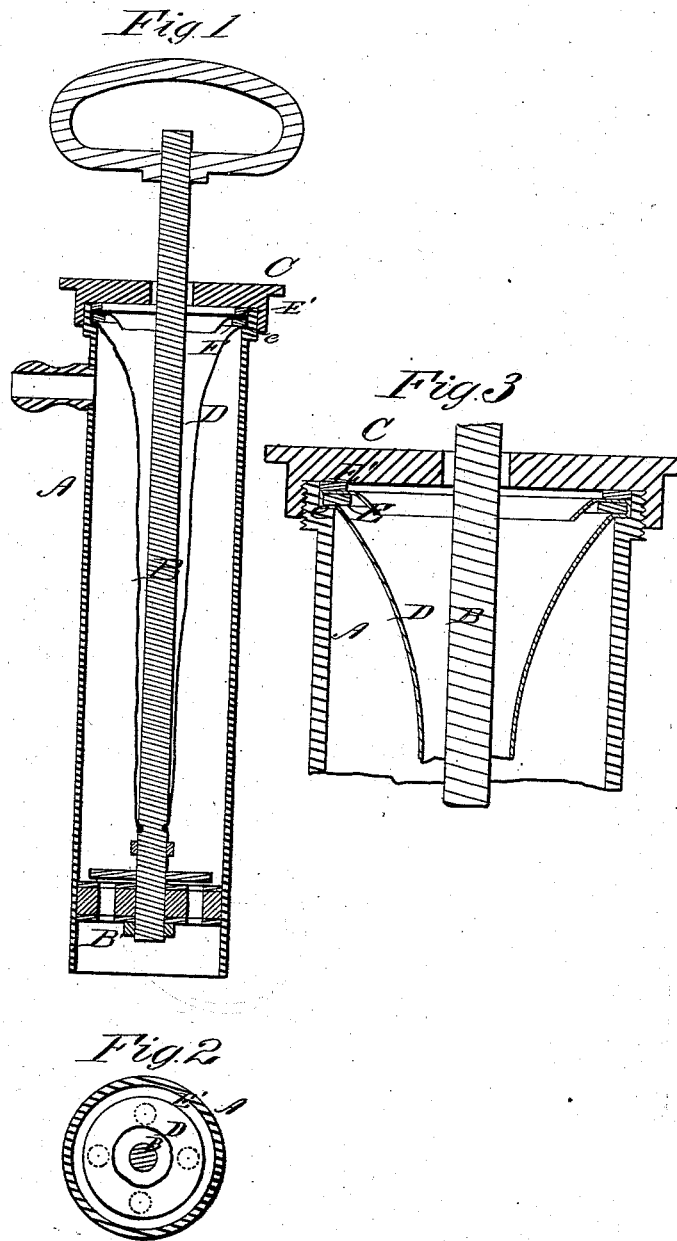


W. FAGAN.
Pump.

No. 214,764.

Patented April 29, 1879.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM FAGAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **214,764**, dated April 29, 1879; application filed September 7, 1878.

To all whom it may concern:

Be it known that I, WILLIAM FAGAN, of Washington, in the District of Columbia, have invented a certain new and useful Improvement in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical central sectional view of a pump embracing my improvement. Fig. 2 is a transverse section of same. Fig. 3 is a vertical central sectional view, enlarged, of upper part of pump.

This invention has relation to pumps, particularly air-pumps, and has for its special object the provision of novel and effective means for securing an air-tight joint at the upper end of the barrel, and dispensing with the ordinary stuffing-box through which the piston-rod plays.

As is well known, stuffing-boxes, unless constructed with the greatest care, involving considerable expense, are very defective, being leaky both for air and liquids. They are, moreover, very liable to get out of order from wear and other causes, and to interfere very materially with the perfect operation of the pump or other apparatus to which they are applied.

My invention purposes avoiding the expense, inconvenience, and defective service of stuffing-boxes by the provision of a substitute device which will be comparatively inexpensive to manufacture and apply, which may be attached to and adapted to perform its functions on any ordinary air or liquid pump, and which will render perfectly and permanently air and liquid tight the space between the barrel of the pump and the piston-rod.

My invention accordingly consists in locating within the barrel of the pump, and above the piston-head, an air and liquid tight sack or tube of a conical shape, which shall at its lower and smaller end closely embrace and be firmly secured to the piston-rod, while its upper and larger end shall be fastened between clamping-rings, and by the cap of the pump, or in any other suitable manner, to the upper end of the barrel. This sack or tube constitutes a perfectly air and liquid tight division

between the upper and lower parts of the barrel, and, being flexible, rises and falls, or compresses and expands, with the elevation and depression of the rod, and, while serving to prevent leakage above the piston-head, serves also to promote and facilitate the creation of a suction-vacuum and increase the efficiency of the pump.

Referring to the accompanying drawings, illustrating my invention, A designates the pump barrel or cylinder, of ordinary construction. B represents the piston-rod; B', the piston-head, and C the screw-cap fitting the top of the cylinder.

D designates the flexible sack or tube, made of india-rubber or other suitable material, and of conical shape. The lower end of said sack or tube embraces and is closely and firmly secured to the piston-rod a short distance above the piston-head.

The upper end of the sack or tube is turned inwardly over a metal ring, E, which then rests in a recess or offset, *e*, cut in the inside of the barrel. Another and slightly larger ring, E', is placed upon the covered lower ring, so as to clamp the inwardly-turned tube. The cap C is then screwed on the barrel, and the rings and sack secured, and the joint rendered perfectly air and water tight.

Having described my invention, I claim—

1. In combination with the pump-barrel A, having recess or shoulder *e*, piston B', and piston-rod B, the conical flexible sack or diaphragm D, detachable clamping-rings E E', and screw-cap C, said sack or diaphragm being at its lower or inner edge connected directly to the piston-rod, and having its upper or outer edge clamped between said rings and held firmly by means of the screw-cap C, substantially as shown and described.

2. In combination with the pump-barrel A, piston-head B', and rod B, the elongated flexible sack or diaphragm D, having its lower or narrow end secured to the rod B and its upper or wide end attached to the shell A, as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand.

WILLIAM FAGAN.

Witnesses:

JOS. B. CONNOLLY,
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