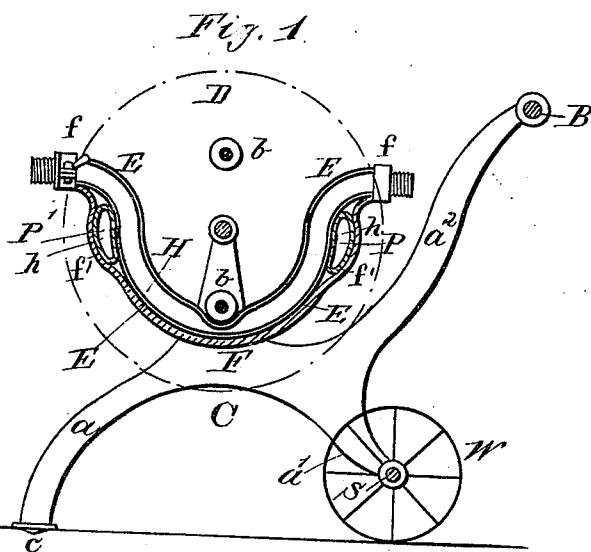
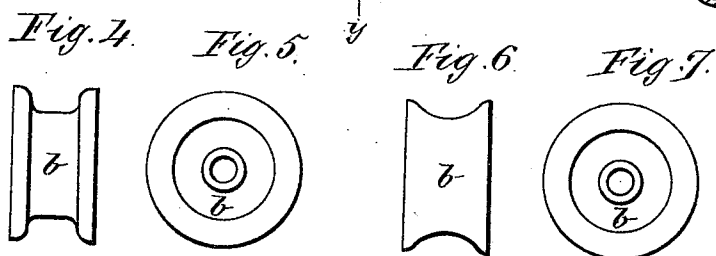
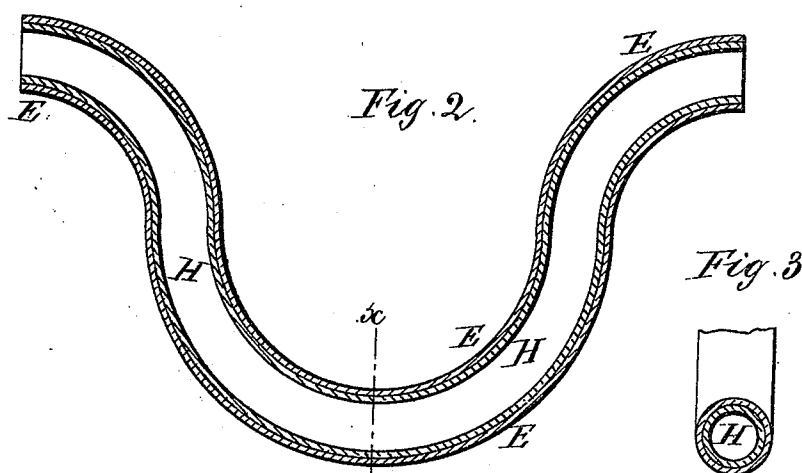


(No Model.)

P. J. RUFFEL.
INDIA RUBBER PUMP.

No. 320,888.

Patented June 23, 1885.



Witnesses.
O. C. Goulter
L. W. Knowles.

Inventor
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for Henry Orth
his atty.

UNITED STATES PATENT OFFICE.

PIERRE JULIEN RUFFEL, OF PARIS, FRANCE.

INDIA-RUBBER PUMP.

SPECIFICATION forming part of Letters Patent No. 320,888, dated June 23, 1885.

Application filed November 21, 1883. (No model.) Patented in England February 27, 1883, No. 1,073, and September 19, 1883, No. 4,482; in France July 27, 1883, No. 156,526; in Belgium August 30, 1883, No. 62,452; in Germany August 30, 1883; in Austria-Hungary September 11, 1883, No. 34,464 and No. 46,736, and in Italy September 11, 1883, No. 15,881.

To all whom it may concern:

Be it known that I, PIERRE J. RUFFEL, a citizen of the French Republic, residing at Paris, in the French Republic, have invented certain new and useful Improvements in Pumps, (for which I have obtained Letters Patent in England, No. 1,073, dated February 27, 1883, and No. 4,482, dated September 19, 1883; in France, No. 156,526, dated July 27, 1883; in Belgium, No. 62,452, dated August 30, 1883; in Austria-Hungary, No. 34,464 and No. 46,736, dated September 11, 1883; in Italy, No. 15,881, dated September 11, 1883, and have filed an application for patent in Germany, under date of August 30, 1883;) and I do hereby declare the following to be a full, clear, and exact description of the invention.

My invention relates to that class of pumps in which the water or other fluid is drawn in and ejected by the alternate collapsing and expanding of a rubber hose.

