J. W. HANDREN.

Steam-Pumps.

No. 134,746. Patented Jan., 14, 1873.

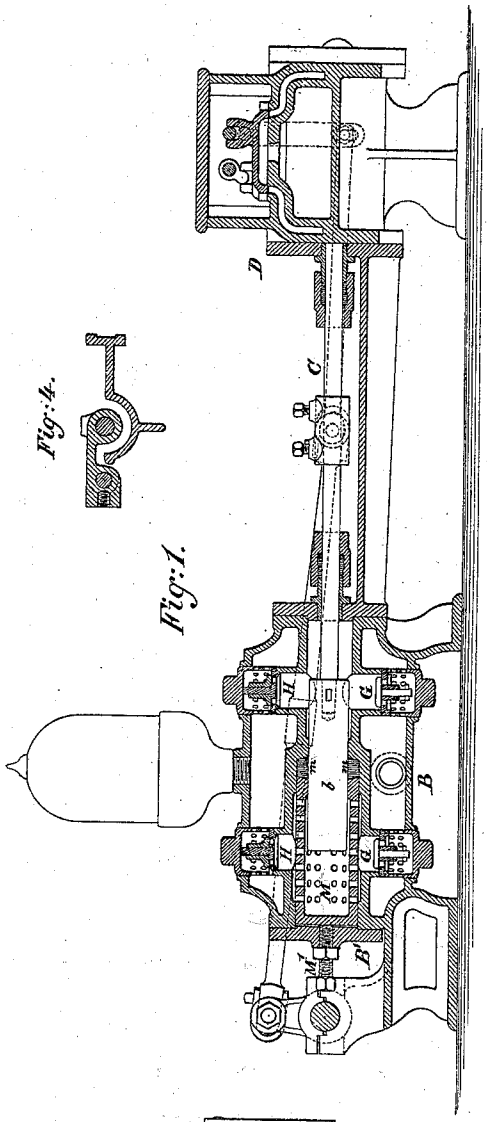

Fig: 1.

Fig: 4.

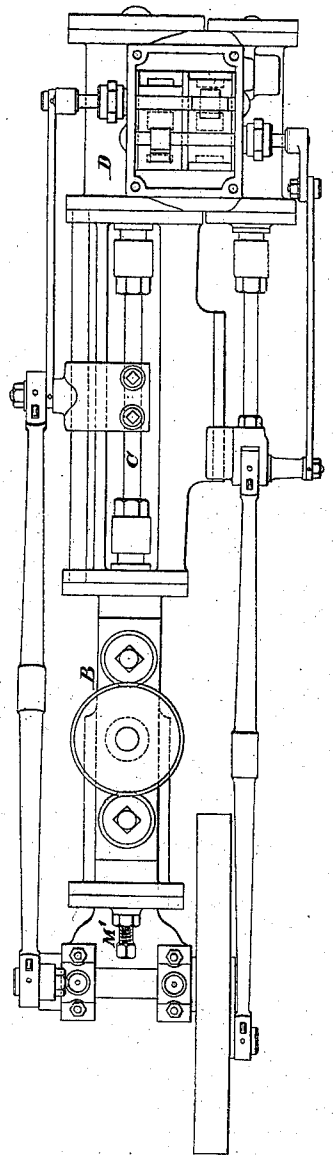

Fig: 2.

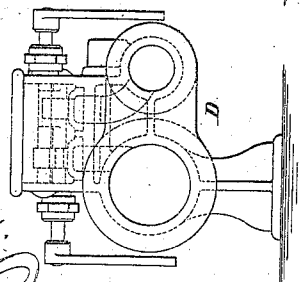

Fig: 3

Witnesses:

A. Hormann.

Wm. C. Dey

Inventor

John W. Handren.

by his attorney J. D. Stetson.

UNITED STATES PATENT OFFICE.

JOHN W. HANDREN, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN STEAM-PUMPS.

Specification forming part of Letters Patent No. **134,746**, dated January 14, 1873.

To all whom it may concern:

Be it known that I, JOHN W. HANDREN, of Jersey City, in the State of New Jersey, have invented certain Improvements in the Construction of Pumps, of which the following is a specification:

I make a double-acting pump, operated by a single plunger playing through a ring of packing, and employ a perforated or open-work tube, serving as a long gland to compress the packing by means of a screw or analogous device applied beyond the end of the movement of the plunger.

The following is a description of what I consider the best means of carrying out the invention. The accompanying drawing forms a part of this specification.

Figure 1 is a longitudinal vertical section; Fig. 2 is a plan view; and Fig. 3, an end view, representing a double-cylindered steam-engine operating my pump; Fig. 4 is a cross-section through a portion.

Similar letters of reference indicate like parts in all the figures.

The steam apparatus which operates the pump is peculiar, and I propose to make it the subject of a separate patent. The steam-cylinders and steam-chests being here represented by the single letter D, C is the main piston-rod extended through, substantially in a single piece, and, entering through a suitable stuffing-box into the pump-body B, is keyed to a plunger, *b*, of suitable size to displace the proper amount of water at each motion.

A proper quantity of suitable compressible packing, *m*, being placed in the recess provided, a large perforated gland, M, is applied over the end of the plunger *b* furthest from the steam-port of the apparatus, and, the cover B′ at that end of the pump being bolted in place, a screw, M′, is applied to act on the gland M, and thereby compress the packing *m* to the proper degree.

G G are induction-valves, and H H are eduction or delivery valves. The water is received through a suitable connection (not fully represented) into the chamber in the lower portion of the pump, and a proper connection (not represented) conducts the water away from the chamber in the upper portion of the pump.

There are decided advantages in the use of a double-acting plunger, *b*, working through a fixed packing-ring which surrounds it, over a packed piston working in a stationary cylinder. The facility of replacing the abraded portion, when the pump is worn out or seriously "cut" with grit or the like, is only one of a number of advantages readily recognized by mechanics. But there have heretofore been difficulties in the way of properly constructing and applying together parts of such a pump, and particularly of conveniently adjusting the packing. These parts of my machine can be very simply constructed, and involve no high degree of skill either in their manufacture or in their subsequent adjustment. The single screw M′ adjusts the entire packing, and when provided with a jam-nut, as here shown, can be set with great nicety and depended on with absolute certainty.

I claim as my invention—

In pumps, the open-work gland or tube M, with its adjusting means M′ arranged as shown relatively to the packing *m*, in combination with the double-acting plunger *b* and suitable means for reciprocating it, and with the valves G H and suitable connections, as herein specified.

In testimony whereof I have hereunto set my hand this 10th day of December, 1872, in the presence of two subscribing witnesses.

JNO. W. HANDREN.

Witnesses:

WM. C. DEY,

ARNOLD HÖRMANN.