S. L. McADAMS.

WATER METER.

APPLICATION FILED AUG. 23, 1907.

905,906. Patented Dec. 8, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

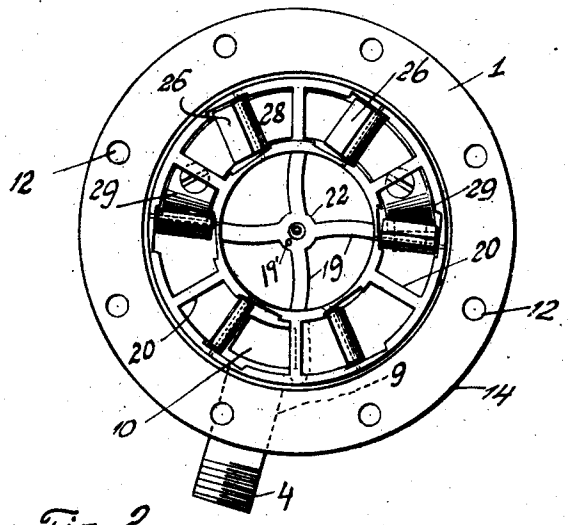


Fig. 2.

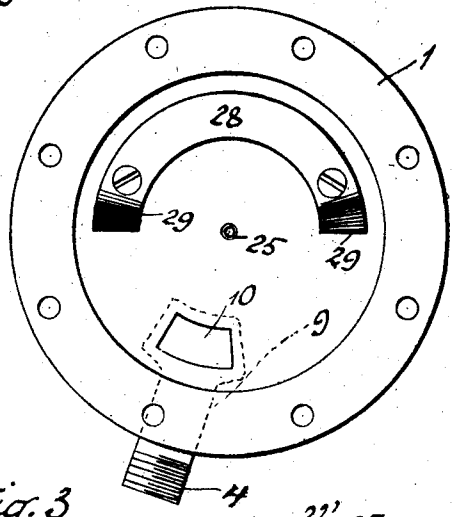
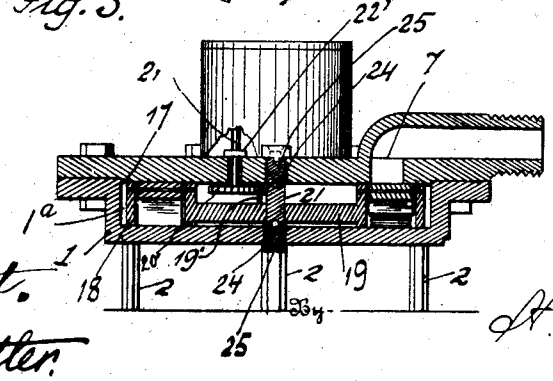


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

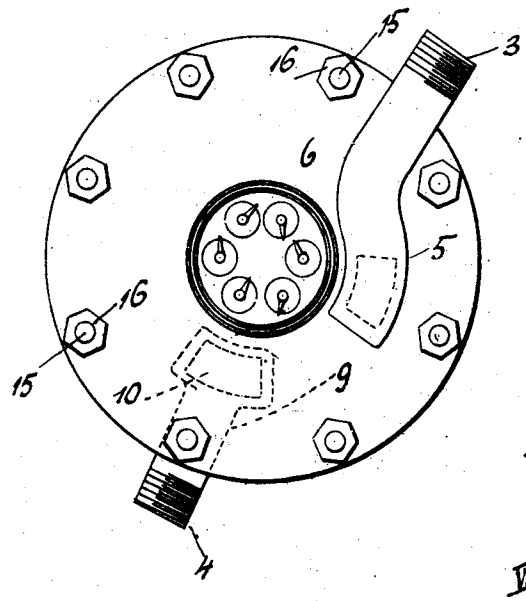


Fig. 5.

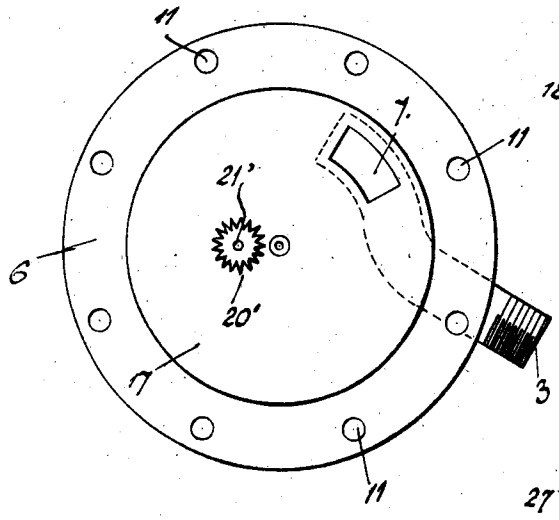
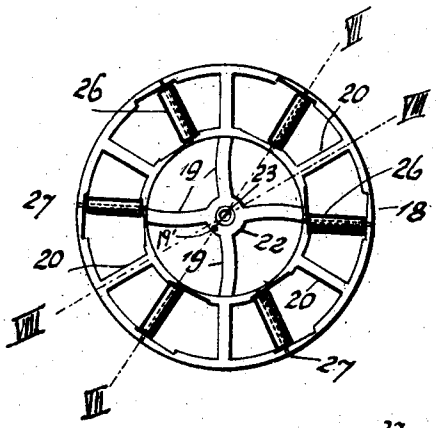


Fig. 6.