In pumps of this class as heretofore constructed the injuries to the operating or suction and force rubber hose by the wheel or roller traveling over it have been so great that for general use this class of pumps have been practically abandoned. These injuries to the hose, which are so great a source of annoyance and expense, are due to the comparatively slight resistance the hose is capable of offering to the action of the wheel or roller.

The primary object of my invention is to obviate the injurious effect of the operating devices upon the compressible hose by reinforcing the same by means of an envelope capable of withstanding the wear resulting from the action of the operating devices upon the hose to a greater extent than the hose itself, by inclosing the latter in a sheath or envelope of textile fabric, either of cotton, flax, hemp, or other like fibrous material, or by means of a flexible varnish or paint or other protecting covering readily replaced by a new one when worn.

The further object of the invention is to reduce as much as possible the friction of the roller on the hose, and to provide a simple

and convenient means whereby such pumps may be readily moved from one place to another.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of a pump of the class described constructed according to my invention. Fig. 2 is a like view of the suction and force hose on a larger scale. Fig. 3 is a transverse section on line *xy* of Fig. 2. Figs. 4 and 6 and Figs. 5 and 7 are front and side elevations of grooved rolls or wheels.

Like letters indicate like parts wherever such may occur in the above figures of drawings.

C indicates the carriage of the pump, preferably of metal. It is composed of two side pieces, each having three arms or extensions, one, *a*, extending forwardly and downwardly and constituting the front legs, which are armed with prongs or calks *c* to afford a firm hold upon the ground where the pump may be temporarily stationed, a short arm or extension, *a'*, extending downwardly and rearwardly and constituting the rear legs, said arms being provided with bearings for a shaft or axle, S, upon which is mounted a carrying-wheel or a pair of such wheels, W, and a long arm or extension, *a''*, projecting rearwardly and upwardly, to which is secured a cross-bar, B, that constitutes the handle. These side pieces support the frame F, upon which is secured the operating-hose H, said frame having the general form of a U or siphon, the extremities of the legs being curved outwardly in opposite directions, as shown. At its opposite ends the frame F carries couplings *f*, to which the operating-hose is secured, said couplings having screw-threaded extensions for the attachment of the feed and delivery pipes or tubes.

Upon a suitable standard or standards formed on or connected with the frame F or its side pieces is mounted a fly-wheel or disk, D, carrying two operating bowls or wheels, *b* *b*, diametrically opposite each other and equidistant from the center. The bowls *b* are so located relatively to the hose that when during their rotation they reach a cer-

tuin point on the hose H the bowl will collapse or compress said hose to such an extent as to form a tight closure of its interior passage. Two such points are provided, one, P, at the feed end of the hose, and one, P', at the delivery end thereof. At these points the wear of the hose is greatest, and, to avoid this, the frame F is constructed to form recesses *f'*, for the reception of flexible hose-sections *h*, so that when the bowls traverse these points the hose H will not be pressed upon the frame, but upon yielding flexible cushions that effectually tend to prevent the hose from breaking at those points and also to effect a better closure of its interior passage.

To protect the hose H from too rapid wear, I inclose or envelop the same, preferably, in a textile or fibrous envelope, E, or in an envelope having the required pliancy—as, for instance, by coating the hose H with a suitable paint or varnish.

To reduce the friction on the hose H of the operative rollers or wheels usually employed, I employ bowls *b b*, having either a rectangular or a semi-cylindrical peripheral groove, as shown in Figs. 4 and 6.

I would state here that I am aware that it is not new to combine fibrous or textile materials with rubber in the manufacture of rubber hose, and I do not wish to claim the combination of these substances, broadly; but I am not aware that a rubber hose inclosed in a fibrous or textile or other protective envelope has ever before been used as a suction and force hose for pumps of this class.

I am also aware that the use of bowls or wheels having rectangular or segmental peripheral grooves is not new; but I am not aware that bowls having such grooved peripheries have been employed for compressing the hose of pumps of this class.

The operation of this class of pumps being so well known, I deem it superfluous to give any description thereof.

Having thus fully described the nature and merits of my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a pump of the class described, the combination, with the compressible suction and force hose, of compressible cushions located at the points of greatest compression of the hose, in combination with a compressing wheel or roller, as described, for the purpose specified.

2. In a pump of the class described, the combination, substantially as herein set forth, of a suction and force hose composed of two sections of flexible tubing contained one within the other, and a compressing wheel or bowls, with a rigid support and elastic cushions secured within recesses formed in said support, for the purposes specified.

In testimony that I claim the foregoing I have hereunto set my hand this 23d day of August, 1883.

PIERRE JULIEN RUFFEL.

Witnesses:

LOUIS COUSSAINT,
FREDERIC MATRERY.