

J. P. KELLY.
WATER METER.

APPLICATION FILED DEC. 18, 1909.

969,286.

Patented Sept. 6, 1910.

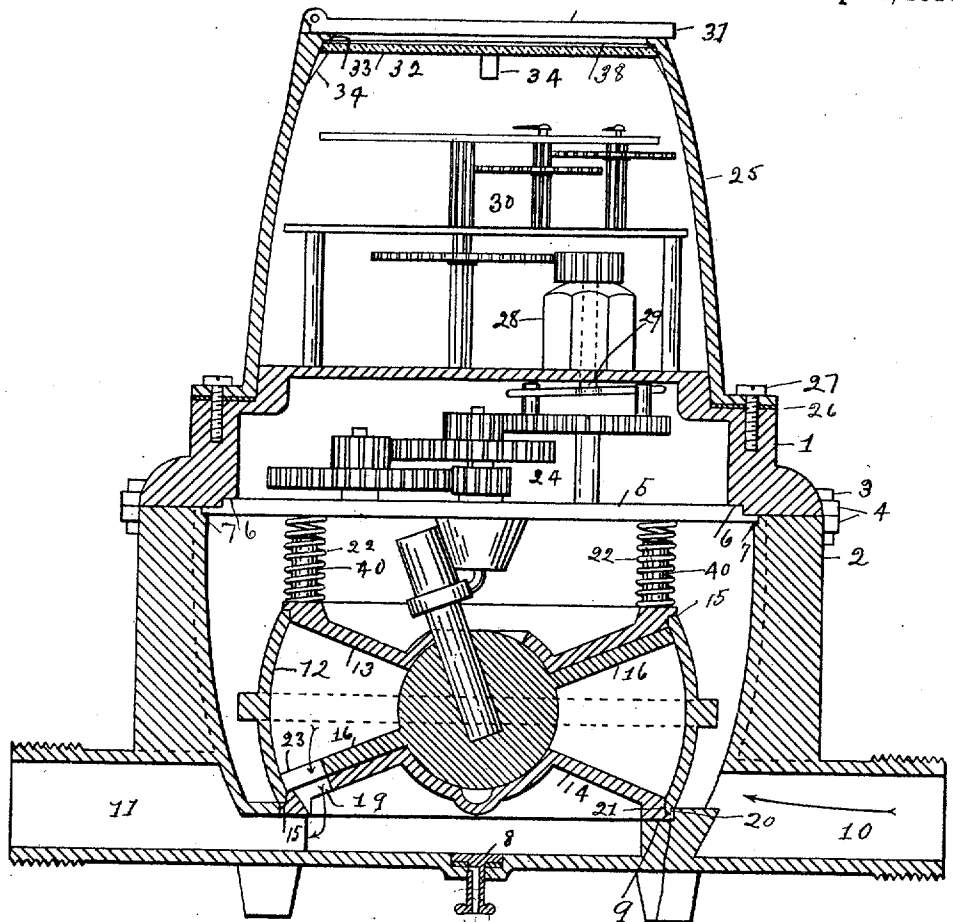


Fig. 1-

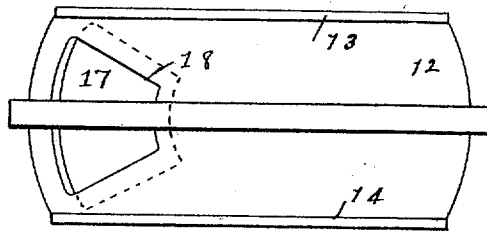


Fig. 2-

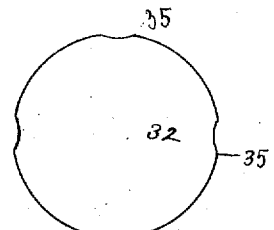


Fig. 3-

WITNESSES.

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WATER-METER.

969,286.

Specification of Letters Patent.

Patented Sept. 6, 1910.

Application filed December 18, 1909. Serial No. 533,885.

To all whom it may concern:

Be it known that I, JOHN P. KELLY, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful Water-Meter, of which the following is a specification.

In the drawings herewith accompanying and forming a part of this application, Figure 1 is a vertical sectional view partly in elevation of my improved water-meter: Fig. 2 is an elevation of the disk chamber showing the inlet port and vertical diaphragm: and Fig. 3 is a plan view of the glass over the registering mechanism.

The same reference characters indicate like parts in the several views.

The outer casing is divided horizontally into two sections 1 and 2 which are adapted to be held against vertical displacement by bolts 3 passing through ears 4 on the outside thereof. The under side of the upper section 1 is machined to receive the circular intermediate gear frame 5, as seen at 6, said gear frame extending down slightly into a recess 7 machined in the lower section, whereby, when the sections 1 and 2 are in position, they are positively locked against lateral movement one relative to the other without other locking means. The bottom of the lower section 2 and the bottom of the disk chamber are correspondingly machined to fit together, as seen at 9, so that when the disk chamber is in place, it is held thereby against lateral displacement. The outer casing is provided with inlet and outlet ports 10 and 11 respectively, said outlet port being positioned preferably at the very bottom of the outer casing. The disk chamber is of the usual disk meter type modified as hereinafter described. It consists of a circular vertical ring 12, upper head 13 and lower head 14, the heads and ring being machined to interlock, as seen at 15. Mounted in the disk chamber is a gyratory disk 16 and a diaphragm 17, said disk and diaphragm being of the same general type and construction as shown in my former patent hereinafter mentioned. On one side of said diaphragm in the ring of the chamber is an inlet port 18 and on the other side in the lower head 14 of the chamber is an outlet port 19. It will be noted that water passing through the meter enters the disk chamber through the inlet port 18 and out thereof

through the outlet port 19, the passage of the water through the disk chamber imparting a gyratory motion to the disk. It will further be noted that the port in the lower head of the disk chamber is within the area of the disk.

