

(No Model.)

N. B. ACHESON.

MEASURING PUMP.

No. 246,058.

Patented Aug. 23, 1881.

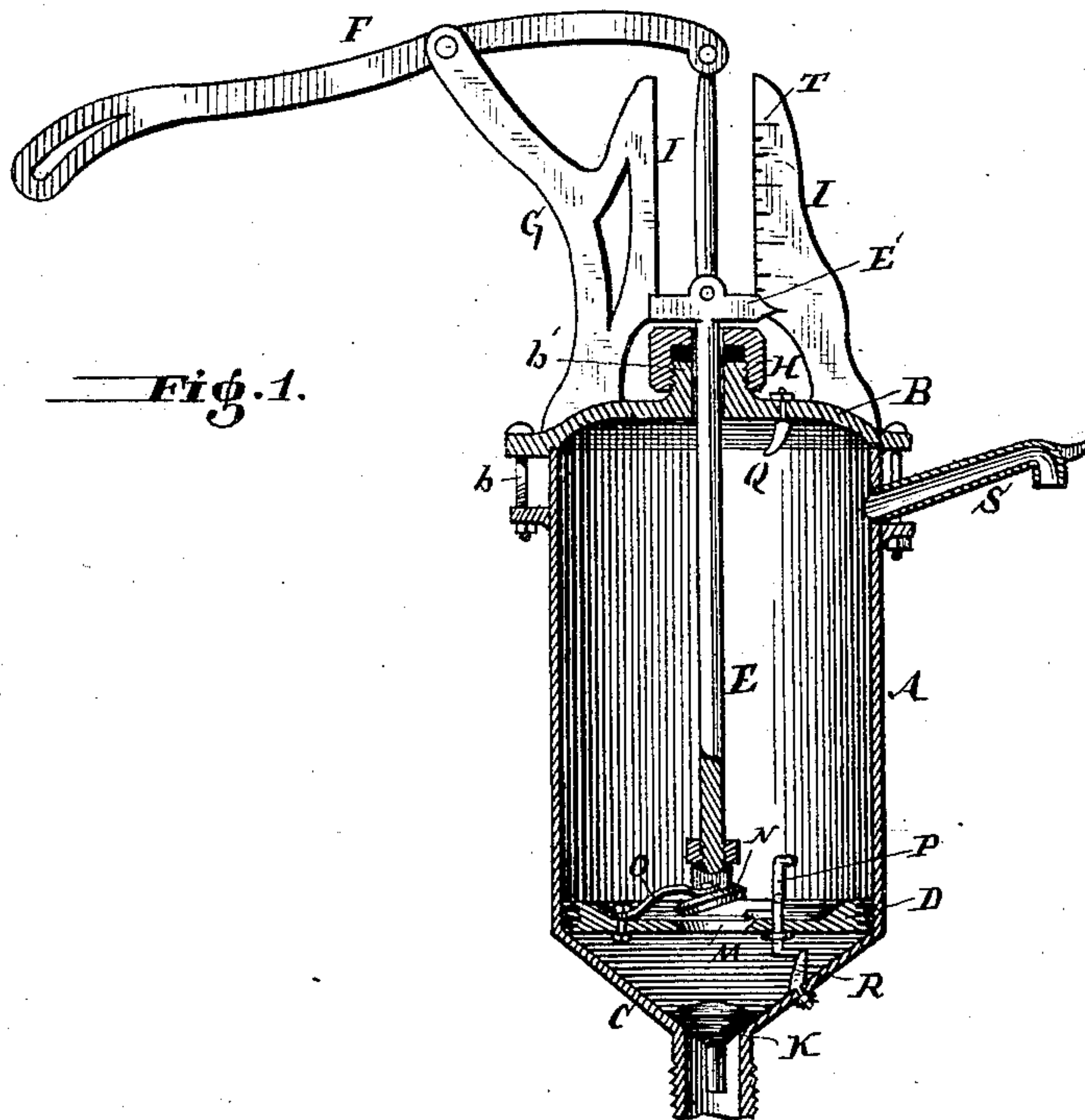


Fig. 2.

