

No. 869,841.

PATENTED OCT. 29, 1907.

N. W. HARTMAN.
WATER METER.

APPLICATION FILED MAY 22, 1905.

2 SHEETS—SHEET 1.

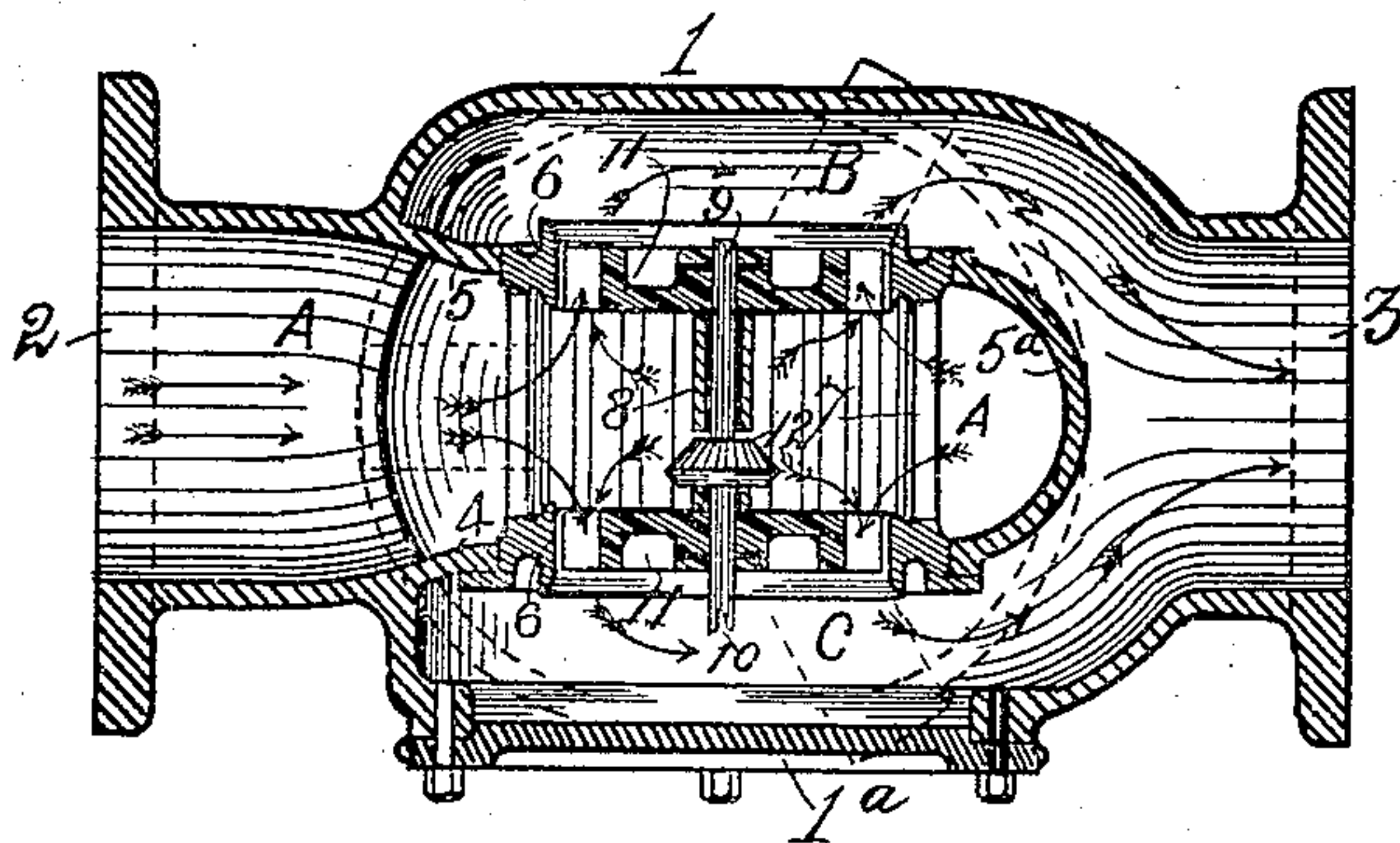


Fig. 2.

