

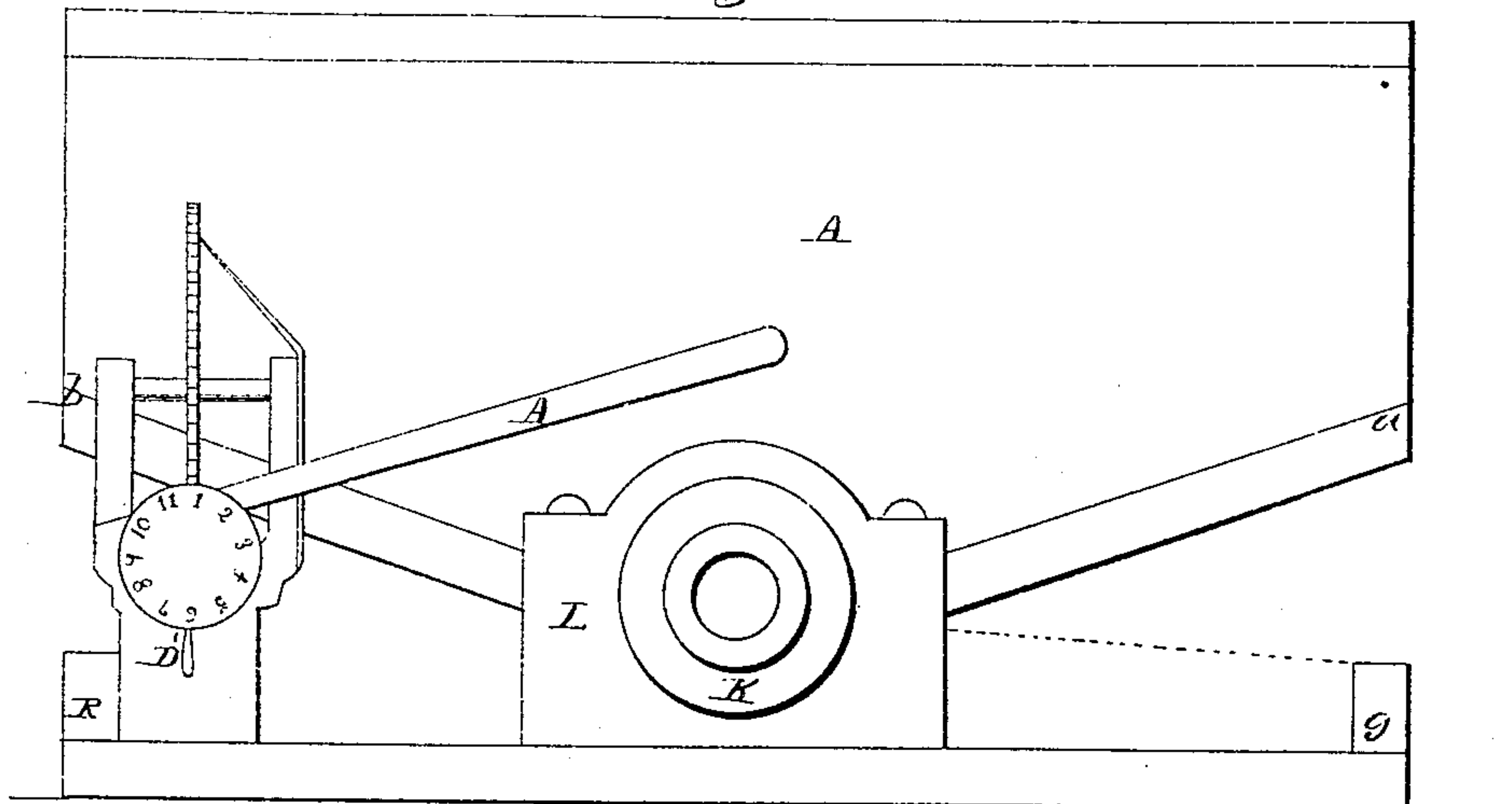
Sheet 1-2, Sheets.