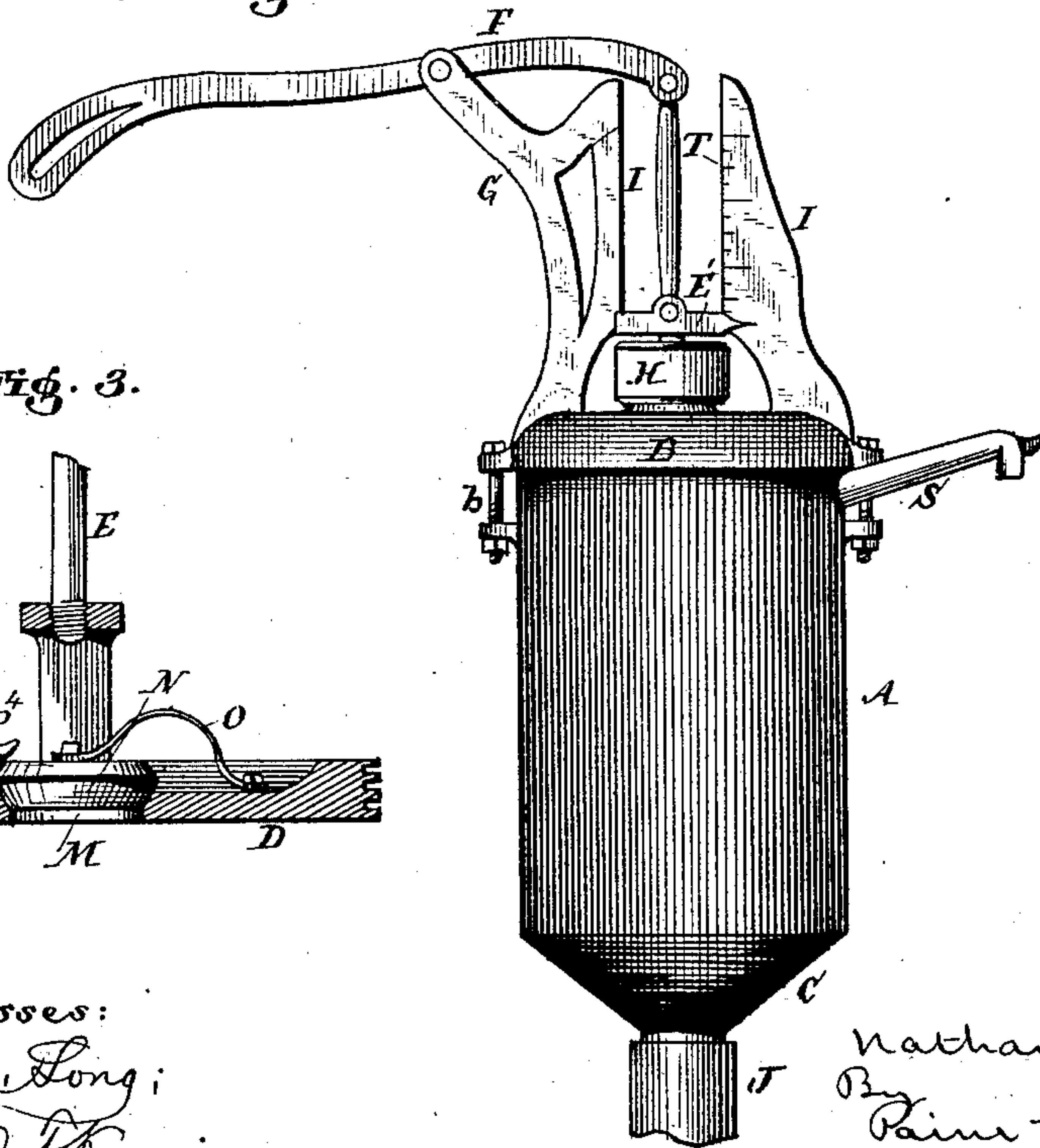
