery of which engages the upper inner end of the sides of cup *p*, as shown. The upper cup being out of contact with liquid and the upper end of the barrel being furnished with one or more relief-holes *I*, there is nothing to force the upper cup tightly against the sides of the barrel. Hence I have devised the above device, which oper-

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ates as follows: The tapered washer *u* is placed on stop *r* and engages the inner upper sides of the cup *p* and is held firmly in engagement therewith by the wing-nut *v*, which is carried by the threaded portion of the stop
5 *r*. As the cup *p* wears, the washer is set farther down on the stop by screwing down the wing-nut, the tapered face of the washer forcing the cup farther and farther outward
10 as it descends, this action being further increased by the conical form of the lower part of the stop, which when the washer is forced down over it increases its diameter by forcing it outwardly from the center.
15 The arrangement used upon the upper cup can, if desired, be also used in connection with the lower cup; but as this latter cup is in direct contact with the liquid it will usually be on its downward or operative stroke held

thereby with sufficient pressure against the 20 barrel to prevent leakage.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a pump, in combination, a barrel, a piston-rod, a cup carried by said rod engaging said barrel, a stop carried by said rod the outside end of which is cylindrical and threaded and the inner end of which is conical, a tapered washer carried by said stop engaging the inner sides of said cup, and a nut carried on said stop whereby said washer may be driven inside said cup as and for the purposes set forth.

JOSEPH HORN.

Witnesses:

GEORGE W. SELTZER,
CHARLES A. RUTTER.

It is hereby certified that the name of the assignee in Letters Patent No. 686,939, granted November 19, 1901, upon the application of Joseph Horn, of Philadelphia, Pennsylvania, for an improvement in "Pumps," was erroneously written and printed "The Nappel Pump Company," whereas the said name should have been written and printed *The Noppel Pump Company*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 3d day of December, A. D., 1901.

[SEAL.]

F. L. CAMPBELL,
Assistant Secretary of the Interior.

Countersigned:

F. I. ALLEN,
Commissioner of Patents.