3 Sheets—Sheet 1.

E. C. TERRY.

Rotary Water-Meter.

No. 216,360. Patented June 10, 1879.

Fig. 1.

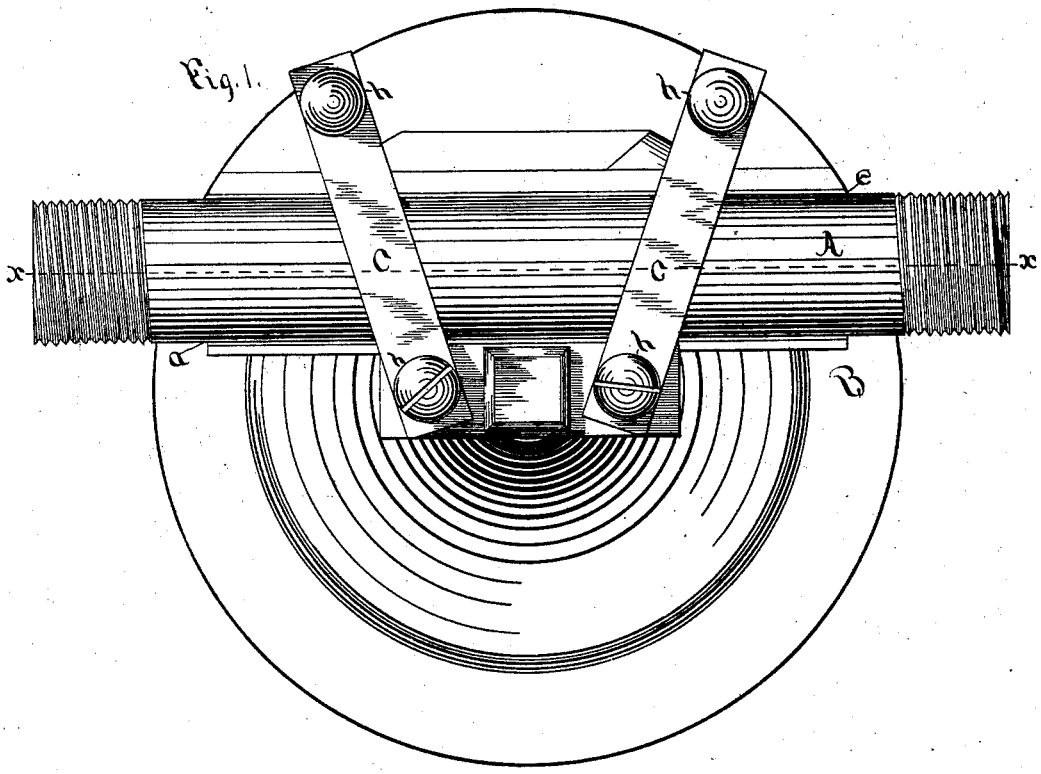
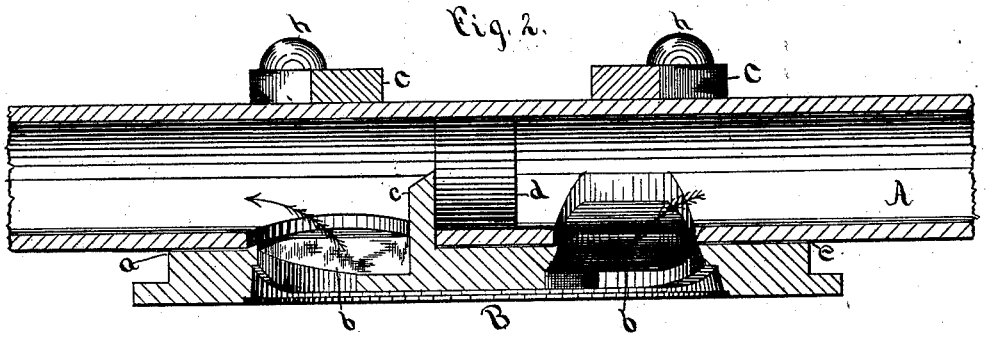


Fig. 2.



Witnesses.
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Leonard S. Burr

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3 Sheets—Sheet 2.

