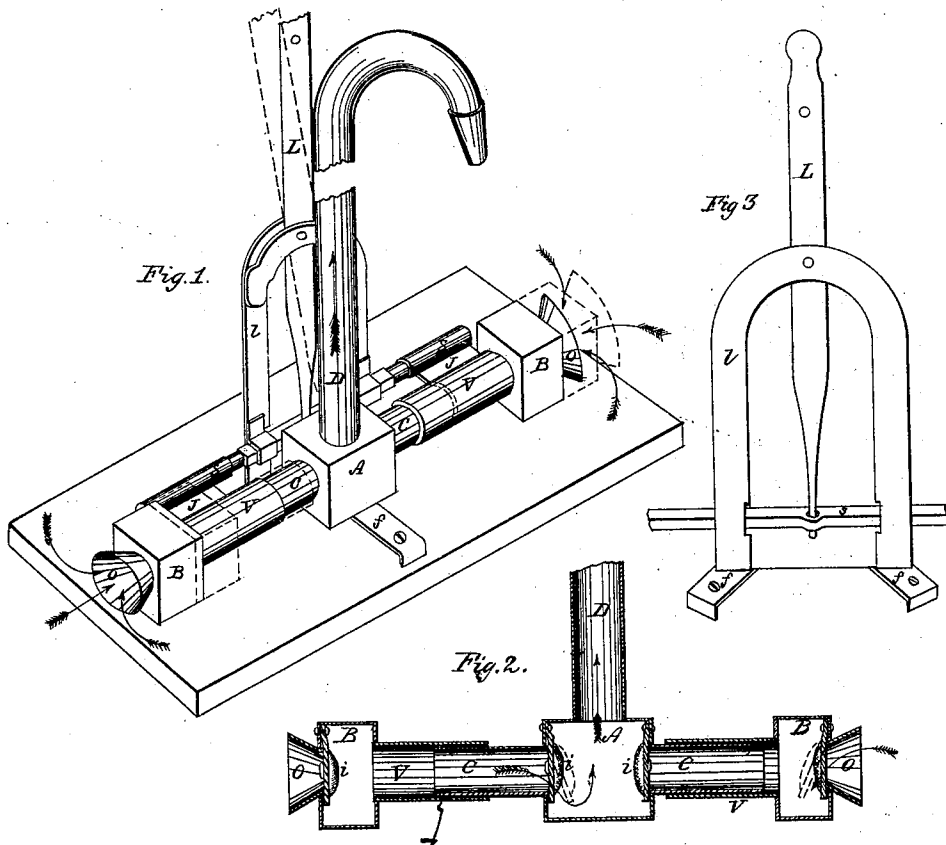


E. J. Hall,

Double-Acting Pump.

N^o 84,274.

Patented Nov 24, 1868.



Witnesses

E. P. Busell
E. Van Buren

Inventor

Earl J. Hall.

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EARL J. HALL, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF AND JACOB ELDRIDGE, OF SAME PLACE.

Letters Patent No. 84,274, dated November 24, 1868.

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, EARL J. HALL, of Indianapolis, in the county of Marion, and State of Indiana, have invented a new and useful Improvement in Double-Action Force-Pumps; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the employment of double horizontal induction-water pipes or tubes, on opposite sides of a central water-box or chamber, and these induction-pipes are coupled securely to a horizontal oscillating lever, so as to oscillate together. Smaller pipes project from opposite sides of the central water-box. Over these the induction-pipes slide, and the latter, having valves near their outer ends, receive a charge of water alternately, and alternately force the same into the central water-box, and thence up, through an eduction-pipe, to the place of discharge.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 is a perspective view of my invention;

Figure 2 is a longitudinal section or skeleton view of the same; and

Figure 3 is a rear elevation of the horse-shoe bracket, and the lever held in this bracket, and used for vibrating the working-parts of my pump.

A is the central water-box, and receives the water from two opposite sides. It may be cast square, and of any size desirable. For drawing water from a thirty-foot well, it should be about twelve inches wide, twelve inches long, and twelve inches deep.

D is the discharge-pipe, about two inches in diameter, and enters the top of A.

C are the smaller induction-pipes, tapping A on opposite sides, about four or six inches in diameter, and from ten to fifteen inches long. A clack-valve covers the end of each of these pipes on the inside of A. The other ends are left open, and enter within the larger induction-pipes V V. These latter are just large enough to slide easily over C.

At the outer ends of V, a valve-box is attached. These valve-boxes, B, may be square or round, and must be long enough to allow the free play of the valves therein.

o o are tunnel-shaped water-gatherers, to concentrate and collect the water within the induction-pipes.

A clack-valve hangs over the inner ends of o o, and prevents the water from regurgitating after it is once within the induction-pipes.

S is the connecting-bar. It is joined (by the septa J J) to the larger induction-tubes firmly and securely. This bar moves back and forth through stirrups near the lower ends of the horse-shoe bracket L. It is thus vibrated by the vertical lever I, which is fulcrumed in the curve of L, at the upper end.

The lower end of L passes loosely through an oval slot in the centre of S.

f are foot-pieces, securely attached to the lower ends of bracket L, and, by fastening these to a board with screws or bolts, (three or more,) the entire working-portion of the pump is held steady, and in a fixed position.

This pump can be made of any kind of material desirable, iron, brass, or wood. It may be made of any size to suit the work it is to perform.

The induction-tubes may be two or four in number. If four are used, they will each enter one of the four vertical sides of the central water-box, and will present the form of a cross. (Only where very large quantities of water are to be drawn, is it desirable to use more than two induction-pipes.) But, when four are used, they will have to be operated by a double eccentric-cam wheel.

The dotted lines in fig. 1 explain the play of the induction-pipes, when pumping water.

The valves are all weighted, and so hung over their seats that, when the induction-pipes move in one direction, that valve (on the side towards which it is moving) opens back, and admits the water, and, when the stroke is completed, and the pipes start back, the valve closes, and secures the water within, which is now forced into the discharge-pipe through central water-box A.

Each alternate end of this pump is forcing water through the exit-pipe, while the other end is receiving its charge, to be forced out, in like manner, by the backward stroke. In performing thus, a continuous stream is thrown.

The pump can be operated by hand or otherwise. One motor peculiarly applicable to it is a windmill.

The oscillating lever I may be made of any desirable length to suit the depth of well, or it may be quite short, and operated through other means.

The discharge-pipe D may be made of any length, size, or shape.

By attaching a hose-pipe to the terminal end of the latter, this pump is converted into a fire-engine. The water can be thrown a great distance, from the fact that no part of the force is required to lift any part of pump, as is the case in most of the vertical pumps in common use.

These pumps will operate well, even when they are carelessly made, and all the power put forth in their use is expended on the column of water.

The arrows pointing towards the flared ends o o show the concentration of the entering water, and those within the inlet and outlet-pipes show the course the water takes in its travel through the pump.

I am aware each of the various elements comprising my invention has been known and used in other pumps, each element in some one pump or device for raising water; but as the conjunction of these elements has never before been effected in any one pump,

What I therefore claim as new, and desire to secure is—

The arrangement and combination of water-box A, horizontal induction-pipes V, valve-chambers B, and the means used for operating the same, all as shown.

EARL J. HALL.

Witnesses:

JACOB ELDRIDGE,
LYSANDER SPARKS.