Taverdon & Moret,

Pump Lift.

No. 82,659. Patented Sept. 29, 1868.

Fig: 1.

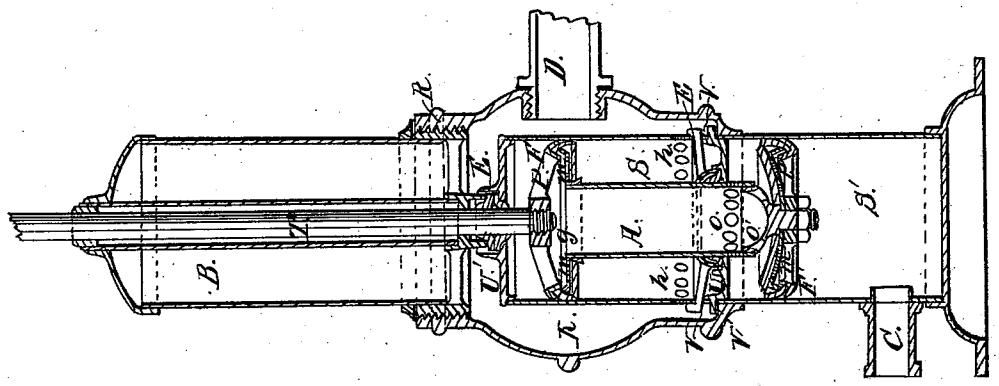
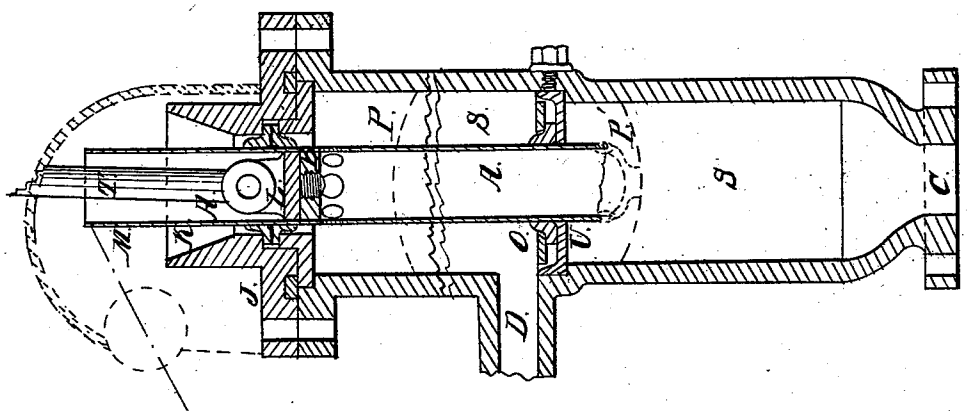


Fig: 2.



Witnesses:

Thos. L. Stanley & Co.

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United States Patent Office.

CLAUDE LUDOVIC TAVERDON, OF PARIS, AND JULES MORET, OF SEVRES, FRANCE.

Letters Patent No. 82,659, *dated September* 29, 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 we, CLAUDE LUDOVIC TAVERDON, of No. 60 Boulevart de Strasbourg, Paris, in the Empire of France, practical engineer, and JULES MORET, of the town of Sevres, near Paris, in the Empire of France, merchant, have jointly invented an "Improved Lift and Force Double-Action Pump, giving a continuous and regular supply of liquid;" and we 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.

Pumps upon our system, although very simple, are compact, strongly built, and are not exposed to interior damage.

Their novelty consists chiefly in the particular arrangement of the piston, which is composed of two stamped-leather heads, connected with each other by a tubular rod or sheath. This said piston works in a cylinder, divided into two chambers by a diaphragm, so that each head of the said piston plays in a separate chamber, and their tubular connecting-rod or sheath slides in a hole bored through the centre of the diaphragm, which hole is provided with a water-tight packing.

The tubular rod or sheath, which connects both heads of the piston, is pierced with several holes for the passage of the liquid, which is forced alternately by each of the piston-heads. When one of the said heads creates the vacuum behind it, the other head forces the liquid forward, so that its outflow takes place unintermittingly.

