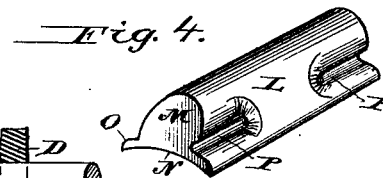
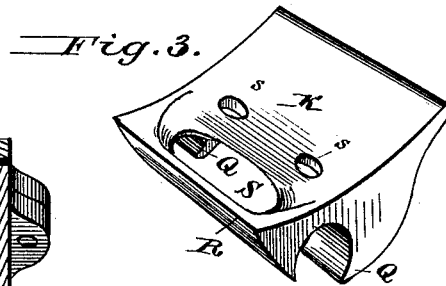
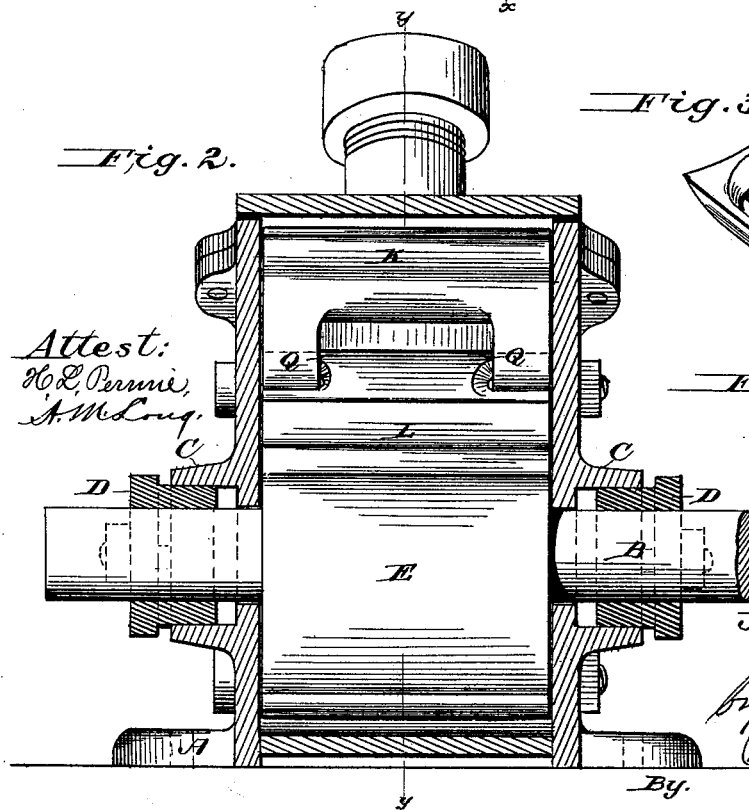
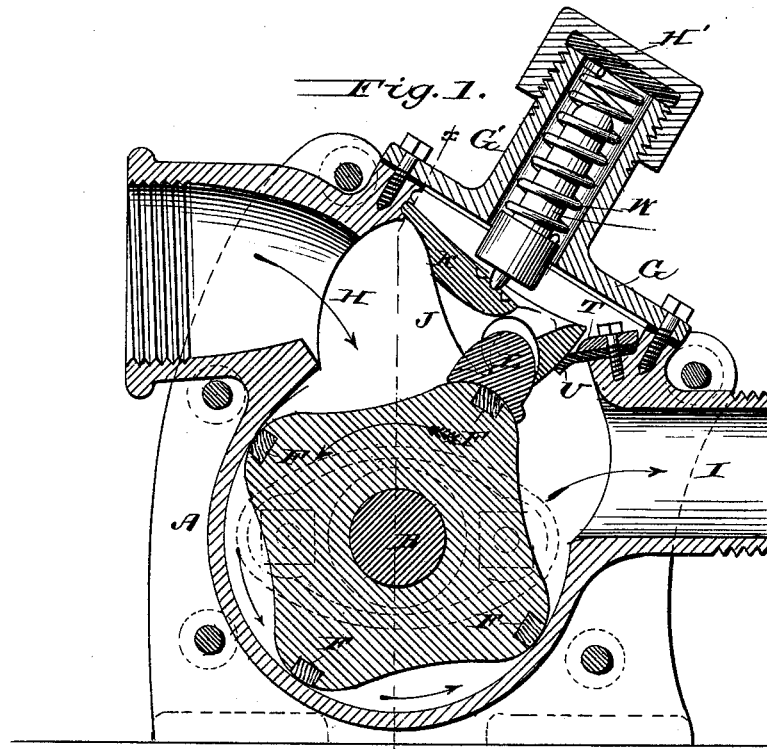


J. B. PULLMAN.
Rotary-Pump.

No. 219,826.

Patented Sept. 23, 1879.



Jas. B. Pullman.
Inventor.

