2 Sheets—Sheet 1.

J. M. LEMON.

FORCE-PUMPS.

No. 193,822. Patented Aug. 7, 1877.

Fig. 1

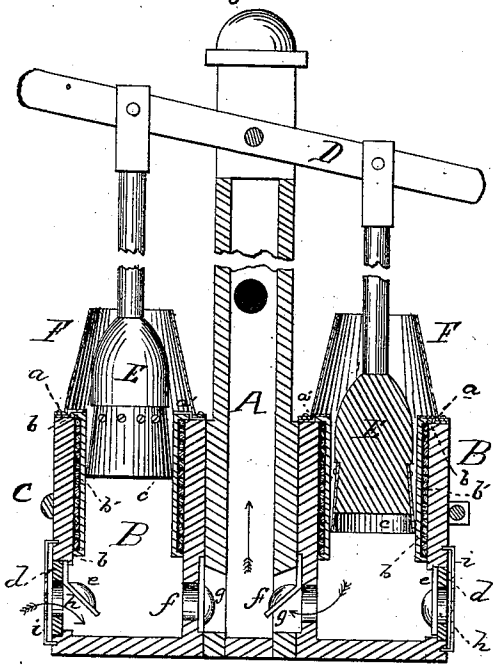
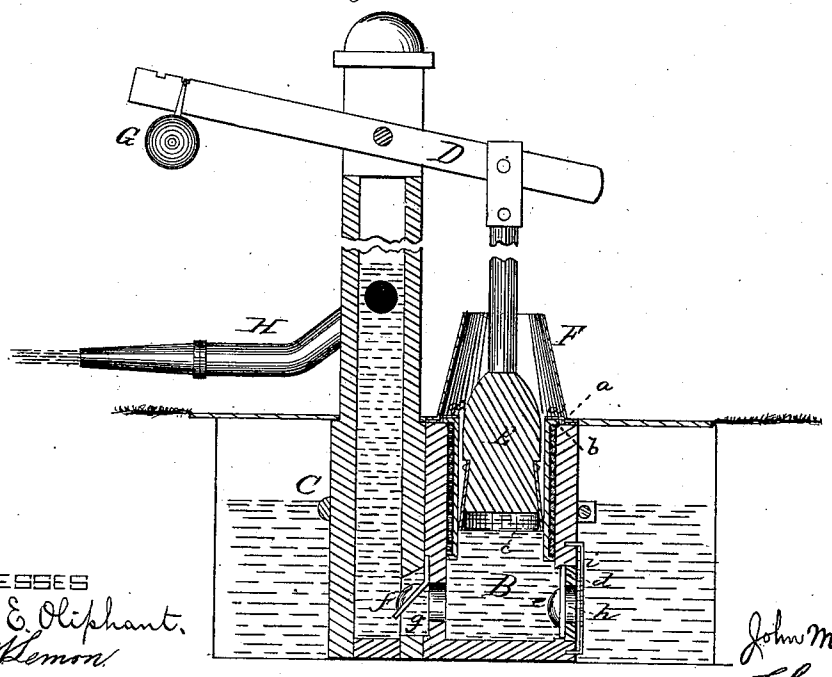


Fig. 2



WITNESSES
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2 Sheets—Sheet 2.

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FORCE-PUMPS.

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Fig. 4.

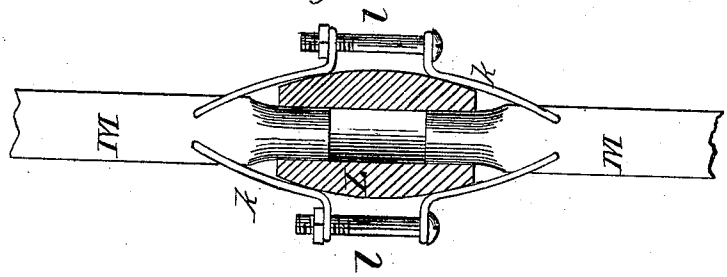
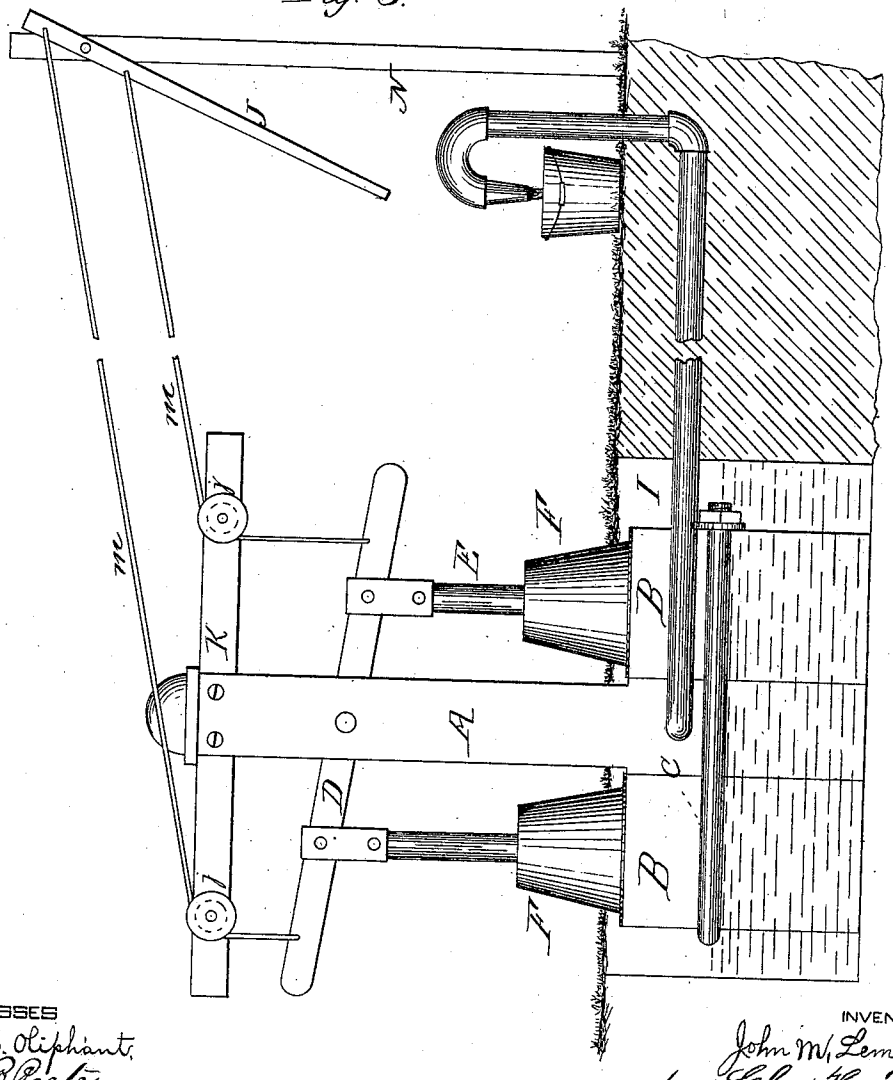


Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN M. LEMON, OF LATROBE, PENNSYLVANIA.

IMPROVEMENT IN FORCE-PUMPS.

Specification forming part of Letters Patent No. **193,822**, dated August 7, 1877; application filed October 12, 1876.

To all whom it may concern:

Be it known that I, JOHN M. LEMON, of Latrobe, in the county of Westmoreland and State of Pennsylvania, have invented a new and valuable Improvement in Force-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 shows the pump in section disconnected from its operating mechanism. Fig. 2 is a similar view of a single-acting pump. Fig. 3 is a side elevation of a double-acting pump, showing the operating mechanism connected thereto. Fig. 4 shows a means of coupling tubes which I prefer to use when required in deep wells.

This invention has relation to that class of pumps known as "force-pumps."

The object of the invention is to provide a pump that will be simple and durable in its construction, easy and effective in its operation, and applicable to wells of any depth; also, in a new and improved mechanism for operating the piston of the pump.

The novelty consists in the construction and arrangement of the parts, as will be hereinafter more fully set forth, and pointed out in the claim.

In the accompanying drawings, A represents a stock or chamber, having cylinders or chambers B attached on opposite sides by means of a band or bands, C. These cylinders are lined with glass, *a*, to prevent friction, and at the same time present a smooth surface, the said linings being formed with flanges *b*, the upper flange resting upon the ends of the cylinder B, and are held in place by means of clips *a'*, or their equivalents, and between the cylinders and said glass lining is placed packing *b'*, of suitable material, to allow of the expansion and contraction of the wood without breaking or otherwise injuring the glass lining.

Connected to the pivoted lever D are plungers or pistons E, provided with suitable packing *c* upon their lower ends, said packing extending below the piston-heads, so that when the pistons are in operation the pressure of the water beneath the same will force out the packing against the glass lining, thereby making a perfectly air-tight packing.

To the top or upper ends of the cylinders B are secured caps F, for the purpose of keeping out all obstructions from the chambers. Mortised in outer sides of the chambers B are pieces of wood *d*, to which are secured valves *e*, which operate alternately with the valves *f*, placed upon the inner sides of the chambers.

It will be seen that the inner valves are so arranged that their upper ends are securely held by being attached between the walls of the stock and chambers, thus preventing them from dropping out or being displaced should the force of the water cause the nails to start or pull out.

The lower end of the stock A is provided with the usual inlets *g*, through which the water passes from the cylinders B into the same by means of the valves *f*.

The outer inlets *h* of the cylinders B are protected by means of perforated caps *i*, to prevent sand and gravel from entering and clogging up the valves.

In Fig. 2 of the drawings, showing a modification of my invention applied to a single pump, the letter G represents a weight used to counteract the pressure upon the lever D, and H is a section of hose coupled upon the delivery-spout, for the purpose of sprinkling plants or extinguishing fires.

Having described the several parts and construction of the pump, I will now proceed to describe the means for operating the same. The lever D, to which the pistons E are connected, is pivoted to the pump-stock A, and has connected near its ends ropes or chains *m*, passing over friction-pulleys *j*, secured to a cross-beam, K, said cords being connected at their other ends to a handle, J, said handle being pivoted to an upright post, N. A pipe, I, connects with the stock A, through which the water is delivered to the place desired. When a single-acting pump is used, as illustrated in Fig. 2, a weight, as previously stated, is used to counteract the pressure upon the lever D.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A force-pump having lateral ports near the base and at its opposite exterior sides, one of them (a valved eduction-port) communicating with the stock, its vertical pistons being ovoid in their upper parts and working into corresponding caps, and carrying flaring elastic packings beneath, substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN M. LEMON.

Witnesses:

WM. D. THOMPSON,

J. C. KEFFER.