E. C. TERRY.

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Fig. 3

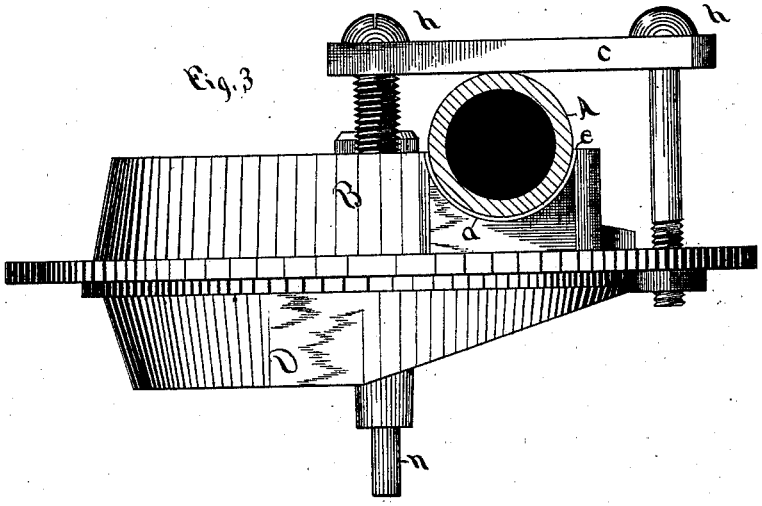
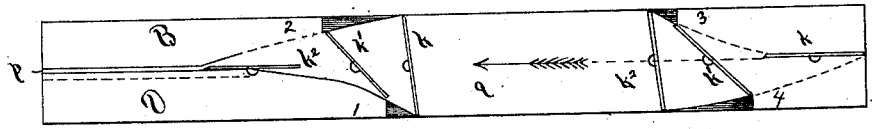


Fig. 4.



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3 Sheets—Sheet 3.

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Rotary Water-Meter.

No. 216,360. Patented June 10, 1879.

Fig. 5

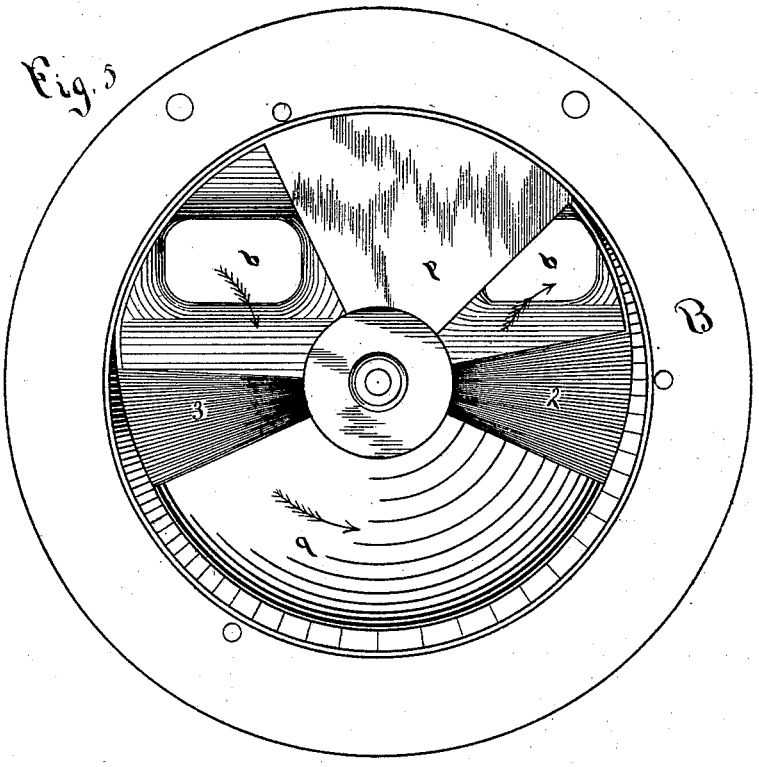
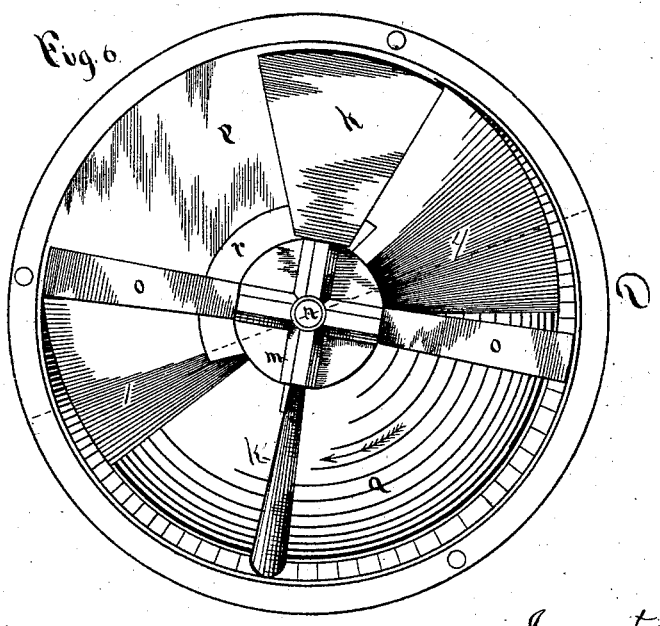


