J. MATTHEWS.

PUMP PLUNGER AND VALVE.

No. 181,793. Patented Sept. 5, 1876.

FIG. 1.

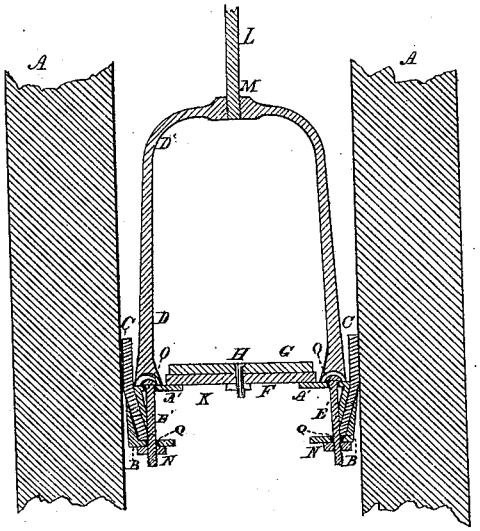


FIG. 3.

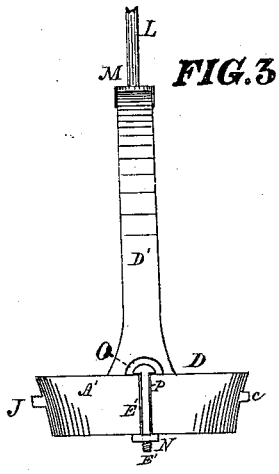


FIG. 4.

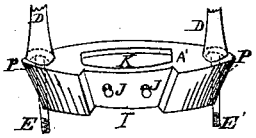


FIG. 2.

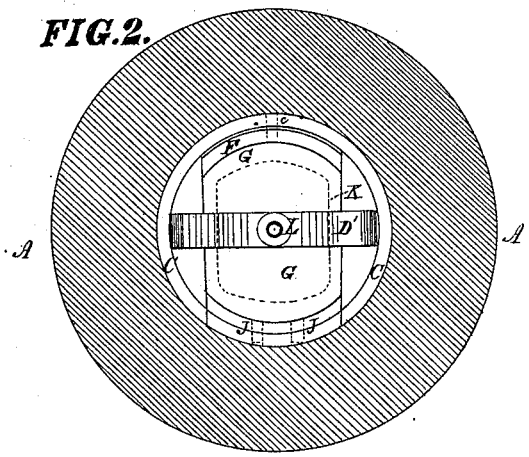


FIG. 5.

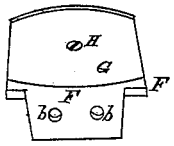


FIG. 6.

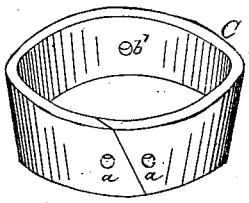
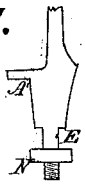


FIG. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN MATTHEWS, OF LYNDEN, ONTARIO, CANADA.

IMPROVEMENT IN PUMP PLUNGERS AND VALVES.

Specification forming part of Letters Patent No. **181,793**, dated September 5, 1876; application filed May 15, 1876.

To all whom it may concern:

Be it known that I, JOHN MATTHEWS, of Lynden, in the county of Wentworth, in the Province of Ontario, Dominion of Canada, have invented a new and useful Improvement in Pump Plungers and Valves; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same.

The object of the invention is to do away with the clumsy and imperfect plungers now commonly used in wooden pumps, and substitute therefor a light, durable, convenient, and more perfect valve and plunger, so constructed that the packing and valve cannot easily get out of order, will work smooth and effectual, and be easily replaced when worn out.

Figure 1 represents a vertical section of a pump with the plunger, valve, &c. Fig. 2 represents a top view of the same. Fig. 3 is a view of the plunger detached. Fig. 4 is a portion of the plunger, showing notch for valve-hinge, and projections which pass through and hold the same. Fig. 5 is a perspective view of the leather valve and weight on its top. Fig. 6 is a view of the leather packing. Fig. 7 is a portion of the lower part of the plunger, showing the bolt E cast solid in the same, instead of the loose bolts shown in Fig. 3, for securing the leather packing C to the valve-seat A′ by means of the collar B.

