

G. R. Moore.

Sheet 1-2, Sheets.

Gas and Water Meter.

N^o 90,678.

Patented Jan. 1, 1869.

Fig. 1.

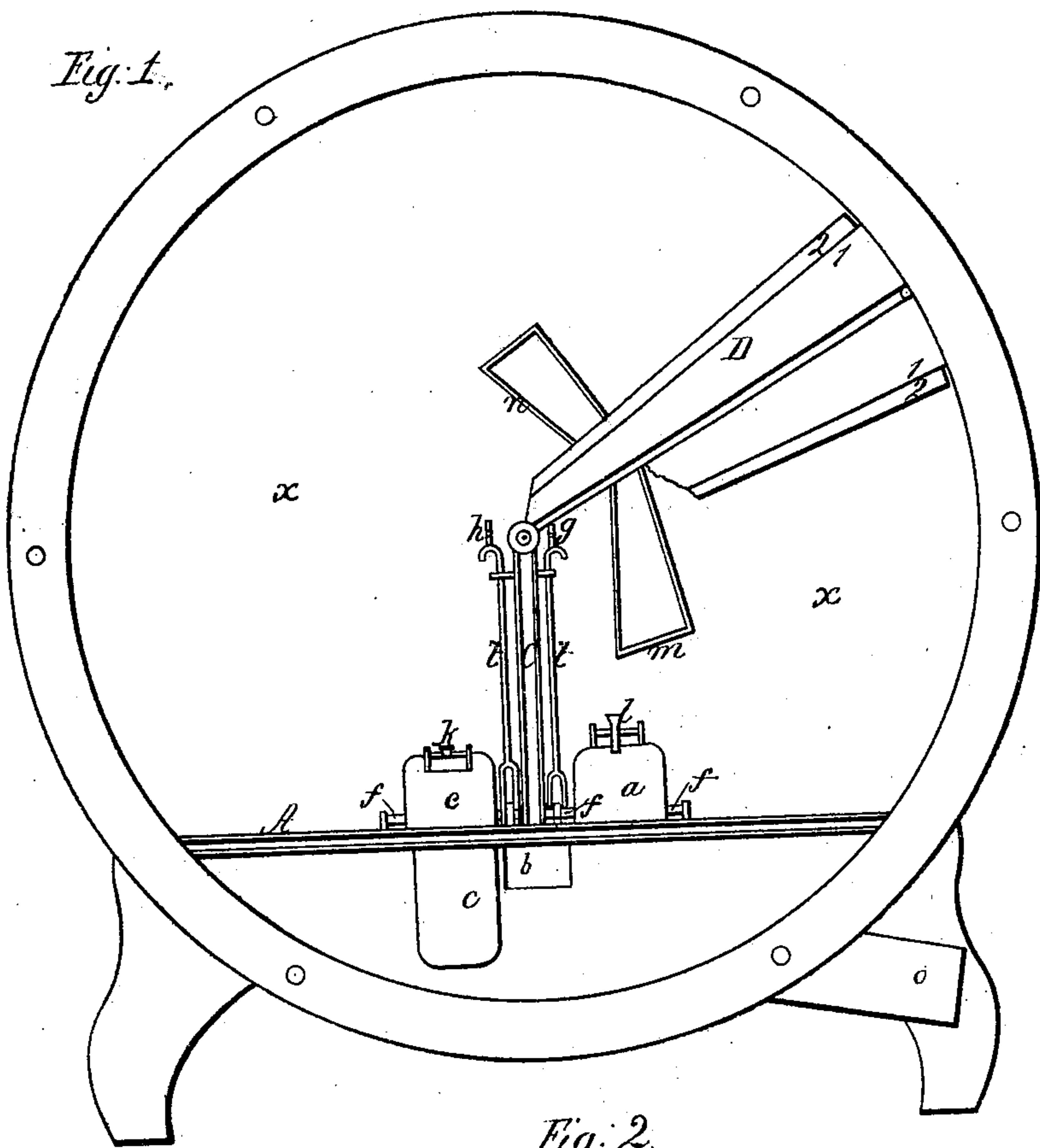
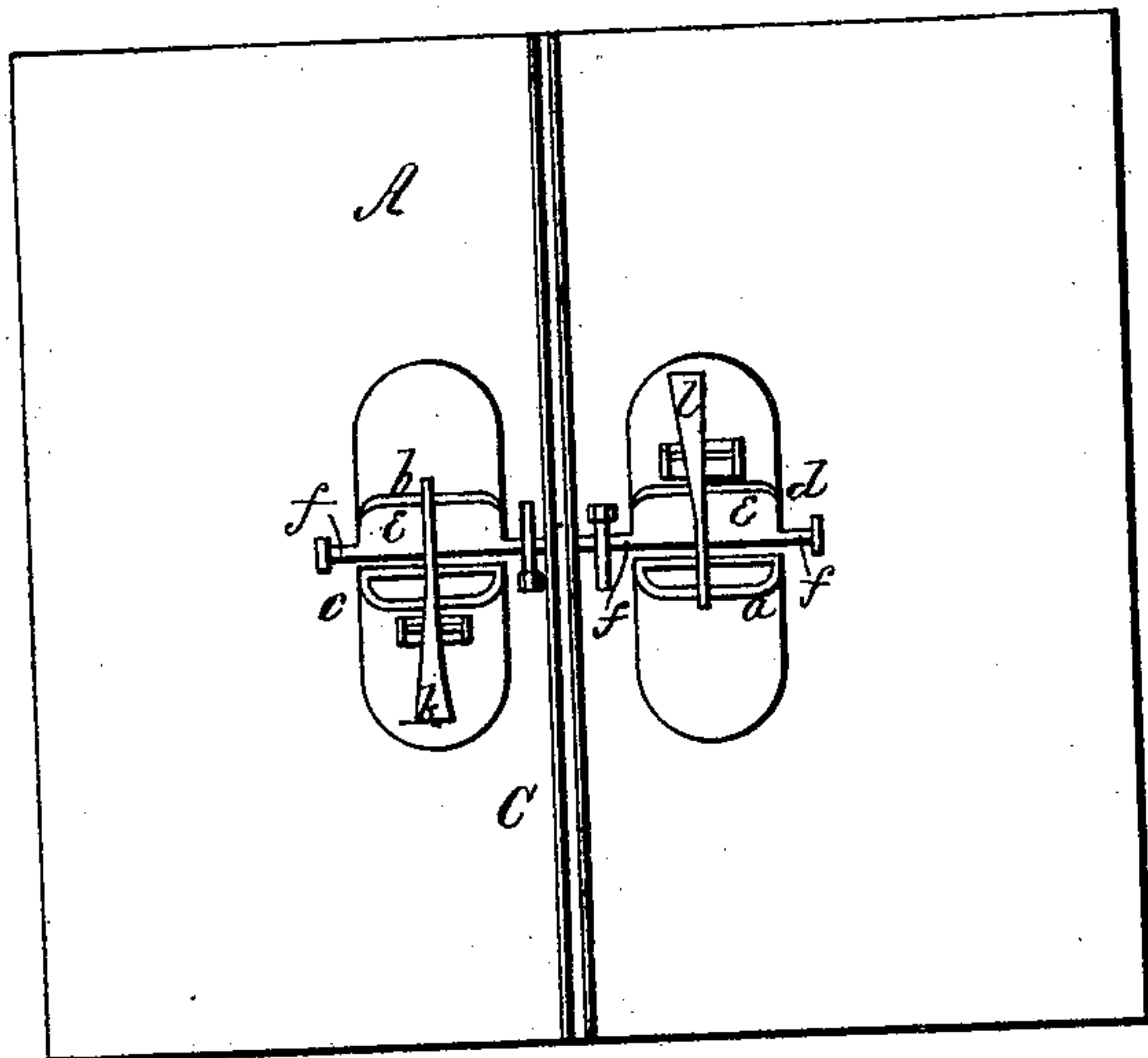