Fig. 6.



Witnesses.
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James Shepard

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E. Clinton Terry

UNITED STATES PATENT OFFICE.

E. CLINTON TERRY, OF TERRYVILLE, ASSIGNOR OF ONE-HALF HIS RIGHT TO GEORGE H. SEYMS, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN ROTARY WATER-METERS.

Specification forming part of Letters Patent No. **216,360**, dated June 10, 1879; application filed November 13, 1878.

To all whom it may concern:

Be it known that I, E. CLINTON TERRY, of Terryville, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Water-Meters, of which the following is a specification.

My invention consists of the peculiar connection of the meter with a water-pipe, and of the peculiar conformation of the interior of the case to a single pair of feathering-floats, all as hereinafter described.

In the accompanying drawings, Figure 1 is a rear elevation of a water-meter which embodies my invention, and also a portion of the water-pipe to which it is attached. Fig. 2 is a sectional view of one half of the meter-case and said pipe, the same being taken on the plane *x x* of Fig. 1. Fig. 3 is an edge view of said meter and a transverse section of the pipe. Fig. 4 is a diagram showing a developed edge view of the interior of the case and various positions of the floats therein. Fig. 5 is a side elevation of the inside of one half of the case, and Fig. 6 is a like view of the other half and the floats.

This meter is adapted to be applied to an ordinary water-pipe without uncoupling the same.

A designates a piece of said pipe, and B the half of the case which is secured thereto. The general form of the exterior of the case is immaterial. Upon the side of the part B there is a longitudinal pipe-seat, *a*, the form of which is substantially semicircular in cross-section. In the bottom of this pipe-seat *a* there are two openings, *b b*, through the case, and leading into the interior thereof. Projecting from this pipe-seat, and between the openings *b b*, there is a stud or stop, *c*, Fig. 2. In order to attach the pipe to this case, two openings are made in it, which substantially coincide with the openings *b b* in the case. One of the openings in the pipe is cut out for a short distance large enough to expose the whole, or nearly the whole, diameter of the bore, so that a plug, *d*, Fig. 2, of a size corresponding to the bore of the pipe may be slipped into said hole and crowded endwise into the pipe to close it at a point between the two side holes made therein. If desired, this plug *d* may be packed to insure a better fit.

Rubber, soft leather, or other suitable packing, *e*, with holes cut in it to correspond with those in the case, is placed in the pipe-seat *a*, and then the case is put upon the pipe, with the stud or stop *c* extending into the pipe through one of the side holes, as shown in Fig. 2.

Straps C C and screws or bolts *h h h h*, or other proper clamping mechanism, are then employed to bind the case firmly to the pipe, the packing being thereby compressed between the pipe and pipe-seat to make the connection water-tight. The stud or stop *c* serves as a guide in placing the case in position, and as it is upon the side toward which the water flows, it effectually prevents said plug from being driven along under the force of the water beyond the position shown in Fig. 2.

In case the pipes are detached, so that the plug may be put in from the end, of course it will be unnecessary to cut out the hole large enough to admit the plug. The other half, D, of the case may be secured to the half B in any proper manner, but preferably so that it may be attached and detached from its fellow half without disturbing the position of the latter upon the pipe.

The floats are of the style known as "feathering-floats," which pass edgewise through a narrow space at one point, and flatwise through a wider space at another point. I employ only one pair, and both of the floats *k k* in said pair are rigidly secured to the ends of a shaft having its bearing in the cross-arm *m* of the shaft *n*, and turning freely therein. The floats are not set at quite right angles to each other, but at a slight inclination from such angle, as shown in Fig. 6. They are also so attached to the shaft, which extends through the cross-arm *m*, that their advance side will be in a plane which passes longitudinally through the axial line of said shaft. The ends of the floats are formed on an arc of a circle which is concentric with the axis upon which they revolve, as shown by the side view of the upper float, which, in Fig. 5, is represented as moving edgewise. The shaft *n* is also pro-

vided with two blades, *o o*, set edgewise, and rigidly secured to said shaft. The thickness of the blades *o o*, and also of the floats *k k*, is such as to just fill the narrowest part *p* of the case.

