(No Model.) 2 Sheets—Sheet 1.

F. PERRET.

PISTON METER.

No. 388,714. Patented Aug. 28, 1888.

Fig. 1.

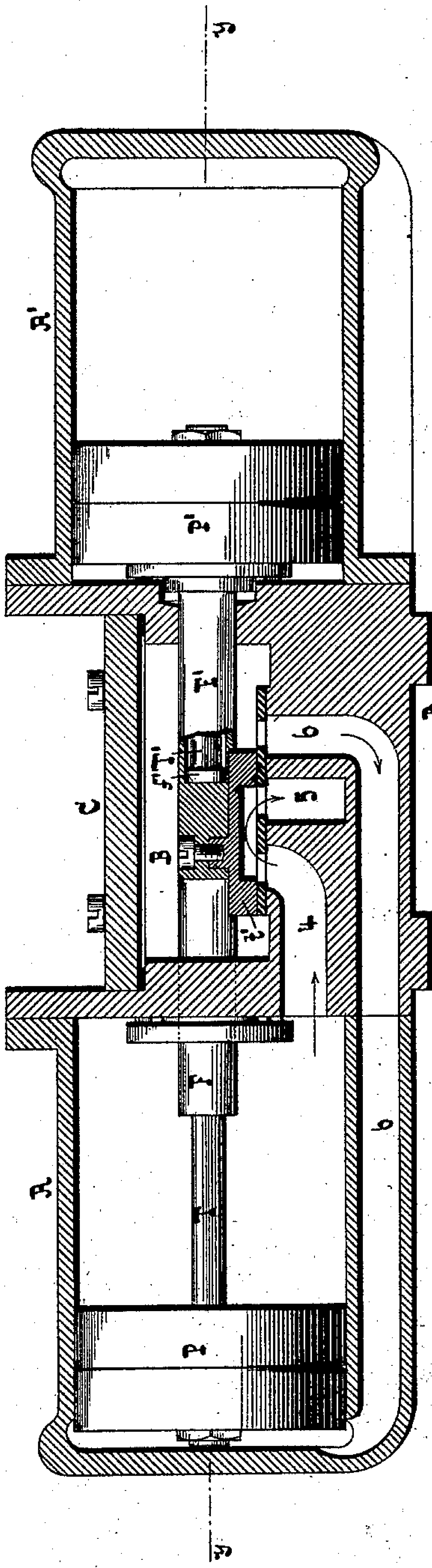
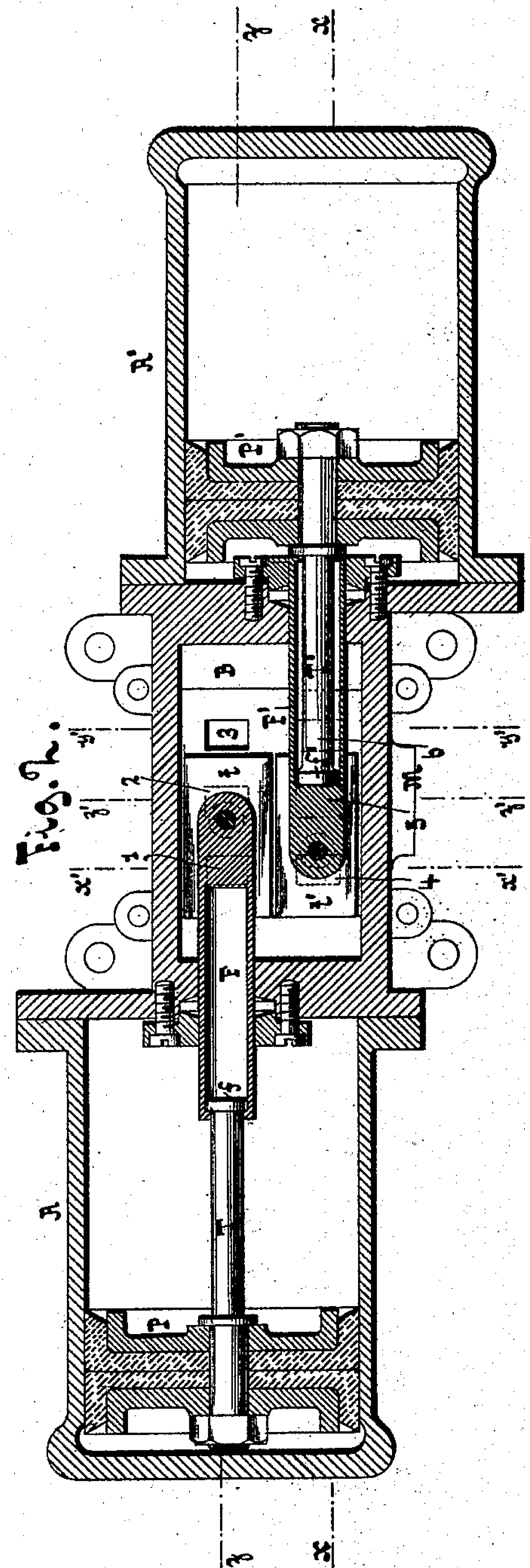


Fig. 2.



