

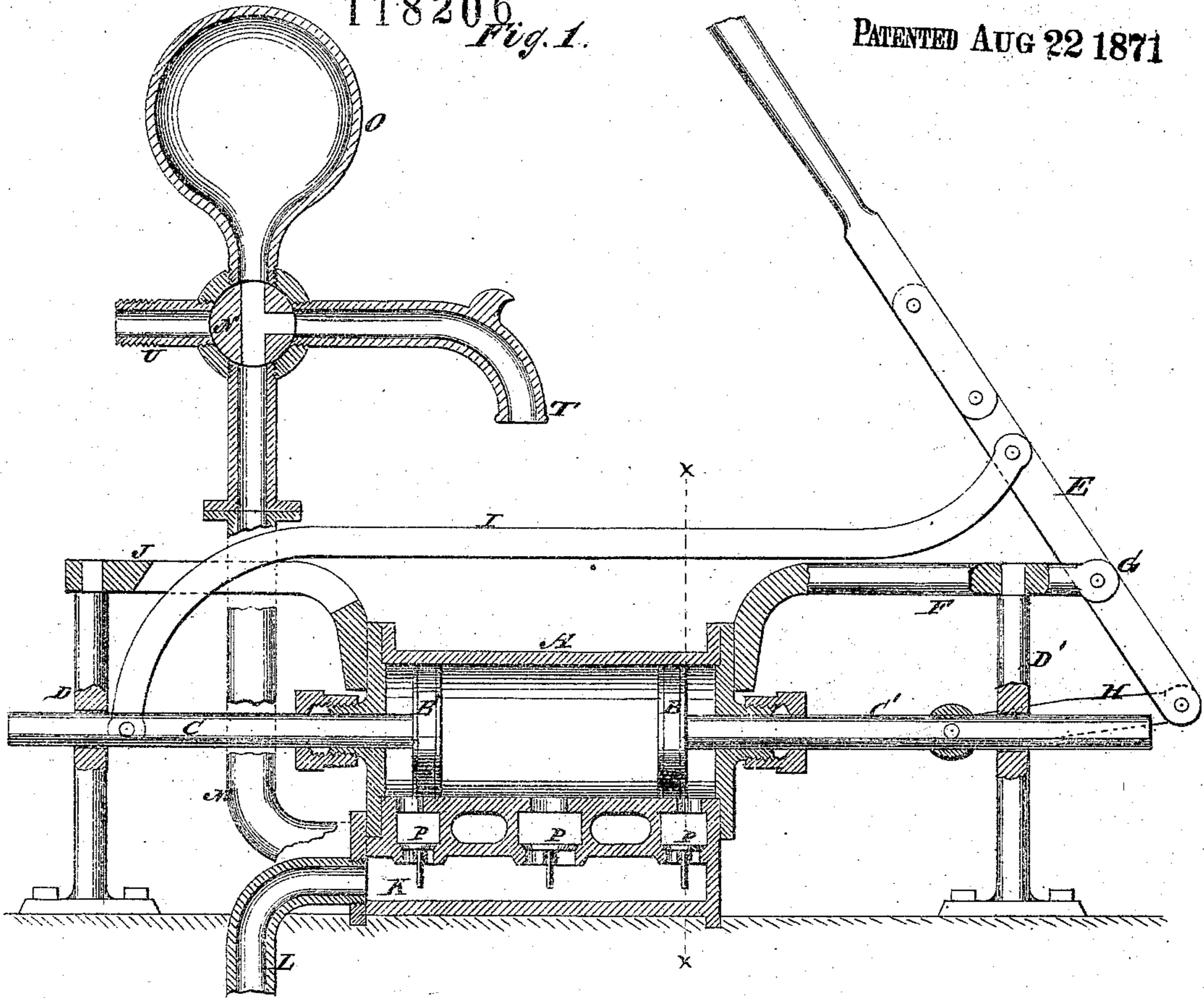
*E. S. Crowell.*

*Pump.*

