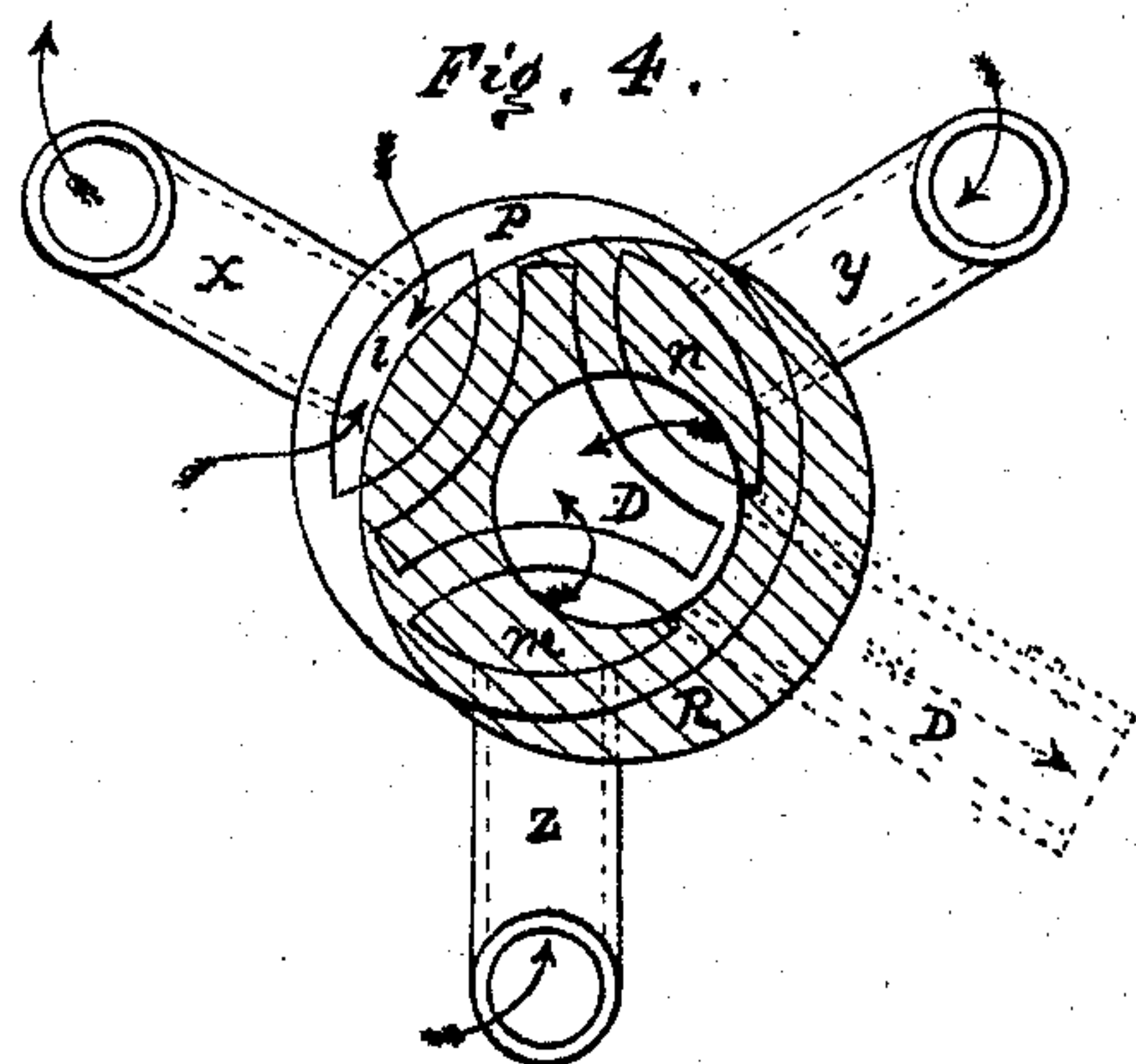