Fig. 2.



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Fig. 3.

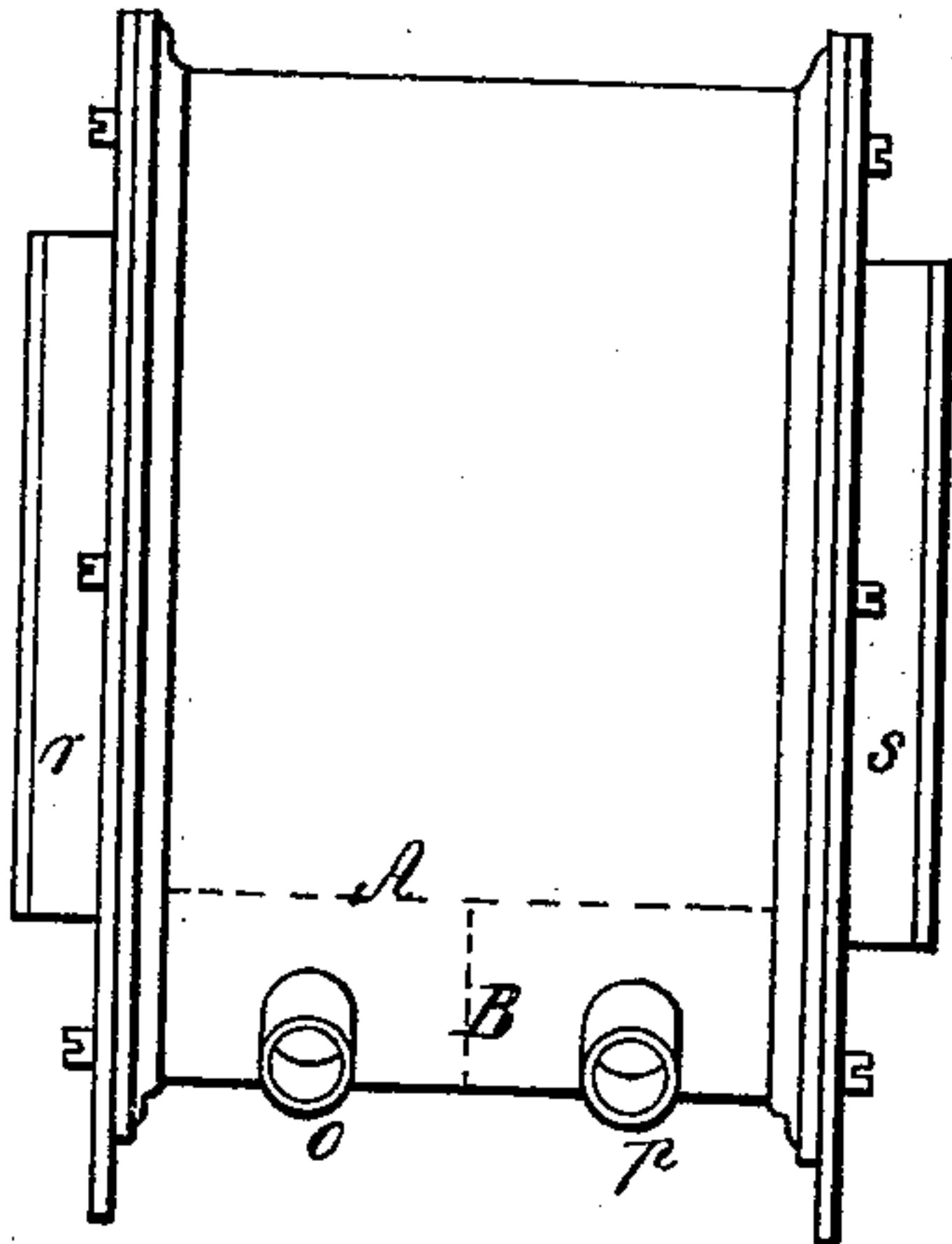


Fig. 4.

