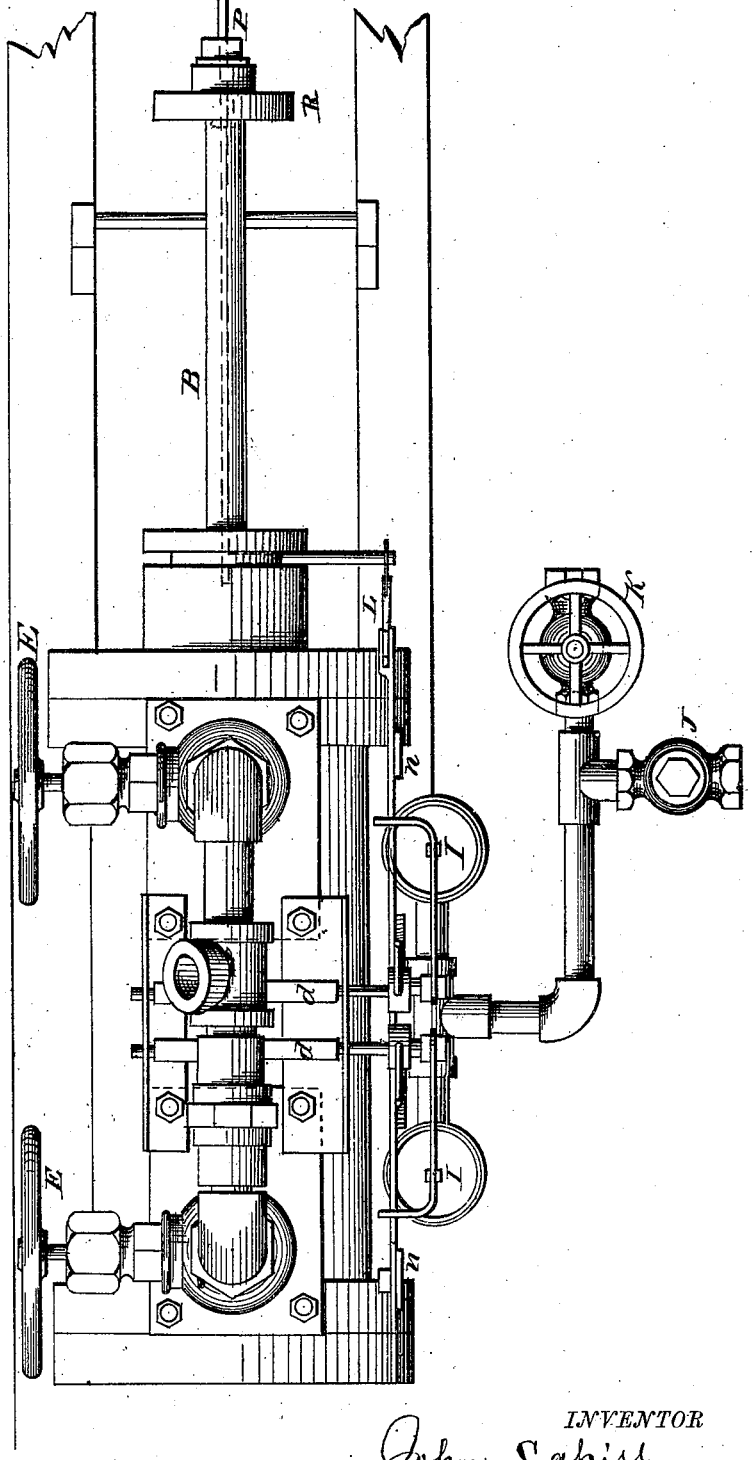
2 Sheets—Sheet 1.

J. CAHILL.

STEAM PUMP.

No. 181,408. Patented Aug. 22, 1876.

Fig. 1.