By *Wm. C. Anderson*
his Atty.

UNITED STATES PATENT OFFICE.

JAMES B. PULLMAN, OF MILAN, ILLINOIS.

IMPROVEMENT IN ROTARY PUMPS.

Specification forming part of Letters Patent No. **219,826**, dated September 23, 1879; application filed August 1, 1879.

To all whom it may concern:

Be it known that I, JAMES B. PULLMAN, of Milan, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Rotary 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification, in which—

Figure 1 is a vertical section through *yy* of Fig. 2; Fig. 2, a cross-section through *xx* of Fig. 1; Fig. 3, a perspective of the abutment-plate; Fig. 4, a perspective of abutment-shoe removed from the plate.

My invention relates to rotary pumps; and it consists in the construction of the several parts, as well as in the combination of parts, hereinafter set out.

In the accompanying drawings, the letter A refers to the case of the pump, consisting of the ends and bottom, together with the suction and force pipe openings, preferably cast in one piece, and having the sides bolted to flanges or ears formed thereon, as shown in the drawings, and a detachable cap, G, forming the top, screwed to the ends and sides of the casing.

The sides have openings formed therein for the passage of the cylinder-shaft B, the said openings having collars C formed therearound, into which collars are fitted journal-boxes D, the same being held in place by bolts passed through the flanges of the boxes and into the sides of the casing. These several parts are packed or otherwise made watertight.

The piston E is secured in any well-known way to the shaft *c*, and extends from side to side of the casing, so that water will not pass around the same. The piston is preferably four-sided, with its corners rounded, and provided with strips, F, of packing material of any suitable kind, and having its four faces slightly concave, as shown in Fig. 1, the diameter of the piston being such that the corners thereof will be in close contact with the ends and bottom of the casing, as is represented in Fig. 1.

The piston is revolved in the direction indicated by the arrows, and the water drawn in through suction-pipe H carried by the piston between the ends and bottom of the casing and the concave face of the piston around to the force-pipe I, as indicated by arrows, and from thence by tubular connections to the points desired. The water is kept from being forced backward over the piston by means of the abutment J, composed of a plate, K, and oscillating shoe L.

I do not confine myself to the detailed construction of this abutment, the main features of which are the oscillating shoe journaled in a plate admitting of a vertical play, so that the shoe will closely hug the periphery of the piston throughout its whole revolution. I prefer, however, to construct the shoe with an elliptical back, M, a concave face, N, lip O, and depressions P. The shoe thus constructed is journaled in the plate K, which is cast or otherwise formed with two ears, Q, projecting toward the front flange, R, of the plate. These ears enter the depressions P in the shoe L, and the flange R bears against the lip thereon. The ears may be said to form the pivotal points of the shoe. The plate K is also provided with openings S s, for the passage of water therethrough above the abutment, so as to cause a pressure thereon, and thus prevent the abutment from being displaced by the force of water entering through the suction-pipe and striking the bottom of the plate K.

The abutment thus constructed is suspended or supported within the casing A by resting one end of the plate K on the bar T, which is bolted to the end of the casing just above the force-pipe I, and has a packing, *u*, of rubber, leather, or other suitable material between it and the casing, as shown in Fig. 1, the packing projecting so as to bear against the flange R, while the other end of the plate is rested in notches formed in the other end of the casing just above the suction-pipe H. When the valve is thus suspended the concave face of the shoe fits snugly the rounded corners of the piston, and as the piston is revolved the edges of the concave face of the shoe are pressed and kept against the periphery of the piston by means of the rod V and spring W, which fit into the neck G' of the cap G, thus

preventing the water from backing to the suction-pipe, but causing it to exit through the force-pipe.

A cap, H', screws over the neck G, and secures the rod and spring therein.

Instead of coiling a spring around the rod V, a rubber or equivalent spring may be placed between the cap H' and the end of the rod.

The joints of the several parts of this pump are packed so as to make the whole water or air tight, and the pump constructed as described will work either as an air or water pump.

Having described my invention, what I claim is—

1. The casing A, with suction and force pipe connections, in combination with piston E, having concave faces and rounded corners, and abutment J, composed of an oscillating shoe journaled in a plate admitting of a vertical play, substantially as set forth.

2. The abutment J, composed of the plate K, having the shoe L, constructed with a concave face journaled therein, so as to oscillate as described, for the purpose set forth.

3. The case A, and piston E, provided with concave faces and rounded corners, in combination with an abutment having an oscillating and vertical play, for the purpose set forth.

4. The case A and detachable cap G, in combination with piston E, abutment J, adapted to oscillate and have a vertical play, as described, rod V, and spring W, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of July, 1879.

JAMES B. PULLMAN.

Witnesses:

ARCHIBALD COOK,

R. K. DOWNS.