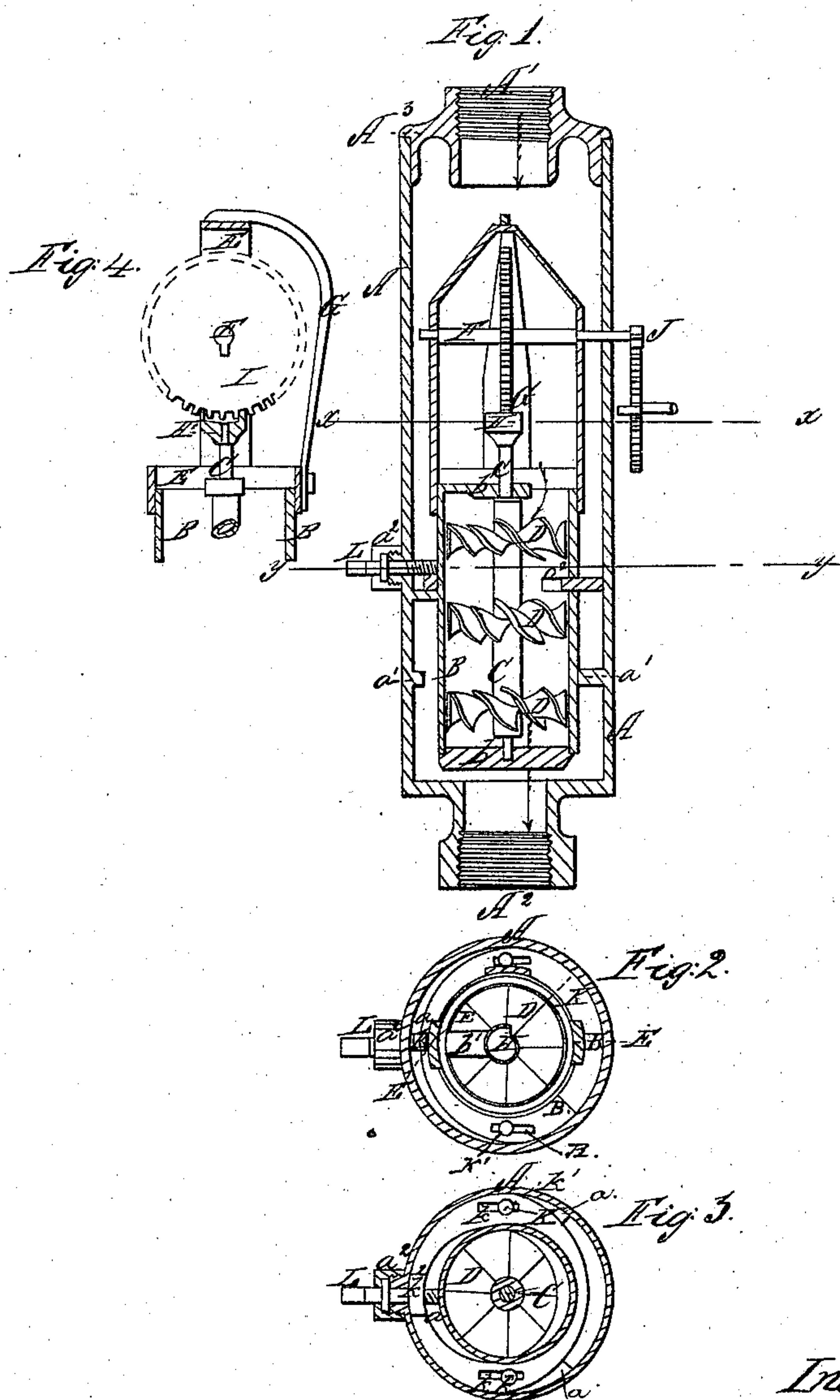


*R. H. Atwell,*

*Rotary Meter.*

*N<sup>o</sup> 68,830.*

*Patented Sep. 17, 1867.*



*Witnesses:*  
*Geo. D. Morrison*  
*J. Scherlin*

*Inventor:*  
*R. H. Atwell*  
*By Attorneys*  
*Knights*

# United States Patent Office.

RICHARD H. ATWELL, OF BALTIMORE, MARYLAND.

