

C. L. Merrill,

Punch.

No. 106072.

Patented Aug. 2. 1870.

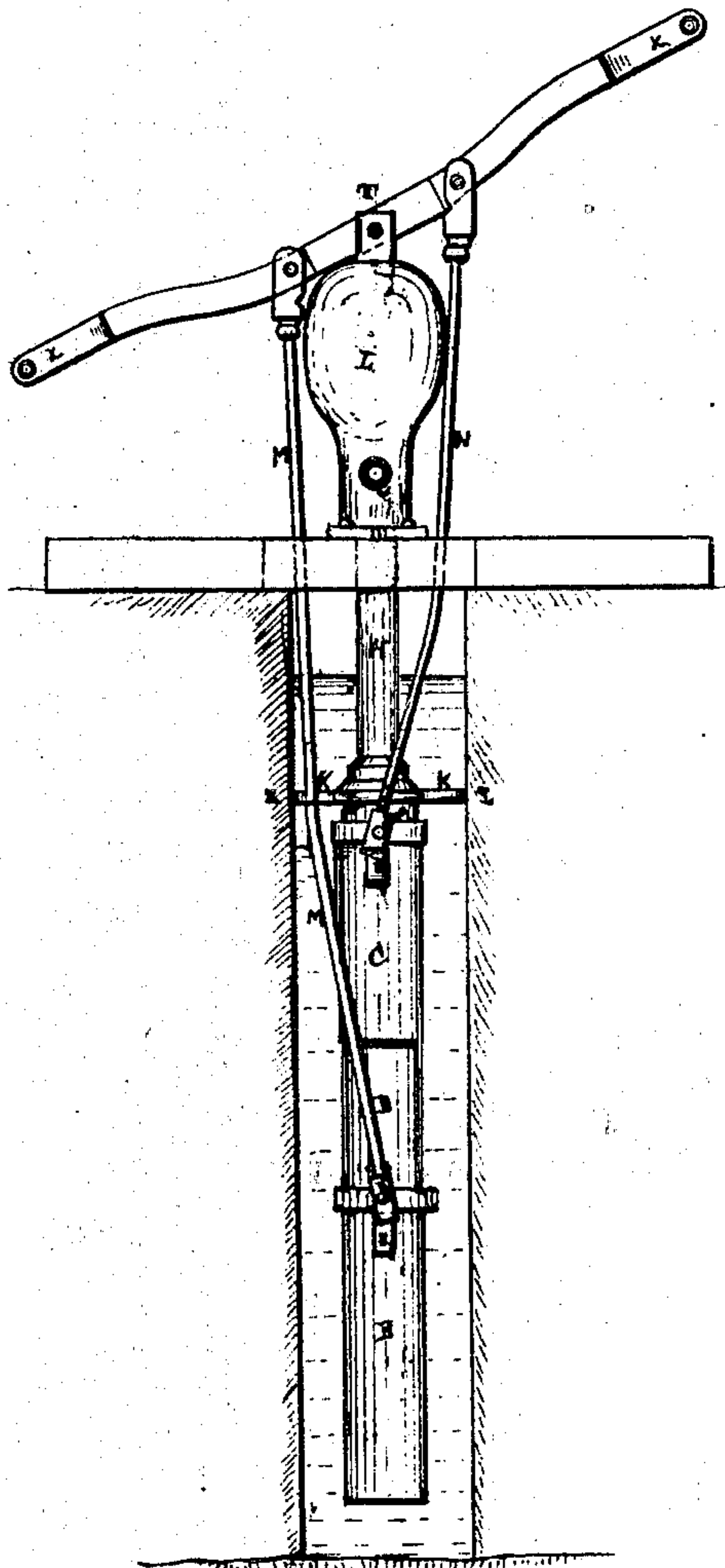


Fig 1

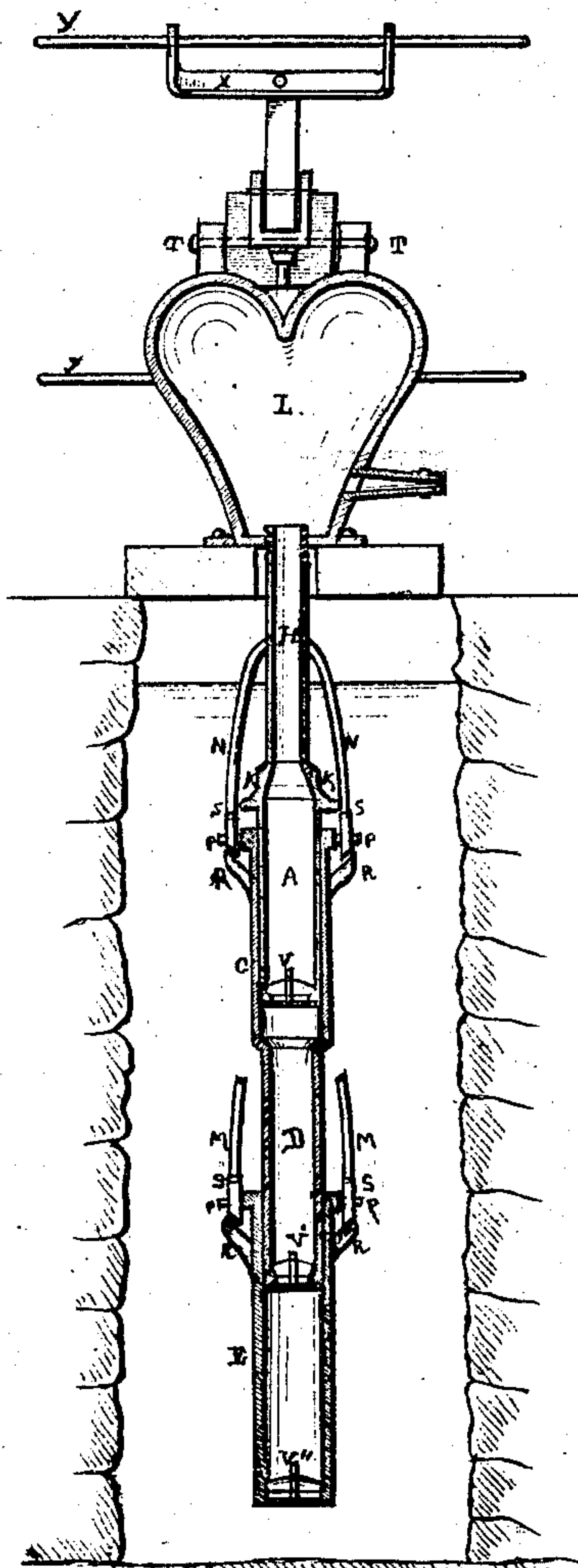


Fig 2.

Witnesses:

A. B. Gardner,
James. C. Fisher

Inventor,

Charles L. Merrill

United States Patent Office.

CHARLES L. MERRILL, OF WATERTOWN, NEW YORK.

Letters Patent No. 106,072, dated August 2, 1870.

IMPROVEMENT IN PUMPS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, CHARLES L. MERRILL, of the city of Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Force-Pumps, of which the following is a specification.

Nature and Objects of my Invention.

The first part of my invention relates to the extending the length of the lower or movable plunger of my pump, and to the decreasing the diameter of said plunger to such an extent that the cubic amount of water collected and thrown upward by the said extended portion of said plunger shall equal the cubic amount of water collected and thrown upward by the upper and stationary plunger, the object of this part of my invention being to cause an equal quantity of water to be forced up through the pump and out at the nozzle of said pump at each elevation and depression of the rods of said pump, and thus, with the aid of the air-chambers, causing an even and continuous stream of water to be thrown from said nozzle.

The second part of my invention relates to the combination of an air-chamber with a double dome and the levers, in such a manner that the steadiness of the stream thrown by said pump shall be increased, and, secondly, that a broader base shall be obtained for the axes of the levers of the pump to rest upon, the object of having a broad base for the levers being, to prevent the pump and its attachments from being twisted and sprung, by some one working the levers of the pump, by having hold at the extreme end of one of the handles, technically called "brakes," by which the levers are worked.

Description of Accompanying Drawing.

