

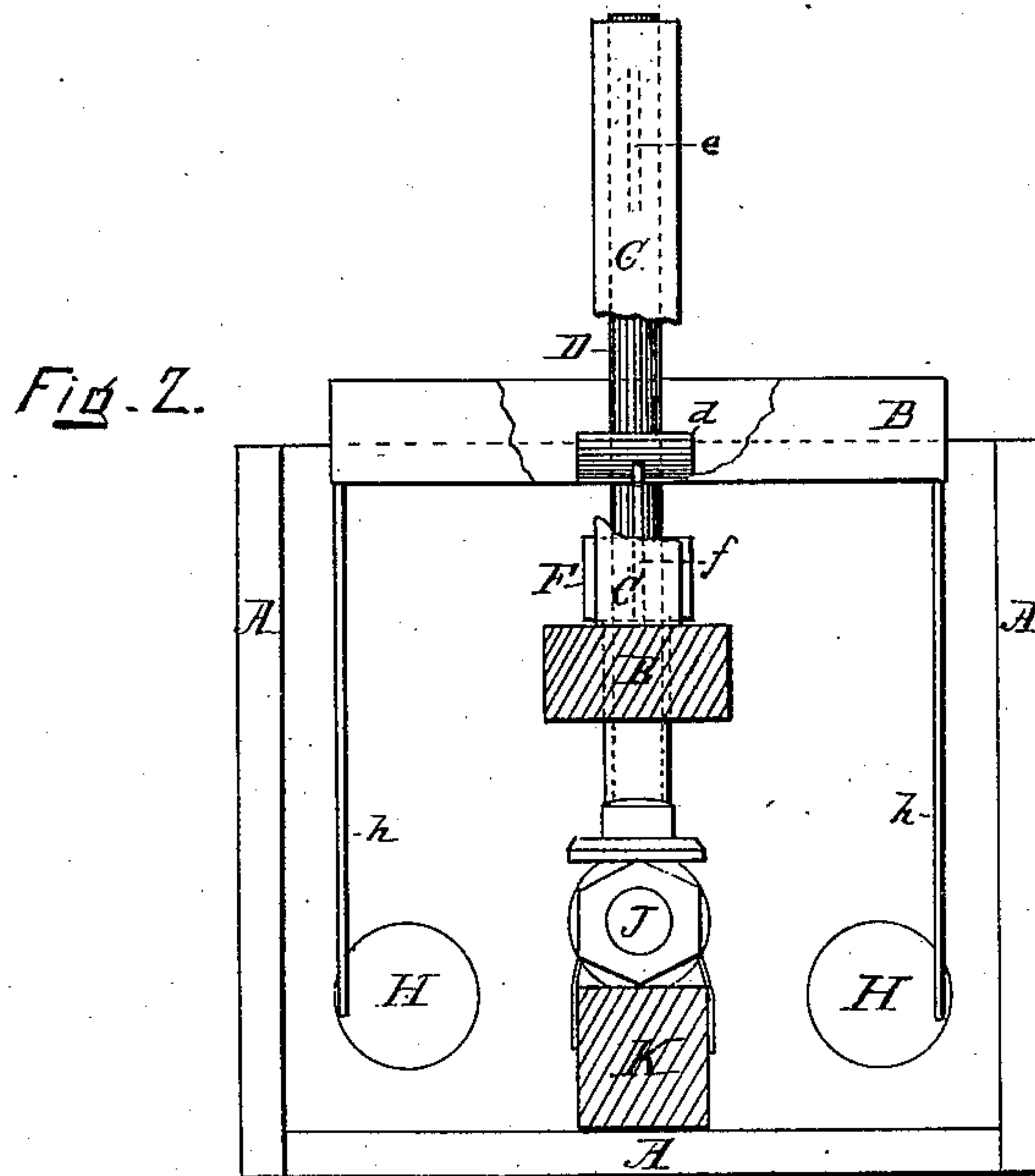
