

No. 804,417.

PATENTED NOV. 14, 1905.

B. LEZGUS.

WATER METER.

APPLICATION FILED APR. 6, 1905.

Fig. 1.

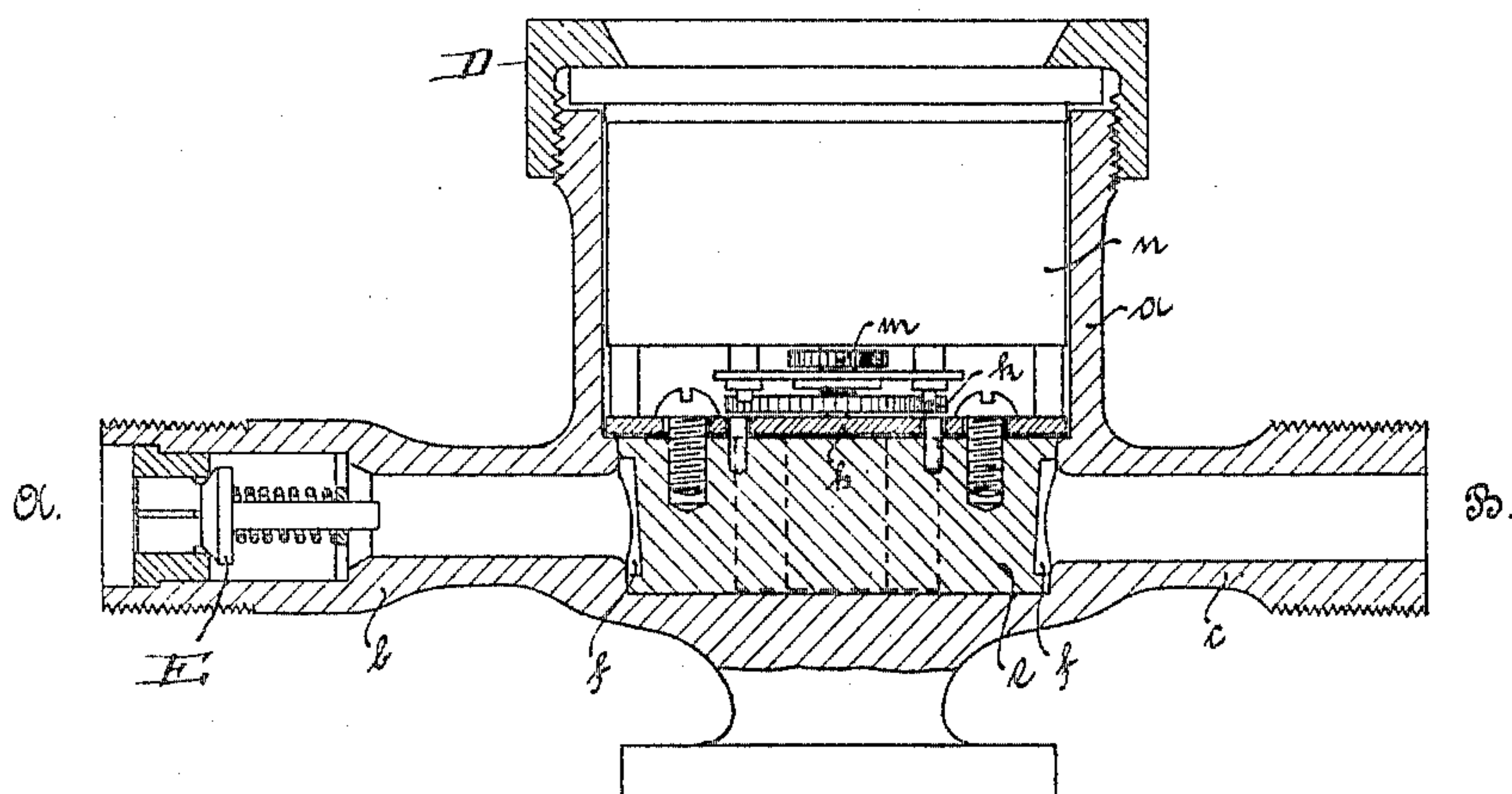


Fig. 2.