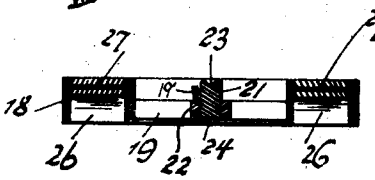


Fig. 7.

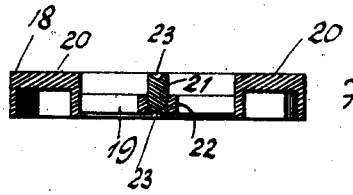


Fig. 8.

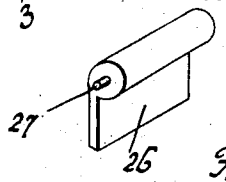


Fig. 9.

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UNITED STATES PATENT OFFICE.

SYLVESTER L. McADAMS, OF BEAVER FALLS, PENNSYLVANIA.

WATER-METER.

No. 905,906. Specification of Letters Patent. Patented Dec. 8, 1908.

Application filed August 23, 1907. Serial No. 389,886.

To all whom it may concern:

Be it known that I, SYLVESTER L. McADAMS, a citizen of the United States of America, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Water-Meters, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to water meters and has for its object to provide a device of such class which shall be simple in construction, strong, durable, efficient in its use, inexpensive to manufacture and wherein friction is reduced to a minimum during the registering operation.

Describing the invention in detail reference is had to the accompanying drawings wherein like reference characters denote corresponding parts throughout the several views and in which:—

Figure 1 is a plan of a water meter in accordance with this invention with the cover plate removed. Fig. 2 is a like view with the turbine wheel removed. Fig. 3 is a cross sectional view of the meter. Fig. 4 is a top plan. Fig. 5 is an inverted plan of the cover plate. Fig. 6 is a plan view of the turbine wheel. Fig. 7 is a cross section on line VII—VII of Fig. 6. Fig. 8 is a like view taken on line VIII—VIII of Fig. 6. Fig. 9 is a perspective view of one of the blades of the turbine wheel.

Referring to the drawing in detail, 1 denotes a cup-shaped member provided with a laterally extending annular flange 14, the member 1, said member and cover plate conis closed through the medium of the cover plate 6. The plate 6 is formed with a series of openings 11 which are adapted to register with the openings 12 formed in the flange 14 and through the said alining openings extend bolts 15 carrying nuts 16, said bolts and nuts securing the cover plate to the member 1, said member and cover plate constituting a casing for a turbine wheel to be hereinafter referred to. The member 1 is supported upon the legs 2, these latter being suitably connected with said member. The cover plate 6 is formed with a segment-shaped slot 7 which establishes communication between the chamber 1^a and a segment-shaped enlargement 5 which is formed integral with or otherwise connected to the outer face of the plate 6. The segment-shaped hollow enlargement 5 terminates in a tangentially extending inlet pipe 3 which is adapted to communicate with a motive fluid supply. The member 1 is formed with a segment-shaped slot 10 which is arranged at substantially right angles with respect to the slot 7, the said slot 10 communicating with an outlet pipe 4 through the medium of a hollow enlargement 9 which depends from the lower face of the member 1.

The inner face of the cover plate 6 is formed with a circular depending portion 17 and between the said portion 17 and the bottom of the member 1 is positioned a double-rimmed turbine wheel 18, the rims of the wheel being connected together by radially disposed ribs 20 arranged at the top thereof. The hub of the wheel is indicated by the reference character 22 and is connected to the inner rim by the spokes 19. The hub 22 is fixedly connected to a shaft 21 having each end thereof formed with a seat 23 in which is mounted a bearing ball 24, the said balls being retained in position through the medium of adjustable screw threaded plugs 25, one of which extends through the cover plate 6 and the other of which through the bottom of the member 1.

Mounted adjacent to each one of the ribs 20 is a blade 26 which is pivotally connected to a pin 27, the latter being secured to the rims of the wheel 18. The latter is suspended within chamber 1^a and the length of the blades 26 is greater than the depth of the chamber 1^a so that during the revolving of the turbine wheel the blades 26 will travel on the bottom of the chamber. Secured to the bottom of the chamber 1^a is an arched shaped elevating member 28 having angularly disposed ends 29 which are inclined with respect to the body portion of the member and upon said member the plates 26 are adapted to travel, the inclined ends 29 facilitating the riding on and off of the blades 26. The elevating member 28 is positioned upon the bottom of the chamber opposite outlet port 10 as clearly shown in Fig. 2.