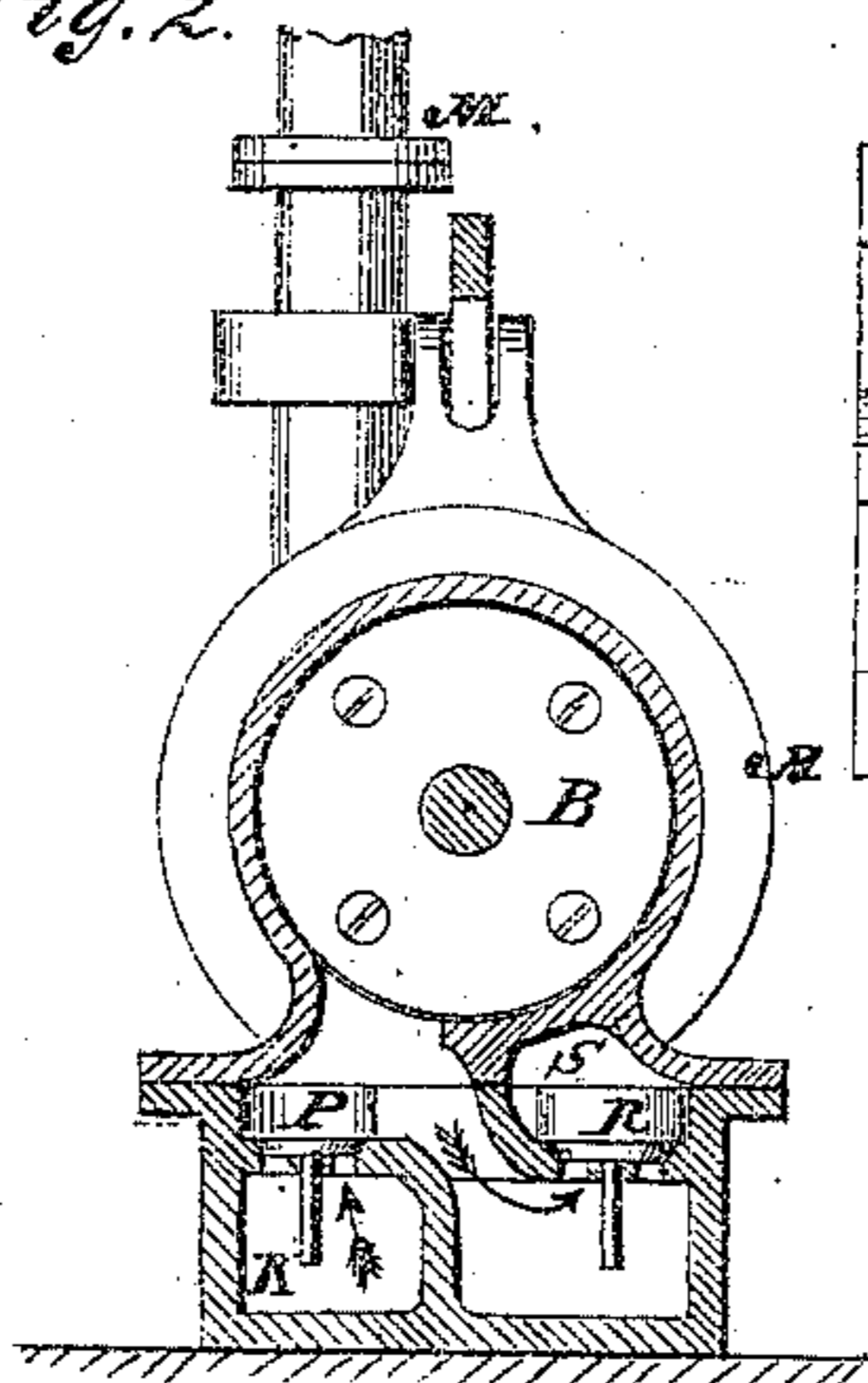
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*Fig. 1.*

