

H. Flad,
Rotary Meter,
N^o 78,795. Patented June 9, 1868.

Fig: 1.

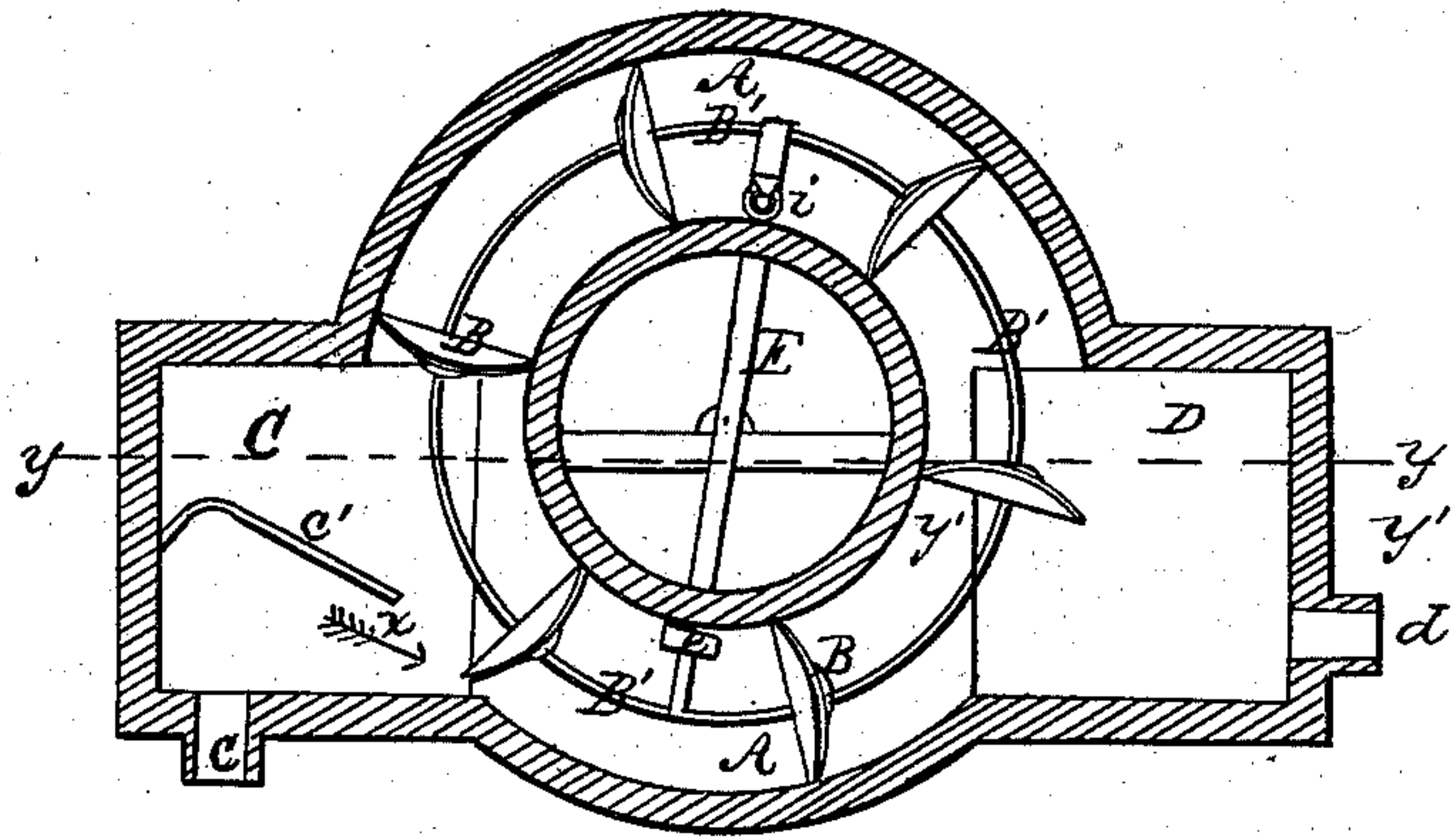
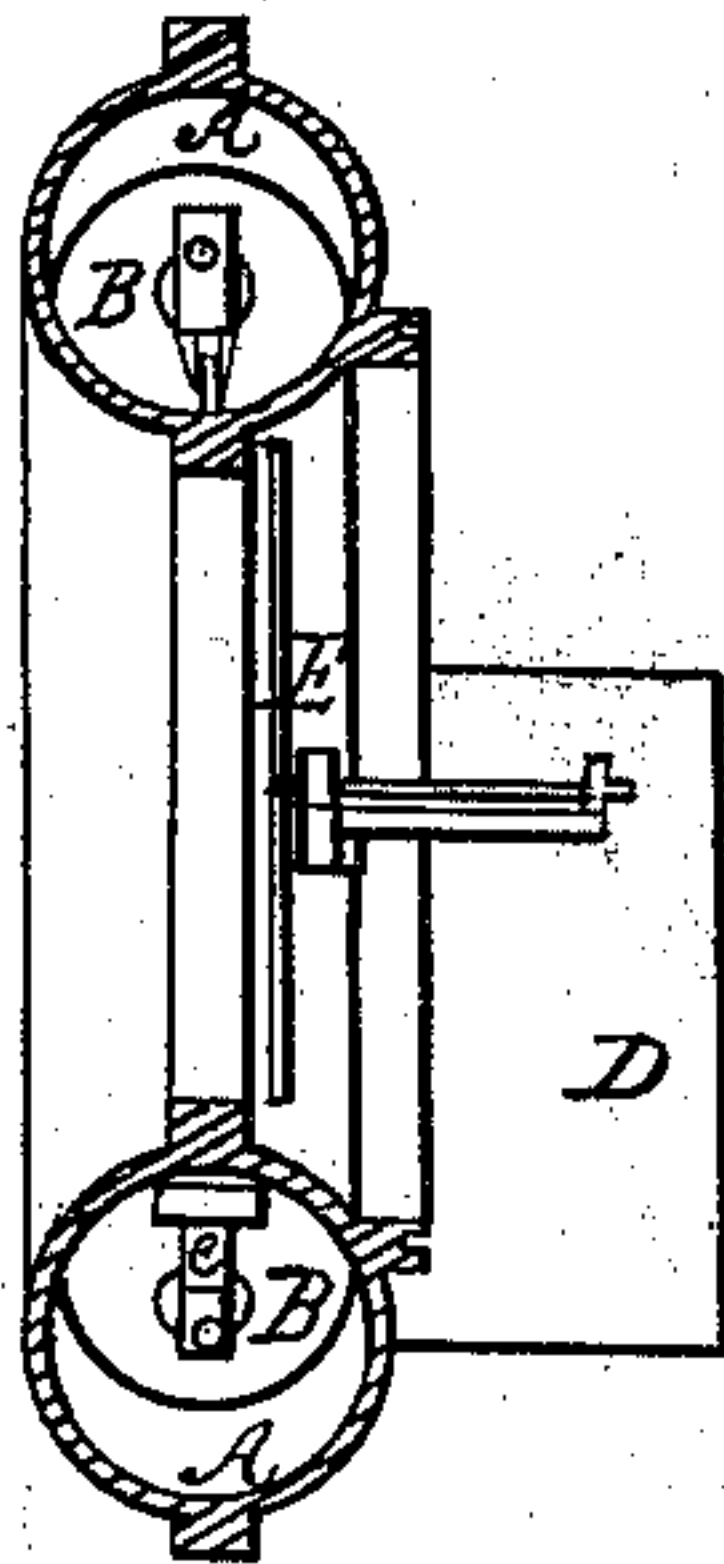


