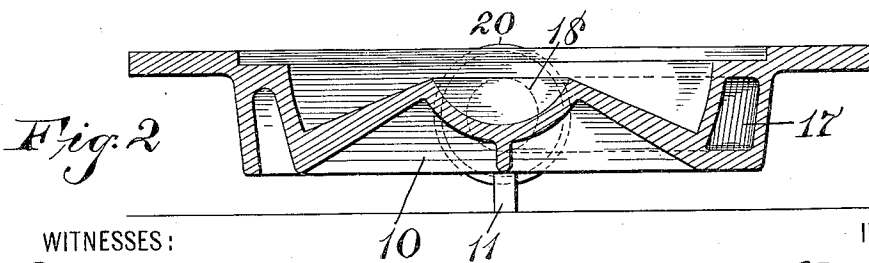
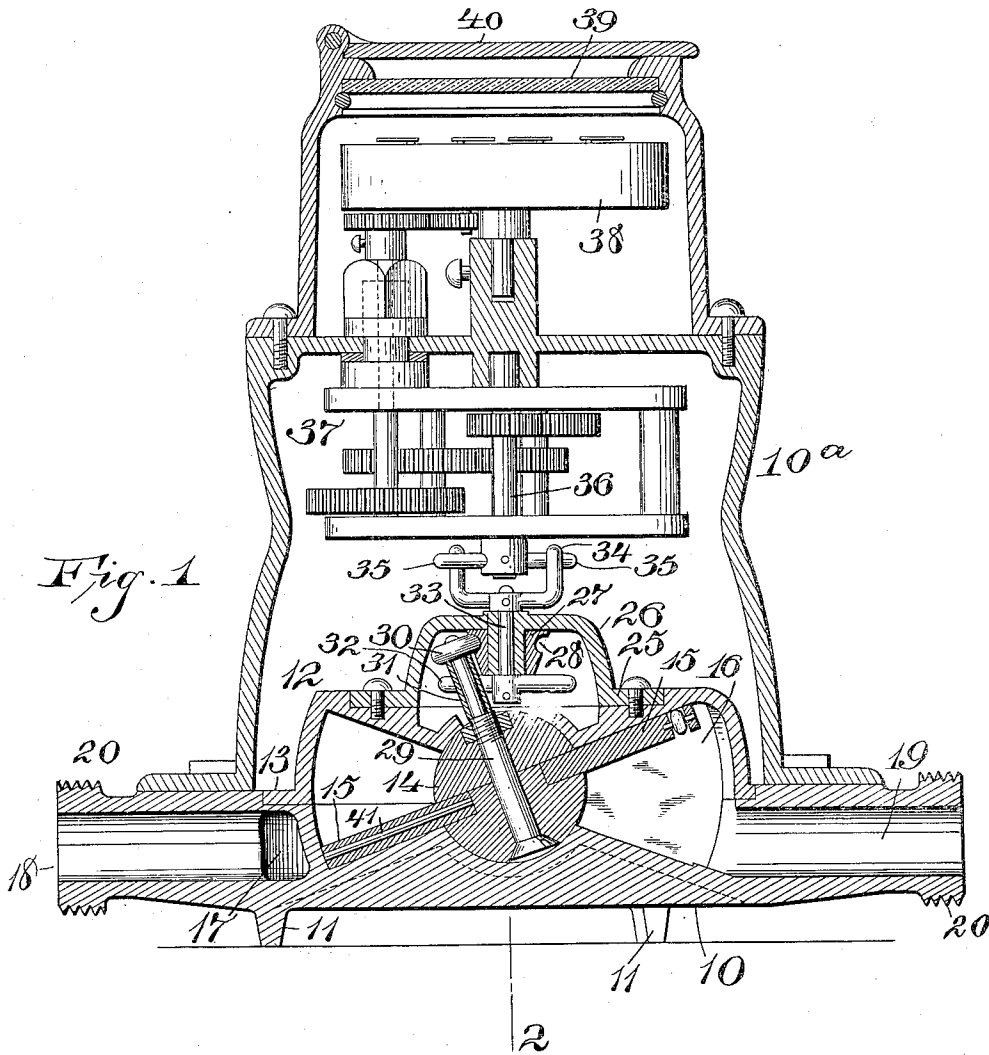


No. 884,650.

