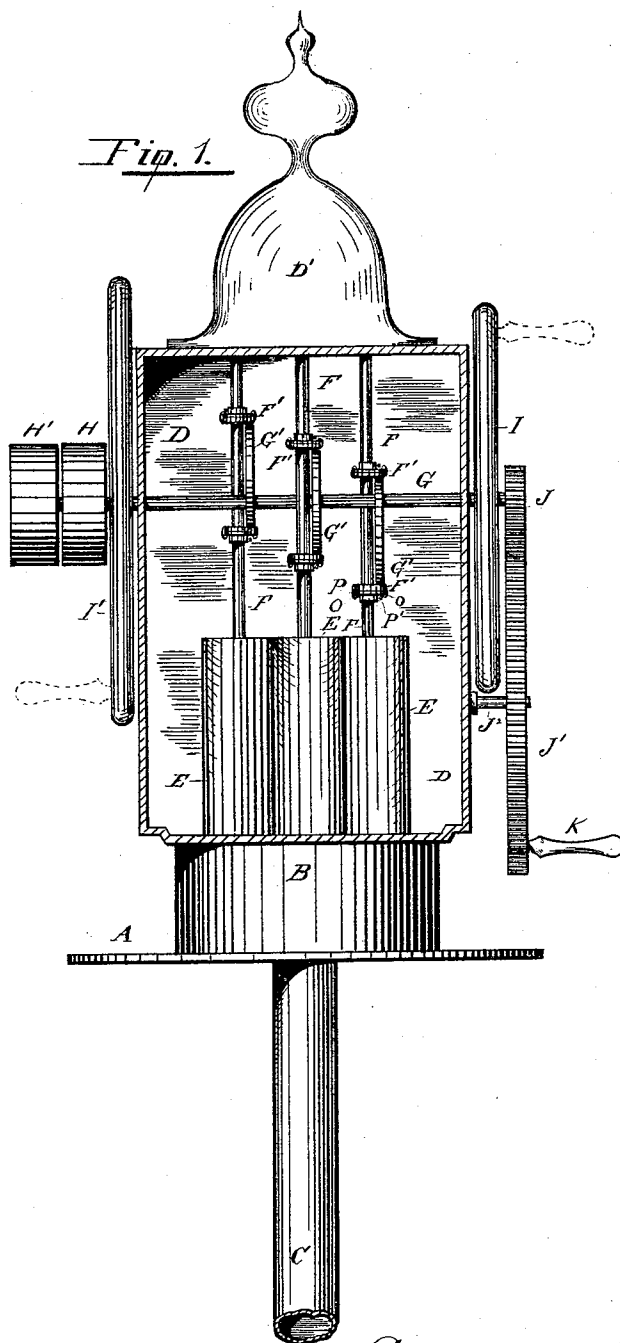


E. D. MIDDLEKAUFF.
PUMP.

No. 481,043.

Patented Aug. 16, 1892.



Witnesses
Edward D. Stowe
Lucius E. Allings

Inventor
Ellsworth D. Middlekauff
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Attorney

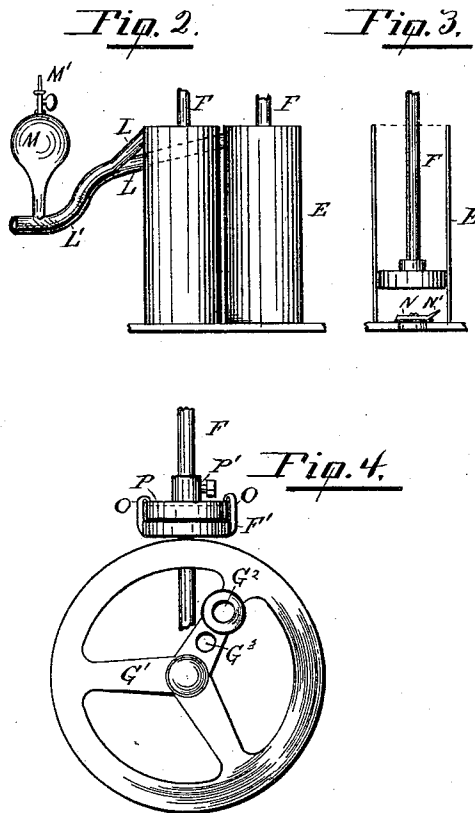
(No Model.)