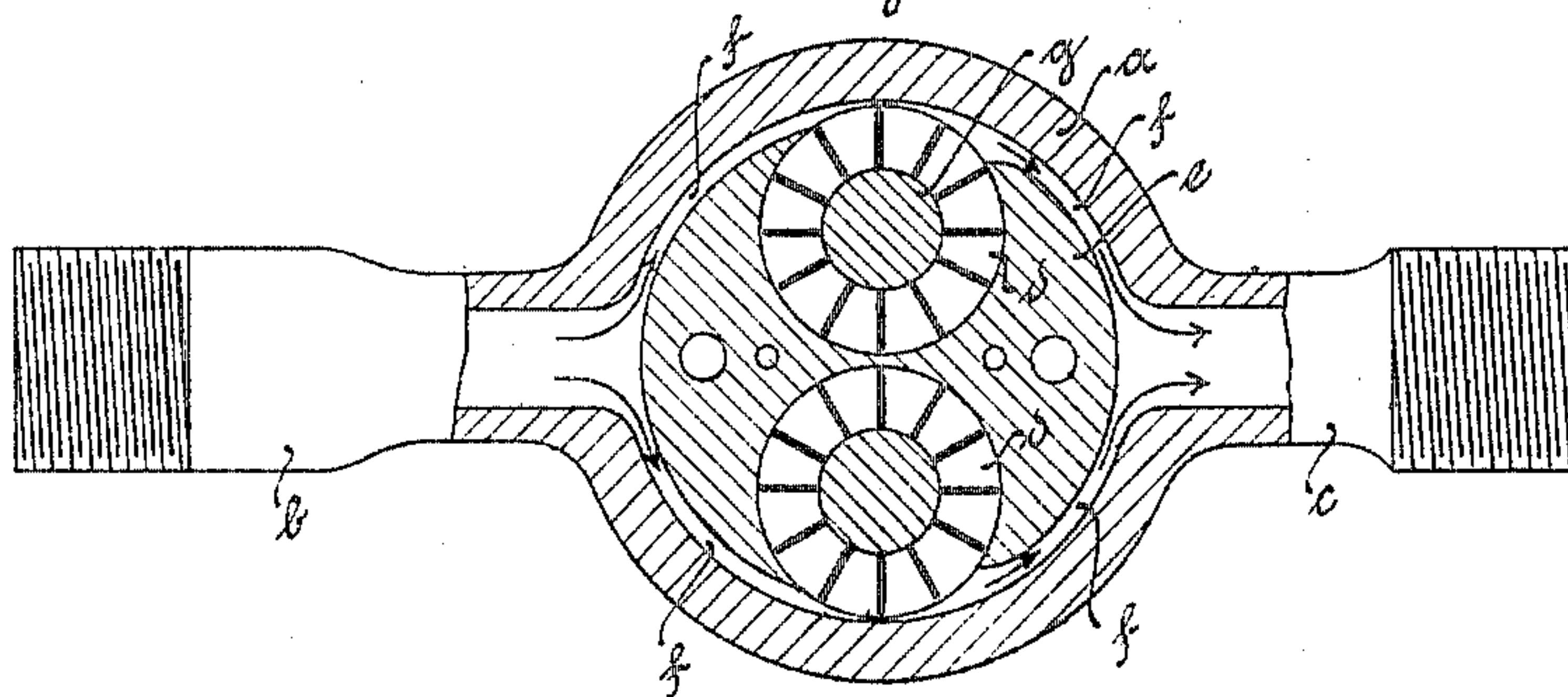


Fig. 3.

