N. Johnson,

Pump Stand.

No 51,726. Patented Dec. 26, 1865.

Fig. 1.

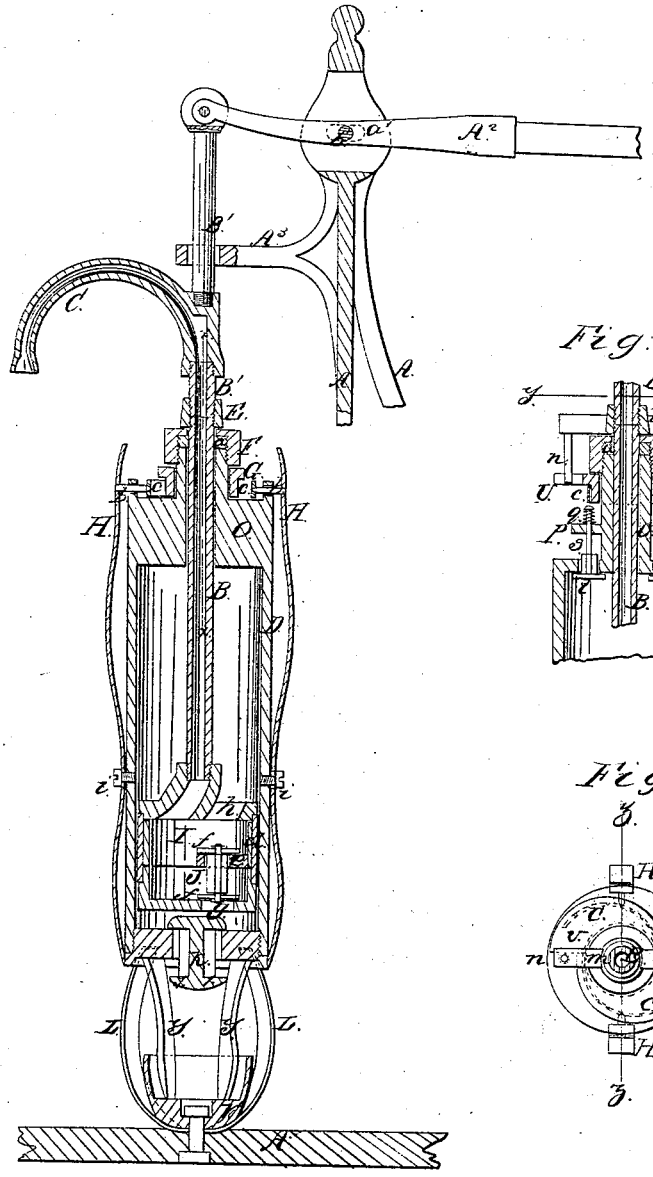


Fig. 2.

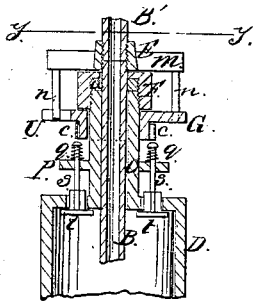
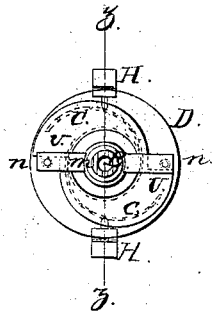


Fig. 3.



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UNITED STATES PATENT OFFICE.

NIELS JOHNSON, OF RIPON, WISCONSIN.

IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. **51,726**, dated December 26, 1865.

To all whom it may concern:

Be it known that I, NIELS JOHNSON, of Ripon, in the county of Fond du Lac and State of Wisconsin, have invented a new and useful Improvement in Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of an axial section of a pump made according to my invention, taken on the line *z* of Fig. 3. Fig. 2 is an axial section of a portion of the pump, taken on the line *x* of Fig. 1. Fig. 3 is a plan of a cross-section taken on the line *y* of Fig. 2.

Similar letters of reference indicate like parts.

This improvement relates to the class of pumps whose cylinders are submerged. My pump is double-acting, and the piston-rod and piston are hollow. Among other novel features is a device for securing the cylinder in its proper position in a well or reservoir, and which is operated from the top of the well.

The letters A designate standards, in which the pump-lever A^2 works. A′ designates the bottom of the reservoir. The lever A^2 is jointed to the upper end of the piston-rod, consisting in this example of an extension-rod, B′, screwed into the top of the hollow piston-rod B, just above the spout C. The cylinder D is supported by legs *y*, four or more in number, which rise from a cup-shaped foot, V, which is to rest upon the bottom A′ of the well or reservoir. The bottom of the cylinder has an inlet-opening in its center, which is governed by a valve, K, whose seat of course is on the inside of the cylinder's bottom. The lower part of the valve-stem of the valve K has three arms, 1, two of which are seen in Fig. 1, which extend in radial directions far enough beyond the edges of the valve-opening to prevent the displacement of the valve; but they are narrow, so as not to hinder the flow of water.