*R. N. Allen.*  
*Water Meter.*

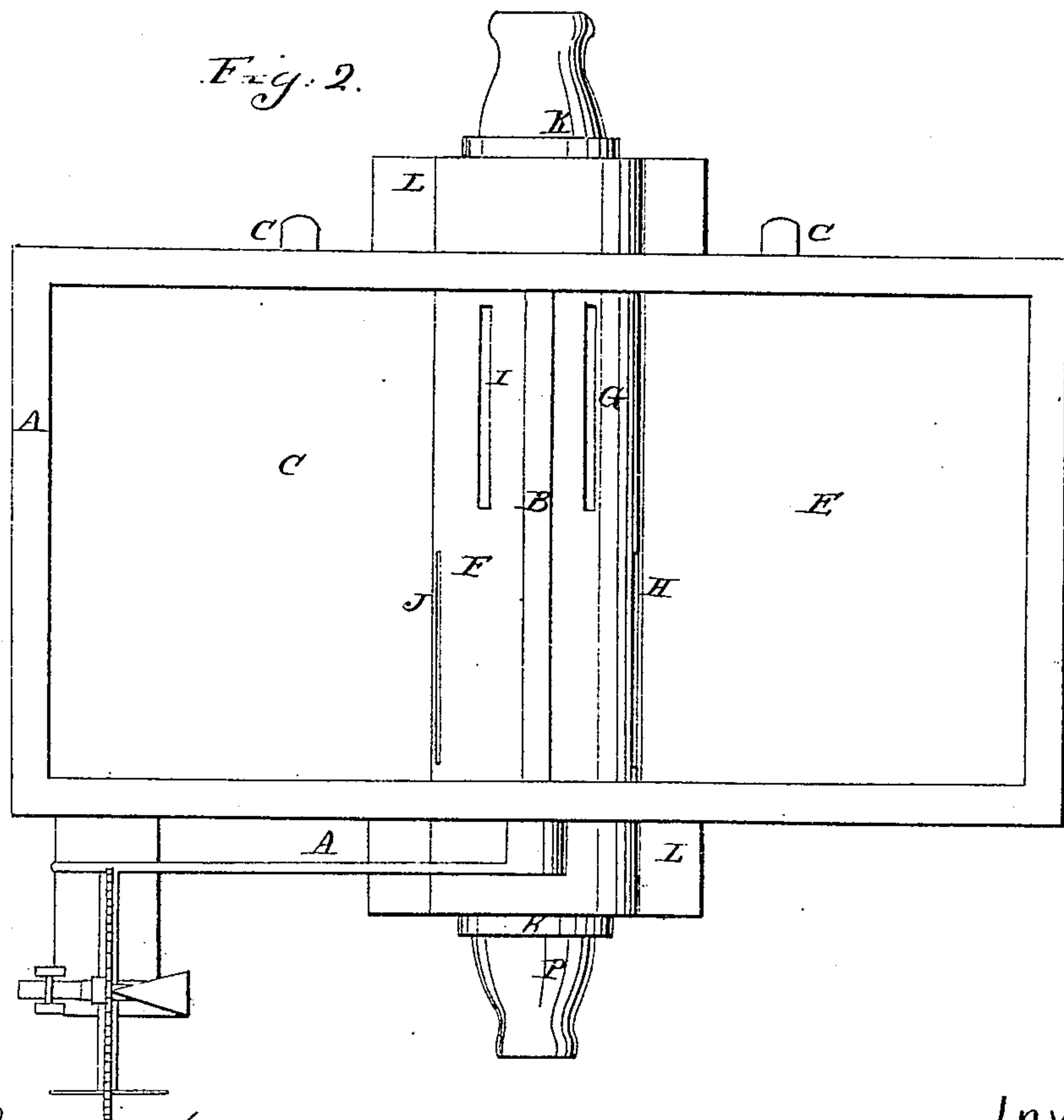
*N<sup>o</sup> 90,717.*

*Patented Jan. 1, 1869.*

*Fig. 1.*



*Fig. 2.*



Witnesses

*J. H. Burridge*  
*Frank S. Alden.*

Inventor

*R. N. Allen*

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Fig. 3.