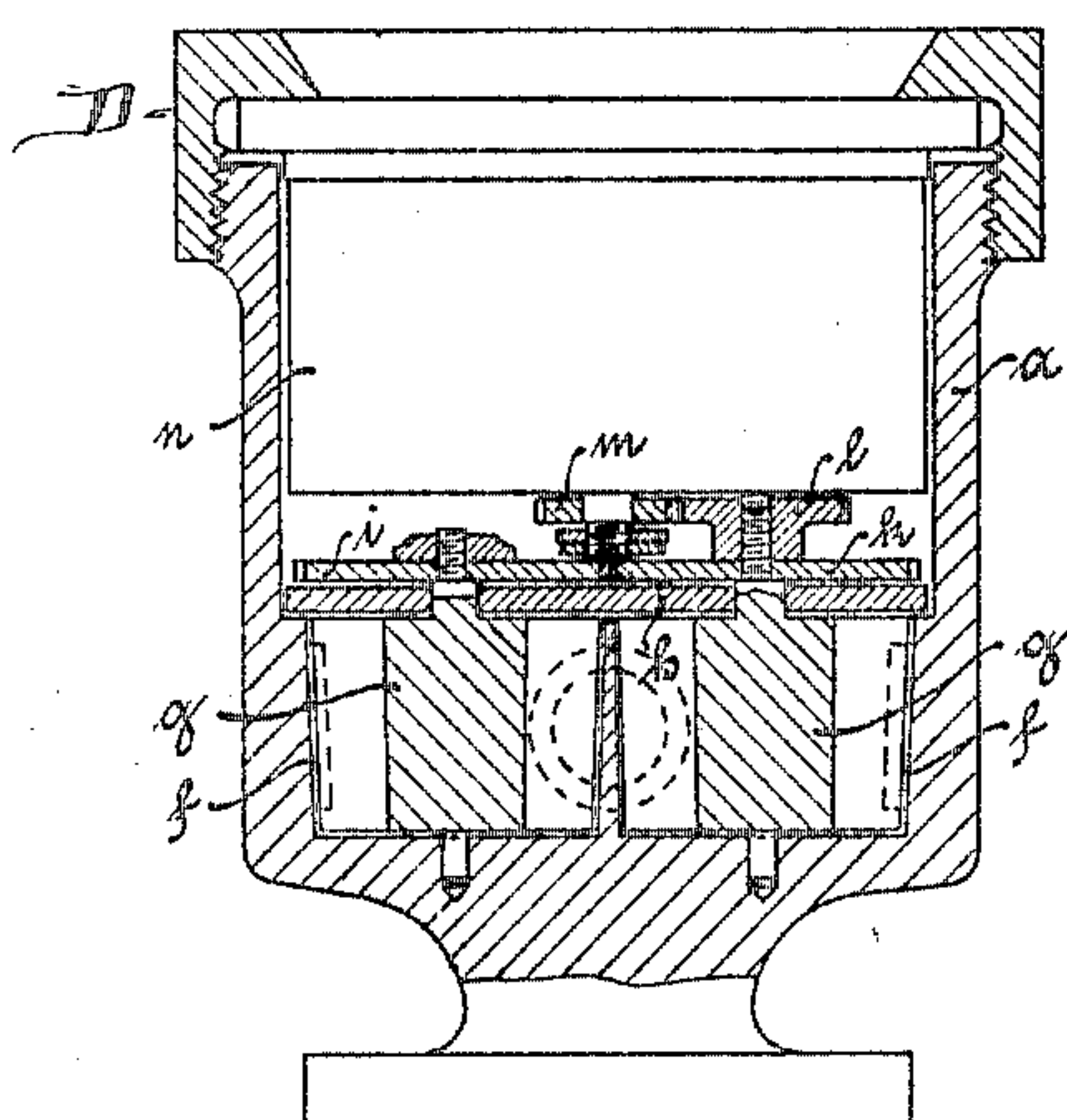
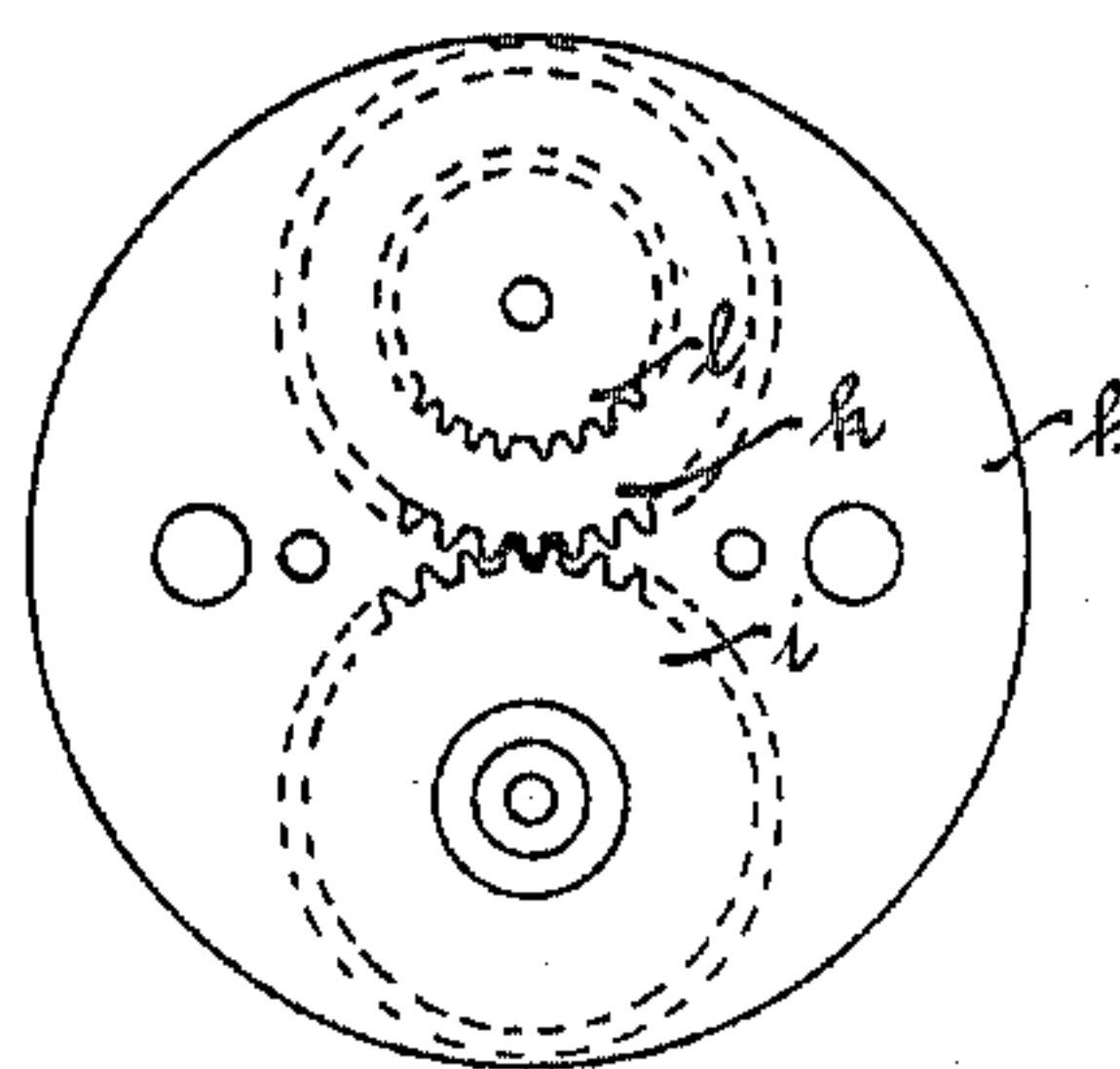