Witnesses:

A. Fabur du Faur, Jr.

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Inventor:

Fritz Perret.

by Van Santvoord & Hauff,

his Attorneys.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. PERRET.

PISTON METER.

No. 388,714. Patented Aug. 28, 1888.

Fig. 3.

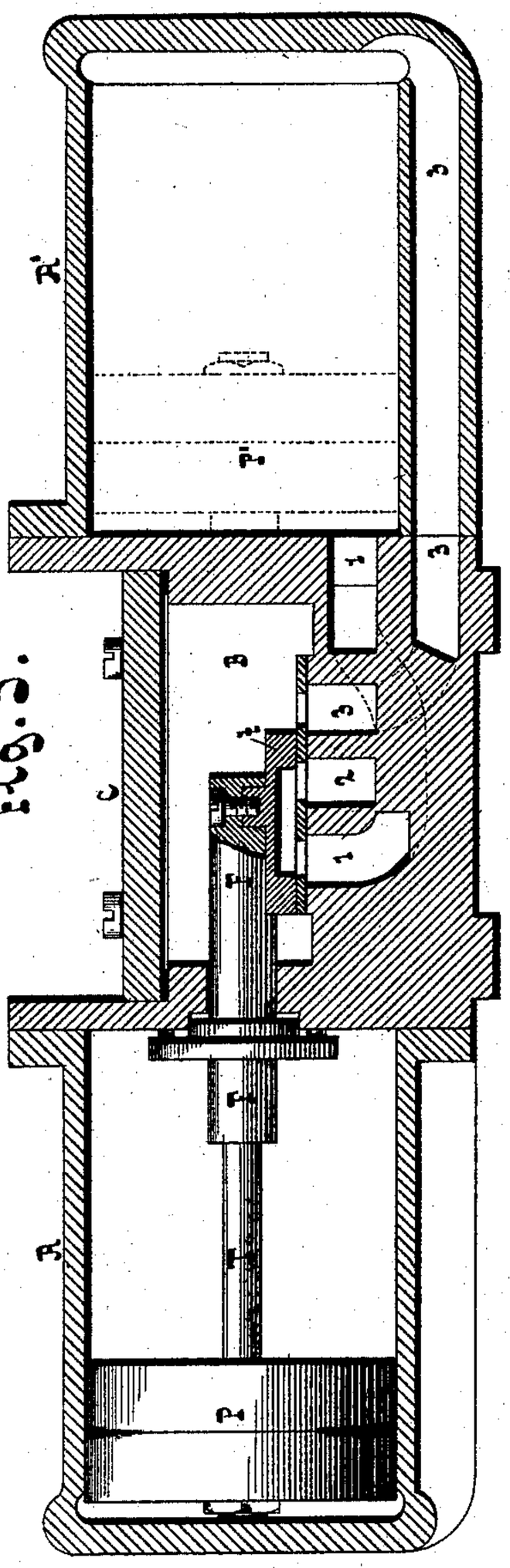


Fig. 4.

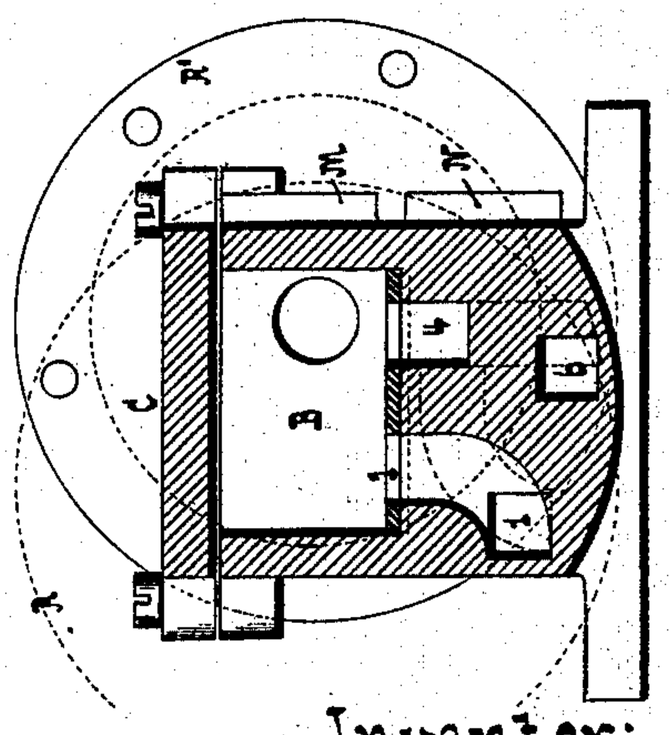


Fig. 5.

