O. Gilmore,

Water Meter.

No. 108,344. Patented Oct. 18. 1870

Fig. 1.

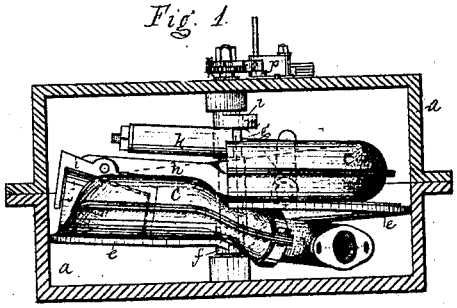


Fig. 2.

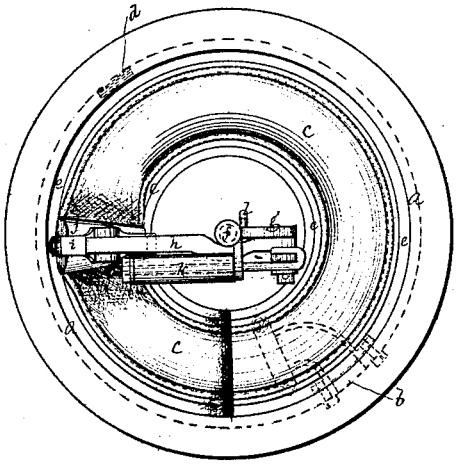


Fig. 3.

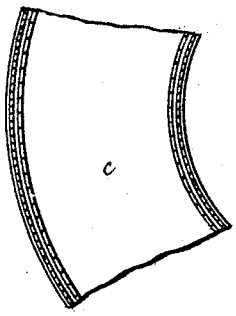
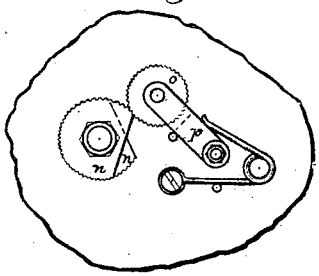


Fig. 4.



Witnesses { W. B. Crosby
Francis Gould. }

Othniel Gilmore

United States Patent Office.

OTHNIEL GILMORE, OF RAYNHAM, MASSACHUSETTS.

Letters Patent No. 108,344, dated October 18, 1870.

IMPROVEMENT IN WATER-METERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, OTHNIEL GILMORE, of Raynham, in the county of Bristol and State of Massachusetts, have invented Improvements in Water-Meters; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention relates to improvements in the detail of construction and arrangement of parts of water-meters, so made as to embody inventions patented by me in the United States, under the numbers 87,837 and 98,686, and dates of March 16, 1869, and January 11, 1870.

Said improvements consisting—

First, in so combining and arranging a flexible pipe or hose within the meter that it rests upon a spiral support, against which it is pressed by a roll or rolls as it or they traverse over the pipe.

Second, in the manner in which the parts forming the flexible tube are united, so as to secure both strength and tightness at the joints; and

Third, in the detail of construction by which the indicating mechanism can be varied to correspond with changes in the capacity of the flexible tube, caused by the shrinking or stretching of its material.

In the drawing—

Figure 1 represents in cross-vertical central section a meter embodying my invention.

Figure 2 is a plan of the same, with one-half of the case removed to exhibit the interior mechanism.

Figure 3 shows a portion of the flexible tube, illustrating the arrangement of the fastenings employed to unite the parts of which the tube is made.

Figure 4 shows in plan my improvement in the indicating mechanism.

Figures 3 and 4 are drawn upon a scale larger than figs. 1 and 2.

In this invention, as in those described in the aforesaid patent, I make use of a flexible tube so arranged as to receive water under pressure and to discharge it under pressure into a closed case, to which the delivery-pipe is attached.

The case is marked *a*, having an inlet at *b*, to which the flexible tube *c* is attached, there being in the case at *d* an outlet from which the service-pipe leads to the various draw-off cocks or faucets.

Within the case is arranged a shelf *e*, for the tube *c* to rest upon, and against which it is compressed as the roll or rolls in the meter traverse over it.

In the drawing the shelf *e* is shown as of that form of spiral which resembles a portion of a screw-thread to suit the arrangement of the roll, which is shown as having its axis nearly at right angles to the axis of the case *a*.

But it will be obvious that if the roll was arranged, as in my aforesaid patents, then the form of spiral for the tube-shelf or rest would be of the kind found in common clock springs.

On a stud, *f*, fixed centrally with the axis of the case *a*, is a frame, *g*, arranged so that it can turn freely on said stud.

To this frame is pivoted an arm, *h*, to the outer end of which is pivoted a frame, *i*, which carries a roll, *j*.

The spring *k* is so arranged that it operates to press roll *j* toward shelf *e*, at all times, thus bringing into contact the opposite sides of the interior of the tube *c*, so that it will be obvious that if the meter is connected at *b* with a head of fluid, and at *d* with a discharge-opening, the fluid under pressure will fill the tube *c*, and will drive roll *j* over the tube in advance of the incoming current, and up the curved incline of the spiral from near the inlet *b* to where the tube *c* terminates with an open end, where the roll *j* will drop upon the inlet-end of the tube, and will continue its motion so long as by reason of draught-openings from the case *a* fluid flows into it through the tube *c*.

To the frame *g* is fixed a pin, *l*, which, as it revolves, turns a crank, *m*, fixed to a shaft which passes through one side of case *a* at its center, for the purpose of actuating the indicating clock-work.

On said shaft are clamped by a nut two segments, *n n*, of gears which may be adjusted relatively to each other, so as to act on a pinion, (which has its teeth about twice the length of the teeth on each segment,) either as an entire gear or as a segment, the size of which may be varied.

It is not, however, necessary that the segments or the pinion should be provided with teeth, as mere frictional contact of smooth surfaces will suffice to drive the light train needed to give the indication of the quantity of fluid which passes through the meter.

The pinion mentioned is marked *o*, and is hung in a pivoted frame, *p*, which is kept pressed toward the segments by a spring, there being a stop so fixed as to prevent excessive pressure of the pinion against the segments.

The shaft of pinion *o* may be connected in any well-known manner with any well-known indicating mechanism, protected by a locked or sealed casing from improper interference.

If on trial it is found that the indicating mechanism indicates a greater flow through the meter than corresponds with the fact, then the pieces *n n* are to

be so adjusted as to diminish the length of their operative circumference, and *vice versa*.

In making the flexible tube *c*, which preferably should be of leather, I make two rows of fastenings, preferably stitches, at each edge. The inner rows upon which I depend for strength, and upon which the strain comes, are spaced wide apart, so that the smallest possible amount of the leather is cut away to receive the fastenings. The outer rows I set very closely together, which insures tightness of the tube.

I claim—

1. In a meter in which a flexible tube is used, and over which tube fluid pressure drives a roll or rolls, the combination of such tube and roll or rolls, with a spiral rest, which supports the tube and receives the pressure of the roll or rolls, substantially as described.

2. In a meter in which the arrangement of the flexible tube is substantially that shown in the drawing, the combination of a conical roll or rolls with said tube, the rolls having their bearings in a frame, pivoted upon an arm, substantially as set forth.

3. The combination with the driven-piece *b* of a water-meter, serving to impart the movements to the indicating mechanism of the segments *n n*, arranged to be adjustable one upon the other, to vary their operative surface, substantially as specified.

4. A circular pipe, made of flexible material, in which the edges are secured by fastenings inserted in two rows, one row being wide spaced and placed innermost to give strength, and the other being closely spaced and placed outermost, to prevent leakage.

OTHNIEL GILMORE.

Witnesses:
J. B. CROSBY,
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