PATENTED APR. 14, 1908.

H. FREDRICK.
DISK WATER METER.
APPLICATION FILED DEC. 22, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

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R. Johnson

INVENTOR

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2 SHEETS—SHEET 2.

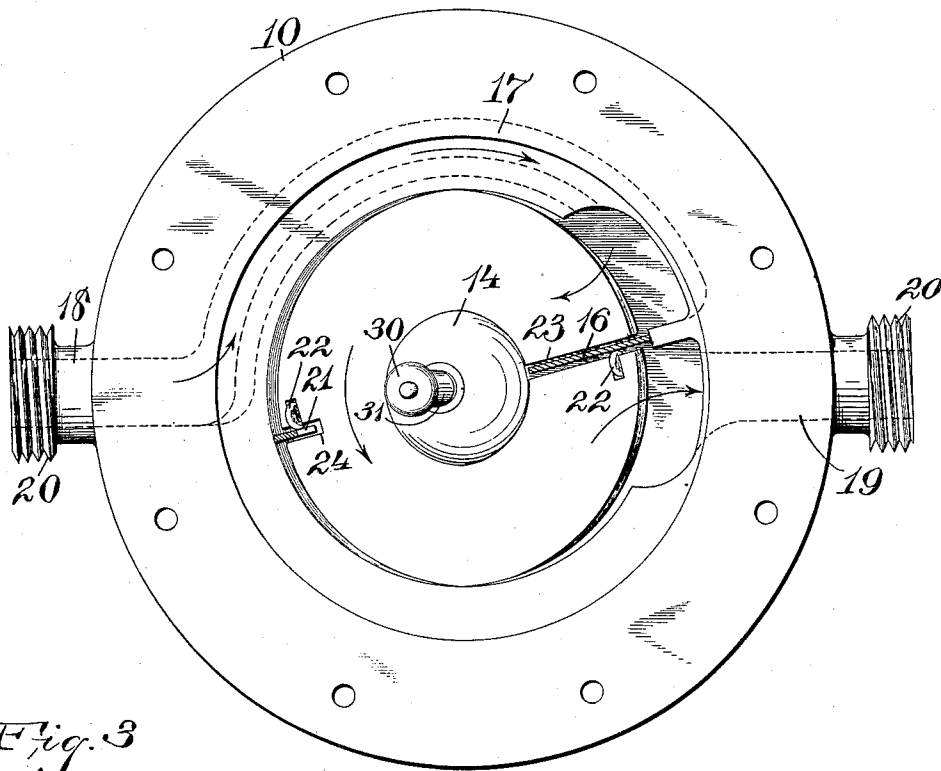


Fig. 3

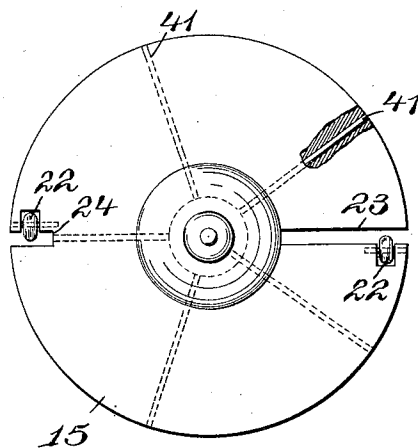


Fig. 4

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UNITED STATES PATENT OFFICE.

HENRY FREDRICK, OF NEWARK, NEW JERSEY.

DISK WATER-METER.

No. 884,650.

Specification of Letters Patent.

Patented April 14, 1908.

Application filed December 22, 1906. Serial No. 349,015.