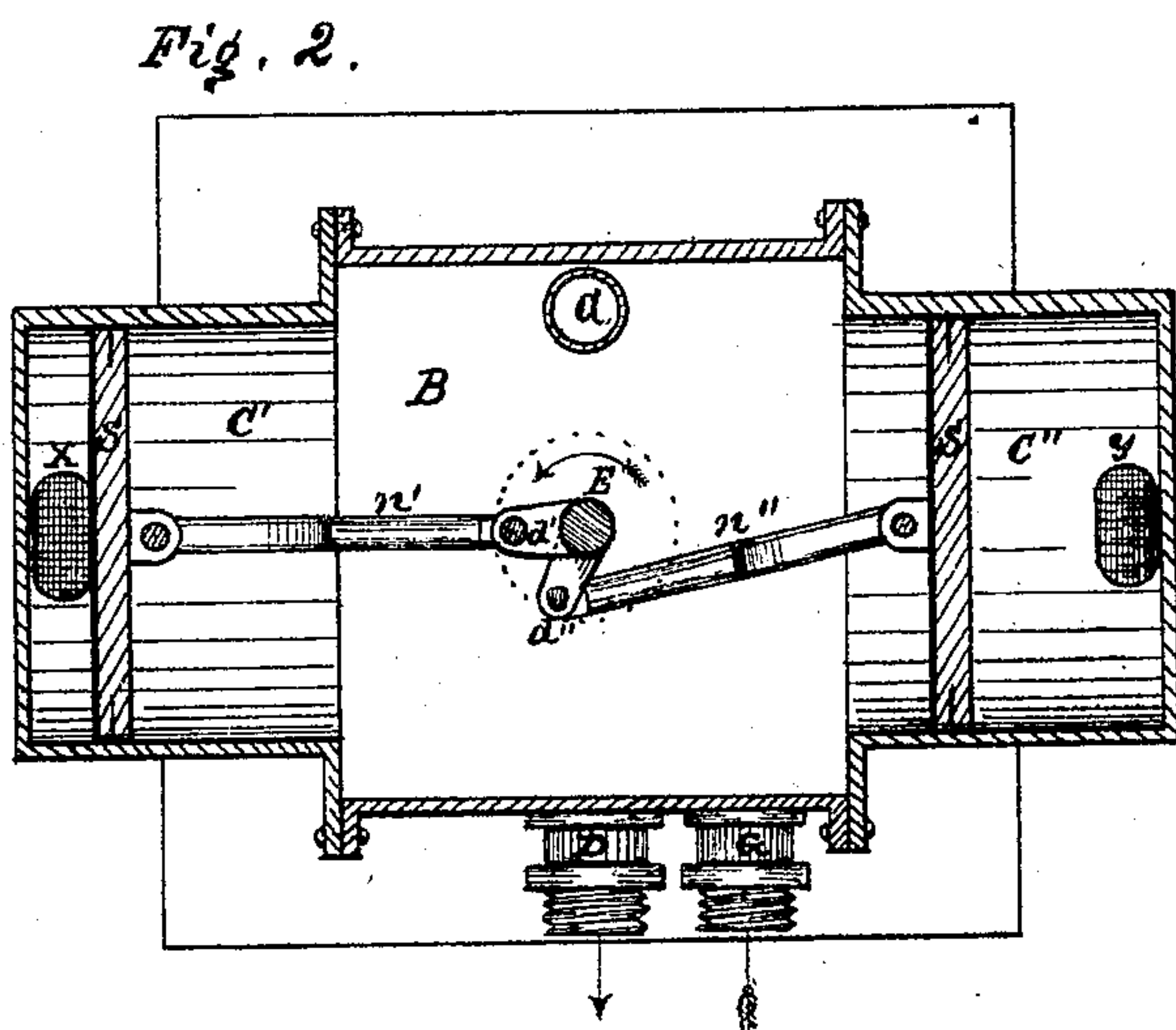
