

E. B. TALCOTT, W. & A. GUTHRIE.

FLUID-METER.

No. 176,817.

Patented May 2, 1876.

Fig. 2.

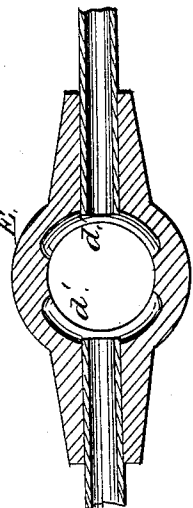


Fig. 1.

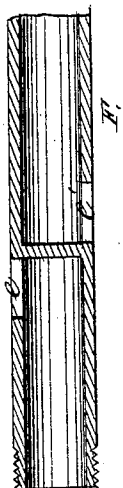
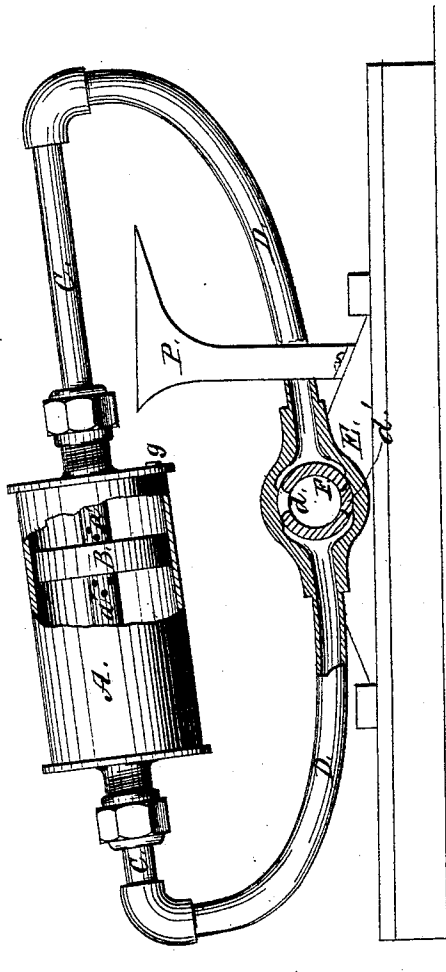


Fig. 3.



Witnesses:

Ossian Guthrie
E. M. Donnell

Inventors

E. B. Talcott
Wardell Guthrie
Alfred Guthrie

UNITED STATES PATENT OFFICE.

EDWARD B. TALCOTT, WARDELL GUTHRIE, AND ALFRED GUTHRIE, OF
CHICAGO, ILLINOIS.

IMPROVEMENT IN FLUID-METERS.

Specification forming part of Letters Patent No. **176,817**, dated May 2, 1876; application filed
February 3, 1876.

To all whom it may concern:

Be it known that we, EDWARD B. TALCOTT, WARDELL GUTHRIE, and ALFRED GUTHRIE, all of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful improvement in the form of construction and the mode of operating fluid-meters, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The object of our invention is to provide for accuracy of measurement, certainty and positiveness of change of valves unaffected by changes of pressures, and also an avoidance of all dead-centers, which in many meters have heretofore prevented a proper movement of the valves.

These objects, in general terms, have been accomplished by giving movement to the measuring-cylinder over a fixed piston instead of a movement of a piston through a fixed cylinder, by the use of hollow piston-rods, or a single rod closed in the center, affording a means for the passage of fluid into and out of the cylinder-chambers on either side of the piston, connecting these by suitable water-pipes to an oscillating valve underneath the main measuring-cylinder, which valve is in turn supported by a fixed hollow shaft, through which the fluid flows into and out of the cylinder-chamber.

Figure 1 shows the meter laid open to exhibit the different parts, whereof A shows the measuring-cylinder; B, the stationary fixed piston; C C, the hollow piston-rods with their ports *a a* on either side of the piston B. D D show the connecting-pipes returning underneath the cylinder A, and uniting with the oscillating valve E. F shows the fixed hollow shaft on which the whole is supported, and on which the valve E oscillates, and which is provided with proper ports to correspond with those in the valve E, marked *e e* for the inlets, and *e'* for the outlet. The valve E supplied with the inlet-ports *d d*, and outlets *d' d'*. P P show the plan of cut-off for regulating the quantity of discharge, or, in other words, the distance of movement of the measuring-cylinder. *g g* show projecting points from the heads of the cylinder and

bearing upon the plane of P until they pass to the end and drop off, the cylinder falling upon the cushion below.

The operation will be as follows: The cylinder A being at its lowest point at the left-hand side, the water is now flowing into the valve E in the direction of the arrows and, through the pipe D and hollow piston-rod C, into the cylinder at the ports *a*, where it impacts against the fixed piston B, and against the head of the cylinder, forcing it forward until it has passed beyond the center of oscillation, when its own and the weight of the incoming fluid are sufficient to overcome any friction or resistance of the valve, when it falls by its force of gravity to the cushion beneath and gives a proper movement of the valve, but this fall will be measurably regulated by the point *g* falling over the end of the cut-off P. The valve being now changed the currents, of course, will be reversed, and the travel of the cylinder will move in the other direction.

We claim as our invention—

1. In a fluid-meter, a moving measuring-cylinder over a fixed and stationary piston instead of a moving piston through a fixed and stationary cylinder, whereby its own weight and the weight of the incoming fluid are carried beyond the center of the oscillating valve, and then act as a lever to effect a proper movement of the valve, substantially as described.

2. The points *g g*, and the adjustable frame or plane P for determining the extension or travel of the cylinder A, substantially as described, and for the purposes set forth.

3. The combination and arrangement of the oscillating valve E, the hollow arms D D, the hollow piston-rods C C, in connection with the fixed piston B, and the movable measuring-cylinder A, for the purposes and in the manner substantially as herein set forth.

E. B. TALCOTT.
WARDELL GUTHRIE.
ALFRED GUTHRIE.

Witnesses:

OSSIAN GUTHRIE,
E. McDONNELL.