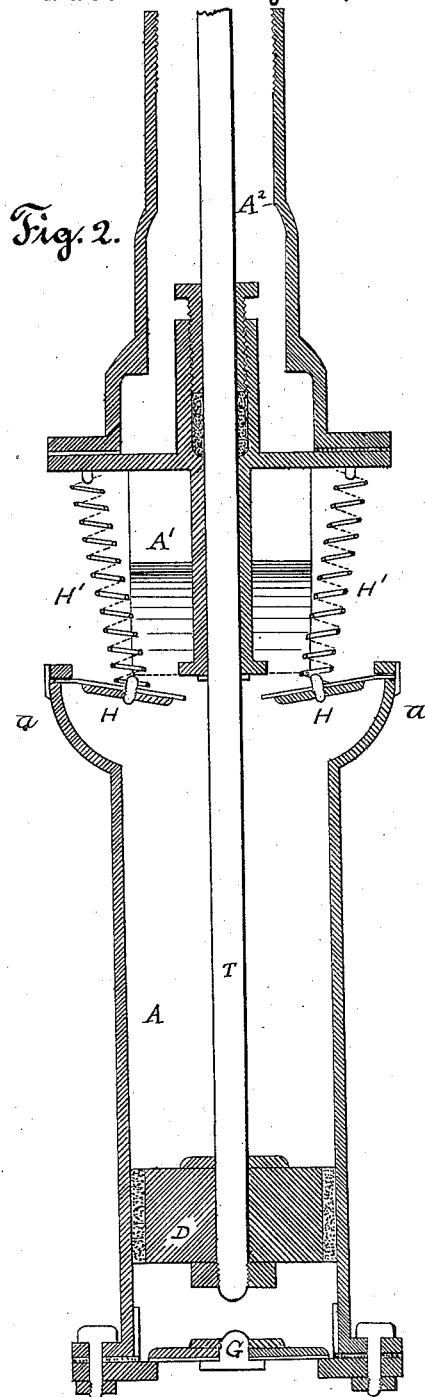
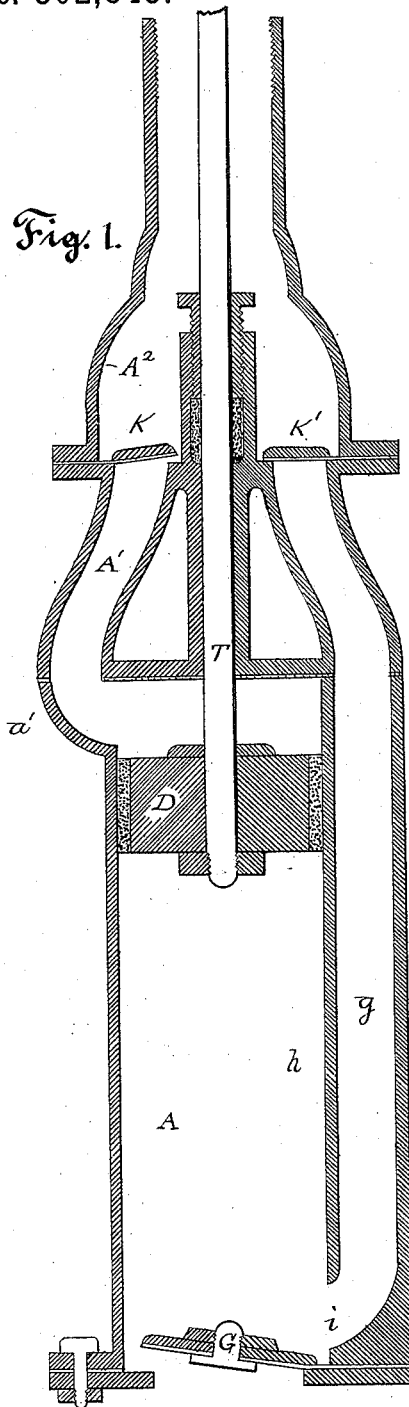


L. HERBERT.

SUBMERGED FORCE PUMP.

No. 302,843.