A, Fig. 1, represents a vertical section of a common wooden pump. D is the plunger, consisting of the valve-seat A′ and bail D′. The bottom portion of plunger is slightly beveled on the outside. C is the leather packing placed around the outside of the plunger, and held in its place by means of an annular ring or collar, B, surrounding the lower portion of the packing, and pressing it against the sides of the plunger, and held there by means of two screw-bolts, E, Fig. 7, cast to the bottom of the plunger, and made to pass through corresponding holes in the annular ring or collar B, and securing the ring by the nuts N to the plunger. This means of securing the device answers well; but I prefer to use the means of fastening the parts described, as shown in Fig. 3.

On each side of the plunger I construct slots P, and an opening, O, in each end of the bail, as shown. I then insert therein loose bolts E′, and secure the same by the nuts N. This means makes it more convenient for repairing the same in case of rust or otherwise.

The plunger has a notch, I, cut out of its side, as shown at Fig. 4, leaving two small projections, J J, thereon. The leather valve F is cut in the manner shown at Fig. 5, so that one part of it is bent over and made to fit the notch I, and two small holes, *b b*, are cut through it for the projecting pins J J of the plunger to pass through to secure the valve in position as thus hinged on the plunger. G is a metallic plate secured on the top of the leather valve F by means of a rivet through the center of both, or by means of a short bolt and nut, H, as shown in Fig. 1, the latter of which is preferable. C is the annular leather packing-ring surrounding the plunger. It is cut as shown at Fig. 6, and pierced with three small holes, *a a*, on one side, which fit on the pins J J, (which are made long enough to pass through the hinge of the valve and through the packing,) and one, *b′*, on the opposite side, which is made to fit on the pin *c*, cast to the plunger, as shown in Fig. 3.

The construction of the device is very simple, and the parts are put together as follows: The valve F, with its weight G, is first placed on the valve-seat, the hinge portion fitted in the notch I, and, the pins J J projecting through the holes *b b*, the loose bolts E′ E′ are then placed in the slots P P. The leather packing is then placed around the plunger, the pins J J passing through the holes *a a* of the packing-ring on one side, and the pin C passing through the hole *b′* on the opposite side. The annular ring or collar is then placed over the packing. It is furnished with two holes, Q, through which pass the bolts E′ E′, and the nuts are then placed on the ends of the bolts, and the whole tightened up by their means. The pump-rod L is screwed into the bail, and the plunger is ready for insertion in its proper place in the pump.

The bail and valve-seat will be made of one piece of malleable cast-iron, and the bolts and nuts galvanized to prevent rusting.

It will be observed that the only part that will wear out first is the leather packing-ring C, which can easily be taken off by removing

the nuts N N, then taking off the collar B, when the packing-ring easily comes off, and may answer as a pattern by which to cut out the new one, which is easily fitted in the plunger, and secured by the ring B and bolts and nuts.

The present method of securing the packing in wooden pumps is to nail it to the valve-seat. This is a cumbersome plan, is not air-tight as my method, and is much more difficult to remove, and also replace when worn out.

The leather valve F, when worn out, is easily replaced. The present method is to merely nail it at one side on the top of the valve-seat, with a block of wood nailed on it—a clumsy arrangement. My method is to employ thinner leather at the top, and cut one side, so as to form a hinge at the top of the notch I. The pins on the plunger, passing through it, hold it, with the packing and ring outside, so that I use no nails in fastening it, as they, by my device, are not necessary. Any one part of the invention can easily and quickly be replaced.

The whole plunger may be galvanized to prevent rusting. The ring B may have a thread cut on its inside, and also a thread cut on the outside of the valve-seat, and the ring screwed over the leather; but I prefer the ring without the thread, as it is more simple.

The advantage of my device is, the valve is better secured than the present method, and the whole arrangement is more durable, convenient, and more easy to replace any part when worn out, and a larger port can be obtained in the plunger by my plan than in the present method.

What I claim as my invention, and desire to secure by Letters Patent, is—

The valve-seat A′, provided with a recess, I, and projections J J in said recess, in combination with the packing-holder B, for the purpose of securing the valve to the plunger, substantially as described.

Dated at Hamilton, Canada, this 30th day of July, A. D. 1875.

JOHN MATTHEWS.

Signed in the presence of—
WM. BRUCE,
I. BRUCE.