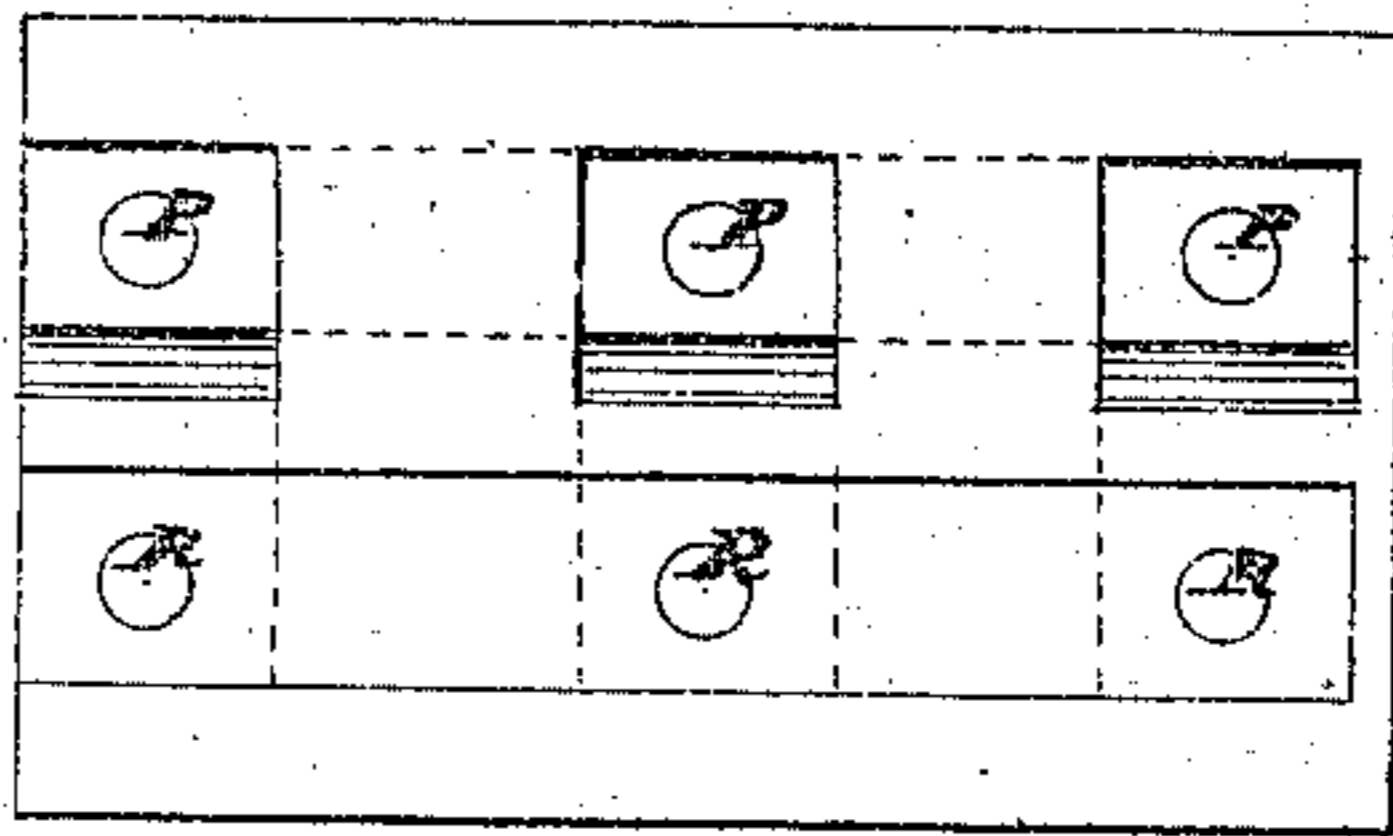
PATENTED AUG 22 1871



*Fig. 2.*



*Fig. 3.*



Witnesses:

*E. Woff.*  
*Alex. F. Roberts*

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# UNITED STATES PATENT OFFICE.

EVERARD S. CROWELL, OF AUGUSTA, MAINE.

## IMPROVEMENT IN PUMPS.

Specification forming part of Letters Patent No. 118,206, dated August 22, 1871.

*To all whom it may concern:*

Be it known that I, EVERARD S. CROWELL, of Augusta, in the county of Kennebec and State of Maine, have invented a new and useful Improvement in Force-Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention is an improvement in the class of force-pumps provided with two sets of inlet and outlet-valves, and two pistons simultaneously reciprocated in the same cylinder and in opposite directions. The improvement consists in the arrangement, with the receiving and eduction-chambers of peculiar construction, of three induction and three eduction-valves, whereby water may be constantly drawn into the cylinder and forced out of the same with more uniformity and steadiness, as well as force of flow, than in allied inventions.

In the accompanying drawing, Figure 1 represents a sectional elevation of my improved force-pump. Fig. 2 is a vertical cross-section of Fig. 1 taken on the line *x x*. Fig. 3 shows the arrangement of the induction and eduction-valves.

Similar letters of reference indicate corresponding parts.

A is the pump-cylinder. B B' are the two pistons. C C' are the piston-rods. D D' are the piston-rod guides. E is the lever by which the pistons are operated. F is the fulcrum-bar of the lever, supported by the cylinder-head and by the guide-stand D'. G is the fulcrum-pin. The lever is connected with the piston-rod C' by the link H. The piston-rod C is connected with the working-lever by the connecting-rod I, which rod

works in a slot in the guide-support J. This support J is attached to the cylinder-head the same as at the other end of the pump, and connects with the top of the piston-guide D. K is the receiving-chamber of the pump. L is the induction-pipe. M is the eduction-pipe, which is attached to the support J and held in an upright position thereby. N is a two-way delivery-cock. O is the air-chamber. The pistons B B' work to and from the center of the cylinder, receiving water from the chamber K at each end of the pump and between the pistons, there being a pair of valves—that is, an induction and an eduction-valve—for that purpose, arranged as seen in Fig. 3. P represents the induction-valves, and R the eduction-valves, all opening upward. The induction-valves rise from the pressure of the water to fill the vacuum caused by the movement of the pistons, and the eduction-valves rise by the pressure of the water produced by the movement of the piston. The eduction-pipe M is connected with the eduction-chamber S. The course of the water from one chamber to the other is seen in Fig. 2, indicated by arrows. By means of the two-way cock N the water may be discharged either through the spout T or through the tube V, to which a hose may be attached.

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

The three induction-valves P P P and eduction-valves R R R, receiving-chamber K and eduction-chamber S, cylinder A, and pistons B B, constructed and arranged as shown and described.

EVERARD S. CROWELL.

Witnesses:

O. G. TURNER,  
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