Patented July 29, 1884.



Witnesses.
 Eliza B. Howe
 Alfred B. Sreadwell

Inventor.
Louis Herbert.
By Joshua B. Nelson Atty.

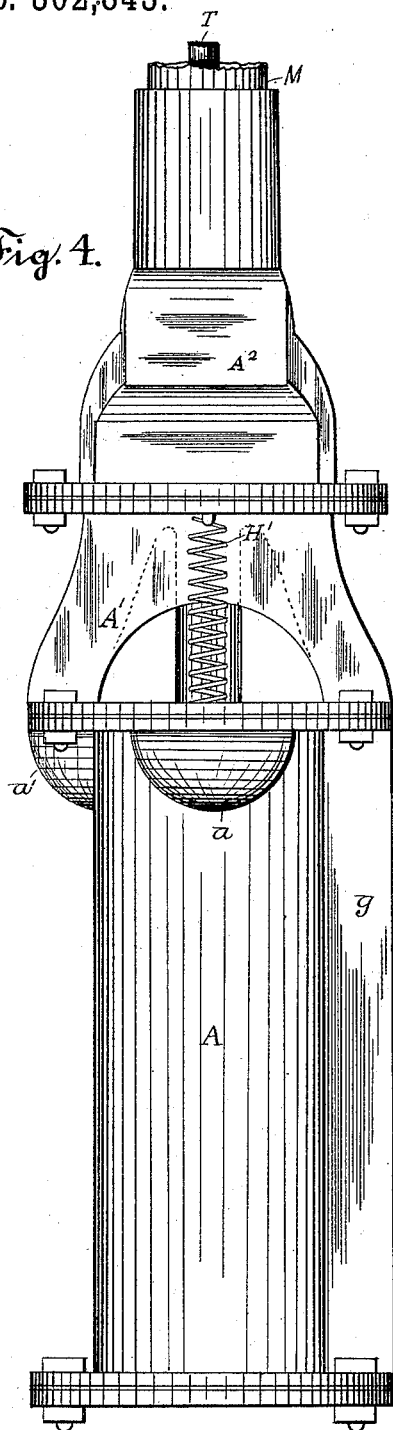
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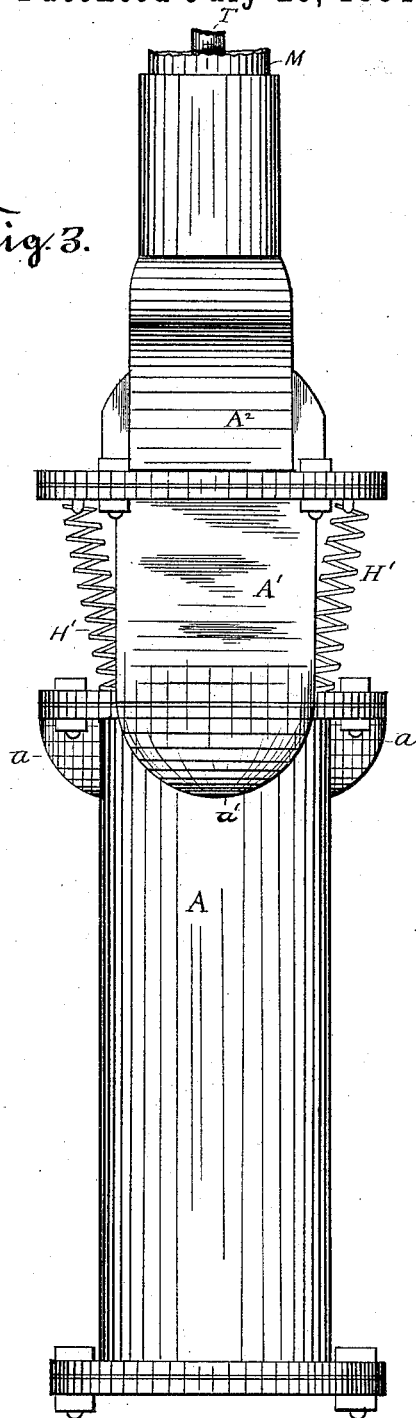
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Fig. 4.



