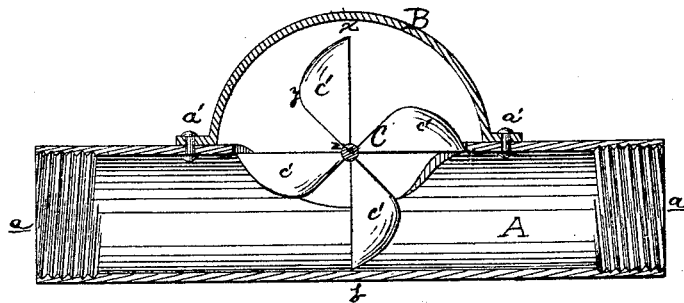


JOSEPH W. CREMIN.  
Improvement in Water-Meters.

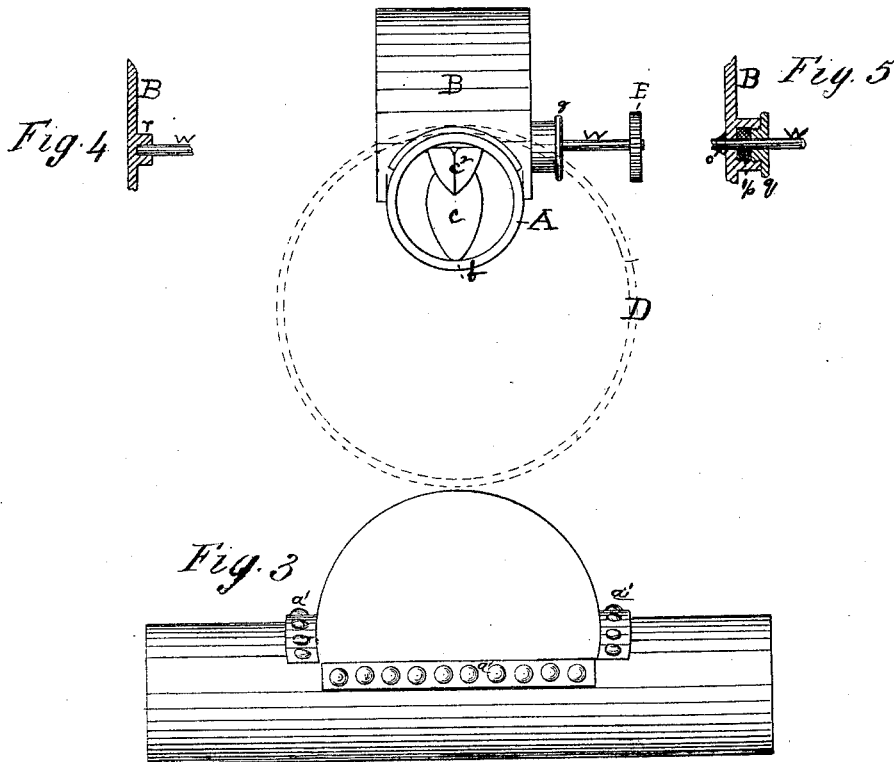
No. 114,415.

Patented May 2, 1871.

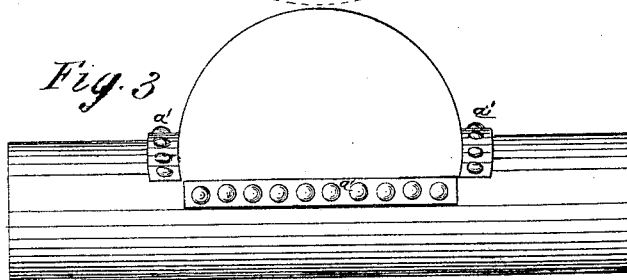
*Fig. 1*



*Fig. 2*



*Fig. 3*



*R. A. Marsh  
Wm. H. Brown*

*Joseph W. Cremin*

# UNITED STATES PATENT OFFICE.

JOSEPH W. CREMIN, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS  
RIGHT TO GEORGE H. FAIRCHILD, OF BRIDGEPORT, CONN.

## IMPROVEMENT IN WATER-METERS.

Specification forming part of Letters Patent No. 114,415, dated May 2, 1871.