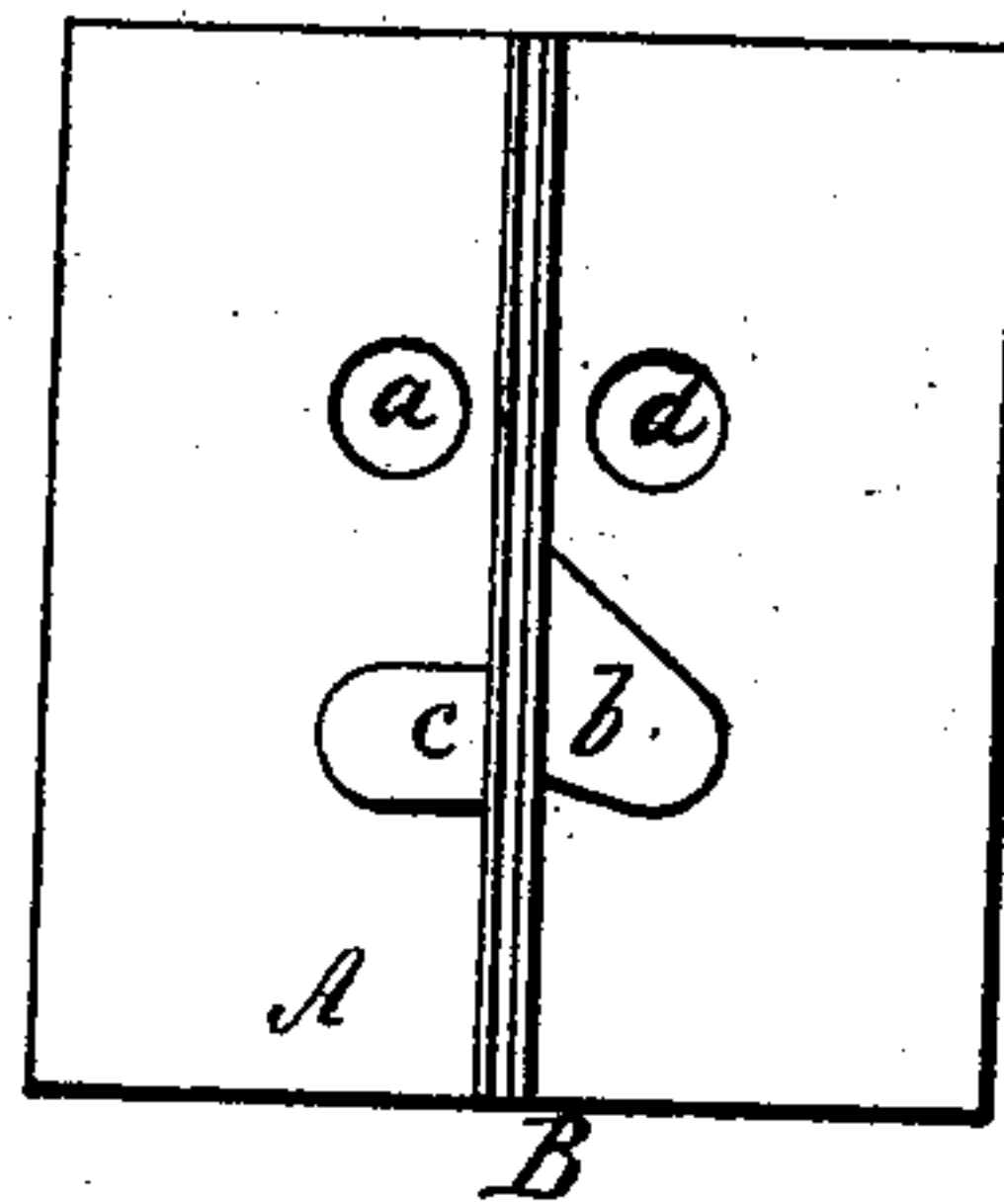


Fig. 5.