WITNESSES

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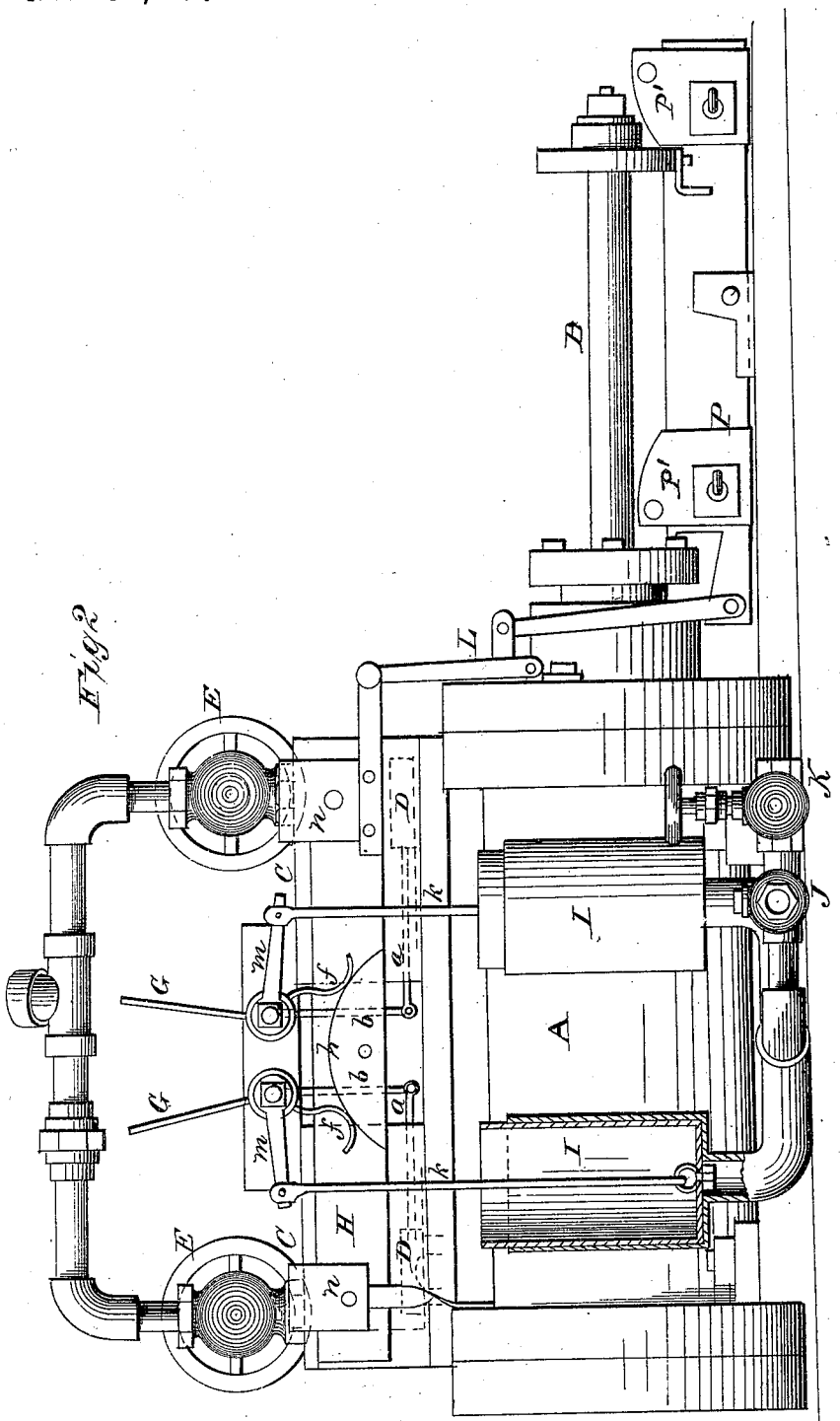
2 Sheets—Sheet 2.

J. CAHILL.

STEAM-PUMP.

No. 181,408. Patented Aug. 22, 1876.

Fig. 2



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UNITED STATES PATENT OFFICE.

JOHN CAHILL, OF MAHANOY CITY, PENNSYLVANIA.