*To whom it may concern:*

Be it known that I, JOSEPH W. CREMIN, of the city, county, and State of New York, have invented a new and Improved Rotary Fluid-Meter; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification.

The invention relates to that class of meters in which the fluid is measured by its volume and velocity.

The invention consists in an apparatus such as hereinafter fully described.

In order to enable others skilled in the art to construct and use the same, I will now proceed to describe it.

In the drawing, Figure 1 is a vertical section of my meter, looking from the front. Fig. 2 is an end view, looking through from the left-hand side of Fig. 1, the dotted lines showing the end of a large water-main. Fig. 3 is a rear side view of the left-hand side of that seen in Fig. 2. Fig. 4 is a detached view of the journal for the inner end of the shaft. Fig. 5 is a detached view of the outside journal and packing.

A is a cylindrical tube, to which water-pipes are attached at each end by being screwed or otherwise connected at *a a*. This meter, therefore, forms a single stationary section in a supply-pipe.

B is a bulb or semicircular projection, made to conform somewhat to the shape of the wheel C, in which the said wheel is suspended on an axle, which latter is on a line with the upper surface of the tube and running at right angles thereto. A hole is made in the tube A, and the bulb B is attached, in this instance, to the same by riveting, or they may be made in any other well-known manner.

*a' a'* are the rivets. C is the water-wheel, having four (more or less) arms or paddles, of the form represented in Figs. 1 and 2. *c* is the front flat face of the paddles, against which the water, as it enters the tube, strikes to turn the axle *w*. The front flat face of the paddle, as seen in Fig. 2, is of an oval form, the lower tip or point of which reaches near the bottom of the tube A, as seen at *b*. The upper part

or tip of the paddle, where it is attached to the axle, is on a horizontal line drawn through the tube at its extreme inner upper surface. Therefore it will be seen, upon reference to Fig. 2, that the spaces on each side of the paddle-wheel are of a crescent shape. This is material, as will be hereinafter more fully explained. The reverse or rear side of the paddles, from *x* to *y z*, is of a rounded form, and the sides are sharply beveled at *c'*, and meet at the point *c''* like a knife-edge.

In Fig. 5, *o* shows a shoulder on the axle *w*, to prevent the shaft from moving endwise. *p* is a packing, of rubber or other material, and *q* is a screw thumb-nut for forcing the packing of rubber against the axle *w* and into its seat, to prevent the escape of water at the bearing.

In Fig. 5, *r* represents the journal for the inner end of the axle, which is a part of the bulb B on the inside of the meter; therefore the axle does not pass through the bulb on the rear side.

A large water-main, D, is shown in dotted lines with my improved meter attached, as I propose to use my meter inside of the pipe D, as shown, when the latter is large, to measure only a portion of the water passing through, and from that to calculate the whole volume.

The registering apparatus is to be attached to the cog-wheel E.

Hitherto, in the construction of water-meters, inventors, in order to present something novel, have produced some of the most complicated arrangements imaginable; whereas in the construction of this meter the great novelty is its simplicity, scientific construction, cheapness, and safety, especially in connection with steam-boilers. The paddles are so constructed as to equalize the various degrees of velocity in the current, the velocity at the center being greater than at the sides, where it is retarded by friction. These facts are so well understood that further explanation is unnecessary.

The reverse sides of the paddles are sharp-edged, to easily overcome the obstruction of the water in their retrograde movement.

I am aware that various varieties of paddle-wheels have been invented, and some with the rear side of such character as will enable

them to pass through the water in their retrograde movement with improved facility, and that others are so constructed as to turn with the arm and pass through the water edgewise; but none of these will practically answer the purpose when used in a supply-pipe, as the force to be overcome is too great; but I am not aware that a meter such as mine, or paddle-wheels like mine, have ever been used or invented; therefore,

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

1. The wheel C, having its buckets or paddles formed with a flat surface for receiving the impact of the water, and a sharp cutting-edge,  $c^2$ , formed by the beveled sides  $c^1$ , substantially as described.

2. The wheel C, constructed as described, in combination with the tube A and bulb B, as and for the purpose set forth.

JOSEPH W. CREMIN.

Witnesses:

J. R. WHITE,  
A. McCALLUM.