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

ELLSWORTH D. MIDDLEKAUFF, OF STOCKTON, ASSIGNOR OF ONE-HALF TO
JOHN M. MCKIEARNAN, OF PORTERSVILLE, CALIFORNIA.

PUMP.

SPECIFICATION forming part of Letters Patent No. 481,043, dated August 16, 1892.

Application filed March 10, 1892. Serial No. 424,412. (No model.)

To all whom it may concern:

Be it known that I, ELLSWORTH D. MIDDLEKAUFF, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Pumps; and I do 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 the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a back elevation of my improved pump, partly in section. Fig. 2 is a view of the pump-cylinders, air-chamber, and discharge-pipes. Fig. 3 is a section of one of the cylinders. Fig. 4 is an enlarged view of a cam-wheel and section of piston-rod and lifting device.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide a pump which shall by the application of a certain amount of motive power supply a large and continuous stream to the discharge-pipes. This I accomplish by the devices and combination of devices which will be now fully described in the specification, and pointed out in the claims.

A is the base or flange from which extends into the well the pipe C.

B is the pump-chamber resting upon the flange A.

D is the casing which rests upon the chamber B and within which are three cylinders E, supplied with suitable pistons, upon the rods F of each of which at proper positions are two collars P, secured by set-screws to the rod F and supplied with surface grooves, from which are suspended by hooks O collars F', which bear upon the rims of cam-wheels G'. A shaft G is passed through holes G² or G³ in one of the spokes, according as a long or short stroke is desired, near the rims of the cam-wheels G', and has its bearings in the sides of the casing D. Upon one end of the shaft G is a balance-wheel I and a pinion J, the latter engaging with a gear-wheel J', having a handle K, and its center bearing upon a pin J², fastened to the outside of the casing

D. The balance-wheel I also may have a handle, as indicated by the dotted lines in Fig. 1. To the opposite side of the shaft G is attached a balance-wheel I' and two pulleys H and H', the former being a fast and the latter an idle pulley. A handle, as indicated by dotted lines in Fig. 1, may be attached to the balance-wheel I'.

Each cylinder E is provided with a discharge-pipe L, which unite in one section L', at the end of which is an air-chamber M, having a valve M' at its apex.

There are suitable openings with valves between the pipes C and chamber B and between the chamber B and cylinders E. In the roof of the casing D are openings to allow of the vertical motion of the piston-rods F, which at their upper ends are covered by a dome or cap D'.

At the connections of the cylinders E with the chamber B are valves N, having legs N', which, coming in contact with the bottoms of the pistons, prevent the valves N from rising beyond a certain point and from breaking the leathers of the valves.

If it is desired to work the pump by hand-power from one side, the handle K is the initial point. If desired to work it from both sides, the gear-wheel J' is removed and the handles of the balance-wheels I and I' are employed. If desired to run the pump by an engine or other power, the gear-wheel J' is removed and a driving-belt connects the pulley H with the motor.

The action of the cam-wheels G', in connection with the collars F and F', is that of eccentrics, for as the shaft G revolves, carrying with it the cam-wheels G', the collars F', bearing upon the rims of the wheels G', revolve around the periphery of the stationary collars P, the hooks O fitting loosely into the grooves of the collars P, thus vertically operating the rods F of the pistons and inducing a large and constant stream of water into the discharge-pipes L.

Having thus described my invention, what I claim as new is—

1. The combination, in a force-pump, of the three cylinders E within the casing D, the piston-rods F, the stationary grooved collars P upon such rods, engaging

with the hooks O of the revolving collars F', the cam-wheels G', their faces impinging on the faces of the collars F', the shaft G of the cam-wheels G', suitable means for turning the
5 shaft G, and the discharge-pipes L and L', with the air-chamber M M' at the end of the pipe L, all substantially as described.

2. The herein-described force-pump, consisting of the well-pipe C, the chamber B, the
10 casing D, the cylinders E, supplied with the discharge-pipes L, the piston-rods F, supplied with the stationary collars P and with the turning collars F', the cam-wheels G', the shaft G of such cam-wheels, the pinion J on

the end of the shaft G, engaging with the 15 gear-wheel J', supplied with the turning-handle K and having its center bearing upon the pin J', secured to the side of the casing D, and the cap D' above the casing D, all arranged and operating substantially as de- 20 scribed.

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

ELLSWORTH D. MIDDLEKAUFF.

Witnesses:

JOSHUA B. WEBSTER,
JAMES T. SUMMERVILLE.