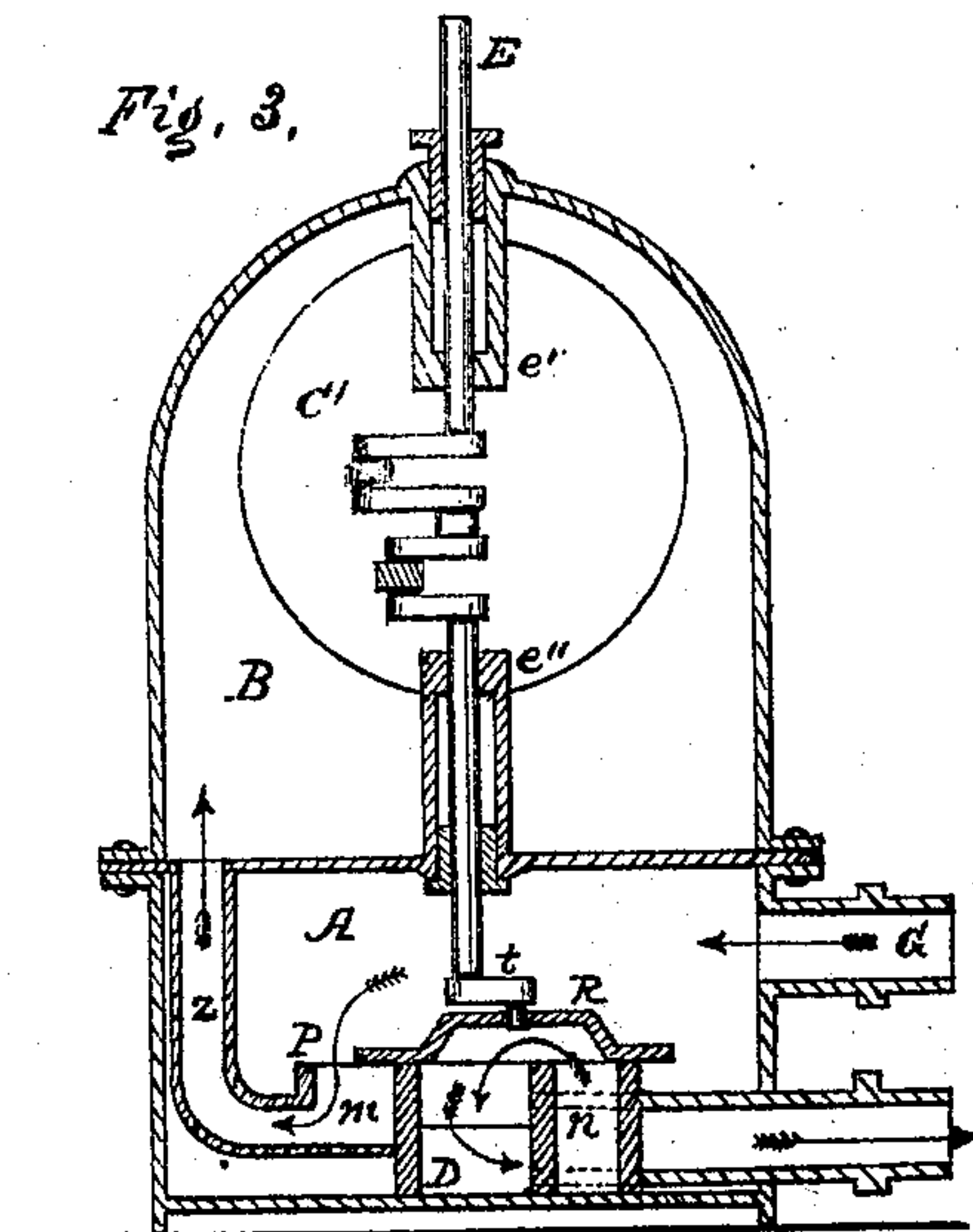