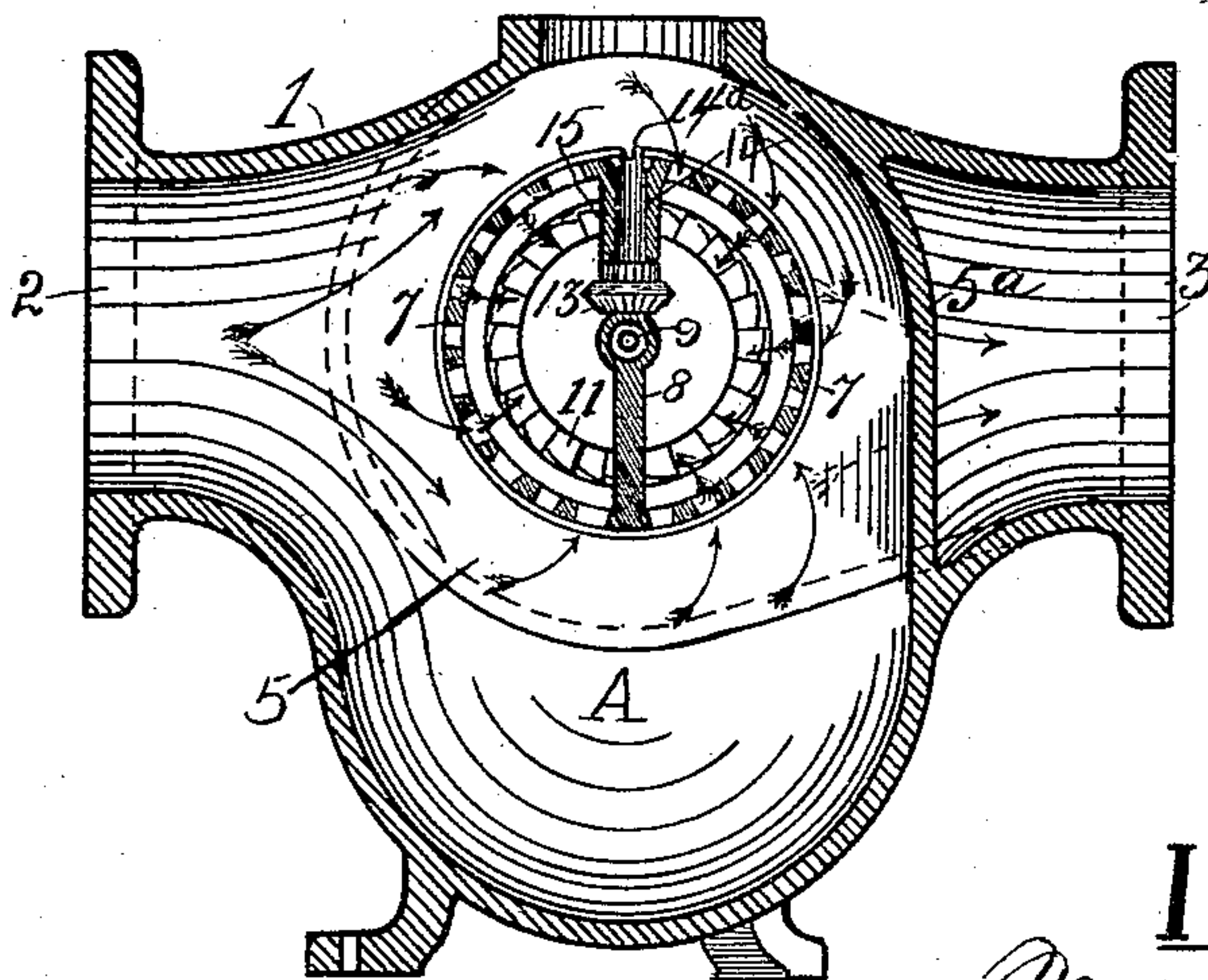


Fig. 1.

Witnesses:
M. L. Marks.
Ira B. Sessions

Inventor:
Noble W. Hartman,
By *Alfred Hall*
His Atty.