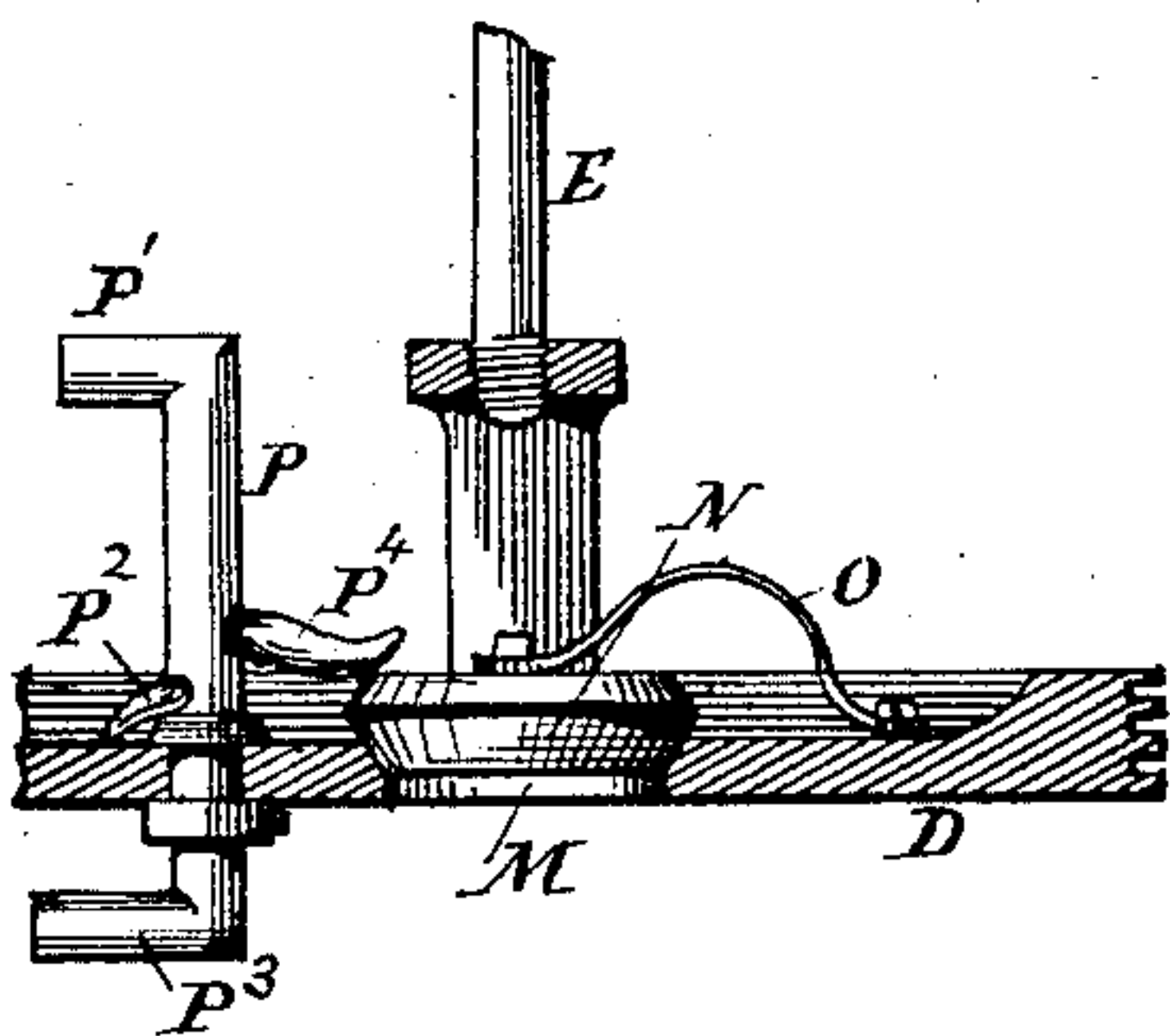