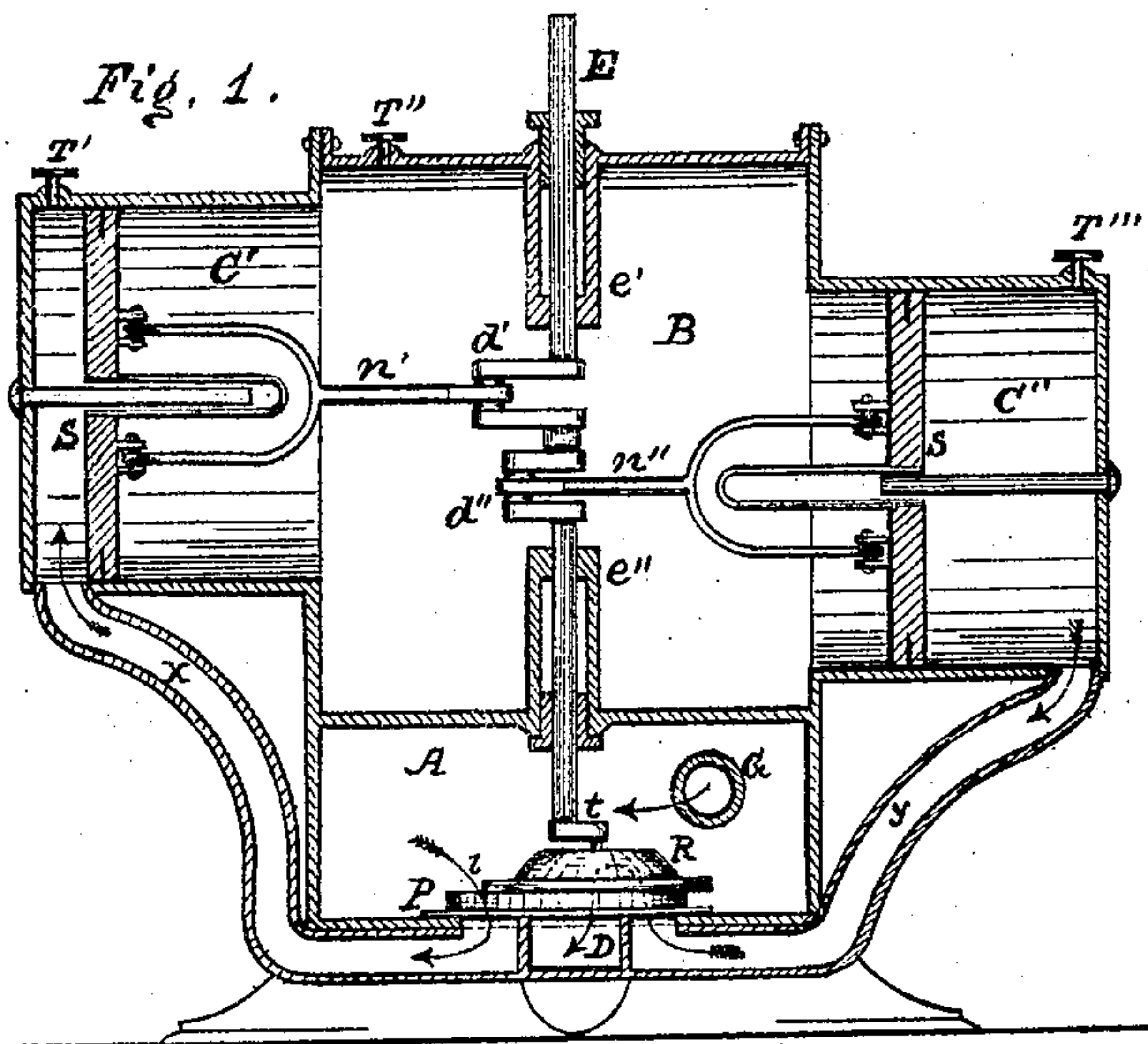