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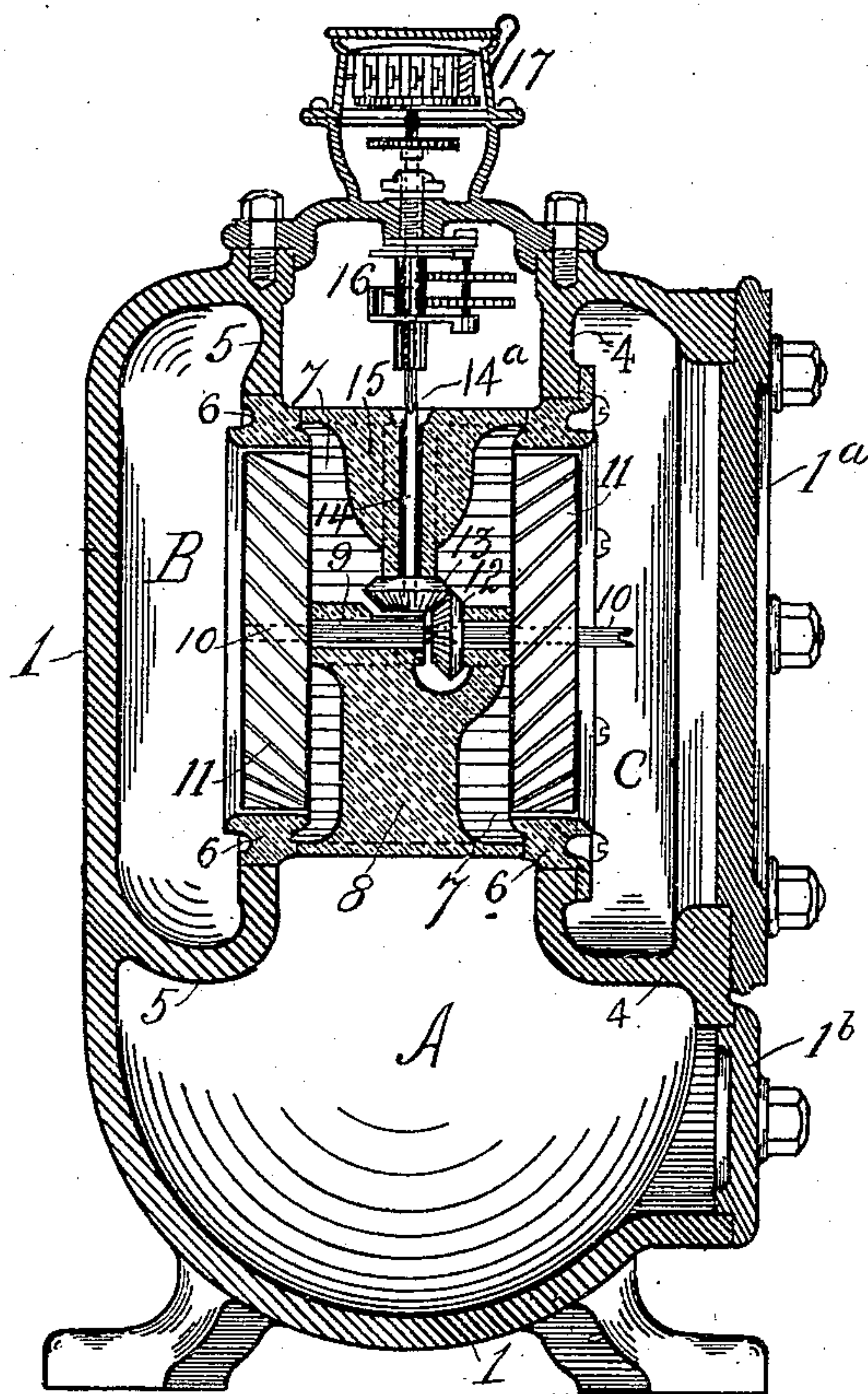


Fig. 3.

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Inventor:

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By Simon Hall His Atty.

UNITED STATES PATENT OFFICE.

NOBLE W. HARTMAN, OF TOLEDO, OHIO, ASSIGNOR TO CLYDE J. SPEAR, OF TOLEDO, OHIO.

WATER-METER.

No. 869,841.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed May 22, 1905. Serial No. 261,496.

To all whom it may concern:

Be it known that I, NOBLE W. HARTMAN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Water-Meters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to meters for liquids and its object is to provide a construction which shall be simple durable accurate and efficient.

A further object of my invention is to provide a construction by means of which the registering mechanism may be placed either upon the top of the meter-casing or at its side so that the meter may be conveniently read in whatsoever position it may be placed.

A further object of my invention is to so arrange the parts of my meter that they may be quickly and easily assembled or taken apart for inspection repairs cleansing and the like.

I attain these objects by means of the devices and arrangement of parts hereinafter described and shown, and illustrated in the accompanying drawings, in which

Figure 1 is a central sectional vertical view of my device; Fig. 2 a central sectional horizontal plan-view, and Fig. 3 a central sectional vertical view taken at a right-angle to the view in Fig. 1.