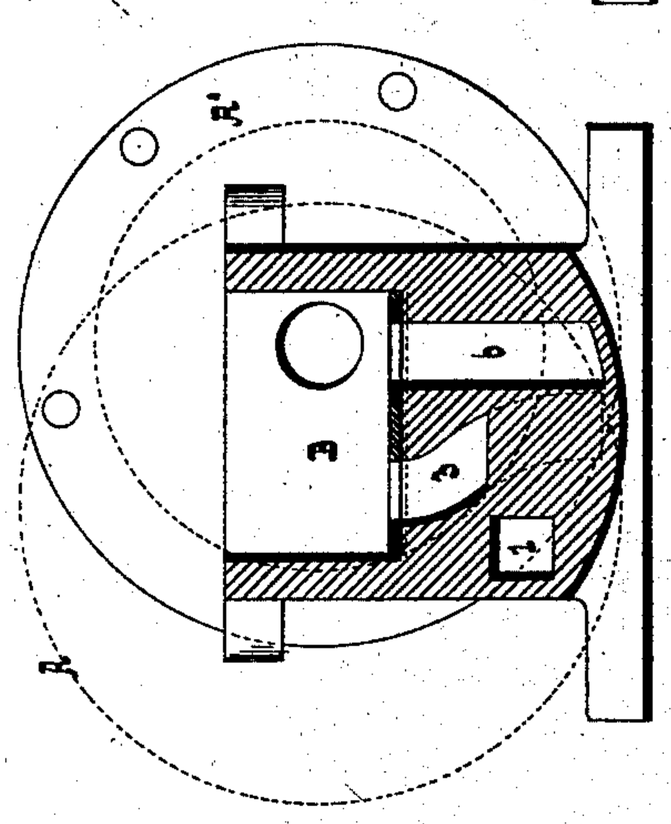
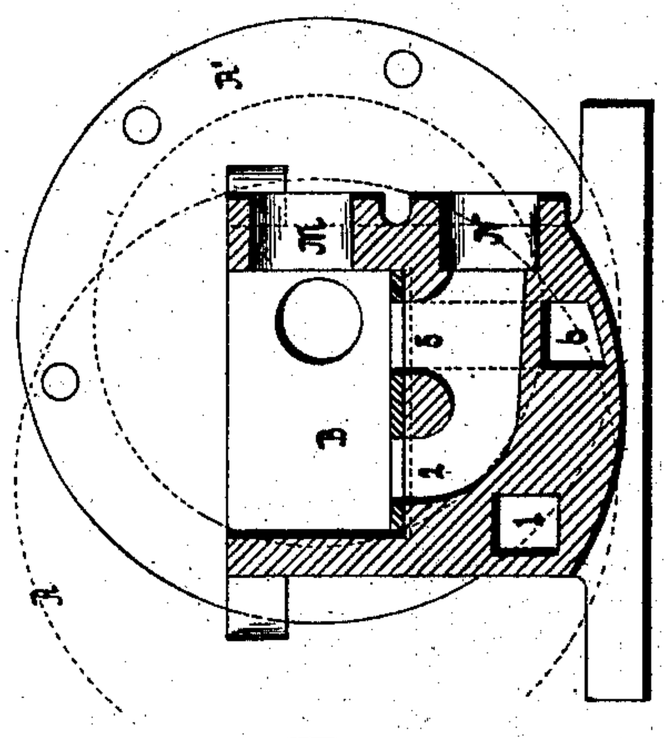


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRITZ PERRET, OF CHAUX-DE-FONDS, SWITZERLAND.

PISTON METER.

SPECIFICATION forming part of Letters Patent No. 388,714, dated August 28, 1838.

Application filed May 31, 1888. Serial No. 275,572. (No model.) Patented in France September 17, 1887, No. 185,911.

To all whom it may concern:

Be it known that I, FRITZ PERRET, a citizen of the Republic of Switzerland, residing at Chaux-de-Fonds, Switzerland, have invented new and useful Improvements in Meters for Water and other Liquids, (for which I have obtained a patent in France, No. 185,911, dated September 17, 1887,) of which the following is a specification.