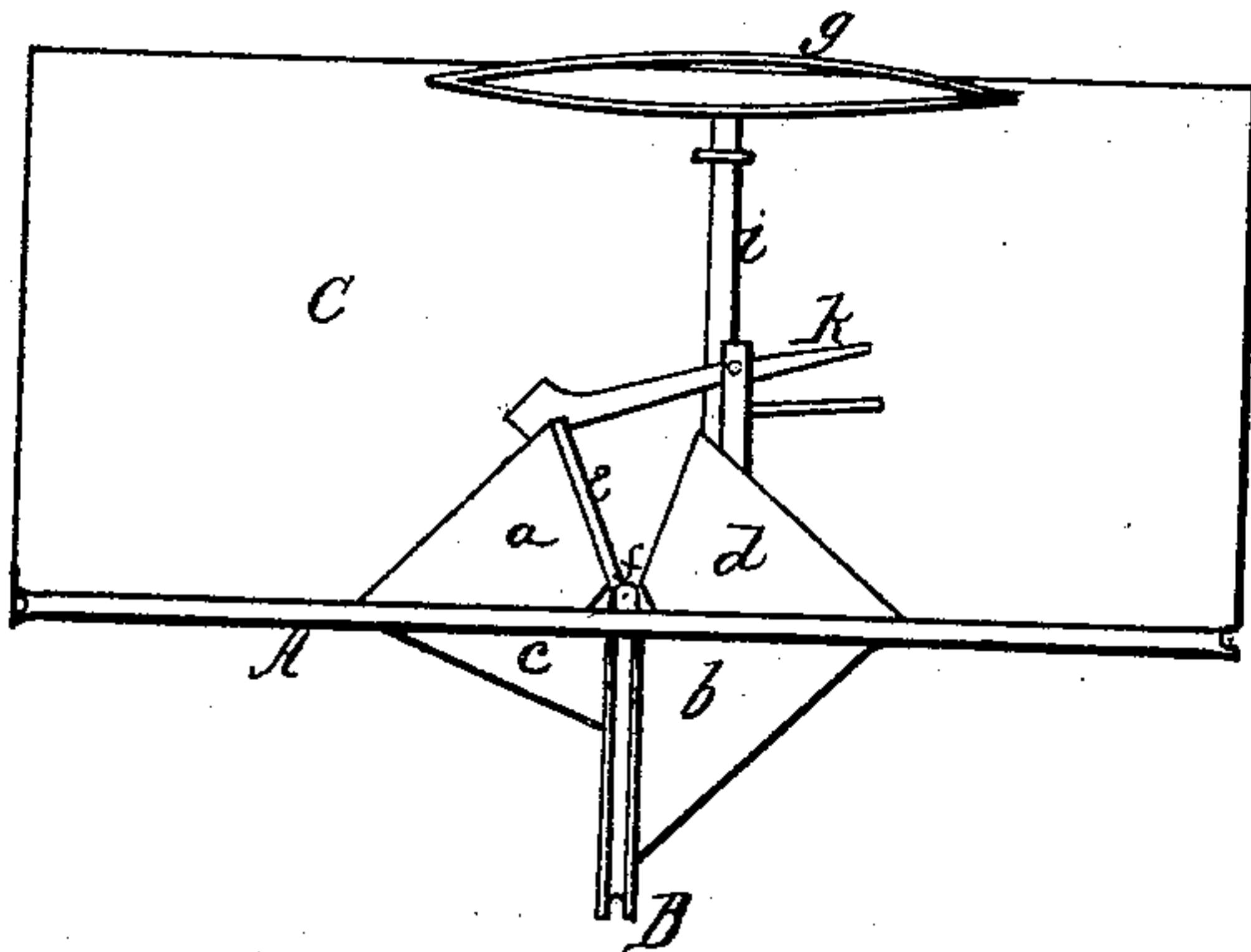
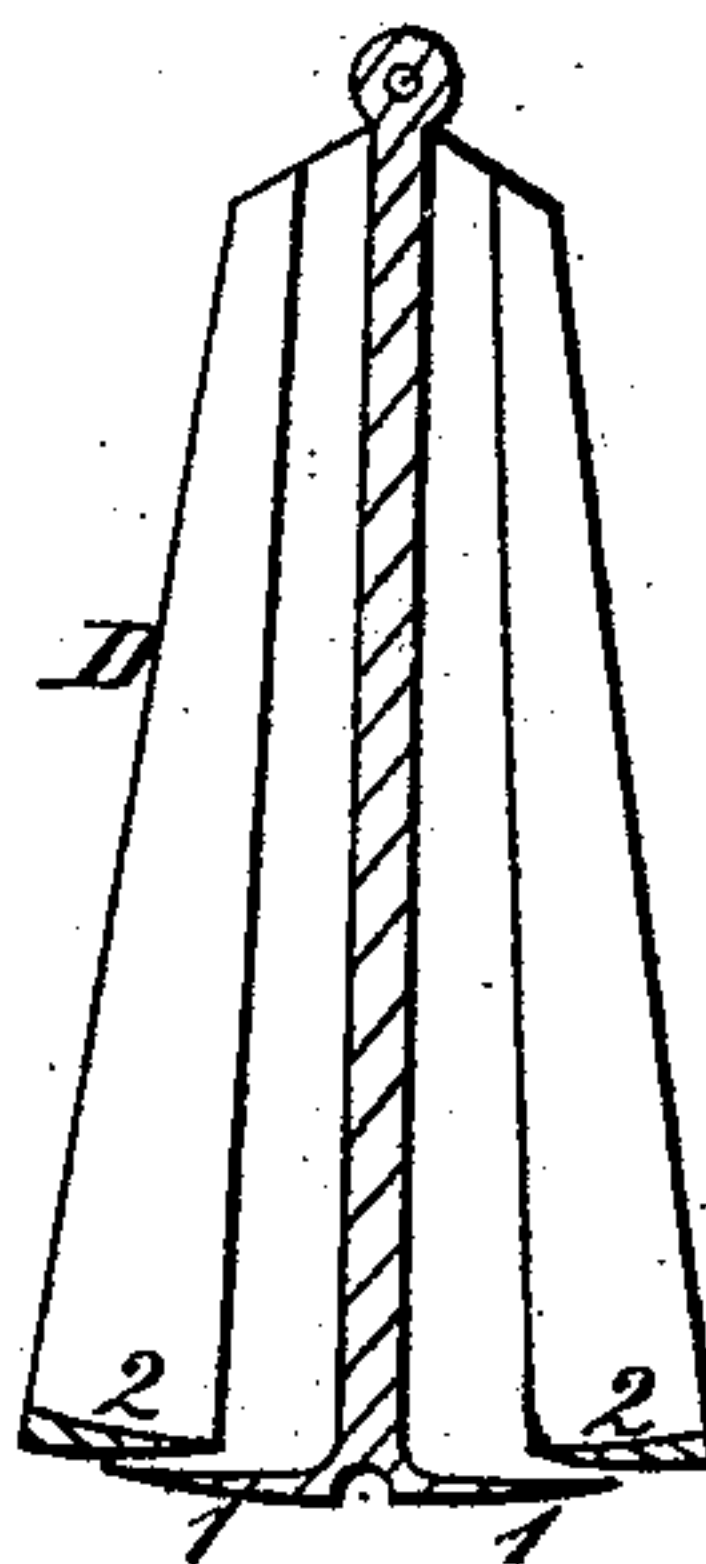