The lower head is easily positioned relative to the ports in the ring and head by means of a pin or stud 20 on one part adapted to take into a corresponding hole 21 in the other member, the upper head is then easily positioned by means of the diaphragm 17 the two heads being provided with registering recesses adapted to receive it. The disk chamber is held yieldingly against vertical displacement relative to the outer casing by means of springs 22 interposed between the top thereof and the intermediate gear frame 5 and these springs are maintained in proper position by means of studs 40 around which the springs are coiled. It will be noted that the disk chamber is thus held in position without screws or bolts and may be removed without tools as soon as the upper section of the outer casing is removed. This construction also prevents damage to the disk or disk chamber in case the water freezes.

In disk meters as heretofore constructed, the disk and disk chamber make a tight joint throughout its entire extent. It sometimes happens when the disk is thus constructed, where the outlet is in the side of the chamber or in the bottom outside the area of the disk that the disk gets into a position that closes the port on one side of the disk and a pressure of water on the other side breaks the disk. To obviate this danger I cut away a portion of the disk as seen at 23 making a port through which the water passes to the outlet port 19 in the bottom head which is located within the disk area.

The intermediate gear mechanism 24, comprising the gearing shown in the upper part of the outer casing, is driven by the gyratory movement of the disk in the manner usual in this class of meters, the same being substantially as shown and described in my former Patent No. 749066, dated January 5, 1904, the gears, however, being free to move vertically on their posts so that in case of freezing the gear frame will not be distorted as it would be if the gears were held rigidly. The register mechanism is contained in a

housing 25. The top of the outer casing is machined so that the housing 25 fits tightly down over the top of section 1 or upon a water tight packing 26, whereby the housing is held absolutely in a central position and against lateral movement. It is secured against vertical movement in any convenient manner as by screws 27. Secured to the top of the outer casing is a stuffing box 28 through which passes a stem 29 operable by the disk spindle through the intermediate gear mechanism, and driven by said stem mounted in said housing is a register mechanism of any suitable construction indicated as a whole by reference character 30. The housing is provided with a removable cover 31 and with a glass 32 positioned below said cover which protects the register mechanism but affords a clear view thereof. I have provided a novel arrangement for removably supporting said glass in the housing. The housing is provided with an internal flange 33 at the top and with one or more internal projections 34 spaced apart below said flange a distance substantially equal to the thickness of the glass. The glass consists of a circular disk provided with one or more reëntrant recesses 35. To insert the glass in position it is introduced through the bottom of the housing and turned until said reëntrant recesses register with said projections 34 which enables the glass to be moved upwardly until it bears against the flange 33 or against a packing 38 to make it water tight. Then a slight turning of the glass carries the recesses beyond the projections which then serve to support the glass. The register housing is thus made water tight which is very important when the meter is set in the ground. In the bottom of the outer casing is a drainage valve 8 positioned so that the outer casing and the outlet port can be entirely drained. The advantages of my improved water meter are that it is cheaply and simply constructed, obviates liability to damage due to unequal pressure and to freezing of the water therein, obviates the use of screws and bolts inside the outer casing and provides

for complete drainage of the outer casing and outlet port.

Having thus described my invention and its use, I claim:—

1. In a disk water meter, an outer casing comprising two sections, an intermediate gear frame positioned in said casing, a disk chamber mounted in said casing and springs interposed between said disk chamber and said intermediate gear frame, whereby the disk chamber is held yieldingly in place.

2. In a disk water meter, an outer casing comprising two members, an intermediate gear frame positioned intermediate the top and bottom thereof, a disk chamber in said casing positioned below said gear frame, said disk chamber comprising a ring and top and bottom heads loosely joined together, and springs interposed between said gear frame and the top head of said disk chamber.

3. In a disk water meter, a disk chamber comprising a ring provided with an inlet port, a top head and a bottom head provided with an outlet port, a vertical diaphragm, a gyratory disk provided with a port, said outlet port and said port in the disk being positioned on the same side of said diaphragm.

4. In a disk water meter, an outer casing comprising upper and lower sections, an intermediate gear frame interposed between the two, the lower section being machined to receive and support said frame and the upper section being machined to fit over and confine said frame, whereby said frame and said upper section are held in central position relative to said lower section.

5. In a disk water meter, an outer casing, an intermediate gear frame mounted in said casing, a register mechanism and intermediate gear mechanism connected therewith comprising posts set on the top of said frame and gears mounted upon said posts and free to move vertically relative to each other, whereby bending of the frame and strain on the register mechanism is obviated.

JOHN P. KELLY.

Witnesses:

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