Hyam J. Hyams
Water Meter.

No. 119,709.

Patented Oct. 10, 1871.



—Witnesses—

N. B. Hatch
Francis Torrance

—Inventor—

Hyam J. Hyams.
per his attorney
Josiah W. Ellis

UNITED STATES PATENT OFFICE.

HYAM JACOB HYAMS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO N. B. HATCH, OF SAME PLACE.

IMPROVEMENT IN WATER-METERS.

Specification forming part of Letters Patent No. 119,709, dated October 10, 1871; antedated September 22, 1871.

To all whom it may concern:

Be it known that I, HYAM JACOB HYAMS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain Improvements in Liquid-Meters, of which the following is a specification:

My invention relates to an improvement in that class of water and other liquid-meters in which reciprocating pistons are used, and which are connected to one and the same crank-shaft, and which are made to operate valves for the purpose of controlling said pistons. The invention I have made consists in forming on the shaft a separate crank for each piston, and so arranging them with relation to each other as that one crank will always be one-sixth of a revolution in advance of its fellow, by which arrangement "dead-centers" are avoided and the apparatus made to work with greater ease and regularity; also the use of a central chamber, dividing the cylinders in which the pistons work, as a measuring-chamber, by connecting it with the valve-ports by means of a short tube, through which the liquids may pass in and out; also the combination and use of a valve, constructed as hereinafter described, with a water-meter having two reciprocating pistons working in opposite cylinders divided by a central measuring-chamber.

Figure 1 represents a vertical longitudinal section of my water-meter; Fig. 2, a transverse horizontal section of the same; Fig. 3, transverse vertical section; Fig. 4, detached sectional view of the valve and seat with its connecting-pipes.

This meter consists of a central chamber, B, having on two of its opposite sides a short projecting cylinder, C' C'', in each of which is fitted a reciprocating piston, S, connected to separate cranks *d'* *d''* on a central vertical shaft, E, by forked links *n'* *n''* pivoted thereto. These cranks are set at an angle equal to one-sixth of a circle described by their revolution around the axis of the shaft, by which a proper working of the apparatus is effected, and that mechanical difficulty known as dead-centers overcome. The shaft E is secured in its vertical position in the chamber B by means of bearings *e'* *e''* above and below the cranks, which bearings also constitute

stuffing-boxes to make the joints between said bearings and the shaft water-tight. Below the central chamber B is the valve-chest A, furnished with a supply-pipe, G, and communicating, through openings *l m n* in the valve-seat P, with the central chamber B and cylinders C' C'' by short tubes X Y Z, which are opened and closed alternately by means of a circular valve, R, in shape like an inverted saucer, resting loosely over the water-passages *l m n*. These passages consist of three outside inlet-ports and one central outlet-port, D. The valve R has motion imparted to it by means of a short crank, *t*, on the lower end of the shaft E, the wrist of which enters a small hole in the center of the valve, so that the crank, in turning, communicates a double motion to the valve—that is to say, it is moved by the crank *t* over the passages *l m n* so as to change alternately the direction of the currents of water through the different passages, and during this rotation round the center of the crank it likewise turns round upon its own axis, which latter motion enables it more readily to free itself from any extraneous matter that might tend to produce friction between its face and the seat whereon it works.

The operation of the meter is as follows: The plugs T' T'' T''' being temporarily removed for the air to escape, water is admitted to the valve-chest A through the inlet-pipe G and passes directly into and through that passage-way in the valve-seat that may be open, and from thence into its communicating chamber, so as to act by pressure on the pistons S, which, in moving before such pressure, by means of the connecting-links *n'* *n''*, impart a motion to the cranks *d'* *d''* and shaft E, and through it transmit a circular eccentric movement to the valve R, thereby opening and closing successively the different passages for the ingress and egress of the water, the quantity of which passing through the meter may be ascertained by a registering device placed outside and attached to the shaft E.

I do not claim any of the specified parts in severalty; but

An improved liquid-meter, provided with a central measuring-chamber, B, projecting cylinders C' C'', reciprocating pistons *s s* connected by

forked links $n' n''$ to separate cranks $d' d''$, set on an upright shaft, E, at an angle to each other equal to one-sixth of their revolution, and with a valve-chest, A, furnished with a valve-seat, P, and circular valve R, operated eccentrically upon said seat by means of a short revolving crank, t , so as to open and close the induction and education-ports alternately in the manner described, when all the specified parts are constructed, com-

bined, arranged, and made to operate with respect to each other as shown, for the purposes set forth.

HYAM J. HYAMS.

Witnesses:

N. B. HATCH,
FRANCIS TORRANCE.

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