

(No Model.)

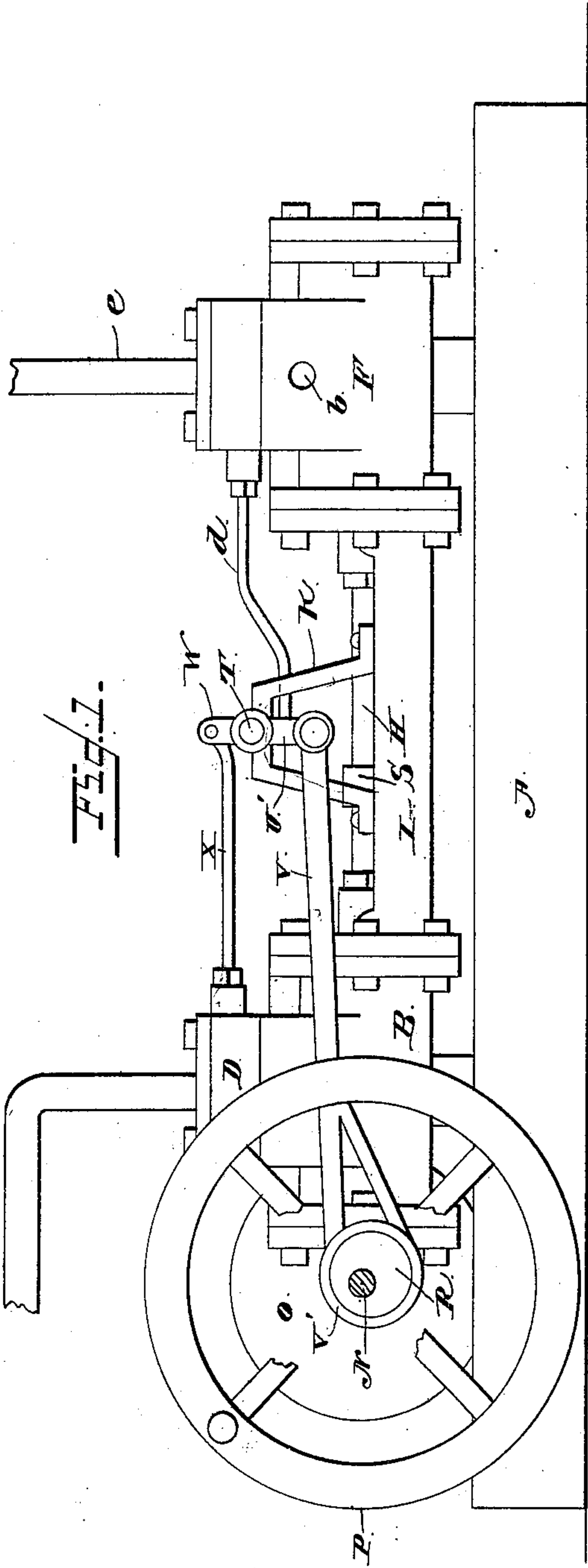
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J. T. LEFTWICK.

## STEAM PUMP.

No. 350,632.

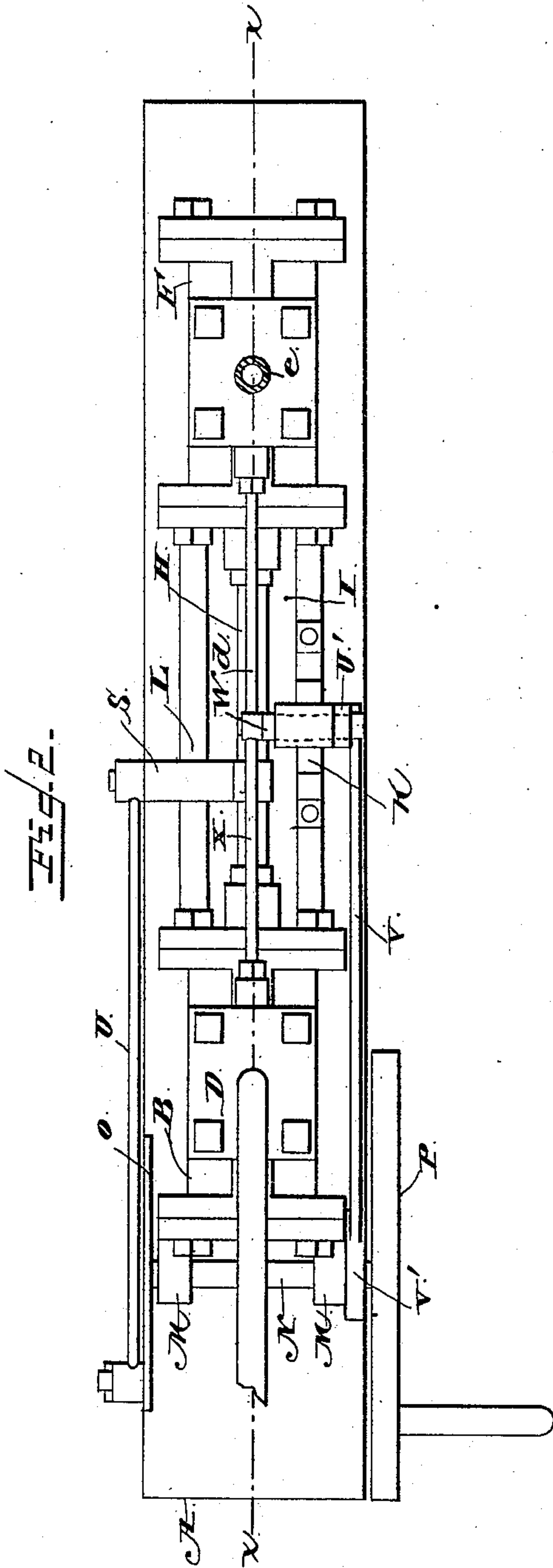
Patented Oct. 12, 1886.