Fig: 2.



Witnesses:

Geo. P. Henthel Jr
Geo. W. Herbert

Inventor:

Henry Flad.

United States Patent Office.

HENRY FLAD, OF ST. LOUIS, MISSOURI.

Letters Patent No. 78,795, dated June 9, 1868.

IMPROVEMENT IN WATER-METERS.

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, HENRY FLAD, of St. Louis, in the county of St. Louis, and State of Missouri, have made certain new and useful Improvements in Fluid-Meters; and I do hereby declare that the following is a full and clear description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

This invention relates to an improved form of meter, wherein an annular chamber is provided with a series of travelling-pistons, that are forced by the passing water, or other fluid, to revolve continuously in one direction; and thus measure the amount of the fluid passed through the apparatus by computing the quantity passed at one revolution, and counting the number of revolutions. The pistons are to be attached to an annular rod, but are not to have any axial attachment. The revolutions are to be counted by a magnetic needle, placed outside of the apparatus, and actuated by a soft-iron bar attached to the piston-rod, and enclosed within the piston-chamber. The revolutions of the magnetic needle are to be counted on a dial, placed on the outside of the apparatus, (but not shown.) The piston-chamber is to be placed in a vertical plane, and the upper part of it is to be filled with compressed air, while the fluid-current flows through the bottom portion. Air-chambers are to be placed at the sides of the piston-chamber, the capacity of which, in combination with the capacity of the piston-chamber, shall be so proportioned to the fluid-pressure as to make the area occupied by the compressed air a little in excess of that occupied by the fluid-column. The arrangement of the inlet-pipe is to be such that the column of fluid flowing into the apparatus will impinge against a diaphragm in one of the air-boxes, and be directed by it toward the bottom of the piston-chamber, and a current through the apparatus will be produced and maintained by the head of the fluid being higher on the induction than on the eduction side of the piston, when the outlet-aperture is open.

To enable those skilled in the art to make and use my improved meter, I will proceed to describe its construction and operation.

Figure 1 of the drawings is a vertical longitudinal central section of the improved meter.

Figure 2 is a transverse central sectional elevation of the same.

The annular piston-chamber A may be square, round, or irregular in its transverse section, and it will be fitted with pistons, B, provided with suitable packings, and attached at short intervals to the annular piston-rod, B'. This rod may be made in one continuous piece, or of several short pieces, jointed together.

Arranged on opposite sides of the chamber A, and in open communication with it, will be the air-boxes C D, which will be respectively fitted with the induction-pipe *c* and the eduction-pipe *d*. A diaphragm, *e*', will be placed in the box C, so as to direct the entering column of fluid in the direction of the arrow *x*, toward the bottom of the piston-chamber. A magnetic needle, E, placed outside of the chamber A, will be turned around by the action of the soft-iron bar *e*, attached to the piston-rod, and will register on a dial (not shown) the number of revolutions.

In this manner the apparatus will be made self-registering, without any waste of power by friction, which would be occasioned were the registering-hand operated by an axle passing through stuffing-boxes.

The apparatus thus constructed, the operation of it will be as follows:

Let the eduction-pipe be closed, and the induction-pipe opened. The fluid will then flow into the apparatus until the air in the top part of the piston-chamber, and the boxes C D, will be compressed to such an extent as to equal the fluid-pressure, inch for inch. The arrangement of the parts, and of the sizes of the compartments, will be such that the line *y y*, coinciding with the top of the fluid and bottom of the air-areas, will nearly bisect the apparatus in a horizontal plane.

The pistons should fit closely in the bottom part of the chamber A, so as to prevent fluid passing through by the sides of the pistons, and loosely in the top part of the said chamber, so as to allow air to pass through from one side to the other. The arrangement of the induction-pipe should be such as to allow the air contained in the fluid to rise to the top part of the chamber A, and the quantity of air derived from this source

It usually be sufficient to keep up the air-supply; but should it not prove sufficient in any instance, a forcing-pump might easily be introduced for the purpose of supplying the deficiency. When the eduction-pipe is opened, the fluid on that side of the meter will fall to about the relative position of the line y' , and the difference in height between this line and the line y on the other side, will be sufficient to create a current through the apparatus in the direction of the arrows $x x'$, the diaphragm c' also acting favorably to give the incoming current direction in the desired manner, as already described.

In lieu of the magnetic registering-device herein described, a small tappet might be used to actuate a ratchet-wheel, which would operate the registering-apparatus, the said tappet being operated by one of the rollers, i , passing over the inner end of the tappet (which will be within the housing) at each revolution of the apparatus.

Having described my invention, what I claim is—

The air-check in the chambers A, C, and D, to prevent the flow of liquid in any direction but that of the line of traverse of the piston, substantially as set forth.

The combination of the magnet E, the soft bar e , and the revolving piston B', when acting substantially as set forth.

HENRY FLAD.

Witnesses:

GEO. P. HERTHEL, Jr.,

M. RANDOLPH.