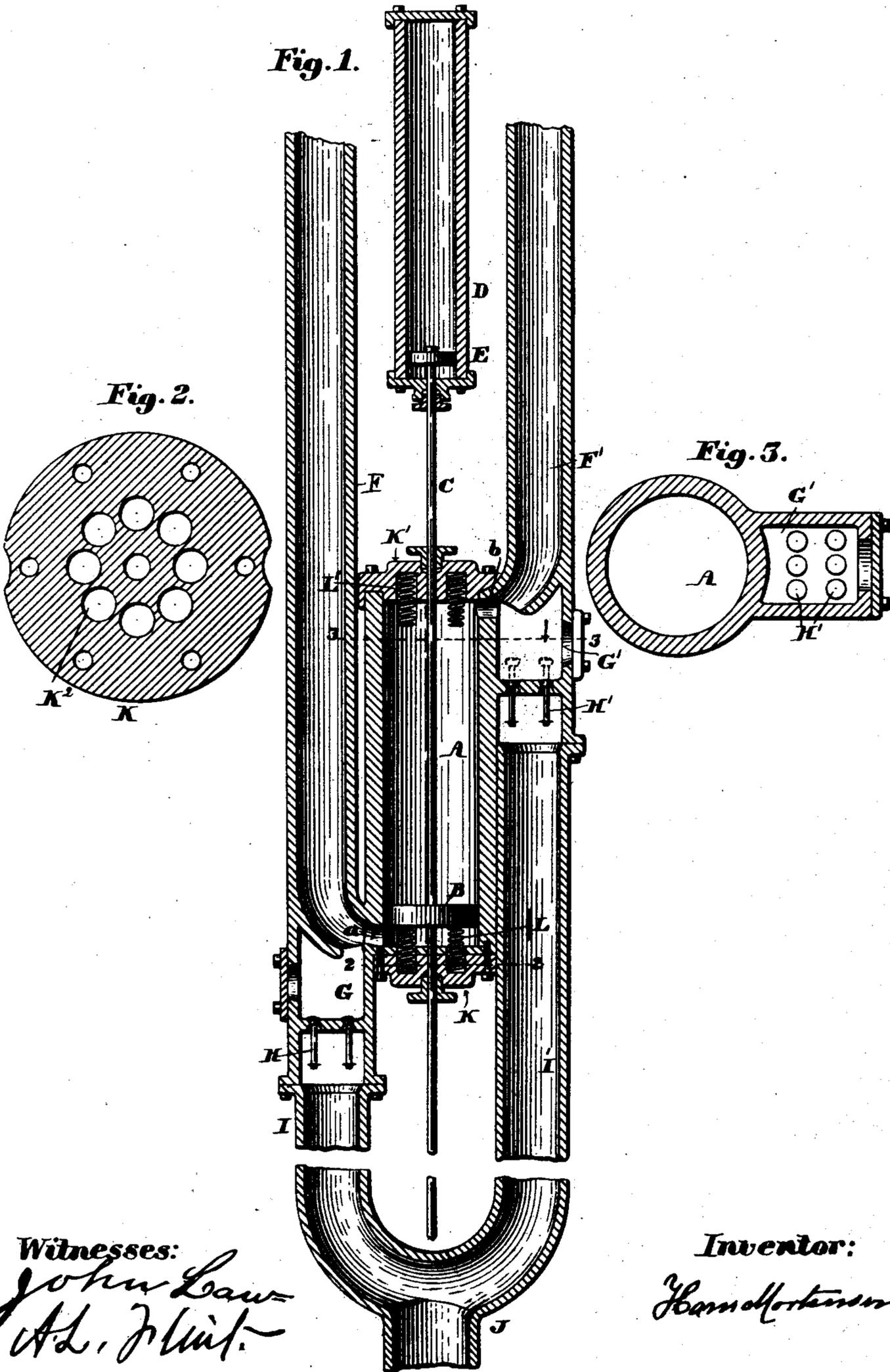


(Model.)

H. MORTENSEN.  
PUMP.

No. 525,714.

Patented Sept. 11, 1894.



Witnesses:  
*John Law*  
*A. J. Hunt*

Inventor:  
*Hans Mortensen*

# UNITED STATES PATENT OFFICE.

HANS MORTENSEN, OF LEADVILLE, COLORADO.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 525,714, dated September 11, 1894.

Application filed April 26, 1892. Serial No. 430,812. (Model.)

*To all whom it may concern:*

Be it known that I, HANS MORTENSEN, of Leadville, in the county of Lake and State of Colorado, having invented a new and Improved Pump, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved pump, which is simple and durable in construction, very effective and easy in operation.

The invention consists of certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1, is a sectional side elevation of the improvement. Fig. 2, is an enlarged sectional plan view of the same, on the line 2—2 of Fig. 1; and Fig. 3 is a similar view of the same, on the line 3—3 of Fig. 1.

The improved pump is provided with a barrel A, in which operates a piston B, secured on a piston rod C, extending through both barrel heads, and extending, at its upper end, into a steam cylinder D, containing a piston E, secured to the said piston rod C.

Near the lower end of the barrel A is arranged a port *a*, and a similar port *b* is arranged near its upper end, the said ports *a* and *b* connecting the barrel with stand pipes F and F' respectively, arranged vertically, as is plainly shown in Fig. 1. The lower ends of the stand pipes F and F' open into the valve chambers or chests G and G' respectively, containing in their bottoms valves H and H' respectively, adapted to open upward, as is plainly shown in dotted lines at the right of Fig. 1. The valves H and H' are adapted to establish communication between the valve chambers G and G' and the inlet pipes I and I' respectively, connected with a common suction pipe J, extending into the liquid to be pumped.

In the heads K and K' of the barrel A, are formed seats K'' arranged in a circle, and

containing springs L and L' respectively, projecting into the barrel to act against the under and upper surfaces of the piston B, where the latter moves downward or upward.

The operation is as follows:—The steam admitted to the cylinder D actuates the piston E therein, so that a vertical sliding motion is imparted to the piston B, in the barrel A, on the upward stroke. With speed of the piston B, the column still moves after end of stroke of piston B, and by so doing allows the atmospheric pressure to send water through the suction pipe J, inlet pipe I, valve H, and chamber G into stand pipe F. On the return stroke, with speed of piston B, the column still moves after end of stroke of piston B, and by so doing allows the atmospheric pressure to send water through the suction pipe J, inlet pipe I', valve H', and chamber G' into stand pipe F' as above described. The springs L and L' are compressed by the up and down strokes of the piston B, at the time the latter nears the end of the stroke, and the said springs, on the reversing of the motive agent in the cylinder D, assist in starting the piston again, in the opposite direction.

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

In a pump the combination of a cylinder, a piston working therein, a port at the upper end of the cylinder, a stand pipe communicating with said port above the same, and a valve and valve chamber below said port, a second port at the lower end of said cylinder, a second stand pipe communicating with said second port above the same, and a valve and valve chamber below said second port, and separate pipes communicating with both of said valves and chambers below the same, each of said ports serving both as a discharge and inlet port, substantially as set forth.

HANS MORTENSEN.

Witnesses:

JOHN LAW,  
A. L. FLINT.