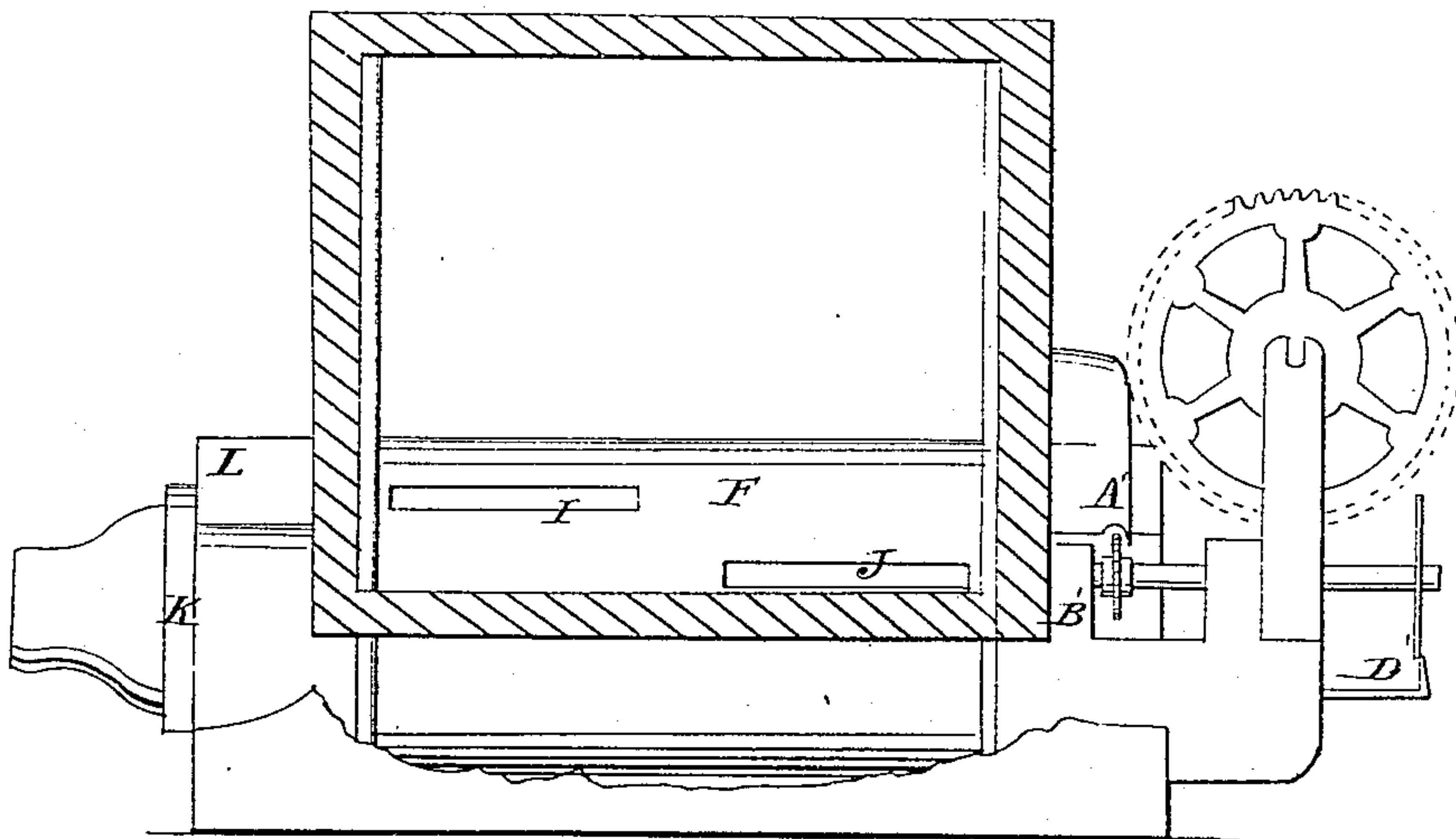
