J. B. POTTER.

Pistons for Oil-Well Pumps.

No. 210,710. Patented Dec. 10, 1878.

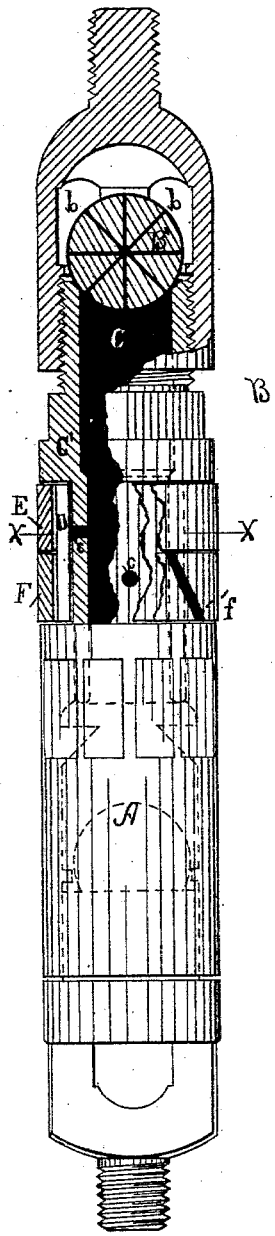
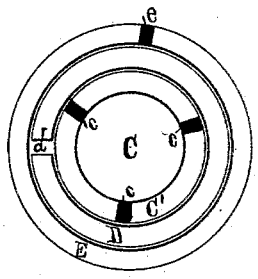


FIG. 1.

FIG. 2.



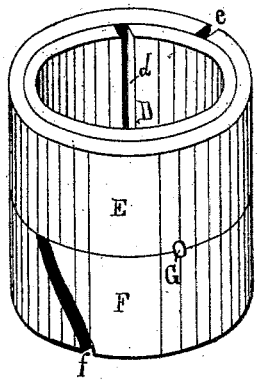


FIG. 3.

Witnesses,

Jas. L. Miller

D. N. Cooney

Inventor,

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Per Jas. K. Hallock

Atty.

UNITED STATES PATENT OFFICE.

JOSEPH B. POTTER, OF KNOX P. O., ASSIGNOR OF ONE-HALF HIS RIGHT TO THE JARECKI MANUFACTURING COMPANY, (LIMITED,) OF ERIE, PA.

IMPROVEMENT IN PISTONS FOR OIL-WELL PUMPS.

Specification forming part of Letters Patent No. **210,710**, dated December 10, 1878; application filed July 10, 1878.

To all whom it may concern:

Be it known that I, JOSEPH B. POTTER, of Knox P. O., in the county of Clarion and State of Pennsylvania, have invented a new and useful Improvement in Valves for Oil-Well Pumps; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the construction of the valves for oil-well pumps; and consists in an improved packing for the piston-valve.

The object of my invention is to avoid the use of springs, and to pack the piston by means of expansible rings which are acted upon by the pressure of the superincumbent fluid.

My invention is shown in the accompanying drawing, as follows:

Figure 1 is an elevation of my valve with parts broken away, so as to show its construction. Fig. 2 is a section on the line *x x*, Fig. 1. Fig. 3 is a perspective view of the expansible rings.

All that part of the valve below the rings, and marked A, is of ordinary construction. (See dotted lines, Fig. 1.)

My invention relates to that part which is marked B. C is the fluid chamber or passage of the valve. C′ is the shell of this chamber. Upon this shell are located the expansible packing-rings D, E, and F, as shown in Fig. 1. Of these rings D has a breadth equal to both E and F. These rings are so placed or arranged together (and thus retained by a pin, G, Fig. 3) that their slits *d e f* break joint. The shell C′, at the point where the rings are placed, is provided with perforations *c c c*. By this means the fluid from chamber C can come in contact and press upon the expansible rings, and when the superincumbent weight of fluid is sufficient this pressure will so expand the rings as to properly pack the piston.

In deep wells, as oil-wells, the weight of the superincumbent fluid will be too great, and the rings will be unduly pressed against the wall of the pump. To avoid this, and provide a means of regulating the pressure upon the rings, I attach at the top of the chamber a check-valve, B′, which is provided with numerous perforations, *b*. As many of these perforations *b* may be plugged as the exigencies of the case require, the result being that by this check-valve B the pressure in chamber C can be regulated, as desired. In very shallow wells the check-valve may be dispensed with. While I have described my invention as being adapted for oil-wells, yet it may be applied to other pumps.

I do not desire to be limited to the exact number or form of rings shown, nor to the exact form of check-valve, for these details may be varied without changing the general features or essential requisites, which are, first, the arrangement upon the shell C′ of extensible rings, adapted to be expanded by the pressure of fluid from the chamber C through the perforations *c*, and, second, when required, the check-valve B adapted to regulate the pressure within the chamber C.

I am aware that it is not broadly new to construct a pump-valve so that the weight of superincumbent fluid will expand its sides, for this was done by W. F. Dodge, as shown in his patent of April 4, 1865, No. 47,095; but the outer and expansible wall of Dodge's valve is of leather, or some similar substance.

The main object of my invention is to do away with the use of such destructible substances, and hence I have devised the expansible metallic rings. While Dodge uses rings as binders around his expansible bag, they do not perform the offices of my rings. The packing of the piston in that case is effected by the leather being forced to expand between the binding-rings, which are placed so as not to come over the openings in the inner metallic shell.

I shall not claim the use of an expansible wall or shell on the outside of a perforated inner shell; but I shall claim expansible metallic rings, in combination with a perforated inner shell, when said rings serve as a packing for the valve or piston by being expanded by the fluid-pressure from within; and, further, I am aware that packing-rings similar in construction to mine have been heretofore used in packing the piston-rods of steam-engines, (see patent to Cornell September 5, 1865, No. 49,725;) but there is nothing in such a use which contemplates my invention,

as above set forth, for I do not claim the rings as a means of packing broadly, but restrictedly—that is, in the combination substantially as shown, and for the purposes denominated.

What I claim is—

1. A piston for pumps consisting of a shell, C′, forming a fluid chamber or passage, C, and having a valve located at the bottom of the same, and having perforations *c c c* above said valve, and metallic expansible bands or rings D E F upon said shell opposite said perforations, which are adapted to be expanded, so as to pack said piston by the pressure of fluid through said perforations from within said chamber, as described.

2. The combination of the extensible rings, perforated shell, and perforated check-valve, said parts being arranged to operate substantially as and for the purposes set forth.

In testimony whereof I, the said JOSEPH B. POTTER, have hereunto set my hand.

JOSEPH B. POTTER.

Witnesses:

B. B. DUNKLE,

A. A. STEWART.