

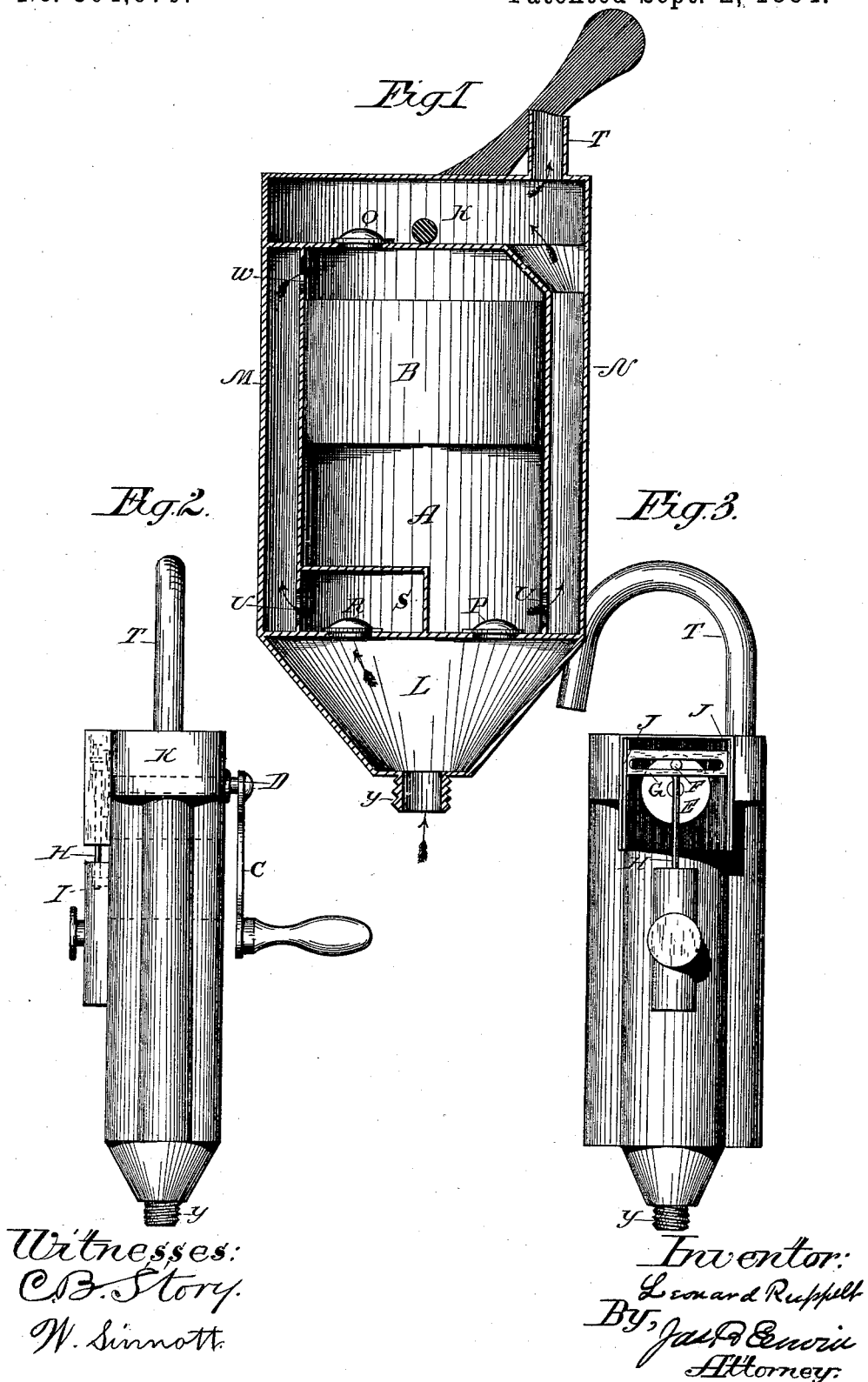
(No Model.)

2 Sheets—Sheet 1.

L. RUPPELT.  
PUMP.

No. 304,670.

Patented Sept. 2, 1884.



(No Model.)