This invention relates to a meter adapted for measuring water and other liquids, as set forth in the following specification and claim, and illustrated in the accompanying drawings, in which—

Figure 1 is a section of a meter in the plane *x x*, Fig. 2. Fig. 2 is a section in the plane *y y*, Fig. 1. Fig. 3 is a section in the plane *z z*, Fig. 2. Fig. 4 is a section in the plane *x' x'*, Fig. 2. Fig. 5 is a section in the plane *y' y'*, Fig. 2. Fig. 6 is a section in the plane *z' z'*, Fig. 2. In Figs. 4, 5, and 6 the moving parts are removed.

Similar letters indicate corresponding parts.

In the drawings, the letters A A' represent cylinders, and B is a distributing box or chest.

In this description the front part of each cylinder is the part at the chest B, and the rear part of the cylinder is that part which is away from the chest B. In the cylinders move the pistons P P', provided with rods T T'. The chest B has openings 1, 2, 3, 4, 5, and 6. The opening 1 is a port to feed water or liquid to the front of the cylinder A'. 3 is a port for the rear of cylinder A'. 4 is a port for the front of cylinder A. 6 is a port for the rear of cylinder A. 2 is an exhaust for cylinder A', and 5 is an exhaust for cylinder A. The chest B is closed by the cover C. The water to be measured enters the chest B by the channel M and leaves the apparatus through the channel N, Fig. 6, said channel N being made to receive the water from the exhausts 2 and 5. The valve *t* communicates with the cylinder A'. Said valve is actuated by the rod T of the piston P. The valve *t'*, which communicates with the cylinder A, is actuated by the rod T' of the piston P'. To each valve is fixed one of the sleeves F F', in which slide the rods T T'. The piston-rods have shoulders *f f'*, which strike against the closed end of the sleeves and against rims at the open ends of said sleeves. Each piston can move freely over a portion of its course and only actuates a valve toward the close of its stroke, each piston thus actuating the feed for the cylinder of the other piston.

The pistons are shown composed of two leather washers inclosed in two metallic disks; but any construction securing a securely-fitting piston can be employed. The piston-rods and openings 1 to 6 can be situated in a right line; but by employing the arrangement shown in the drawings the apparatus is shortened.

The device operates as follows: Starting from the position shown in Fig. 2, the ports 3 and 6 being open, the water-pressure is transmitted through the port 3 to the rear of the cylinder A' and holds the piston P' toward the front of said cylinder. Also, the water flowing through the port 6 presses on the rear of the piston P, the front of said piston being in communication with the exhaust 5 through the valve *t'*. The piston P is then moved toward the chest B. Toward the close of the stroke of the piston the piston-rod T strikes against the closed end of the sleeve F and the valve *t* is moved so as to close the port 3 and open the port 1. The rear of cylinder A' is then in communication with the exhaust 2, and the port 1 being opened the water flows to the front of said cylinder A', the piston P' moves toward the rear of the cylinder A', and the piston P comes to rest. The piston P, having passed to the front of cylinder A, is held there by the pressure of water from the port 6 until this port is put in communication with the exhaust. Meanwhile the piston P' presses toward the rear of the cylinder A'. Upon the piston P' coming near the end of its stroke it actuates the valve *t'*, so as to bring the port 6 into communication with the exhaust 5, and the port 4 is thus opened. Upon the port 4 leading the water to the front of cylinder A the piston P moves toward the rear of said cylinder and the piston P' comes to rest. Near the end of its stroke the piston P again actuates the valve *t*, opening the port 3 and bringing port 1 into communication with the exhaust 2, and then said piston P comes to rest. The water coming against the rear of the piston P' through the conduit 3 causes the piston P' to move toward the front of the cylinder A', and when said piston has arrived near the end of its

stroke the pistons and valves have resumed the position shown in Fig. 2. The operation of the apparatus continues on in this manner.

The registration is made by a usual suitable registering mechanism, which, being placed on the distributing-chest, allows the quantity of liquid which has passed through the cylinders—such as liters and cubic meters—to be read. The movement of the registering mechanism can be controlled by one of the pistons which causes the hand or indicating wheel to be actuated at each stroke.

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

The combination, in a fluid meter, of the two cylinders, the chest interposed between and secured to the inner adjacent ends of the cylinders, the ports leading respectively from the chest to the front and rear ends of the cylinders, the two sliding valves arranged side by side and both located above the said ports to the cylinders, the two sleeves sliding respectively through the opposite ends of the chest and each secured directly to one of the sliding valves, from which they extend in opposite directions, and the pistons having rigidly-attached piston-rods extending into and sliding within the sleeves and provided with shoulders, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

FRITZ PERRET. [L. S.]

Witnesses:
J. A. BOILLAT,
L. N. DUCOMMUN-JEANNERET.