Witnesses

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J. W. Gainer



Inventor

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(No Model.)

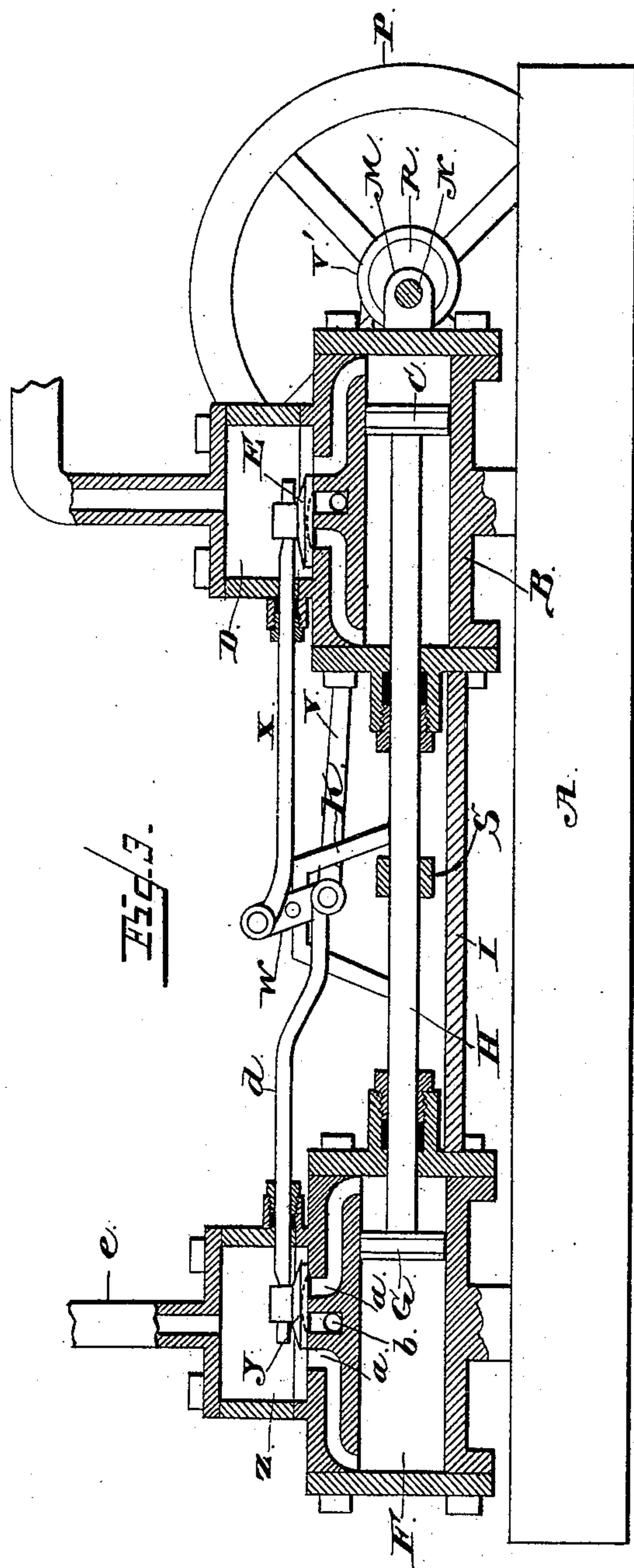
2 Sheets—Sheet 2.

J. T. LEFTWICK.

STEAM PUMP.

No. 350,632.

Patented Oct. 12, 1886.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN TAYLOR LEFTWICK, OF GREENSBURG, KENTUCKY.

## STEAM-PUMP.

SPECIFICATION forming part of Letters Patent No. 350,632, dated October 12, 1886.