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

NATHAN B. ACHESON, OF YOUNGSTOWN, OHIO.

MEASURING-PUMP.

SPECIFICATION forming part of Letters Patent No. 246,058, dated August 23, 1881.

Application filed March 14, 1881. (No model.)

To all whom it may concern:

Be it known that I, NATHAN B. ACHESON, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Measuring-Pumps; and I do hereby 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 letters or figures of reference marked thereon, which form a part of this specification.

The present invention relates to that class of pumps for measuring liquids in which a piston operates in a chamber or cylinder of known cubical capacity.

The chief object of the invention is to provide means whereby the discharge of the liquid from the measuring cylinder or chamber cannot be effected if the stroke of the piston is reversed either in ascending or descending before said stroke is completed—that is, before the piston reaches the top or bottom of the cylinder, as the case may be.

The invention consists in the construction and combination of parts, which will hereinafter be more fully described, and then set forth in the claims.

In the drawings, Figure 1 is a vertical sectional view of a measuring-pump constructed according to my invention. Fig. 2 is a side elevation thereof, and Fig. 3 is an enlarged view of valve-locking device.

The measuring-chamber or liquid-receiver is composed of a cylindrical shell, A, having an attachable top head, B. The cylinder is generally made of metal, and is, with the bottom C, cast in one piece. The head is secured to the cylinder by bolts *b*, which pass through ears on the sides of the head and lugs projecting from the cylinder, as shown in the drawings; or it may be attached in any other well-known way. A packing-gasket is interposed between the end of the cylinder and the head to make a liquid-tight joint. A piston, D, is attached to a piston-rod, E, which passes through the top head or cap-plate, B, and is connected with a lever, F, fulcrumed in a bracket,

G, of said cap-plate. The piston-rod works through a stuffing-box or packing-cap, H, which fits on a screw-threaded neck, *b*, of the cap or top head. A cross-head, E', or enlargement of the upper end of the piston-rod, slides between guide arms or plates I, formed integral with the cap-plate or top head, B. The edges of the cross-head are generally grooved for the reception of the guide arms or plates. The bottom C is generally made of a flaring shape, and has a suitable neck for the attachment of the inlet-tube J, which leads into the barrel or other liquid-reservoir. A check-valve, K, movable in an upward direction, prevents reflux of the liquid through the inlet-tube. The piston has a central opening, M, which is closed by means of a valve, N, when the piston is in proper position for expelling the liquid from the measuring chamber or cylinder. The valve N is also provided with a spring, O, which holds it down upon its seat, the force of said spring, however, being easily overcome by the pressure of the liquid upon the bottom of the valve when the piston is descending and is not locked, as hereinafter explained.

Attached to the piston, and journaled in a suitable support or yoke on the top of the piston, there is a vertical rock-shaft or arm, P, which extends through the piston. The upper end of this rock-shaft has a horizontal extension, P', which, when the piston has reached the limit of its upward stroke, comes in contact or engages with an inclined plane or projection, Q, on the cap-plate of the cylinder. This partly rotates the rock-shaft and causes a projection, P², on said rock-shaft to bear against the under side of the piston-valve, or project under it and hold it open while the piston is making its downward stroke. As soon as the piston has reached the bottom of the cylinder the rock-shaft is again turned, so as to disengage the projection or holding-arm P' and permit the valve to close. This second movement of the rock-shaft is effected by an inclined plane or projection, R, on the lower head of the cylinder and horizontal extension P³ on the lower end of the rock-shaft. The valve is then held in a closed position by means of a holding arm or projection, P⁴, which, when the rocking-shaft is turned by the projection

on the bottom head, bears upon the top surface of the valve. The valve being in a closed position, the movement of the piston in an upward direction will cause the expulsion of the liquid through the spout or outlet-tube S at the upper end of the cylinder. In order to permit the precise quantity of liquid discharged to be readily known, I provide one of the guide-plates of the piston cross-head with a graduated scale, T, by means of which and a suitable pointer on the cross-head the quantity discharged is easily read.

The object of the aforesaid valve-operating device is to hold the valve open and shut, respectively, during the downward and upward strokes, in order that full measure shall always be given. An upward stroke cannot be made until the piston has first touched the bottom, for, the valve being locked open, as above described, if the stroke is reversed before it touches the bottom, the valve will still be held open, and the contents of the pump above the piston will pass through the valve and will not be discharged. On the other hand, if it is attempted to reverse an upward stroke before the piston has reached the top of the cylinder, the valve will still be locked down, and a downward stroke cannot consequently be made.

A measuring-pump constructed according to my invention will enable the seller to readily perceive when he gives full measure, and fraud on the customer is also effectually prevented, because the discharge of the liquid cannot take place until the piston has reached the limit of

its upward and downward strokes, when the valve is opened and closed in the manner already described.

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

1. In a measuring-pump, the combination of a measuring-cylinder having a top outlet, a piston moving in said cylinder provided with a valve, and means substantially as described, for holding said valve open and closed, respectively, during the downward and upward strokes, as and for the purpose set forth.

2. The combination of the vertical rock-shaft, having projections extending at right angles therefrom, with the piston, having a valve, and the measuring-cylinder, having end heads provided with projections or inclined stops, as and for the purpose set forth.

3. The cap-plate or upper head, constructed with guide plates or arms and a lever-bracket, in combination with the piston-rod having a cross-head, the measuring-cylinder, and the operating-lever, as and for the purpose set forth.

4. The graduated-scale plate, in combination with the cylinder, the cap thereof, and the piston-rod provided with a suitable pointer, as and for the purpose set forth.

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

NATHAN B. ACHESON.

Witnesses:

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JAMES KENNEDY.