Fig. 6.



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GEORGE RODNEY MOORE, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 90,678, dated June 1, 1869.

GAS AND WATER-METER.

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, GEORGE RODNEY MOORE, of Philadelphia, in the county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Gas and Water-Meters; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a vertical longitudinal section.

Figure 2 is a horizontal section, or plan view of the valves and pawls.

Figure 3 is a side elevation.

Figure 4 is an under-side plan view of the plate upon which the valves are placed.

Figure 5 is a transverse vertical section of all the internal works of the meter below the centre of the cylinder in which they are placed.

Figure 6 is a vertical section of the movable or rotating partition, which is an important part of the internal works of the meter. It rotates, partially, upon journals at the centre of the cylinder.

The same letter, repeated in different parts of the drawings, indicates the same part of the meter.

The dials and indicators required in this meter, being the same as in any other, I have not attached them; but the motion required for that purpose may be taken from the journals of the rotating partition D, upon which a temporary dial-plate is suspended, and partially encased in front; also, at the other end, a balance-weight is partially encased in the same manner, (7 and 8,) in fig. 3.

The outside casing of this meter consists of a plain short cylinder, with plain heads in it, and these heads afford, at their centres, bearings upon which the rotating partition D is hung.

The cylinder is divided into three permanent apartments, as shown by dotted lines in fig. 3, and one of these apartments is again divided by the union of the partition C with the rotating partition D, which, as a piston, divides the chamber-space *x x*.

The plate A extends the whole length of the cylinder, and divides its space into two apartments, while B extends crosswise of the cylinder, and divides the space below A also into two apartments, and these divisions are permanent.

C is also a partition, and extends the whole length of the cylinder, and high enough to make a joint with the arbor upon which the rotating partition D is hung.

This rotating partition D finishes the division of the upper part of the cylinder, thus making four apartments in all; but this last division, when the meter is in use, is always changing from one side to the other, alternately, the partition D moving first in one direc-

tion, until it changes the valves below, and then in the other until it changes them back again, and thus continually.

There are four valve-seats in the meter, and two valves.

There are two valve-inlets through A, *a* and *b*, and two outlets, *c* and *d*.

The two valves *e e* are both solid upon one arbor, *f f f*, both moved at once, so that there is always one inlet and one outlet valve-seat opened, and the others closed alternately.

The valves are operated by the rotating partition D, through the medium of the upright levers *i* and *j*, pivot-jointed, with clevises, to *f f f*, and surmounted by springs *g* and *h*, with which the direct connection with D is made.