Projecting laterally from the hub 22 is a pin 19′ which is adapted to engage the teeth of a star wheel 20′ which is interposed

between the wheel 18 and the lower face of the cover 6. The star wheel 20′ is supported by a shaft 21′ which extends upwardly through the cover 6 and into a stuffing box 22′ mounted on the outer face of the cover 6. The shaft 21′ is adapted to operate a recording mechanism of a conventional form and which may be secured upon the cover 6.

The operation of the device is as follows: Motive fluid being supplied to the chamber 1^a through the slot 7, it impacts against the blades 26, these latter hanging in the position shown in Fig. 3 of the drawings. As the blades 26 are longer than the depth of the chamber 1^a it is impossible for these blades to be swung forward and as the water impacts with these blades it causes the revolving of the turbine wheel 18. During the rotation of the wheel 18 the water which is behind the blades 26 as these latter pass over the slot 10 will be discharged through the said slot and out through the port 4. As the wheel rotates the blades will be elevated by the member 28 and close the water zones between the rims of the wheel. When the blades move off the member 28 they assume an inclined position and are then impacted upon by the incoming fluid. During the rotation of the turbine wheel 18 the pin 19′ engages the teeth of the star wheel 20′ actuating the latter and thereby operating the recording mechanism so as to register the volume of water which passes through the meter.

While I have herein illustrated the preferred manner of constructing the meter, yet it is to be understood that changes, variations and modifications can be inserted which come within the scope of the claims hereto appended.

What I claim is:

1. A water meter comprising a casing constituting a turbine wheel chamber and having a tangentially-extending inlet and outlet, a turbine wheel mounted in said chamber and provided with an inner and an outer rim and hub, a plurality of spokes for connecting the inner end to the hub, a plurality of spokes for connecting the inner and outer ends together, pivoted blades of a length greater than the depth of the chamber, said blades carried by the wheel between its rims and adapted to be impacted upon by incoming motive fluid, thereby revolving the wheel, and said blades of greater width than the length of those spokes connecting the rims together, said rims provided with cut-away portions for the increased width of the blades, and means for elevating said blades to position them in an inactive position during the rotation of the wheel.

2. A water meter comprising a casing embodying a cup-shaped member and a cover plate, said cup-shaped member constituting a chamber for a turbine wheel, said cover provided with a tangentially-extending inlet and said member with a tangentially-extending outlet, a turbine wheel rotatably-mounted in said chamber and embodying an inner and an outer rim and a hub, a plurality of spokes for connecting the rim to the hub, a plurality of spokes for connecting the outer and inner rims together, pivoted blades of a length greater than the depth of the chamber, said blades carried by the wheel between its rims and adapted to be impacted upon by the incoming motive fluid thereby revolving the wheel, and said blades of greater width than the length of the spokes connecting the rims together, said rims provided with cut-away portions for the increased width of the blades, and means for successively elevating said blades thereby shifting them to an inactive position.

3. A water meter comprising a casing embodying a cup-shaped member and a cover plate, said cup-shaped member constituting a chamber for a turbine wheel, said cover provided with a tangentially-extending inlet and said member with a tangentially-extending outlet, a turbine wheel rotatably-mounted in said chamber and embodying an inner and an outer rim and a hub, a plurality of spokes for connecting the rim to the hub, a plurality of spokes for connecting the outer and inner rims together, pivoted blades of a length greater than the depth of the chamber, said blades carried by the wheel between its rims and adapted to be impacted upon by the incoming fluid thereby revolving the wheel, and said blades of greater width than the length of the spokes connecting the rims together, said rims provided with cut-away portions for the increased width of the blades, and an elevating plate carried by said member and adapted to successively shift the blades to an inactive position, said elevating plate having angularly-disposed ends.

4. A water meter comprising a casing constituting a turbine wheel chamber and having a tangentially-extending inlet and outlet, a turbine wheel mounted in said chamber and provided with an inner and an outer rim and hub, spokes for connecting the inner rim to the hub, spokes for connecting the outer and inner rims together, pivoted blades of a length greater than the depth of the chamber, said blades carried by the wheel between its rims and adapted to be impacted upon by incoming motive fluid, thereby revolving the wheel, and said blades of greater width than the length of those spokes connecting the rims together, said rims provided with cut-away portions for the increased width of the blades, means for elevating said

blades to position them in an inactive position during the rotation of the wheel, bearings for supporting said wheel within said chamber, a registering mechanism, and means actuated by the turbine wheel and engaging with said mechanism for operating it.

In testimony whereof I affix my signature in the presence of two witnesses.

SYLVESTER L. McADAMS.

Witnesses:
MAX H. SROLOVITZ,
C. A. RENZIEHAUSEN.