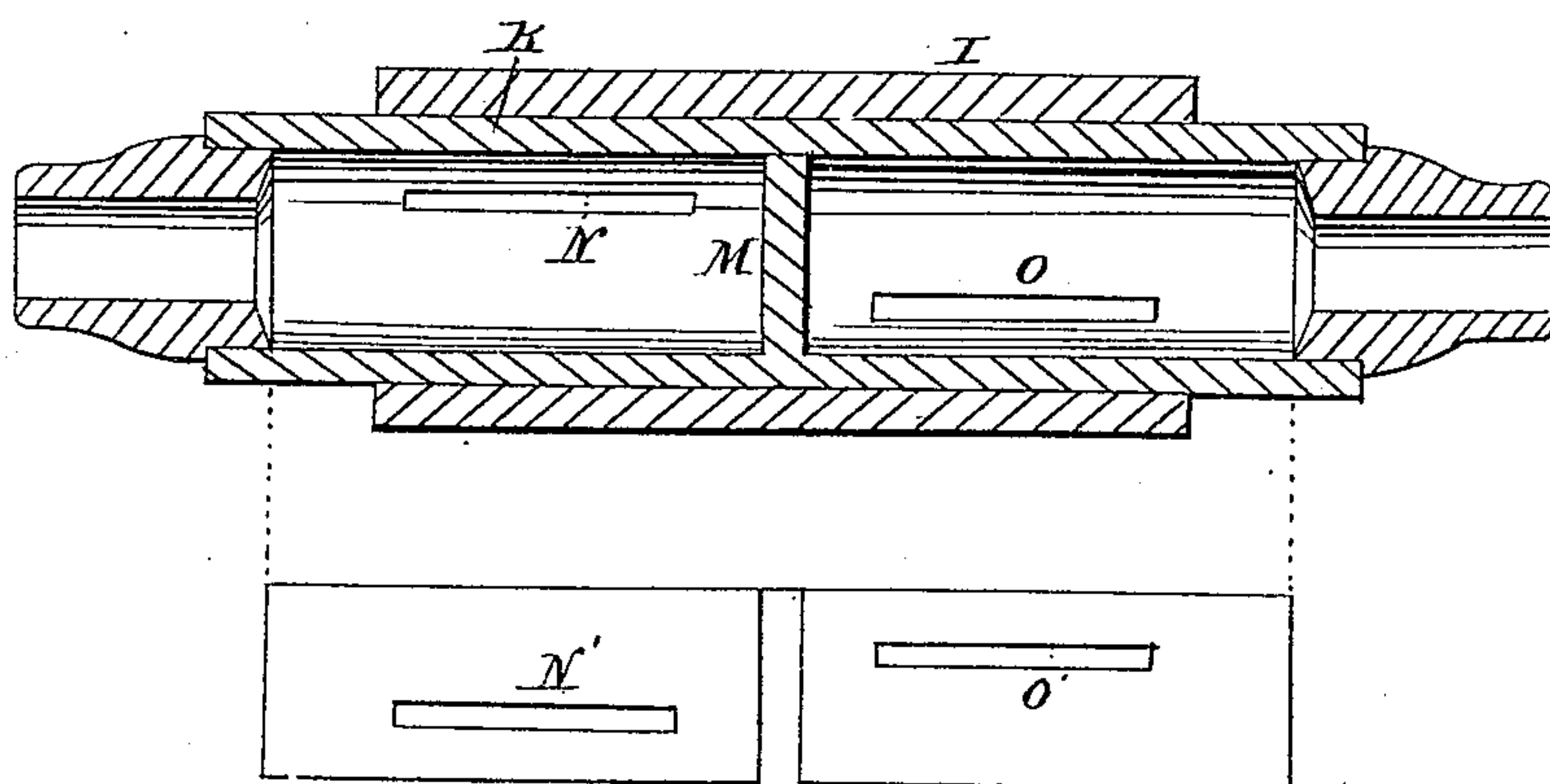