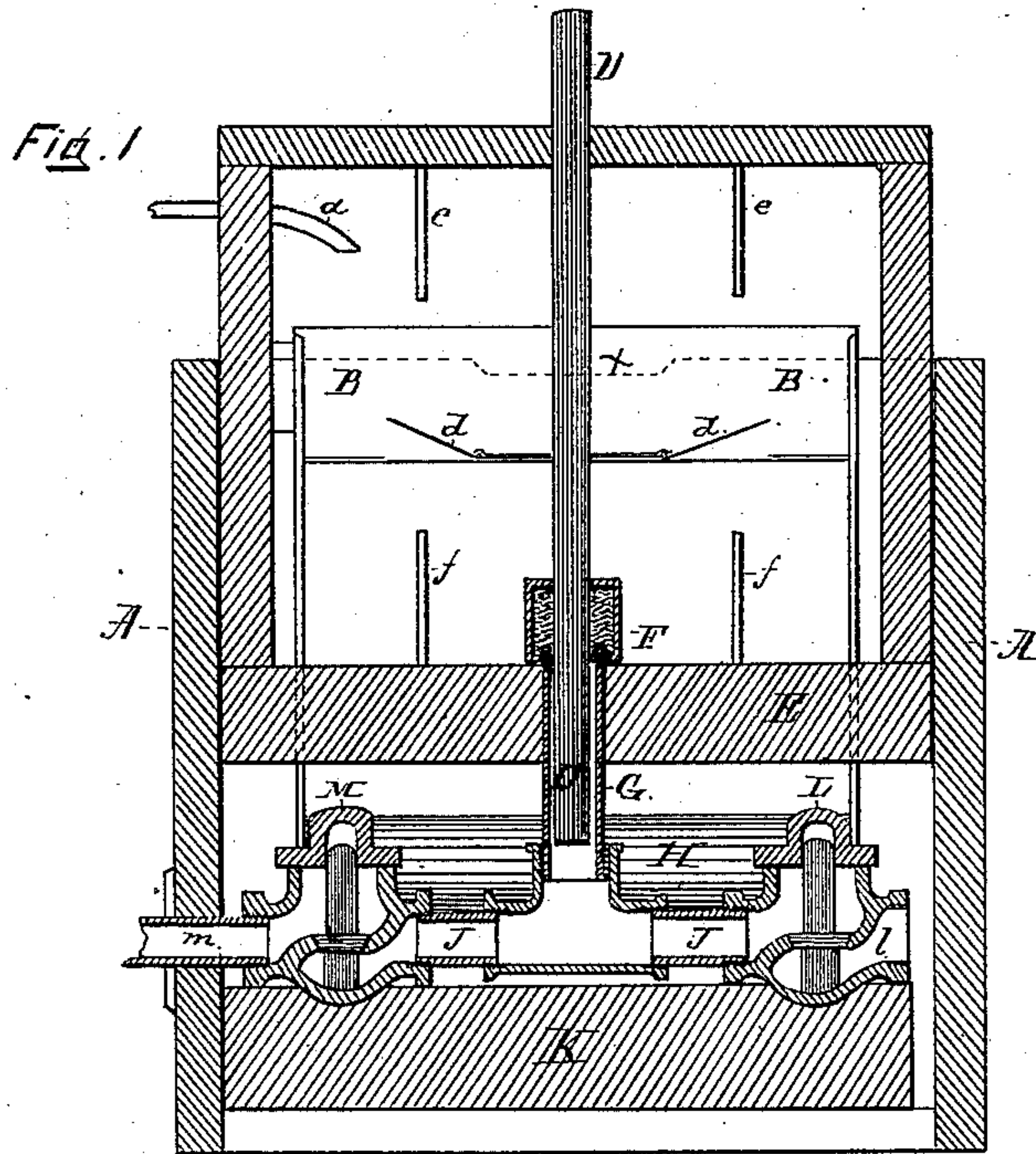
(No Model.)