Application filed June 16, 1886. Serial No. 205,356. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN TAYLOR LEFTWICK, a citizen of the United States, residing at Greensburg, in the county of Green and State of Kentucky, have invented a new and useful Improvement in Steam-Pumps, of which the following is a specification.

My invention relates to an improvement in steam-pumps; and it consists in the peculiar construction and combination of devices, that will be more fully set forth hereinafter, and particularly pointed out in the claim.

In the drawings, Figure 1 is a side elevation of a steam-pump embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical longitudinal sectional view on the line *xx* of Fig. 2.

A represents the base or bed plate, on one end of which is secured the cylinder B of an ordinary reciprocating high-pressure steam-engine, which is provided with the usual piston, C, the steam-chest D, and the valve E. On the opposite end of the bed-plate is secured a pump-cylinder, F, in which works a piston or plunger, G, which is connected to the piston C by means of a rod, H.

I represents a longitudinal frame, which connects the opposing heads of the cylinders B and F, and on one side of the said frame, at the center thereof, is bolted a vertical standard, K, while the opposite side of the frame forms a horizontal guideway, L. From the outer head of the cylinder B project lugs or brackets M, in which is journaled a transverse shaft, N. To one end of the said shaft is secured a crank-wheel, O, and to the opposite end thereof is attached a fly-wheel, P. An eccentric, R, is also attached to the shaft M on the inner side of the fly-wheel.

S represents a cross head, which is bolted to the piston-rod H and projects laterally from the guideways L, and works on the said guideways. A pitman, U, connects the outer end of the cross-head S with the crank-pin of the wheel O.

T represents a rock-shaft, which is journaled in a bearing formed on the upper end of the standard K. To the outer end of the rock-shaft T is secured a rocking arm, U', which is connected to the eccentric R by means of an eccentric-rod, V, and an eccentric-strap, V'. To the inner end of the shaft T is secured a

double-ended rocking arm, W. To the upper end of the rocking arm W is attached a valve-rod, X, the inner end of which is attached to the valve E. The said rod passes through a stuffing-box in the front wall of the steam-chest D.

Y represents a valve, which is located in a chamber, Z, on the upper side of the cylinder F. Inlet ports or channels *a* extend from near the center of the chamber Z to the ends of the cylinder F, and communicating with the said inlet-channels is an outlet channel or port, *b*, which extends through one side of the cylinder F, and to which a discharge-pipe, C, is attached. The valve Y works over the channels *a* and *b*, constantly covering the channel *b* and alternately opening and closing the inner ends of the channels *a* as the said valve is reciprocated in the chamber Z. A valve-rod, *d*, connects the valve Y with the lower end of the rocking arm W. *e* represents a supply-pipe, which is connected at one end to the chamber Z, and which extends to a tank or reservoir or other suitable source of water.

The operation of my invention is as follows: When the steam-engine is operated in the usual manner, the motion of its piston C is communicated to the piston G of the pump-cylinder, and the valve Y is also operated in the chamber Z simultaneously with the piston G and in the opposite direction. When the piston G is at the rear end of the cylinder, the channel *a*, communicating with the rear end of the cylinder, is opened by the valve Y and the channel in the front end of the cylinder is closed by the said valve. When the piston moves forward, it creates a partial vacuum in the rear end of the cylinder, and thereby causes the water to be drawn through the pipe *e* into the chamber Z, and from thence through the rear channel, *a*, into the rear end of the cylinder. The water which was previously drawn into the front end of the cylinder F by the rearward stroke of the piston is expelled therefrom through the exhaust-opening *b*, as will be very readily understood, thus causing a stream of water to be forced from the cylinder F at each movement back and forth of the piston.

A steam-pump thus constructed is cheap and simple, and is exceedingly powerful, being adapted to raise a considerable volume of water to a great height.

Having thus described my invention, I claim—

5 The combination, with the steam-engine, the pump-cylinder F, and the frame connecting the opposing heads of the steam and pump cylinders, of the piston G in the pump-cylinder, the rod H, connecting the said piston to the steam-piston, the cross-head attached to the rod H, the shaft N, having the crank-wheel O and  
10 the eccentric R, the pitman U, connecting the cross-head to the crank-wheel, the standard K, secured to the frame between the cylinders, the rock-shaft T in the said standard, the rock-arm V at one end of the said shaft and connected  
15 to the eccentric by the rod V' and strap V<sup>2</sup>, and the double-ended rock-arm W on the inner

end of the shaft T, one end of the said arm being attached to the steam cut-off valve by the rod X, and the other end thereof being attached to the valve Y of the pump by the rod Z, the cylinder F having the inlet-channels a and the outlet-channel b, the inner ends of the said channels being covered by the said valve Y, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN TAYLOR LEFTWICK.

Witnesses:

CHAS. D. ALLEN,  
B. F. HAMILTON.