The stamped-leather heads of the piston act alternately as piston and as valve. There is no other valve.

As in ordinary lift and force-pumps, there is an upper space, in which the air driven by the rising liquid accumulates, and forms an elastic cushion, which, by its reaction, regulates the speed of the outflow of the liquid.

We will now proceed to describe the accompanying drawing, which, to the end that our system may be thoroughly understood, represents, in vertical section, two different views.

In Figure 1, A is a tubular rod or sheath, connecting two pistons, P and P′, made of stamped leather, and which play in the cylinders S S′. B is an air-receiver or elastic cushion, situated above the cylinder; C, orifice by which the liquid enters; D, outlet-orifice; E E′, packings of stamped leather, the first being for the passage of the piston-rod T, the second for the passage of the tubular connecting-rod A. F F′ are the leather packings of the pistons; *m m*, perforations through the piston-heads; *o*, perforations in the tubular connecting-rod A; and *h*, perforations in the upper chamber, S, of the cylinder, for the passage of liquid. U is a removable diaphragm, firmly fixed, when in use, as will be understood, and forming a partition about the middle of the cylinder. U′ is the top, through which the rod T slides.

For the better demonstration of the apparatus, we will suppose it filled with water. Let us now consider what takes place when both piston-heads are moved downward, that is to say, in the descending motion.

The piston P, as it moves down, creates a partial vacuum above it. The liquid will rush through the perforated disk or bottom of the piston P′, and, passing through the tubular rod A, will fill up the vacant space formed by the motion of the piston P. An additional quantity will flow up through P′, to fill the enlarged space between it and the diaphragm U.

At the same time, the liquid which was under P (in the space S) will be forced through the orifices *h* into the common receiver, *k*.

Now, in the ascending motion, the water which is above P will pass beneath it, a partial vacuum will be produced under P′, and the liquid which is above this piston P′ will be forced up through the tubular rod A, and down through the piston P, and will flow out through the orifices *h*, so that whether the piston be moved upward or downward, the water will be continuously drawn in and forced out at the proper orifices, and all without a necessity for any special valve other than the valved heads of the piston.

We would here draw attention to the simplicity of the fitting together of the several parts when setting up

the pump, this being effected by screwing the single piece B on its leather joint at R. By screwing up the said piece, all the other leather joints, E, E′, and V, will be at once tightened.

We reserve the right of giving to our lift and force-pump whatever shape we may find most suitable to the requirements of its various applications.

For some of these we may simplify the arrangement. Thus we might, as in Figure 2, form the main part of the pump of a cylinder, S S′, bored of two different diameters. The projection produced by this difference of bore forms the seat of the diaphragm U, and this particular circumstance results from the difference of diameter, namely, that the greater pressure above always tends to keep the diaphragm on its seat.

Another advantage is that of compensating the difference of surface of the pistons, resulting from the passage of the connecting tubular rod A as guide through the cover J which closes the pump.

We would here remark, that in this kind of fitting, when the pieces are put together, a disk, I, set in a circular groove, is instrumental in sustaining the stamped-leather packings O.

The upper part of the connecting tubular rod or sheath A is closed by a plug, B, soldered to it. This plug is screw-tapped in its centre, to receive the compass-head piece L, where hinges the rod T, by which the pump is set at work.

The stamped-leather packing O of the disk U is kept on the said disk by means of a washer, compressed by screws not represented.

A little water is poured into the widened part of the cover K to form a hydraulic joint.

If the pump is horizontal, a cistern or basin, M, should be cast together with the cover J, forming the end of the tubular rod or sheath, as shown by red lines. The movement then takes place within this cistern or basin.

What we claim as our invention, and desire to secure by Letters Patent, is—

The within-described construction and arrangement of the piston, composed of two valved heads, connected together by a tubular rod or sheath adapted for the passage of the liquid, as specified, working in a chamber divided into two compartments, S S′, by a disk or partition, U, all as and for the purposes herein set forth.

C. L. TAVERDON.
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Witnesses:

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