The valves are held firmly by one of the pawls *k* or *l* until D, by one of its braces *m* or *n*, adjusted to the required length for that purpose, touches the pawl in use at the time, and leaves the valve free, when the spring above (which was sufficiently compressed before the pawl was touched) instantly opens the valve.

The operation of this meter is as follows:

The fluid or gas to be measured is admitted by the inlet *o* into the front lower apartment of the meter, from which there are two fluid ways or valve-seats, *a* and *b*; *b* having an enclosed passage, from its position over the back apartment to the front, so that nothing passes to it but from the front.

It will be seen from the construction of these valves, both solid upon one arbor, that but one of the valve-seats, *a* or *b*, can ever be open at the same time, and whichever one it is that opens, it gives the gas or fluid an open passage to the apartment above, where it may push upon the rotating partition D until it carries it over a sufficient distance to change the valves; and in the mean time D has forced out through one of the outlet valve-seats *c* or *d* whatever was before it.

A cross-passage is made for *c*, so that it communicates with the outlet-apartment only.

The valves being changed, D reverses its rotation, and these changes of valves and alternations of motion are perpetual.

Also, the quantity measured, or passing through the meter at each sweep of D, is shown by dials and indicators when its arbor is suitably connected with the ordinary machinery for such purposes.

As the general arrangements and plan of this meter are precisely the same as seen in the one for which I have lately been allowed a patent, I wish to be more particular in regard to certain things in which this differs from that.

First, it will be seen, in fig. 2, that the valve-seats or fluid-ways *c* and *a* are shown as open, and *b* and *d*

as closed, while the valves *e e*, solid upon the arbor *f f*, need only to be slightly tipped or rocked (the weight of the valves is above the journal upon which they turn) to close *c* and *a* and open *b* and *d*, both sides of *e e* serving as valves, one side for *a* and *c*, and the other for *b* and *d*. By this construction the friction is diminished.

Second, in order to move the valves quickly and surely, and to prevent imperfect action in this respect, a pawl, *k* or *l*, is applied to each one of them, and a spring, *h* or *g*, is placed upon each lever, in such relation to *D* that it will be sufficiently compressed to move the valve promptly before a pawl is touched by either of the braces *m* or *n*, and the moment the pawl is touched it leaves the valve free, and the spring, being already compressed for that purpose, opens the valve instantly. This secures great accuracy and uniformity in the measuring, as *D* will be moved uniformly until, by one of its braces, it touches a pawl, and no further.

Third, all the fittings of *A*, and *C*, and *D*, (their edges,) are grooved; while the inner, or enclosed portions of them, are thin metallic sheets. These grooves facilitate the application of packing, when that is required, and in *D* they tend to check leakage past it, by giving occasion to the formation of eddies.

Fourth, the movable or rotating partition *D* is provided with a two-leaved rim or edge, from one end of its arbor around to the other, as shown in fig. 6, (1, 2). The inner rim 2 is so placed that its outer edge comes as near the cylinder as it can, while its inner edge laps within the other rim, but not close upon it. Where the lapping takes place the rims stand apart, so that a passage is left between them, and this passage lies

from the main part of *D* in a direction the reverse of that in which fluid would be passing if it were leaking past *D* in the cylinder.

The object is to provide for such an antagonism of currents as to destroy all tendency to motion, whereby fluid might force itself through between the closely-fitted surfaces of *D* and the cylinder, to constitute, as it were, a kind of self-acting gas or water-packing.

Having thus fully described my invention,

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

1. The rocking-valves *e e*, in combination with the water-ways *a b c d*, and operated by the partition *D*, substantially in the manner and for the purpose herein set forth.

2. The pawls *k* and *l*, arranged to hold the valves, and to be operated by the partition *D*, substantially in the manner and for the purpose herein set forth.

3. The arrangement of the rotating piston *D*, with grooved edges, in combination with springs *g* and *h* and rods *j j*, substantially in the manner and for the purpose herein set forth.

4. The flanges 1 1 and underlapping edges 2 2, with a space between them, so as to allow a direction of current outward from *D*, or contrary to its direction when in motion, and thus constituting a self-acting fluid packing, substantially in the manner and for the purpose herein set forth.

GEO. R. MOORE.

Witnesses:

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