Letters Patent No. 68,830, dated September 17, 1867.

## IMPROVEMENT IN LIQUID-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, R. H. ATWELL, of Baltimore, in the county of Baltimore, and State of Maryland, have invented a new and useful Improvement in Water-Meters; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which are made a part of this specification.

My invention consists in a novel and effective arrangement for correctly registering the flow of water through a pipe by means of a series of compound water-wheels on a shaft, which gives motion to the register, the flow of water being regulated by a sliding gate or valve, which allows more or less water to pass through without acting on the wheels, to keep the register correct under different degrees of pressure. In the drawings—

Figure 1 is a transverse vertical section of my invention.

Figure 2 is a horizontal section on the line  $x x$ , fig. 1.

Figure 3 is a horizontal section on the line  $y y$ , fig. 1.

Figure 4 is a detached sectional view of the upper part of the wheel-cylinder.

A represents the outer cylinder or case, which is connected to an ordinary water pipe by the couplings  $A^1 A^2$ , and to the interior of which access is had through the cap  $A^3$ . Supported on the perforated rims  $a a^1$ , within this case, is a smaller cylinder, B, in the cross-bar  $b$  and arm or projection  $b^1$  of which the shaft C, carrying the water-wheels D D D, is journaled, and in the slot  $b^2$  of which the regulating valve slides, and whose upper end is provided with a frame, E, which forms the bearings for the shaft F, and which, converging to a point, is there supported by a brace, G. The shaft C is provided at its upper end with a helix, H, which rotates the cog-wheel I on the shaft F, and through it and the tappet J, on the outer end of said shaft, the registering machinery. The blades of each succeeding wheel D D D, from the receiving to the discharging end of the cylinder B, are set at a greater angle to the shaft than those of the preceding wheel, so that the deflected stream of water will act on them with greater force. K represents a gate or valve of elliptical form, having a circular opening in it corresponding with the interior of the cylinder B, slots  $k$ , through which the pins or bolts  $k^1$  pass, securing it to the rim or partition  $a$ , which forms its seat, and an enlargement,  $k^2$ , through which the shouldered bolt L, by which it is operated, passes, its shoulder being secured by a cap,  $a^2$ , on the outside of the cylinder A, through which it passes.

The operation is as follows: The valve K being closed, as shown in figs. 1 and 2, the water flowing into the meter, as indicated by arrows, is forced to pass through the wheels D, rotating the shaft C, and through it the registering mechanism, the helix H being so constructed that for every revolution of the shaft the wheel I will be turned one cog. If, however, it is found that the device is not registering correctly, by turning the screw L the valve K may be opened more or less, as shown in fig. 3, until the flow of water is accurately registered, the valve allowing more or less water to pass through the cylinder A without going through the wheels.

The device is so constructed that with ordinary pressure of water, if the gate K be closed and the whole body of water passed through the meter B, the action of the water on the wheels D will move the registering apparatus to an extent corresponding with the quantity of liquid passing through. In the event of excessive pressure, causing a greater acceleration in the motion of the wheels than in the flow of water, and thus tending to indicate a greater flow than actually occurs, the valve K may be slightly opened to permit so much of the liquid to pass clear of the meter as may be necessary to restore the necessary correspondence between the flow and the register, which may be tested by measurement whenever the apparatus is to be adjusted to any new place or pressure.

I have described my device exclusively as a water-meter, but it is evident that it may be used for measuring any kind of liquids, and by means of the valve may be made to register more accurately than any other device known to me. The meter may be made of any desired size, but by a slight change in construction a meter of the size represented in the drawings may be made to register the flow of a two-inch or larger pipe.

Having thus described my invention, the following is what I claim as new therein, and desire to secure by Letters Patent:



1. The valve K, constructed and operating in combination with the wheels D, substantially as described for the purpose set forth.
  2. The helix H, in combination with the shaft C, water-wheels D, and registering device, substantially as and for the purpose specified.
  3. The arrangement of the rims or partitions  $a a^1$ , water-wheels D, and valve K, substantially as described.
- To the above specification of my improvement in constructing fluid or liquid-meters, I have signed my hand this 19th day of June, 1867.

RICHD. H. ATWELL.

Witnesses:

E. F. M. FAENTZ,

A. M. FAENTZ.