To all whom it may concern:

Be it known that I, HENRY FREDRICK, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Disk Water-Meters; and I do hereby 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 letters of reference marked thereon, which form a part of this specification.

This invention relates to a water meter, and is particularly adapted to measure a fine stream passing through a pipe, is extremely sensitive, being built so that the disk in the meter will not stick, and is also designed to provide a meter that has a small number of parts and consequently there are less joints requiring finishing to make them water tight, and it is also easier to assemble the meter, and there are less crevices for the accumulation of dirt and grit.

This invention is an improvement on the style of water meter described and illustrated in my Patent No. 818,430 of April 24, 1906, and the improvement lies in a new base portion that has the passages for the water integral in the base portion, and also provides for an easier running connection between the gearing of the registering mechanism and the disk.

Another new feature of this meter is the construction of a web approximately diametrically opposed to the dividing partition of the disk chamber, and antifriction bearings between the disk and the opposed sides of the partition and the web to prevent binding of the disk on the partition or web when the disk is tilted, and the disk is also made of rubber in a way to prevent its being warped.

The invention is illustrated in the accompanying drawings, in which

Figure 1 is a central vertical section of the meter with the registering mechanism in elevation. Fig. 2 is a section of the base portion on line 2 in Fig. 1. Fig. 3 is a top view of the base portion with the disk in place, the partition and web of the disk chamber being shown in section, and Fig. 4 is

a plan of the disk partly broken away at one point to show the stiffening or anti-warpage feature.

In this improved meter I employ a base portion 10 that is preferably cast and with indentations at all suitable points so as to lighten it without weakening the structure, and this base portion is supported on the feet 11. A cover 12, with the flanges 13, sits down on the top of the base portion and forms, with the central portion of the base portion, a disk chamber in which moves, in the manner usual to these disk meters, a disk 15 supported by the ball 14 which is held between the cover 12 and the central portion of the base portion 10. At a suitable point in the disk chamber is arranged a partition 16, shown in Figs. 1 and 3, this partition causing the water to go around in the disk chamber to move the disk, the water coming in through the inlet passage 17 which is cast directly into the base portion 10, and is connected with the inlet port 18. The water passing through the inlet port 18 passes around through the passage 17 to the other side of the meter, and following the course of the arrows in Fig. 3, it actuates the disk 15, and passing around the partition 16, runs out through the outlet port 19. The inlet port and the outlet port have suitable screw-threads 20 on their exterior for attaching the meter to a pipe line.

It has been found that in the gyrations of the disk, and when it tilted at right angles to the partition, there is apt to be a binding if there is a very small volume of water passing through the meter, and consequently having little force. This has also been present when rolling bearings have been employed on both sides of the partition, and in order to overcome this difficulty, I have installed a web 21 projecting into the disk chamber approximately opposite the partition 16, this web not projecting into the disk chamber far enough to interfere with the free flow of the fluid. Bearing on one side of the web and on the opposite side of the partition, are a pair of rollers 22, these rollers being given plenty of room for operation by reason of the slots 23 and 24, for the partition 16 and the web 21 respectively. These rollers are preferably placed on the side from which the flow is ap-

proaching, and thus take up the thrust and allow a free action of the disk under all conditions.

Sitting on top of the cover 12 is a cap 26 which has the flange 25, by means of which it is secured to the cover 12. The cap when placed in position is centered in its relation to the disk, and when placed in position is fixed with this relation in mind and irrespective of the registering mechanism to be hereinafter described. This cap is of a somewhat dome like shape, and has a central depending lug to which is secured a conical block 27 which has a peripheral groove 28. The screw or post 29 passing through and projecting from the ball 14 of the disk, is provided, on its end, with a roller 30 which, when the disk is operated, rolls around in the groove 28, and the portion 31 which is preferably a rotating sleeve, engages one of the arms 32 which is fastened to the shaft 33, and on the top of this shaft 33, the projecting arms 34 engage another set of arms 35 which are secured to the driving shaft 36 of a train of gearing 37. This whole structure is incased in a suitable casing 10^a, and any suitable connection is used to transmit power to a suitable registering mechanism 38 which can be read through the sight glass 39, the whole being adapted to be covered, in the usual way, by a lid 40. It will be seen from Fig. 1 particularly, that a very easy running device is constructed, and that the roller 30 running in the groove 28 makes a very easy running device, and this coupled with the rollers on the partition and the small web, in the disk chamber, will allow the disk to be tilted under the very slightest pressure.