2 Sheets—Sheet 1.

N. C. PAGE.
PUMP.

No. 299,574.

Patented June 3, 1884.



Witnesses.

James A. Harvey.
Chas. F. Lewis

Inventor:

Nathan C. Page
per Charles E. Allen
Atty.

(No Model.)

2 Sheets—Sheet 2.

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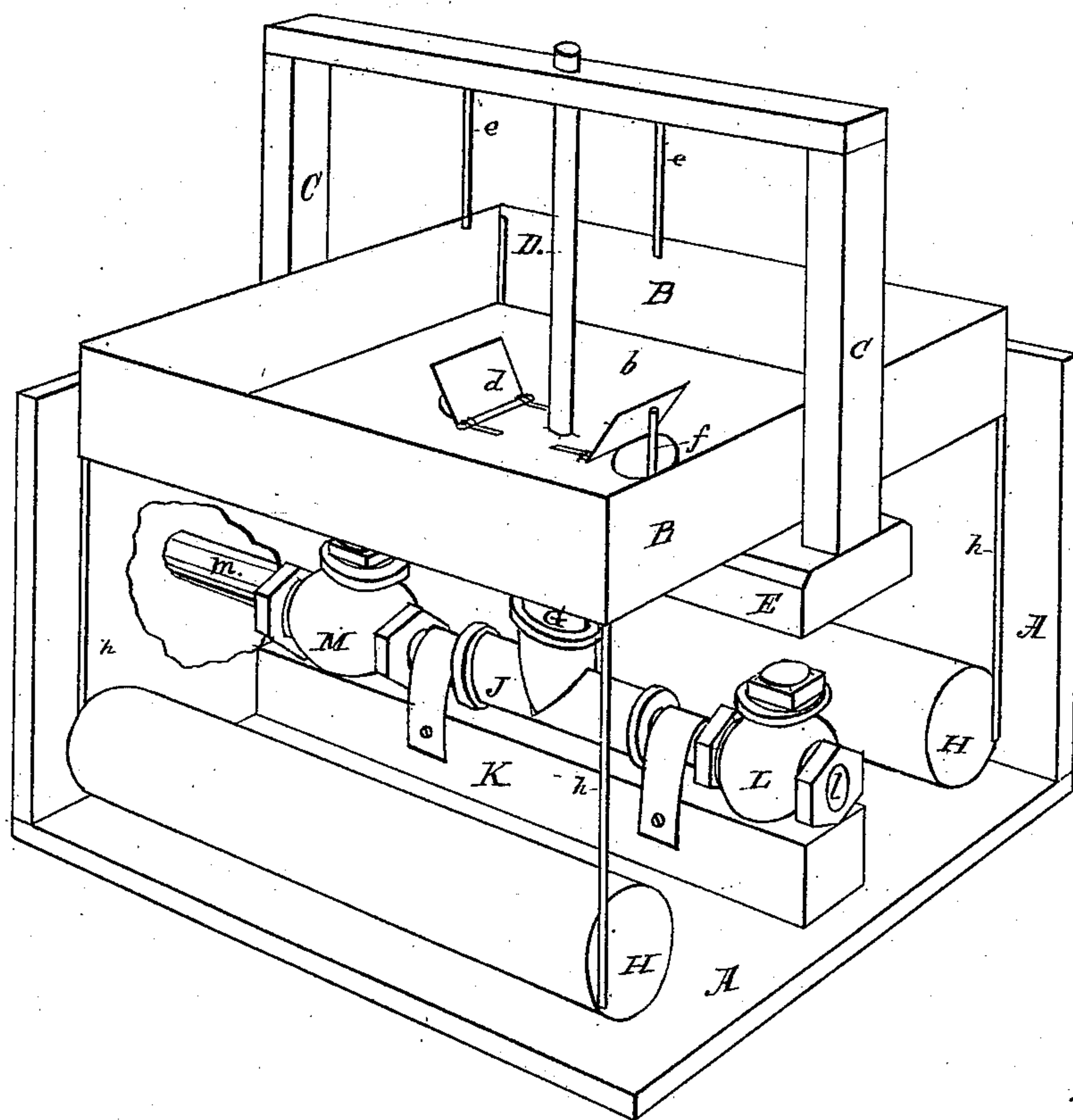


Fig. 3.

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UNITED STATES PATENT OFFICE.

NATHAN C. PAGE, OF MONKTON, VERMONT.

PUMP.

SPECIFICATION forming part of Letters Patent No. 299,574, dated June 3, 1884.

