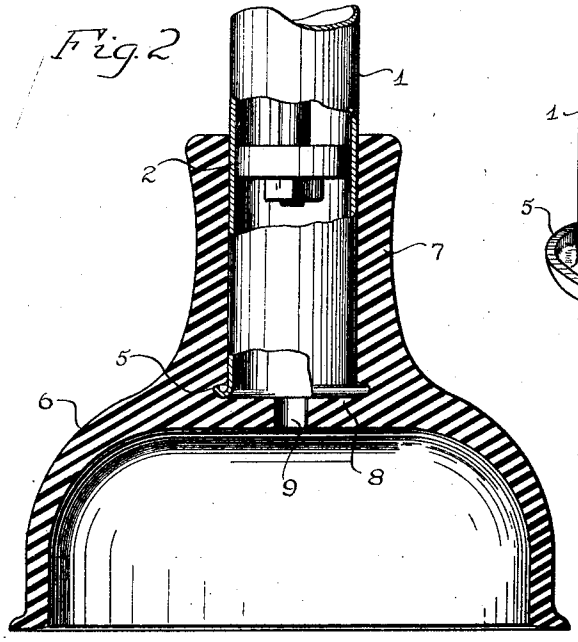
March 19, 1929. A. G. NORTON 1,706,315

FORCE PUMP

Filed March 24, 1928

Fig. 2



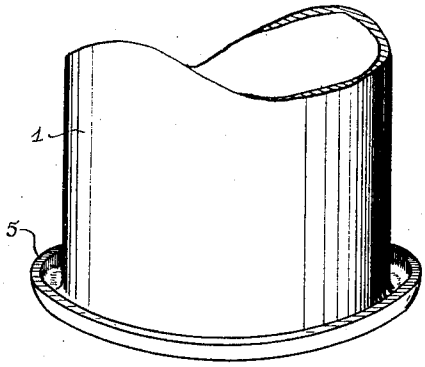


Fig. 4

Fig. 1

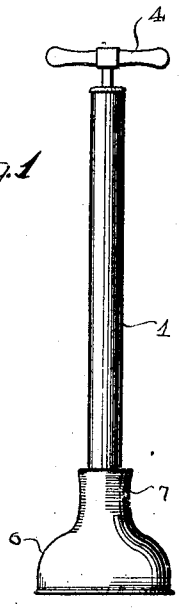
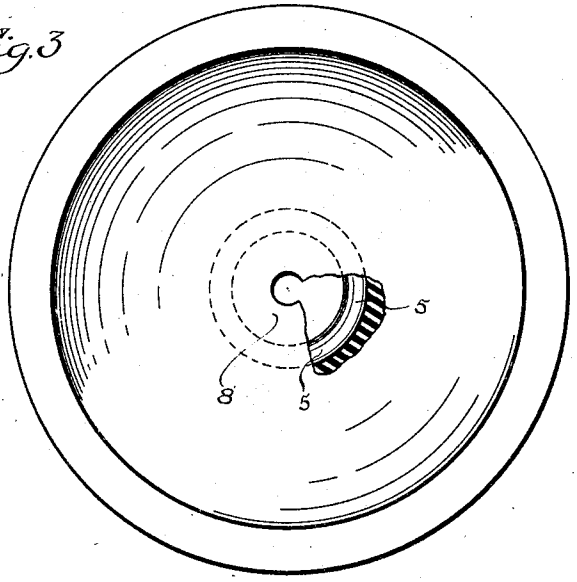


Fig. 3



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Patented Mar. 19, 1929. 1,706,315

UNITED STATES PATENT OFFICE.

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FORCE PUMP.

Application filed March 24, 1928. Serial No. 264,398.

The present invention relates to force pumps and more particularly to the type in which the cylinder of the pump has a flexible sealing cup secured at one end for forming a sealed connection with the object on which the pump is used. An object of this invention is to provide an effective means for securing the sealing cup to the cylinder of the pump. Another object of the invention is to utilize the sealing cup for increasing the pressure created by the pump.

To these and other ends, the invention consists of certain parts and combinations of parts all of which will be hereinafter described: the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a view in elevation of a pump constructed in accordance with this invention;

Fig. 2 is an enlarged fragmentary sectional view of the pump cylinder and the sealing cup;

Fig. 3 is a bottom view of the sealing cup, and

Fig. 4 is a fragmentary perspective view of the lower end of the pump.

In the illustrated embodiment of the invention, 1 indicates the cylinder and 2 the piston movable therein through the handle 4. The cylinder, in this instance, is a metal tube open at its lower end which bends or curves outwardly in the direction of the cylinder to provide an annular curved rib 5. The sealing cup 6 has a sleeve 7 at one end which is separated from the chamber of the cup by a partition 8 formed with a central opening 9 the diameter of which is relatively smaller than that of the cylinder 2. In fitting the sealing cup to the cylinder, the sleeve 7 is stretched or expanded, from an internal diameter materially less than that of the external diameter of the cylinder and after such expansion it is fitted to the cylinder so that the end of the cylinder abuts the partition 8. When the sleeve is released, it contracts into binding engagement with the outer surface of the cylinder and the rib 5 becomes imbedded in the material of the sleeve adjacent the partition 8 so that the sealing cup is held against movement in one direction by the curved annular rib or flange 5 as well as by the tight frictional engagement between the sleeve 7 and the cylinder 2, and, in the other direction, by the abutment of the lower end of the cylinder against the partition 8. The small opening 9 has the effect of increasing the air pressure created by the piston 2.

From the foregoing, it will be seen that there has been provided a construction in which the sealing cup is effectively held to the cylinder against movement in both directions and at the same time it has a partition which creates greater air pressure from the pump. Further, the partition 8 acts as a stop for the piston and prevents the latter marring or injuring any parts on which the tool is being used.

What I claim as my invention and desire to secure by Letters Patent is:

1. A force pump comprising in combination a cylinder open at one end and provided with a rib around such open end, a piston movable in the cylinder and a sealing cup having a sleeve, a partition between the sleeve and the chamber in the cup abutting the lower end of the cylinder, the rib of the cylinder being imbedded in the material of the sleeve adjacent such partition.

2. A force pump comprising in combination a cylinder, a piston movable in the cylinder, and a sealing cup having a sleeve fitting on the cylinder and also having a partition abutting the end of the cylinder and arranged between the sleeve and the chamber of the cup, said partition having an opening of smaller area than the internal diameter of the cylinder so as to increase the pressure of the air delivered by the cylinder to the chamber of the cup.

ARTHUR G. NORTON.