The letters L designate convex springs, four in number, which extend upward from the outside of the cup to the bottom of the cylinder D, so as to inclose and protect the legs *y*. Only two of these springs are seen in the drawings. Their office is to hold the lower part of the pump in place by coming in contact with the sides of the well in which the pump is placed.

The letters H designate two springs, which extend from the bottom to the top of the cylinder. They are held to the cylinder by screw-pins *i i*, passing through slots in the springs, which allow the springs to have motion on the pins lengthwise on its outside. Their upper ends carry pins *b b*, which project inward through flanges raised on the top of the cylinder D, and press against the outer sides of curved spring-plates *c c*, which extend eccentrically around the highest part of said cylinder. These spring-plates *c c* are fixed to the lower part of the collar G, whose upper part has two sectional eccentrics, U U, the ends of which are in radial lines, as seen in Fig. 2, and also in dotted outline in Fig. 3, where their ends are covered by the bar *m*. The springs *c c* have depressions in them which engage the ends of the pins *b b*, and thereby lock the outer springs H and keep them distended. The collar G is rotated by means of vertical arms *n*, projecting from a bar, *m*, which extends on either side of the piston-rod, being fixed by a screw-joint or in any other convenient way to the piston-rod. The place of the collar E is directly above the stuffing-box F, which fits by a screw-joint over the upper end of the cylinder, and has the usual packing, *a*, within it to prevent leakage around the piston-rod.

The letters *t t* designate valves placed in the upper part of the cylinder. Their stems *s s* reach upward and pass through plates P P, which extend horizontally from the neck O of the cylinder. The upper part of the valve-stems have springs *q q* about them confined from above by caps formed on the upper ends of the valve-stems, the bottoms of the springs resting on the plates P P. This arrangement causes the valves *t t* to be constantly driven upward against their seats when the pump is at rest. The neck O is of a length in one direction equal to the diameter of the cylinder; but its breadth is only sufficient to receive the piston-rod within it. The collar G rests on the top of the neck O.

When it is necessary to secure the pump-cylinder within a well the cross-piece or plate *m* is rotated, when its vertical arms *n n* will strike against the straight sides of the eccentrics U U and rotate the collar G, and thereby crowd

the springs *c c* against the pins *b b* and push the outer springs against the sides of the well. The pins *b b* will engage the depressions of the springs and so become locked. When the cylinder is to be withdrawn from the well the collar is rotated further round until the curved eccentric springs *c c* pass the pins *b*, and so let the springs H return toward the sides of the cylinder, in which position they offer no resistance to the withdrawal of the cylinder.

The hollow piston-rod B is screwed into the upper side of a hollow piston, I, which is properly packed by a packing, *d*. A bracket, *e*, extends from one side of the interior of the piston, for the purpose of guiding and holding a valve-stem, J, whose valves *f f* close in alternation the openings *g h* of the piston.

The operation of the pump is as follows: When the piston is forced downward any water in the cylinder below it will be forced up into the piston through its bottom, the upper valve, *f*, closing the opening *h* and causing the water to flow up into the hollow piston-rod. In the meanwhile the descent of the piston will cause a partial vacuum in the upper part of the cylinder and cause the valves *t t* to be drawn downward against the springs *q*, when water will be received into the cylinder from above. When the piston ascends the valves *t t* will be shut, and the upper valve, *f*, will fall down and allow the water to rush into the piston and up the rod. The continuation of these operations will cause a stream of water to flow through the rod continuously.

The pump-handle has gudgeons or ears on each side, which are received in horizontal slots *a*, made in that part of the standard which sustains the handle. The handle passes through an opening made in the upper part of the standard, and said slots occur on each side or wall of such opening. Friction-rolls are placed on the gudgeons or journals of the handle, and these enable the said journals to be moved to different parts of said slots with ease. By this arrangement the fulcrum of the handle is shifted during different periods of the stroke of the piston without the necessity of providing a swinging joint or stirrup to sustain the journals.

I claim as new and desire to secure by Letters Patent—

1. The lower springs, L, surrounding the bottom or foot of the pump and operating to hold that part steady in the well, substantially as described.

2. The springs H H on the outside of the cylinder, made with pins *b b*, in combination with the rotating spring-plates *c c*, by which the springs H are forced against the sides of the well, substantially as described.

3. The cross-piece *m* and its arms *n*, in combination with the eccentric U of the collar G, substantially as described.

4. The valves *t t* in the upper part of the cylinder, constructed as shown, with springs placed about their spindles, so arranged as to admit air to the cylinder at the downward stroke of the piston, substantially as described.

NIELS JOHNSON.

Witnesses:
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