When water meters of the disk type are placed in positions in proximity to boilers and similar structures, the heat travels back along the feed pipe, if not much water, or no water at all is being used, and heats up the water in the meter, and one heating of this kind is liable to warp the disk, as it is made of hard rubber in most cases, and is easily made mis-shapen. I insert, when molding this disk 15, radial wires or small rods 41 which tend to hold the disk perfectly flat, do not make it too heavy, and will at all times keep the disk stiff.

I wish to emphasize the fact that the roller 30, running around in the groove 28 of the block 27, assists in holding down the ball and taking the wear off the upper surface on which the ball 14 rotates. It has been found, in water meters of this class, that the wear on the top of the ball is greater than on the bottom, and this wheel 30, running in the groove, assists in counteracting the tendency of the ball and the disk to ride upward.

Having thus described my invention, what I claim is:—

1. An improved water meter comprising a

base portion having a cover thereon to form a disk chamber, the base portion being made of one piece and having an inlet port and an outlet port, one of the ports opening directly into the disk chamber, the base portion having a passage to conduct water from the other port to the disk chamber at a point adjacent to the first port, a partition in the disk chamber, a disk and its ball in the disk chamber, a casing on the top of the base portion, a registering mechanism therein, and an operative connection between the disk and the registering mechanism.

2. In an improved water meter, a base portion made of one piece and being formed in its center to receive a disk and its ball and thereby form the bottom portion of a disk chamber, the base portion having a port on one side leading directly to the disk chamber, and having a second port on the opposite side, the base portion having a passage arranged to connect the second port with the disk chamber at a point adjacent to the first port.

3. An improved water meter comprising a base portion having a central recess to receive a disk and its ball, the base portion having diametrically arranged inlet and outlet ports, the base portion also having a passage concentric to the recess connecting one of the ports to the disk chamber at a point adjacent to the other port, a cover on the base portion forming a disk chamber with the recess, a partition between the connections of the ports with the disk chamber, a disk and its ball in the disk chamber, a web projecting from the wall of the disk chamber at a point approximately opposite the partition, rollers secured to the disk, one riding against one side of the partition and the other on the opposite side of the web, a casing on the base portion, and a registering mechanism in the casing.

4. In a water meter, a base portion having a central recess, a cover to form a disk chamber with the recess, a disk in the chamber, a partition in the disk chamber, a web in the disk chamber opposite the partition, and rollers on the disk, one bearing on the partition and one on the web, on the side from which the current comes.

5. In a water meter, a base portion made of one piece and having a central recess to form a portion of a disk chamber, the base portion having a port passing from the exterior to the recess, the base portion also having a port diametrically opposite the first port and having a passage to connect the second port with the recess at a point adjacent to the first port, and a partition in the recess.

6. A water meter comprising a base portion having a recess therein for a ball and disk, a ball and disk in the base portion, a

cover on the base portion to form a top for
the disk chamber and engaging the ball near
its top, a bar projecting from the ball and a
roller thereon, a cap on the cover and de-
5 tachably secured thereto, a conical block for
the travel of the roller inside the cap, a shaft
on the block and projecting from the cap, a
casing on the base portion, a registering
mechanism on the base portion, and an op-

erative connection between the shaft and the 10
registering mechanism.

In testimony, that I claim the foregoing, I
have hereunto set my hand this 19th day of
December 1906.

HENRY FREDRICK.

Witnesses:

WM. H. CAMFIELD,
E. A. PELL.