2 Sheets—Sheet 2.

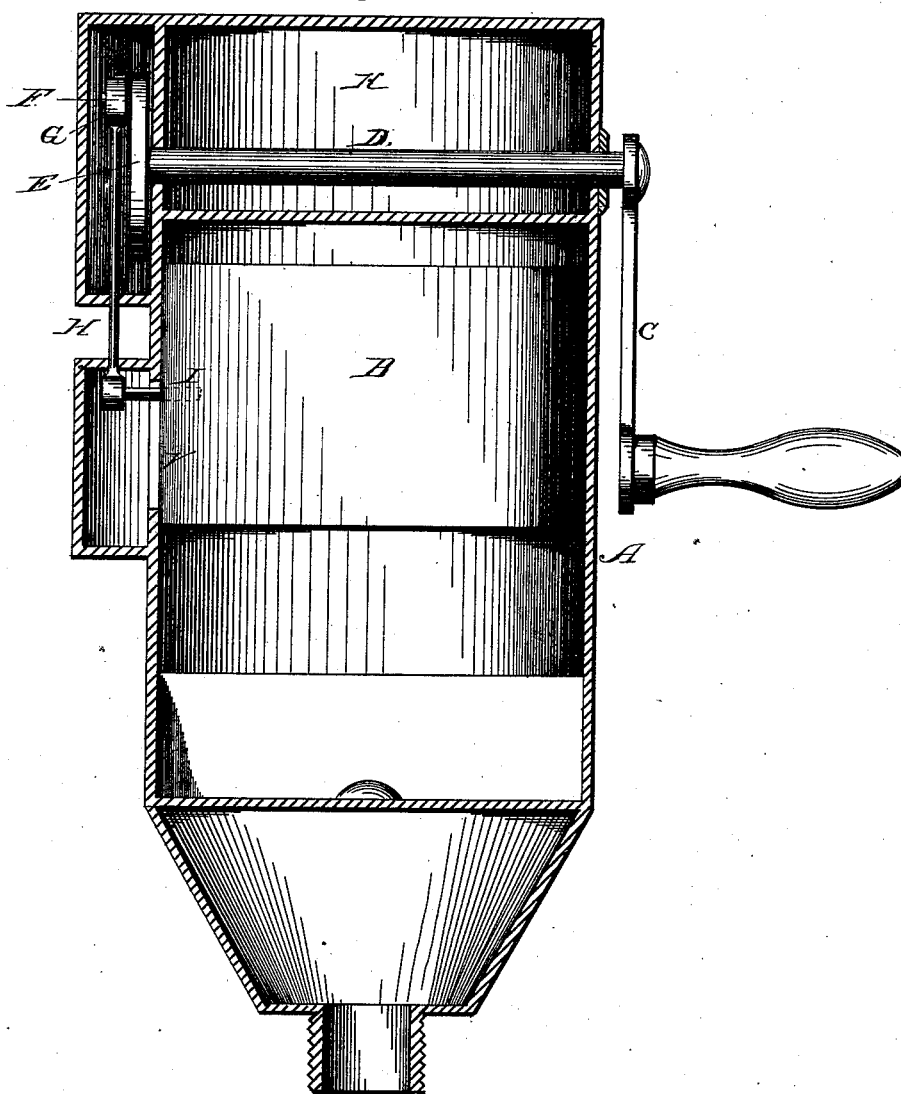
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*Fig. 4.*



*Witnesses:*

*O. B. Story.*  
*Clinton Goodwin*

*Inventor:*

*Leonard Ruppelt*  
*By Jas. D. Enright*

*Attorney*

# UNITED STATES PATENT OFFICE.

LEONARD RUPPELT, OF MILWAUKEE, WISCONSIN.

## PUMP.

SPECIFICATION forming part of Letters Patent No. 304,670, dated September 2, 1884.

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

*To all whom it may concern:*

Be it known that I, LEONARD RUPPELT, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in force-pumps, and pertains to that class in which a reciprocating plunger is adapted, as it moves in either direction, to throw a continuous unbroken stream of water.

The construction of my invention is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a vertical section. Fig. 2 is a side and Fig. 3 a front view, and Fig. 4 is a vertical section drawn at right angles to that shown in Fig. 1.

Like parts are represented by the same reference-letters throughout the several views.

A represents the cylinder proper, in which the reciprocating plunger B is adapted to move upward and downward with each revolution of the crank C. Motion is communicated from the crank C to the plunger B through the crank-shaft D, crank-wheel E, crank-pin F, cross-head G, piston-rod H, and pin I. The cross-head is provided with guide-ways J J, in which ways it moves upward and downward as the crank C is revolved. As the crank revolves, the crank-pin F moves horizontally toward the right and left in the slot shown in the cross-head, while it communicates an upward and downward reciprocating movement to the piston-rod H, and from thence to the piston or plunger, as described. The pin or rod I is rigidly attached to the piston B, and one of its ends projects at right angles to the line of its motion through a slot formed in the side of the cylinder A, and is attached to the lower end of the piston-rod H, as indicated by dotted

lines in Fig. 2. The thickness of the plunger B is such that it entirely closes the slot through which the rod moves, and thus prevents the water from escaping or entering through it.

Above and below the cylinder A are provided receiving and discharging chambers K and L, and upon the sides of the cylinder are water ducts or passages M and N. The cylinder A is provided with clapper-valves O P R and chamber S.

My pump operates as follows: When the plunger is moved upward, water rushes into the lower end of the cylinder through the valve P, while the water above the plunger is forced through valve O into the chamber K, and from thence through the discharge-pipe T. With the downward return-stroke of the plunger the valve P closes, and the water beneath the plunger is forced out through hole U into passage N, and from thence up into the chamber K and out through the discharge-pipe T, as indicated by the arrows. Simultaneously with the downward movement of the plunger a vacuum is formed above the same, which causes the water to enter valve R and pass into chamber S, and from thence through hole U up through passage M, when it enters the cylinder A through the hole U preparatory to being forced upward by the return upward stroke of the plunger. With the upward movement of the plunger the valve R closes, and the water confined above the plunger is forced, as above stated, through valve O, chamber K, and out through the discharge-pipe T. Thus it is obvious that a continuous stream of water is forced from the cylinder A as the plunger moves upward and downward. The cylinder may be located either in the water or above it, as desired, it being adapted to operate the same in either case. When the cylinder is located above the water, it is connected therewith by a tube attached to the nozzle y.

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

In a force-pump, the combination and arrangement of the cylinder A, provided with water-receiving valve P and solid reciprocating piston B, connected with operative mechanism,

chamber S, provided with water-receiving valve R, chamber K, provided with water-receiving valve O, chamber L, and side ducts, M and N, said chamber S and duct M serving as a  
5 way of communication through which water passes from chamber L above the piston as said piston moves downward, and said duct N and chamber K affording a means of communica-

tion from beneath the piston to the escape-pipe, substantially as and for the purpose specified. 10

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

LEONARD RUPPELT.

Witnesses:

JAS. B. ERWIN,

CLARENCE B. STORY.