S. G. Randall,

Pump Lift,

No. 27,308. Patented Feb. 28, 1860.

Fig 1

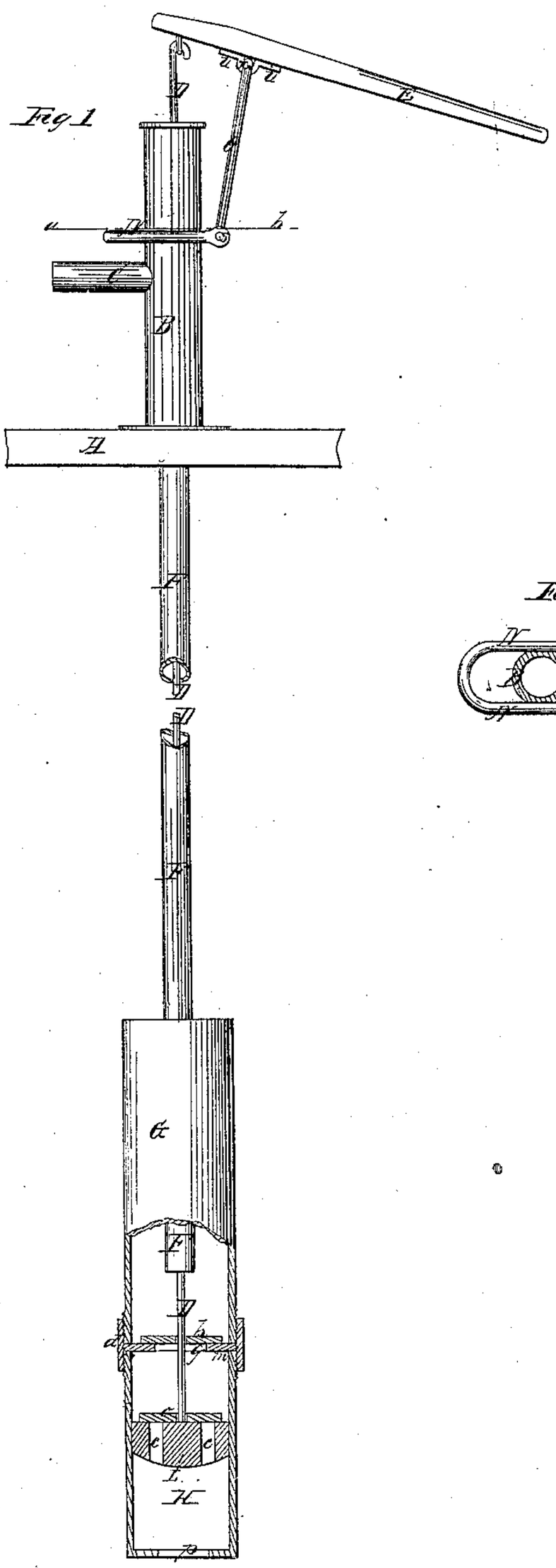
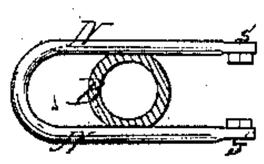


Fig 2,



Witnesses,
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Inventor,
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UNITED STATES PATENT OFFICE.

SILAS G. RANDALL, OF WORCESTER, MASSACHUSETTS.

PUMP.

Specification of Letters Patent No. 27,308, dated February 28, 1860.

To all whom it may concern:

Be it known that I, S. G. RANDALL, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in the Construction of Lifting-Pumps; and I do hereby declare that the following is a full, clear, and exact description of the construction and the operation of the same, reference being had to the accompanying drawings, which form a part of this specification.

Figure 1 is a side view of my improved pump, with the exception of portions of the enlarged piston and valve-chambers thereof which are shown in section; Fig. 2 is a transverse section in the line *a*, *b*, of Fig. 1.

The first feature of novelty in my improved lifting pump consists in constructing the short piston and valve chambers thereof of much larger diameter than the eduction pipe (F) which leads from the valve-chamber to the point of delivery, and which also serves as a grinding and steadying way for the slender valve rod (D) of the pump.

The second feature of novelty in the above mentioned pump consists in constructing the piston and valve-chambers thereof by uniting the mouths of two cup-shaped sections G, and H, with each other and with the valve-partition-plate *m*, by means of a closely embracing thimble *d*, which is removably secured thereto by means of male and female screw-threads, as shown in Fig. 1 of the drawings, or by any other suitable means.

The piston-chamber H, of my improved pump is perforated with one or more openings for the free admission of water thereto; and the valve-chamber G, of said pump has a central aperture in its upper end for the reception of the eduction pipe F, which leads from the said valve chamber to the delivery chamber B. The delivery chamber B, may be situated at any desired distance above the piston and valve chambers of the pump, for the reason that the slender piston rod D, which descends from the delivery-chamber to the piston-chamber of the pump, passes through the eduction pipe F, and is guided and laterally supported therein by the ascending column of water passing through the said pipe to the delivery chamber.

If the delivery-chamber B, be firmly seated upon a suitable platform, (A,) and the eduction pipe F, be allowed to descend vertically therefrom to the main body G, H, of the pump at the bottom of the well, no lateral stays or supports will be required for either the pump or the eduction pipe; and consequently, the said pump can be easily removed from the well, whenever it may require refitting or repairing.

The piston L, has a series of vertical apertures *c*, *c*, formed within it, and a valve-plate *o*, which is of less diameter than the piston, rests upon it and plays loosely upon the piston-rod D; consequently, during the downward movement of the piston the water will pass freely through the same, and during its upward movement the water will be carried before it, for the reason that the apertures in the piston will then be closed by the plate *o*.

The aperture *g*, in the valve-partition plate *m*, is covered by the disk *h*, which plays freely up and down, for a limited distance, upon the piston-rod D; and consequently, the said aperture is opened by the upward movement of the piston L, and is closed by the pressure of water above the same the instant that the upward movement of the piston ceases.

The operating lever E, which is jointed to the upper end of the piston rod, may be connected to the delivery chamber B, by means of the adjustable staple N, and the jointed fulcrum O, in the manner represented in the drawings, or by any other suitable means.

Having thus fully described my improved lifting-pump for deep wells, what I claim therein as my invention and desire to secure by Letters Patent, is—

The union of the combined piston and valve-chambers G, and H, with the smaller delivery chamber B, by means of the eduction tube F, when the piston-rod D, of the pump is conducted from the latter to the former through said eduction tube; the whole constructed and arranged in the manner herein set forth.

S. G. RANDALL.

Witnesses:

EBENEZER CUTLER,

WM. B. TABER.