As before stated, the interior of the case consists of a narrow space or chamber inclosed at one point, and a wider space inclosed at another point, the latter being designated by the letter *q*. The edge of the case is on an arc of a circle which corresponds to that on the end of the floats *k k*, and the sides are sloping, to correspond with the side edges of the floats. Upon each side of the narrow part *p* of the case there are openings *b b*, before referred to, the water entering at one and flowing out at the other in the direction indicated by the arrows in the several figures.

At the ends of the widest part *q* of the case, and at the points where the floats begin to turn upon their own axis, there are four inclines, 1 2 3 4, the form of which conforms to the figure described by the floats in making about one-eighth of a revolution upon their own axis, and at the same time moving along a given distance upon the main axis, whereby the sides of the case fit the floats closely while they are changing, the one from a transverse position to a position at forty-five degrees to the case, and the other from its edgewise position into a position at the same angle, at which points both of the floats stand at the same angle of forty-five degrees to the case. The floats stand in this position when their axis reaches the point designated by broken lines in Fig. 6.

The shape of the case between the points where the floats stand at an angle of forty-five degrees and the narrow part *p* is immaterial, except a narrow portion on the inclines 1 and 2, which act as cams to trip the floats upon their own axis. A groove, *r*, in the part or half D of the case permits the ends of the shafts bearing the floats and blades to pass unobstructed through the case.

The operation of the floats will be best understood by reference to the diagram, Fig. 4, in which *k k* designate companion floats, the advance one of which is represented as about to engage the inclines 1 and 2, while the rear one has just left the narrow part *p* of the case, and is about to engage the inclines 3 and 4. The advance float is tripped by the incline 1, and soon stands at forty-five degrees to the case. Its companion float, being rigidly secured to the same shaft, necessarily turns with said advance float about one-eighth of a revolution on its own axis, and stands at a like angle to the case.

The floats k^1 k^1 represent companion floats in this position of forty-five degrees to the case, and it should be observed that both of the floats fills the case, so that before the advance float opens to let the water escape its companion float effectually closes the passage in the case to cut off and measure the water which is between said floats. The shape of the interior of the case in advance of the advance float is now unimportant, while that in advance of the rear float is important, and must conform to the figure described by the side edges of said float in passing from the position represented at k^1 to its position in the widest part of the case, (represented at k^2,) so that it shall fill the case during such passage. A sufficient portion of the incline 1 should, however, be left to act as a tripping-cam, to trip the floats on their own axis.

The parts of the inclines which conform, as before described, to the figure described by the floats are represented in shaded lines, while the parts in Fig. 4, whose shape is immaterial, are designated by broken lines, and the parts which act as cams merely are designated in said figure by full lines. (See the inclines 1 and 2.) These cams, acting upon the most advanced float, trip the floats into the position represented by the companion floats k^2 k^2, the advance one of which passes on edgewise through and fills the narrow part *p* of the case, while the rear one fills the widest part *q*. The blades *o o*, acting intermediately between the floats, fill the narrow part of the case to keep it continually closed.

Any suitable registering apparatus may be connected with the main shaft *n*.

I claim as my invention—

1. In a water-meter, the case having a longitudinal pipe-seat with openings formed therein, in combination with the pipe having corresponding side openings, and the bore of the pipe closed between said openings, substantially as described, and for the purpose specified.

2. In a water-meter, the combination of the case having longitudinal pipe-seat with openings therein, and the stud *c* projecting therefrom, with the pipe having corresponding openings, and the plug *d*, substantially as described, and for the purpose specified.

3. In a water-meter, the combination of a pair of feathering-floats, rigidly secured to the same shaft, with a case the interior of which is provided with inclines 1 2 3 4, which conform to the figure described by the floats while making an eighth turn upon their own axis, whereby the advance float in the pair will effectually close the case on one side until its companion float has closed it upon the other side, substantially as described, and for the purpose specified.

E. CLINTON TERRY.

Witnesses:
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WILL. B. THOMSON.