

G. Sickels.

Water Meter.

No. 86,949.

Patented Feb. 16, 1869.

Fig. 1.

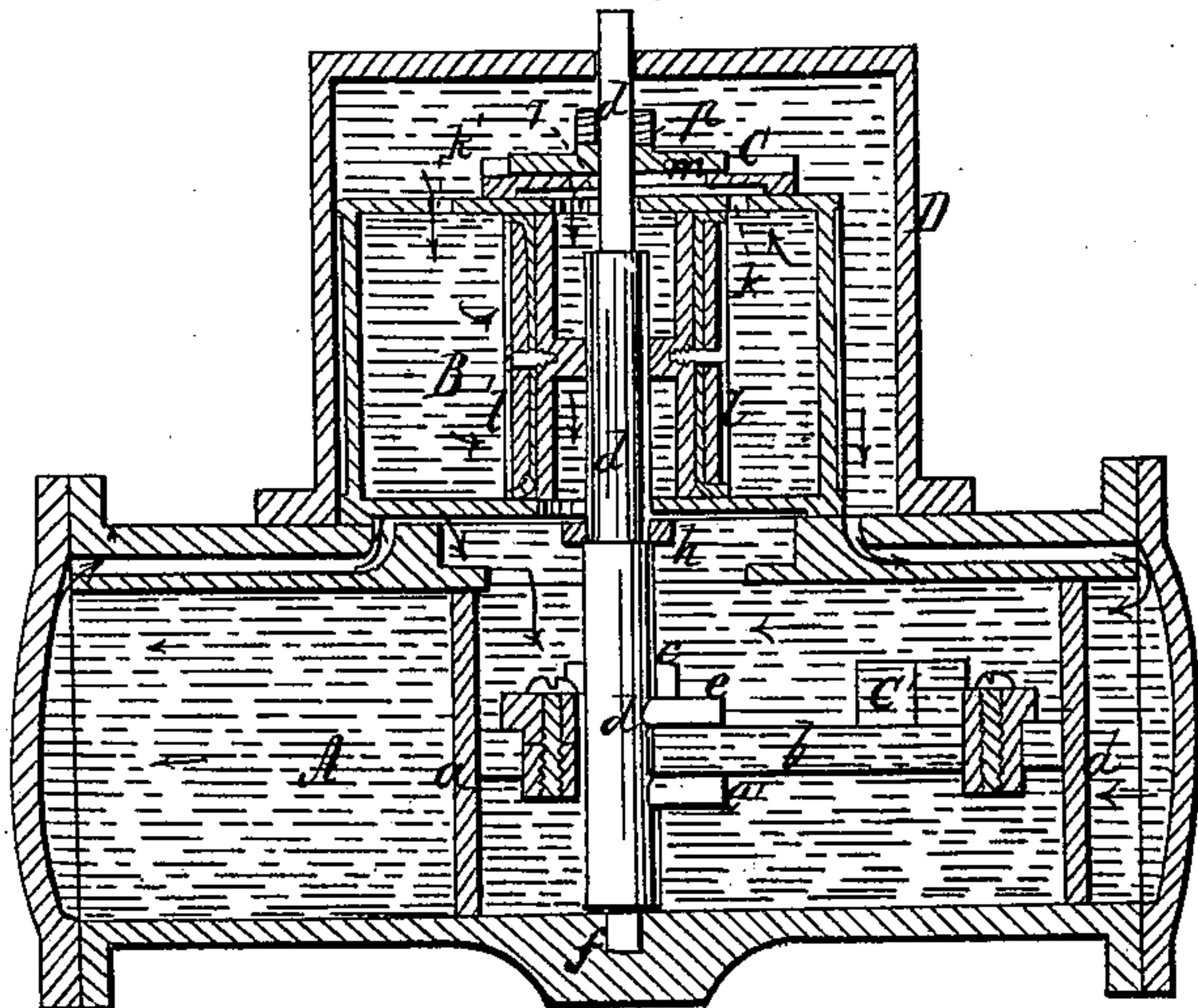


Fig. 2.