Application filed November 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, NATHAN C. PAGE, a citizen of the United States, residing at Monkton, in the county of Addison and State of Vermont, have invented certain new and useful Improvements in Balance Force-Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in force-pumps in which the piston-rod or plunger is alternately raised and depressed by means of a water-receiver, having suitable valves in its bottom for the retention and escape of the water, and a system of floats which is connected with the water-receiver; and the object of my improvement is to force water from the tank or reservoir which contains my apparatus to the point desired by means of a simple and effective device, which operates automatically and requires only a continuous supply of water from a spring or other source for its economical and successful operation.

My invention is fully shown in the accompanying drawings, in which Figure 1 is a vertical section of a tank containing my apparatus. Fig. 2 is a cross-section of the same. Fig. 3 is a perspective view of my invention, two of the sides of the tank being removed.

A is the tank or other suitable receptacle to contain the water, which is supplied through the pipe *a*, and in which my balance force-pump operates.

B is the water-receiver, which is designed to rise and fall within the frame C, being guided in its vertical movement by the piston-rod or plunger D, to which it is tightly attached at the point where it passes through the bottom of the receiver; and also by the uprights of the frame.

d d are valve-openings in the bottom *b* of the receiver, which are closed and opened reciprocally by the projecting rods *e e* and *f f*, the former extending downward from the top bar of the frame C directly above the valves, and the latter projecting upward from the horizontal bar E, which extends across the tank, between the packing-box F and the cylinder G, to brace them firmly.

H H are floats on either side of the receiver

B, to which they are respectively suspended by the rods *h h*. They are made of suitable material and of proper size to balance the receiver and piston-rod when the tank A is sufficiently filled with water to float them.

J is the water-pipe, which rests upon and is properly secured to a substantial base, K, at the bottom of the tank A. To either extremity of the pipe J are attached the check-valves L M, of suitable pattern, the former having an outlet into the tank, through which the water may be drawn into the pipe J by the suction caused by the plunger D as it rises in the cylinder G. The latter valve opens into the discharge-pipe *m*, through which the water is forced by the pressure created by the descent of the plunger D in the cylinder G.

In operation the receiver B is first raised above the top of the tank, which is then nearly filled with water from the supply-pipe *a*. The stream is then directed into the water-receiver B, the valves *d* being first closed. As the receiver becomes slowly filled, its increasing weight gradually overcomes the buoyancy of the floats, the specific lightness of which practically balances the weight of the piston and the receiver when the latter is empty, and the receiver descends, carrying with it the piston or plunger D, to which it is securely attached, until the valves *d* are sufficiently raised by being brought into contact with the upper extremities of the rods *f f* to allow the water in the receiver to run into the tank through the openings thus formed. The displacement of water by the receiver passes off through a depression in the side of the tank at *x*. The receiver, being thus relieved from the weight of the water, is raised, together with the piston D, to which it is attached, by the floats H H, until the valves *d* come into contact with and are closed by the lower extremities of the rods *e e*. The water, which during the entire operation of raising the receiver has been running off as rapidly as supplied through the open valves *d d*, is again retained in the receiver by the closing of the valves, and soon accumulates sufficient weight to overcome the buoyancy of the floats, and depresses the receiver, as before described. The water is drawn into the pipe J through the inlet *l* by

the suction caused by the rising of the plunger D, the valve L being open and the valve M closed. It is forced out through the discharge *m* by the force of the plunger as it descends, the valve M being open and the valve L closed. After the pump has been started, its operation in the manner described is automatic and continuous, being dependent only on the supply of water at the point *a*. The extra force of the head of water will always carry the stuffing-box past any friction.

By means of an apparatus constructed as above described the flow of water from a spring or other similar source may be made to force water to a house or any distant point that may be desired.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

A balance force-pump consisting of a tank, A, containing a water-receiver; B, attached to the piston, and provided with one or more valves, *d*, in its bottom, which are actuated by the rods *e* and *f*, and to which are suspended one or more floats, H, in combination with a cylinder, G, and pipe J, having reciprocating check-valves, substantially as specified, and for the purpose set forth.

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

NATHAN C. PAGE.

Witnesses:

CHARLES E. ALLEN,

WILL J. MURPHY.