Witnesses.
Elihu B. Howe.
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Fig. 3.



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Louis Herbert.
By Joshua S. Webster, Atty.

UNITED STATES PATENT OFFICE.

LOUIS HERBERT, OF HICKSVILLE, CALIFORNIA.

SUBMERGED FORCE-PUMP.

SPECIFICATION forming part of Letters Patent No. 302,843, dated July 29, 1884.

Application filed November 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, LOUIS HERBERT, a citizen of the Kingdom of Great Britain, residing at Hicksville, in the county of Sacramento and State of California, have invented certain new and useful Improvements in Double-Action Submerged Force-Pumps, (being an improvement on Letters Patent No. 263,406,) of which the following is a specification, reference being had therein to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

Figure 1, Sheet 1, is a section of the cylinder or chamber containing the plunger, piston, and valves. Fig. 2, Sheet 1, is a section of the same at right angles to Fig. 1. Fig. 3, Sheet 2, is an elevation of Fig. 2. Fig. 4, Sheet 2, is an elevation of Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is, mainly, to improve the construction of the submerged chambers of the pump described in the Letters Patent No. 263,406, granted to me August 29, 1882, so as to make it more convenient in use and more effective in operation.

The invention will be first described in connection with the drawings, and then pointed out in the claims.

A is the lower cylinder or pump-chamber, which is immersed in the water at the bottom of the well. *g* is a passage or water-way connected with the chamber A and with a chamber, A', as hereinafter shown, and divided therefrom by a partition, *h*, and having an inlet, *i*, at its bottom, leading from chamber A. Water is admitted into the bottom of chamber A and into way *g* by the inlet *i* through a valve, G, at the bottom of chamber A. The chamber A has enlargements *a a* at its apex, which carry valves H H, through which the water is admitted into the top of the chamber A. The tops of these valves H are connected by springs H' H' to the top flange of a chamber-section, A', whose bottom flange, by proper connections, is attached to top flange of section A. The chamber A also has another enlarge-

ment, *a'*, at its apex, to permit the flow of the water from chamber A into chamber A'. Attached to the top flange of chamber A' is the bottom flange of a top chamber, A², the chambers A, A', and A² forming a cylindrical compartment for the plunger-rod T, having a piston, D, and the water-way *g*, the water passing from the chamber A by inlet *i* into way *g*, and emptying into the pipe M of the pump, which pipe M is screwed into the top of the chamber A². A valve, K, permits the passage of the water from chamber A and A' into chamber A², and a valve, K', permits the passage of the water from water-way *g* into chamber A².

The method of operation is as follows: As the piston D descends, the chamber A receives water at its top by the opening of valves H. As it ascends, the chamber A and way *g* receive water at the bottom by the opening of valve G. As the piston descends, the water is forced upward through way *g*, and by the opening of valve K' is discharged into chamber A², the valves H at the same time opening and letting water into top of chamber A, and the valve G remaining closed. *Contra*, when the piston ascends, the valve K' closes, also the valves H close by aid of the springs H', while the valve G opens again to admit water into the bottom of chamber A, and the valve K opens to discharge the water that is being raised by the piston from chamber A and A' into top chamber, A², from which it flows upwardly into pump-pipe M, to be finally discharged from its nozzle in any usual way.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a force-pump, of the lower section, A, provided with a valve at its bottom and suitable valves at its top, and having the side passage, *g*, with the section A', the section A², the valves K K', and the piston, substantially as shown.

2. The combination of the cylinder A, having the enlargements *a* at its top, and provided with a valve, G, in its lower end, with

valves H in its upper end, the piston, the water-way *g*, the sections A' A², and the valves K K', substantially as described.

3. The combination of the cylinder A, having the enlargements *a'* at its top, and provided with the valve G at its bottom, and the valves H at its top, and suitable springs, H', for closing the valves, the sections A' A², the

valves K K', and the piston, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LOUIS HERBERT.

Witnesses:

JOSHUA B. WEBSTER,

ELIHU B. STOWE.