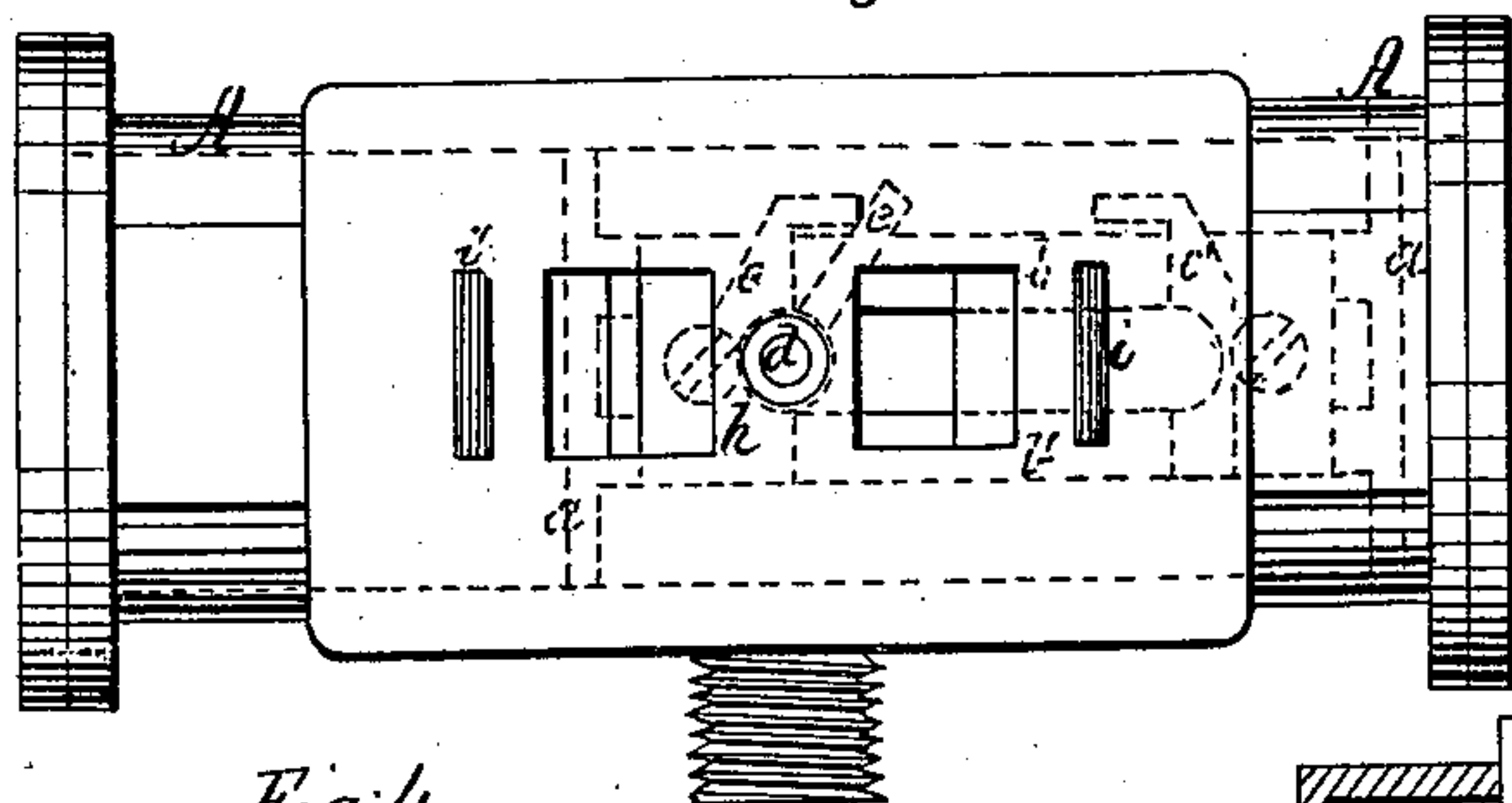


Fig. 4.