Fig. 4.



Witnesses:

H. K. Boulter

*[Signature]*

Inventor:

Louis Lezgus.

By *[Signature]* H. K. Boulter, attorney



# UNITED STATES PATENT OFFICE.

LOUIS LEZGUS, OF HAGEN, GERMANY.

## WATER-METER.

No. 804,417.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed April 6, 1905. Serial No. 254,195.

*To all whom it may concern:*

Be it known that I, LOUIS LEZGUS, a subject of the King of Prussia, German Emperor, residing at Hagen, Westphalia, Germany, have  
5 invented certain new and useful Improvements in Water-Meters, of which the following is a specification.

This invention relates to a water-meter having a divided passage for the water and two  
10 paddle-wheels coupled together.

Well-known water-meters have the drawback that when the supply-cock is open only to a slight extent—that is to say, when the pressure is only small and the speed of flow  
15 also small—they give false indications. This fault goes so far that the meters sometimes stand quite still while there is water flowing through them. In some constructions this is due to the fact that the paddle-wheels  
20 have too much play in the casing or are arranged too far away from the water-inlet and that the water is deviated too much from the direction it had at the admission. In other constructions in which a closed casing is employed the paddle-wheels are without a canal  
25 for a distance greater than half the circumference, this being necessary on account of the filling and draining of the chambers. It happens then that two adjoining chambers  
30 are filled simultaneously and the paddle-wheel is caused to rotate backward, as, owing to the missing resistance of the measuring apparatus, it runs easier.