IMPROVEMENT IN STEAM-PUMPS.

Specification forming part of Letters Patent No. **181,408**, dated August 22, 1876; application filed May 10, 1876.

To all whom it may concern:

Be it known that I, JOHN CAHILL, of Mahanoy City, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Pumps; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The nature of my invention consists in the construction of a steam-pump, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a plan view, and Fig. 2 a side elevation, of my invention.

A represents an ordinary cylinder with piston and piston-rod B. The cylinder is provided with two steam-chests, C C, each with a slide-valve, D, to control the steam on both ends of the cylinder. These slide-valves have but two openings, so that when the steam is shut off it exhausts at the same time. Over the steam-chests are two stop-valves, E E, to regulate steam for each valve separately. The slide-valves D D are, by rods *a a*, connected to arms *b b*, extending downward from two parallel rocking shafts, *d d*, which are provided with two upright levers, G G, used for starting-bars. From the rock-shafts *d d* depend curved arms *f f*, which are operated alternately by a tappet, *h*, on the side of a tappet-rod, H, sliding in bearings alongside of the cylinder. I I represent an air or water cataract, used for opening the slide-valves, the plungers thereof being, by rods *k k*, connected with arms *m m*, extending outward in opposite directions from the rock-shafts *d d*. The cataract feeds itself from the check-valve J, and a check and screw valve, K, is used for discharging air. At each end of the tappet-rod H is a projection, *n*, which stops the pumps in case anything should go wrong, by coming under the bent ends of the arms *m*. The tappet-rod H is connected to an elbow-lever, L, and the other arm of this lever is connected to a pivoted rocking arm, P, under the piston-rod, whereby the stroke is regulated. The piston-rod B of the engine is, in operation, attached to the plunger of the pump by a coupling, R, on the end of the piston-rod. At each end of the pivoted rocking arm P there is an adjustable tappet, P′, to regulate the stroke. Now, as the piston-rod moves out the coupling R will strike the tappet P′ on the beam P, and bear it down, raising the other end, whereby the plug-rod H will be moved in its bearings, and the tappet *h* thereon strike the curved arm *f*, and, through the connections described, close the slide-valve D, through which steam was entering, and exhaust. It will then stand still until the cataract forces the air out of the screw or check valve K, which can be regulated so as to let it out fast or slow.

The pump may be started in a few seconds by opening this valve all the way, or it can be made to stand any length of time by partly closing the valve, so as to let the air out gradually, and by that means the pump may be run so as to have no hard knocks at either end.

The cataract sucks the air in through the check-valve J when the plunger is lifted. The projections *n* on the plug-rod H will be made adjustable thereon by set-screws, and set so that as long as the pump is running all right the bent ends of the arms *m* will just clear them; but as soon as anything gets wrong, causing the engine to run the least bit too far, one of said projections *n* will come under the corresponding arm *m*, so that the slide-valve cannot open until relieved by hand.

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

1. In a steam-pump, the combination, with the cylinder A, of the two steam-chests C C, with slide-valves D D and the stop-valves E E, substantially as and for the purposes herein set forth.

2. The combination of the slide-valves D D, rods *a a*, rocking shafts *d d*, with arms *b b* and *f f*, and the sliding tappet-rod H, with the tappet *h*, substantially as and for the purposes herein set forth.

3. The combination of the plug-rod H, elbow-

lever L, and the pivoted rocking arm P, with adjustable tappets P′, operated by the piston-rod B, as and for the purposes herein set forth.

4. The combination of the cataract I I, with valves J K, plunger-rods *k k*, and arms *m m* on the rocking shafts *d d*, connected with the slide-valves D D, as and for the purposes herein set forth.

5. The projections *n n* on the sliding tappet-rod H, operating in combination with the bent ends of the arms *m m* and the cataract, as and for the purposes herein set forth.

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

JOHN CAHILL.

Witnesses:

ELI REESE,

BERNARD COLLIGAN.