No. 738,836. PATENTED SEPT. 15, 1903.

F. L. NORTHROP.

ROTARY WATER METER.

APPLICATION FILED MAY 2, 1903.

NO MODEL.

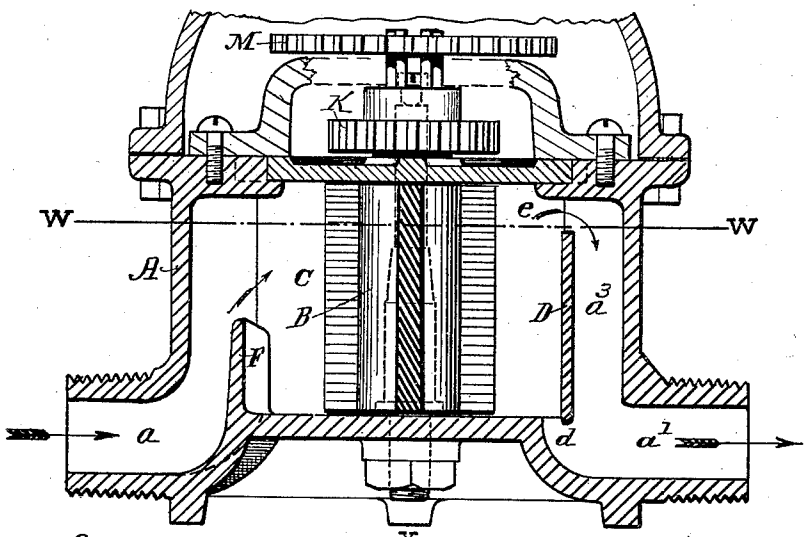


FIG. 1

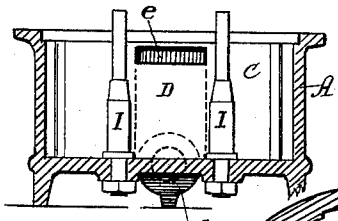


FIG. 3

FIG. 2

Witnesses—

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No. 738,836. Patented September 15, 1903.

UNITED STATES PATENT OFFICE.

FRANK L. NORTHROP, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO UNION WATER METER COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATON OF MASSACHUSETTS.

ROTARY WATER-METER.

SPECIFICATION forming part of Letters Patent No. 738,836, dated September 15, 1903.

Application filed May 2, 1903. Serial No. 155,244. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. NORTHROP, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Rotary Water-Meters, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

This invention relates to that class of water-meters in which two coacting rotary pistons or oppositely-disposed segmentally-armed cylinders are employed, mounted to revolve upon upright axis-posts fixed within a twin cylindric casing, which is provided with inlet and outlet ways for the water or fluid. An example of the previous construction of a meter of this class may be found in Letters Patent Nos. 207,862 and 386,795.

The objects of my invention are, first, to obviate the unequal and irregular side wear upon the axis-posts heretofore experienced in the working of this class of meters; second, to obviate a tendency of the outgoing water to create a reverse force against the regular motion of the pistons; third, to afford means for resisting the effect of the "water-hammer" and to prevent breakage of the pistons by the shocks thereby produced; fourth, to avoid confinement of air in the upper part of the piston-chamber, and, fifth, to impart to the flow of water a direction that will render the running of the pistons lighter and easier, thus making the meter more sensitive. These objects I attain by the means set forth in the following detailed description, defined in the claims, and illustrated in the accompanying drawings, wherein—

Figure 1 represents a vertical section of the body parts of a rotary water-meter embodying my invention, taken on line X X. Fig. 2 represents a horizontal section of the same at line W W on Fig. 1; and Fig. 3 is a vertical section at line Y Y on Fig. 2, drawn to smaller scale, showing the meter-casing with the pistons removed and looking toward the outlet-port.

Referring to the drawings, A denotes the meter-casing, comprising the twin cylindric chamber C and provided at its lower part with the inlet-way a and outlet-way a' through the usual screw-threaded spuds or nipples.

B B′ indicate the rotatable pistons, and I I′ the axis-posts, fixed in the bottom of the casing and upon which said pistons are mounted for operation in well-known manner.

At the outlet side of the piston-chamber I provide a barrier or partition plate D, fixed in the casing in transverse position and approximately tangent to the circles of the twin cylindric piston-chamber walls and disposed in intermediate relation to the two pistons and extending across the outlet-space a^3 from the bottom of the chamber nearly to its top, but affording a long horizontal main exit-port e near the top of said chamber, with the outlet-space extending down at the back of said barrier from the port to the outlet-way a', as best shown in Fig. 1. At the bottom of the piston-chamber a small opening or minor port d is provided beneath the barrier D to permit back drainage or escape of water from the meter-chamber when the service is shut off; but said opening is made of such small dimension that it carries no material portion of the outflow in the running of the meter. The barrier D may be formed integral with the casing-casting or it may be separately formed and firmly affixed in position therein.

F indicates an upright V-shaped deflector fixed to the bottom of the casing at the inlet-way a and projecting upward within the chamber with spaces 5 at either side for directing the entering fluid right and left toward the segment-headed arms of the respective pistons. Said deflector is also adapted for giving to the inflowing current a somewhat upward deflection.

K indicates the piston-connecting gear, and M the register-operating gear; but these parts, together with the register mechanism, are not of my invention and may be of any well-known kinds, and need not be further shown or described.

In the operation of the meter the barrier D interrupts the currents that flow around the revolving pistons and causes the water to take an upward tendency before passing out of the

chamber C over the top of the barrier, while it also prevents bottom draft from the foot of the piston. This changing of the currents results in relieving the pistons from a canting side strain heretofore experienced in this class of meters and which caused an irregular wearing away of the axis posts at the upper part thereof on the inlet side and at the lower part thereof at the outlet side. The barrier, in combination with the inlet-deflector, also produces an upward current within the chamber which tends to lighten up the pistons and cause them to run with greater ease and sensitiveness. The outlet being at the top of the barrier, any air within the chamber is at once driven off with the outgoing liquid. Another great advantage of the barrier is that it acts as a firm reaction-guard at its position across the outlet-space and protects the pistons from the reactive effect and shocks of water-hammer when the flow is abruptly checked, and thus prevents breakage of the pistons, as sometimes occurs, frequently in situations where meters are connected in a direct line of piping and are run under high pressures.

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

1. In a water-meter comprising two intermatching rotary pistons; a transverse barrier-partition within the meter-casing, arranged across the outlet-way approximately tangent to the twin cylindric circles of the piston-chamber, and having the exit-port disposed in intermediate relation to the two pistons above said barrier at the upper part of the piston-chamber, for the purpose set forth.

2. The combination, with the two rotary pistons, the meter-casing having inlet and outlet passages, and the piston-axis post fixed in the bottom of said casing, of the barrier-plate disposed in intermediate relation to the pistons between the piston-chamber and main outlet formed as an elongated horizontal space, with the outlet-port along the top of said barrier, substantially as set forth.

3. In a meter of the character specified, the combination, with the two rotary intermatching pistons, stationary axis-posts upon which said pistons are mounted, and the meter-chamber casing having an inlet-way provided with a deflector for inducing lateral and upward inflection of the inflow-current; of a barrier or partition at the outlet side of the meter-chamber, a long exit-port at the top edge of said barrier and a minor drainage-port beneath said barrier.

Witness my hand this 29th day of April, 1903.

FRANK L. NORTHROP.

Witnesses:
CHAS. H. BURLEIGH,
EDW. P. KING.