R. J. ROGERS.
Water Meter.

No. 229,187. Patented June 22, 1880.

FIG. 1.

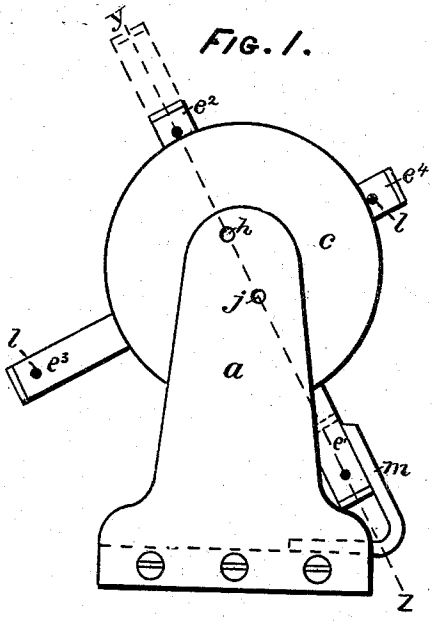


FIG. 2.

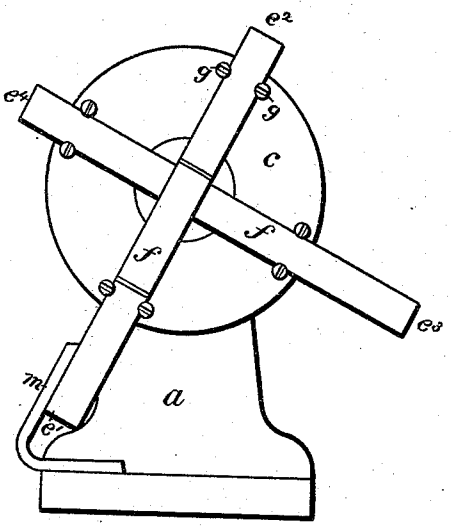


FIG. 4.

FIG. 3.

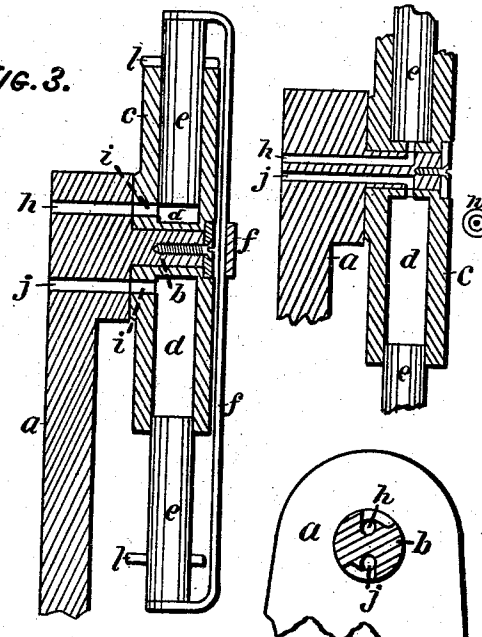


FIG. 6.

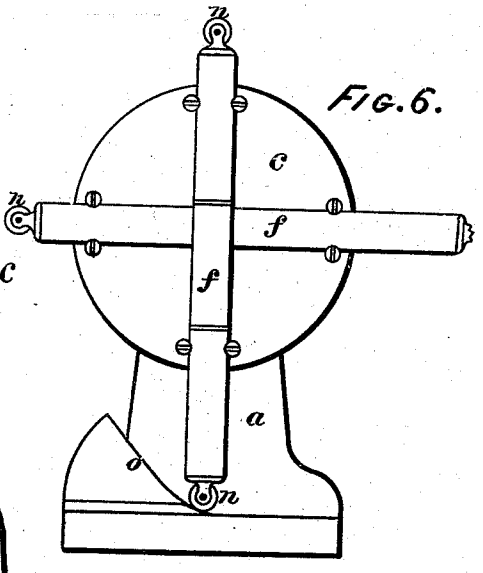


FIG. 5.

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RICHARD J. ROGERS, OF CHELSEA, MASSACHUSETTS.

WATER-METER.

SPECIFICATION forming part of Letters Patent No. 229,187, dated June 22, 1880.

Application filed February 24, 1880.

To all whom it may concern:

Be it known that I, RICHARD J. ROGERS, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented a new and useful or Improved Water-Meter, which invention is fully set forth in the following specification, reference being had to the accompanying drawings.

My invention relates to that class of devices by which is measured the amount of water that passes a given point in the conduit through which it flows; and the invention consists in a disk or other suitable body arranged to revolve upon its center, and which is formed or provided with four or more radial cylindrical chambers having fitted therein suitable plungers connected in diametric pairs, and arranged to slide freely, but closely, in such chambers, and so constructed and arranged relatively to inlet and outlet ports connecting with the water-conduit that, as each of such plungers is, by the rotation of the disk, brought coincident with the inlet-port, the plunger will be forced outward by the water-pressure, and its chamber thereby filled, thus raising its antipodal plunger, and so expelling the water then in its chamber through the outlet-port. A stop device is so arranged as to arrest the rotation of the carrying-disk while the chambers successively fill, and so that when each is filled the added weight of the water therein and such extended plunger will renew such rotation to the extent of bringing the succeeding arm to such stop.