Figure 1 is a side view of a force-pump embodying my improvements.

Figure 2 is an end section through the center of the aforesaid pump.

General Description.

A is the upper or stationary plunger, upon which the lower or movable plunger C slides.

C is a movable cylinder, which acts as the cylinder for the upper plunger A.

D is a movable plunger, attached immovably to the bottom of the cylinder C, and acts as a plunger to the cylinder E. D is the subject of the first part of my invention. The stroke of the plunger D, in combination with the stroke of the cylinder E, is twice as long as the stroke of C upon A; also, the plunger D is smaller in diameter than the plunger A, in order that the cubic quantity of water received and thrown by each of said plungers, A or D, shall be equal.

E is the lower cylinder, the bottom of which fits into the well.

In the bottom of the cylinder A there is a valve, V, and in the bottom of plunger D there is a valve, V', and in the bottom of the cylinder E there is a valve, V".

M is the rod or bail, attached at its lower ends S S by trunnions, P P, to the top of the cylinder E, and at its upper end to the lever of the force-pump.

N is the rod or bail, attached at its lower ends S S by trunnions, P P, to the top of the cylinder C, and at its upper end to a lever of the force-pump.

P P are the trunnions upon which the ends S S of the bails M N turn.

R R are the lugs, inclined upward and outward from the cylinder E, or from the plunger D, so as to hold the ends S S upon their respective trunnions.

K K are ears or braces projecting from the top of the sides of the upper plunger A.

The outer ends Z Z of these braces are long enough to come against the sides of the well.

H is the straight pipe of the force-pump, connecting the top of the upper plunger A to the bottom of L.

L is the air-chamber, dividing toward its top into two bulbs or air-chambers. The tops of the two air-chambers form the foundation upon which the axes of the levers of the force-pump rest.

Mode of Operation.

The method in which my improvements operate is as follows:

When, by the levers at the top of the pump, the bail M and the movable cylinder E are depressed upon the plunger D, (into the well,) the bail N and the movable cylinder C will, at the same time, be raised upon the plunger A. The vacuum thus caused in the cylinder E, will be at once filled with a column of water from the well beneath, entering through the valve V"; all water, previously forced through plunger D into cylinder C, will be forced at the same time into the plunger A.

Upon reversing the levers at the top of the pump, the bail M and the cylinder E will be raised toward C, and the bail N and its plunger D will be depressed away from A toward the cylinder E. The effect of this is to force the whole of the water just collected in the cylinder E, into the plunger D and cylinder C, and one-half of this same body of water will be, at the same time, forced on up into the plunger A, and thus, by raising and depressing the levers, with the aid of the air-chambers, a continuous, and steady and rapid stream of water is thrown from the nozzle of the pump.

The double dome of the air-chamber operates to in-

crease the elasticity of the air without said chamber, for the reason that the air within said dome operates as a double spiral spring, and thus increases the steadiness of the stream of the force-pump. This double dome of the air-chamber, as a base for the axes of the levers, spreads the fulcrum centers of the brakes and keeps said brakes from rocking.

In order to attach the ends S S of the bails M N to their respective trunnions, we lay the bails at right angles to the length of the cylinder; the ends S S of the bails are then slipped onto their respective trunnions, P P, &c. The bails are then turned up between the lugs R R, and the cylinder to which the bails are attached. These lugs, then, keep the ends of the bails in their places.

If it is desired to unship the bails, let them be turned at right angles to the sides of the cylinders to which they are attached, and their respective lugs will no longer hold them upon their trunnions, and they may be easily taken off from said trunnions.

The ends O O of the braces or ears K K are fastened to the sides of the well, and operate to keep the pump so steady and firm that it will not be shaken by the movement of the levers.

Claims.

I claim—

1. The combination of plunger A, cylinder C, plunger D, with cylinder E, when constructed to operate substantially as described, and for the purposes hereinbefore set forth.

2. The arrangement of the levers X X upon the air-chamber L, having a double dome, so constructed as to form a broad seat for the levers, substantially as described and for the purposes hereinbefore set forth.

CHARLES L. MERRILL.

Witnesses:

ABNER B. GARDNER,
JAMES C. FISHER.