In the drawings, 1 is a meter-casing, preferably of cast iron, having a flanged inlet 2 and a flanged outlet 3, the flanges of these two openings being adapted for connection with the line of pipe for conveying the fluid to be measured. Extending across the interior of the meter-casing, from one side nearly to the other, are two vertical parallel partitions 4—5 which may be cast integral with the casing. The inner vertical margins of these partitions are united by a curved cross-wall 5^a. The walls of the casing and the two partitions divide the interior of the casing into three principal chambers, A, the middle chamber, and B and C the outer chambers. In these partitions are corresponding opposed round holes. Fitting tightly into the two holes are the ends of a bronze casting 6 which is in the form of an open-work horizontal cylinder forming a screen 7. The chamber A between the two partitions 4—5 receives from the inlet 2 and, passing through the cylindrical sides of the screen 7, discharges laterally into the other two chambers, B—C, which lead into the outlet 3.

Cast integral with the screen is an internal bracket 8 which supports, in bearings 9, preferably of vulcan-

ized rubber, a spindle 10. Upon the outer extremities of the spindle are fixed two turbines 11, right and left hand respectively, which revolve in the circular openings in the ends of the cylindrical screen 6. On the spindle 9 is a miter-gear 12 which engages a corresponding gear 13 on shaft 14, journaled in depending bracket 15, formed with or secured to the cylindrical casting 7. The upper end of the shaft 14 is notched or otherwise adapted, as at 14^a, for engagement with the driving shaft of a train of gears 16 which, in the usual manner, is connected with and actuates a registering mechanism 17 of any desired construction.

In one side of the casing is a large opening through which the screen, turbines, shafts and gears, above described, may be introduced into place. This opening is closed by means of a flanged plate 1^a secured in place by suitable bolts and nuts. The casing is also provided with a waste opening near its bottom which is closed by means of a waste-cap 1^b.

The outer extremity of the shaft 10 is notched or otherwise adapted for engagement with the shaft of a train of gears, like the train 16, mounted upon the inner side of the plate 1^a and arranged to actuate a suitable registering mechanism mounted upon the outer side of said plate, as will be understood without further illustration.

The operation of my meter is as follows: The casing being connected up with the line of pipe which conveys the liquid to be measured, and the working parts of the meter being assembled in operative relation, as shown and described, liquid entering the casing through opening 2 passes into the chamber A between the two partitions 4—5 and thence through the walls of the cylindrical open-work screen 7 into the interior of the screen. Here the stream divides, flowing laterally in opposite directions, in approximately equal volumes, actuating the turbines as it flows through their vanes into the chambers B—C between the partitions and the walls of the casing. From these chambers the liquid flows through outlet 3, into which the chambers B—C converge. The course of the liquid through the meter is clearly indicated by the arrows in Figs. 1 and 2.

The advantages of my construction over those meters in which one or more water-wheels or turbines, horizontally disposed, are employed are that in my meter the two turbines are vertically disposed, and thus the weight of the water superimposed upon their edges and the resulting friction upon the bearings of the turbines are reduced to a minimum. Again, the chamber A is so formed in relation to the turbines that the greater volume of water enters through the screen 7 from below, the superior upward pressure tending to relieve the bearings of the weight of the turbines and to further reduce the friction and wear of these bearings.

Having described my invention, what I claim and desire to secure by Letters Patent is—

1. In a fluid meter, a casing having two partitions there-
in which divide the interior of the casing into three prin-
cipal chambers, said casing having an inlet opening which
5 leads into the middle chamber and having an outlet open-
ing leading from said two other chambers, a cylindrical
open-work screen having its ends disposed in corresponding
opposed openings in said partitions, a bracket disposed
10 within the screen, a spindle journaled in the bracket, a
right hand turbine on one end of said spindle disposed in
one of the openings in the partitions, a left hand turbine
on the other end of the spindle in the other of said open-
ings, and means for operatively connecting a registering
15 mechanism with the spindle.
2. In a fluid meter, a pair of vertically disposed re-
versed turbines, means for directing the liquid to be
measured in between said turbines and out through the
turbines, a registering mechanism, and connections inter-

mediate the turbines and the registering mechanism com-
bined with a cylindrical open-work screen in the opposite
ends of which said two turbines revolve.

3. In a fluid meter, a casing having at top a removable
cap and having at one side a removable closure, a pair of
reverse turbines, means for directing the liquid to be
measured in between the turbines and out through the
turbines, a spindle upon which said turbines revolve and
having an extension in the direction of said closure adapt-
ed for connection with a train of gearing, and a counter-
spindle engaged with said first mentioned spindle and hav-
ing its upper end projected in the direction of said cap and
adapted for engagement with a train of gearing.

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

NOBLE W. HARTMAN.

Witnesses:

LOUIS SKRAUSEWFKY,
M. L. MARKS.