Figure 1 is a rear elevation of my invention. Fig. 2 is a front elevation thereof. Fig. 3 is a section as taken on line *y z*, Fig. 1, and through the axis of a pair of the plungers, and showing the inlet and outlet ports. Fig. 4 is a detached view, taken in section on the same line as Fig. 3, but showing the inlet and outlet ports as passing through the journal on which the disk revolves. Fig. 5 is a detached view, showing the upper part of the supporting-standard in elevation and its journal in transverse or vertical section as taken on a line passing through the axis of the plungers, and showing a modification of the inlet and outlet ports. Fig. 6 is a back view of my invention, but showing a modification of the means of insuring the filling and discharging the cylinders.

In these views, *a* represents the vertical standard or support, which is formed or provided with journal *b*, on which is mounted the revolving disk *c*, provided with the four cylindrical chambers *d*, radially and equidistantly arranged around the disk. The plungers *e* fit closely, but slide freely, in these chambers, and are each rigidly connected to their respective antipodes by the slides *f*, which cross each other, as shown in Figs. 2, 3, 6, and may have guides upon the back of the disk, as shown at *g g*, Figs. 2 and 6.

To the inlet-passage *h* in standard *a* the supply-pipe is to be connected, and passages *i* in disk *c* are so positioned relatively to its center that as they pass the passage *h* it will be axially coincident therewith, as shown in Fig. 3. The outlet-passage *j*, which also passes through the standard, connects with a passage, *i*, through disk *c*, in the same manner as in the case of the inlet-passage.

A short pin, *l*, is inserted transversely in plungers *e*, and at such distance from their inner ends that when the plungers are retracted the contact of this pin with the periphery of the disk will arrest the plunger before its inner end has reached the bottom of its chamber, (see upper plunger in Fig. 3,) and so that the plunger will not obstruct the flow of water through inlet-passage *i* in the disk.

A stop, *m*, is secured to the standard or its base, and by the successive contact of plungers *e* therewith it arrests the rotation as each such plunger encounters it.

The practical operation of my meter is described as follows: Let us suppose it in operation, and that plunger e', which is extended by its chamber being filled with water, has just been arrested by stop *m*. At that point the inlet-passage *i* in the disk would be coincident with inlet-passage *h* in the standard, and the water, by flowing through them, would extend or push out plunger e^2, and, through the connecting-slide *f*, would retract or force in plunger e', thus expelling the water in its cylinder through the outlet-passages *j i*, which would be then coincident.

When the cylinder of plunger e^2 is filled the plunger e' will be released from stop *m*, when the preponderating weight of plungers e^2 and e^3 and the water in their cylinders will pro-

duce rotation until plunger e^3 is brought in contact with the stop. Then the filling of the chamber of plunger e^4 will raise and release plunger e^3 from the stop, and the rotation will be repeated.

It will be apparent that by means of the size of the cylinders and length of stroke of the plungers a standard measure of water—as one or more gallons—may be delivered by each plunger when retracted, and that by attaching an automatic indicator to the meter to show the number of revolutions the exact quantity delivered may be thereby correctly determined.

In Fig. 4 the passages *h* and *j* are shown as extending within the body of journal *b* to the axial line of the cylinders. In Fig. 6 the plungers are shown with small rollers *n* mounted at their outer ends, while an incline, *o*, is so arranged that as the rollers are brought in contact with and mount to its summit the water in the cylinders will be expelled thereby, and at the same time the upper cylinder will be filled, as before described, in which case an uninterrupted or continuous rotation is secured, whereby the rotative force of the device may be economized as a motor.

When the plungers are extended by an incline, as described and shown, the passages *h j* are extended in a circumferential line cut through the shell of arbor *b*, as shown in Fig. 5, in order that the water may be entering at *h* and passing out at *j*, while the disk rotates sufficiently for the roller *n* to mount incline *o;* and if the outlet and inlet passages were arranged as shown in Fig. 3, then, if the incline *o* were used, a circumferential groove would be extended from such passages in the inner face of the standard *a*, in order to allow the communication with passages *i* to be kept up while the rollers *n* mounted the incline.

What I claim as my invention is—

1. In a water-meter, the radially-chambered disk or body *c*, mounted upon standard *a*, and arranged to revolve in a vertical plane, and provided with plungers *e*, connected together in antipodal pairs, with passages *i* communicating with chambers *d* in said disk, and the inlet and outlet passages *h j* in the supporting-standard, arranged coincident with the circumferential path of passages *i*, and a stop or incline to act upon said plungers and insure the lineal reciprocation thereof when antipodal passages *i* are coincident with passages *h j* in said standard, substantially as specified.

2. In a water-meter having the standard *a* and chambered disk *c* arranged to revolve thereon in a vertical plane, and with their respective coinciding water-passages, the combination therewith of four sliding plungers antipodally connected and arranged to slide in pairs in the chambers in said disk, whereby a preponderating weight at one side is effected, causing the rotation of said disk and the successive filling and discharge of the water from said chambers, substantially as specified.

3. The radial plungers *e*, connected in pairs, as described, and arranged to slide in chambers *d*, so as to be successively retracted to expel the water in their respective chambers by the force of the water as it in succession fills the empty chambers, and causing rotation by the preponderation thus produced, substantially as specified.

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