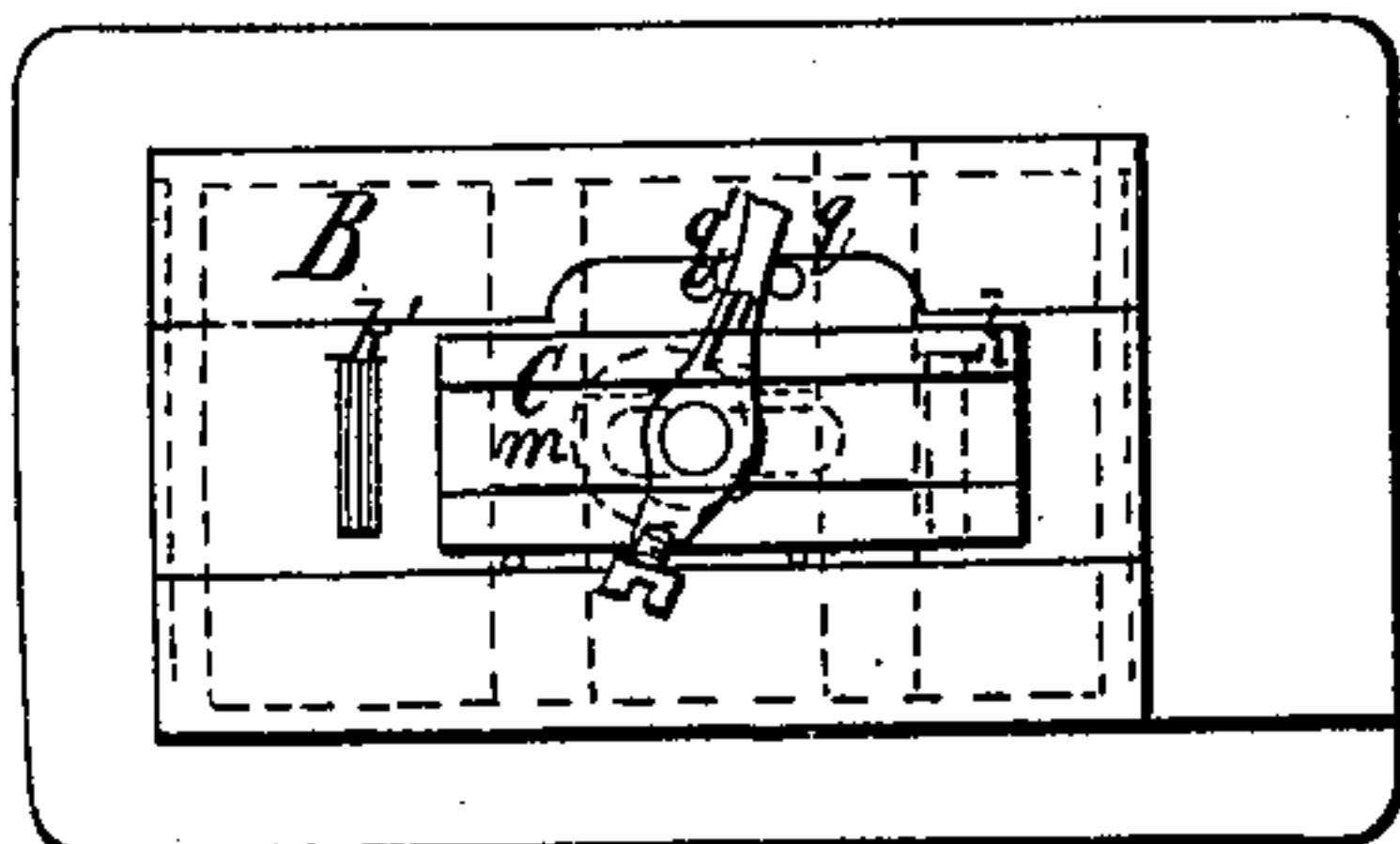