In the apparatus according to this invention  
35 there is absolutely no filling of paddle-wheel chambers, water is supplied by means of two canals of rectangular cross-section to two paddle-wheels positively connected together in which at the outside only a quarter of the  
40 circumference is lying free, and the jets of water strike the vanes at right angles. As definite quantities of water correspond to definite speeds of flow of water, the said quantities of water rotating the paddle-wheels  
45 ways with definite speeds, the measurement takes place without the filling of the chambers between the vanes by the number of the revolutions of the wheels. In dividing the water admitted there is the advantage that  
50 shocks taking place in the water-pipe are considerably reduced by the sudden change of direction before admission and by the great friction in the flat admission-canals to the paddle-wheels, so that they exercise only a  
55 small influence on the paddle-wheels.

In the accompanying drawings, Figure 1 is

a longitudinal section; Fig. 2, a section on A B; Fig. 3, a cross-section, and Fig. 4 a plan of a detail.

In a casing *a*, having a cover *D* screwed  
60 therein and also having an inlet branch *b* and an outlet branch *c*, is secured an insertion *e*, provided with two round holes *d*. This insertion *e* is provided at the circumference with a circular groove *f*, which, together with the  
65 wall of the casing, forms rectangular canals for admission and discharge of water.

*E* indicates a check-valve located in the inlet branch *b*.

In the holes *d* are arranged paddle-wheels  
70 *g*, the vanes of which are struck by the water-jets, the said wheels being mounted on spindles which are supported at the bottom in the casing *a* and at the top in a covering-plate  
75 *h*, screwed on the insertion *e*.

To the inwardly-extending portions of the  
spindles of the wheels *g* are secured toothed  
wheels *i* and *k* of equal size, which engage  
with each other, so that both wheels *g* must  
always rotate simultaneously and at the same  
80 speed. To the toothed wheel *k* there is connected a smaller wheel *l*, engaging with the wheel *m*, mounted on the driving-spindle of the registering apparatus *n* of the well-known  
85 construction, mounted in the upper portion of the casing *a*.

The working of the measuring apparatus is as follows: On entering, water is divided in the casing *a* into two separately-flowing currents and flows in the direction of the arrows  
90 in Fig. 2 direct against the vanes of the paddle-wheels *g*, whereby the latter are turned without the chambers being filled with water. The currents of water escape on the other side of the paddle-wheels, as indicated by the arrows,  
95 and again join together in the discharge branch *c*. The rotating motion of the paddle-wheels is transmitted by the toothed wheels *i* and *k* and *l* to the driving-wheel *m* of the registering apparatus *n*.  
100

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

1. In a water-meter the combination of a casing having inlet and outlet ports axially arranged on opposite sides thereof, a recessed  
105 insertion fitting within the casing and formed with a circumferential groove communicating with the inlet and outlet ports, paddle-wheels mounted in recesses of said insertion symmetrically to the axis of the casing and extending  
110 across the circumferential groove of the insertion, means for insuring the simul-



taneous rotation of the paddle-wheels, and means for registering the number of rotations of the said wheels.

2. In a water-meter the combination of a  
5 casing having inlet and outlet ports axially arranged on opposite sides thereof, a cylindrical recessed insertion fitting within the casing and formed with a circumferential groove of rectangular section communicating with the  
10 inlet and outlet ports, paddle-wheels of equal diameter mounted in the recesses of said insertion symmetrically to the axis of the casing and extending across the circumferential groove of the insertion, means for insuring  
15 the simultaneous rotation of the paddle-wheels and means for registering the number of rotations of the said wheels.

3. In a water-meter the combination of a cylindrical casing  $\alpha$  having inlet and outlet

ports axially arranged on opposite sides thereof, a cylindrical insertion  $e$  fitting within the casing  $\alpha$  and formed with a circumferential groove  $f$  of rectangular section communicating with the inlet and outlet ports, paddle-wheels of equal size mounted in the recesses  
25  $d$  of the insertion  $e$  symmetrically to the axis of the casing and extending across the circumferential groove  $f$  of the insertion  $e$ , means for insuring the simultaneous rotation of the paddle-wheels and means for registering the  
30 number of rotations of the said wheels.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS LEZGUS.

Witnesses:

OTTO KÖNIG,

J. A. RITTERSHAUS.