Fig. 4.



Witnesses

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# United States Patent Office.

R. N. ALLEN, OF PITTSFORD, VERMONT.

Letters Patent No. 90,717, dated June 1, 1869.

## IMPROVEMENT IN WATER-METERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, R. N. ALLEN, of Pittsford, in the county of Rutland, and State of Vermont, have invented a certain new and useful Improvement in Fluid-Meter; and I do hereby declare that the following is a full and complete description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of the meter.

Figure 2, a view of the inside from the top.

Figure 3, a transverse section.

Figure 4, a detached section.

Like letters of reference refer to like parts in the several views.

The purpose of this invention is for measuring oil and other fluids in large quantities, and in such way that the machine is automatic in its operation, so that no personal attention is required to fill the meter, or to discharge its contents.

In fig. 1, A represents the measure, and which consists of an oblong square box, provided with a transverse partition-wall, B, fig. 2, whereby it is divided into two equal compartments, C E.

Transversely across the centre of the bottom of the box is secured a shell, or sleeve, F, in which are cut longitudinal openings, or ports G H and I J, two of which, G H, are on one side of the partition-wall B, and I J on the other, as shown in fig. 2, which also shows the relative position they hold to each other and to the box.

In said shell, or sleeve F, is fitted a tubular shaft, K, fig. 4.

The ends of said shaft project beyond the sides of the box, forming trunnion-like bearings, on which the meter is supported, they being secured rigidly in the bearing-seats L.

This tubular shaft is divided transversely in the middle by a diaphragm, M, whereby the openings N O and N' O', fig. 4, are separated from each other.

Said openings correspond in size, number, and position, to the openings in the shell above referred to, and with which they are brought in open relations, as and for a purpose hereinafter shown.

The shell F is closely fitted to the tubular shaft, but not so closely but that it will allow the shell to turn upon it, and thereby allow to the box a vibratory movement, the shell and shaft serving as the centre of vibration, and the support of the meter.

Having thus described the construction and arrangement of the apparatus, the practical operation of the same is as follows:

The meter is supposed to be situated near to the oil-tank, or other vessel from which the liquid is to be drawn off, and is put in connection with it by means of a pipe, which is made fast to one end of the tubular shaft referred to, as at P, fig. 2.

The box is tilted, so as to bring the end *a* down upon the rest Q, fig. 1, thereby elevating the opposite end, the result of which will be to bring the opening I of

the shell in open relations with the opening M, in the tubular shaft, at the same time closing the opening J, and its corresponding opening in the shaft.

In this position of the apparatus the oil will flow into the compartments C, through the openings I, which, on being filled, will cause a counterbalancing of the box, and bring down the end *b* upon the rest R, which will open the port J, and allow the oil to run out into the tubular shaft on the opposite side of the diaphragm M; from thence into the barrel, or other vessel placed to receive it.

At the same time that port J is opened, port I is closed, thereby shutting off a further inflowing of the oil. During this reverse action of the meter, the opening, or port H, in the compartment E, is closed, and, at the same time, opening port G, through which oil will flow into the empty compartment E, which, on becoming full at the time that the opposite end has discharged itself, will bring down the end *a* again upon the rest *g*, shutting the port G and opening H, through which the oil will flow out into the barrel as before.

During this opening and shutting of the ports G H, port J is closed, and I opened, allowing the oil to flow again into compartment C, as before, and so on, alternately receiving at one end of the meter, while discharging at the other.

At each vibration of the meter, the arm A', pivoted to the side of the box, and the free end made to rest upon and engage the ratchet-wheel B', fig. 3, will cause the dial-plate C' to revolve from one number to another, and which will be indicated by the index-finger D', fig. 1.

By this means the number of vibrations are shown, and the capacity of each compartment being known, the amount of oil run off is easily and accurately obtained.

This meter may be so adjusted, by means of a graduated scale of weights, as to cause it to vibrate when any given number of gallons shall have run in. Thus the machine can be made to operate at less than its full capacity.

As the box is covered tightly with a lid, hence observation is not easily had to the inside.

A glass tube, *c*, fig. 1, is attached to the outside of such compartment of the box, and with which it communicates, so that on filling the compartment the oil will also ascend in the tube, and thus discover to those outside the depth of oil within.

What I claim as my invention, and desire to secure by Letters Patent, is—

The sleeve F, provided with ports, or openings, and the tubular shaft, having also ports, or openings, in combination with the vibrating box and diaphragm M, substantially as and for the purpose herein specified.

R. N. ALLEN.

Witnesses:

W. H. BURRIDGE,

J. H. BURRIDGE.