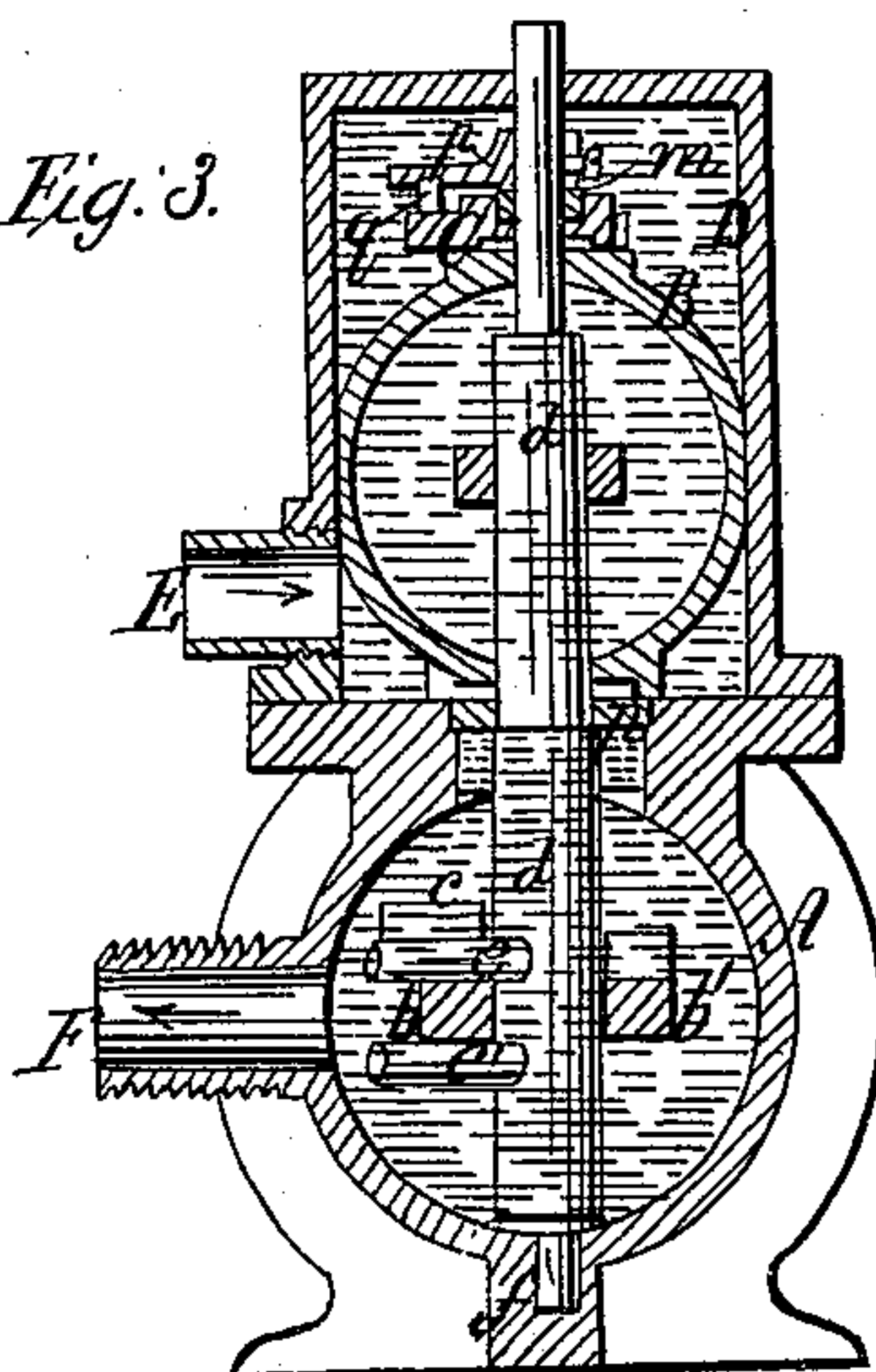


Fig. 3.



Witnesses;
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GERARD SICKELS, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 86,949, dated February 16, 1869.

IMPROVEMENT IN FLUID-METERS.

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

Be it known that I, GERARD SICKELS, of Boston, in the county of Suffolk, and State of Massachusetts, have invented a new and useful Improvement in Water-Meters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a vertical longitudinal section of a water-meter, embodying my improvement;

Figure 2 is a plan view of the main cylinder, with the valve-chest removed;

Figure 3 is a vertical transverse section of fig. 1; and

Figure 4 is a plan view of the valves in detail.

Similar letters indicate like parts in the several figures.

The object of my invention is to produce a simple, cheap, and accurate apparatus for measuring water; and

The invention consists in the employment of a movable cylinder, in connection with stationary pistons, which cylinder acts as a slide-valve to another or main cylinder, and is operated directly by the action of the water.

The said movable cylinder is also provided with a slide-valve on its upper portion, which is moved by means of arms, attached to a semi-rotating shaft, extending vertically through both cylinders.

The said shaft is actuated by means of pistons in the lower, or main cylinder. The pistons are connected by rods, upon one of which are toes, or abutments, which act upon arms attached to the shaft, thereby imparting to the latter an alternate semi-rotary motion.

Referring to the drawings—

A represents the lower, or main cylinder, in which are arranged two pistons, *a a'*, connected together by means of two bars, *b b'*.

Upon one of these bars, at opposite ends, are placed toes, or abutments, *c c'*, which are designed to operate upon the arms *e e'* of the vertical shaft *a*, as they are moved to and fro.

d represents a vertical shaft, which is stepped in the centre of the lower part of the cylinder A, and extends through the upper cylinder B, being supported in a bearing, *h*, between the two cylinders.

B is a sliding cylinder, made to act as a valve, and is seated on the top of the main cylinder A, being provided with an opening or slot, through which the shaft *d* passes, so as to admit of a free movement of the cylinder-valve, and also to allow of the passage of the water through the same.

i i' are ports, for the passages, leading from the valve-seat to the cylinder-heads respectively.

Within the cylindrical valve B are two pistons, *l l'*, firmly connected together, and held stationary by the shaft *d*, which passes through the centre of the connection between the two pistons.

On the upper part of the cylindrical valve B is a slide-valve, C, which is made to open and close alternately the ports K K' in the cylinder B.

The slide-valve C is operated by means of an arm, *p*, acting upon studs *q q'*, as shown in fig. 4.

The arm *p* is attached to the shaft *d*, and moves with the same; or the valve C may be operated by any other suitable connection.

The valves B and C are enclosed in a suitable casing, D, which is provided with an inlet-opening, E, a suitable outlet, F, being provided in the lower cylinder A.

The shaft *d* extends through the upper part of the casing D, when it may be connected with a registering-apparatus.

Operation.

The water, entering through the inlet E, fills the valve-chest D, and, when the parts are in the position shown in fig. 1, passes, through the port *i*, into the main cylinder A, and forces the piston *a'* forward, causing the abutments, or toes *c c'*, to come in contact with the arms *e e'*, and thus imparting a semi-rotating movement to the shaft *d*. This movement of the shaft at the same time imparts a motion to the slide-valve C, through the arm *p* and studs *q q'*, thus covering one port and opening the other. The water then enters into the cylinder B, and moves the same, closing the port *i*, and opening *i'*. The water passes from the cylinder B, through the recess *r*, on the under side of the valve C, into the space between the two stationary pistons *a a'*, and out at the exit F.

The apparatus above described may be used as a steam-engine or steam-pump, by projecting a piston-rod through one head of the main cylinder, and using steam instead of water as a motor.

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

1. The movable cylindrical valve B, in combination with the stationary pistons *l l'* and slide-valve C, as and for the purpose set forth.

2. In combination with the above, the vertical central shaft *d*, provided with the pins *e e'* and *p*, when connected and operating substantially as set forth.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GERARD SICKELS.

Witnesses:

J. H. ADAMS,
M. S. G. WILDE.