

(No Model.)

A. S. DIETZMAN & G. CRESSEY.

MAGNETIC REGISTER CONNECTION FOR WATER METERS.

No. 369,595.

Patented Sept. 6, 1887.

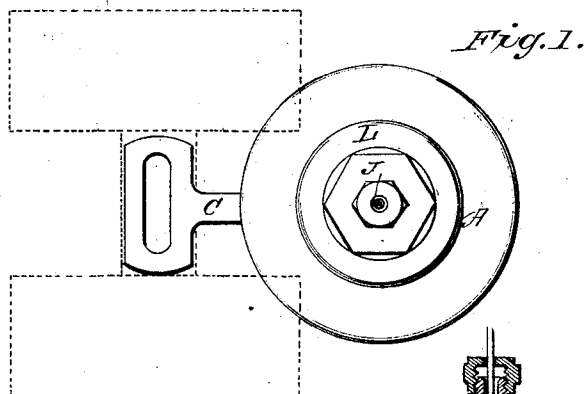
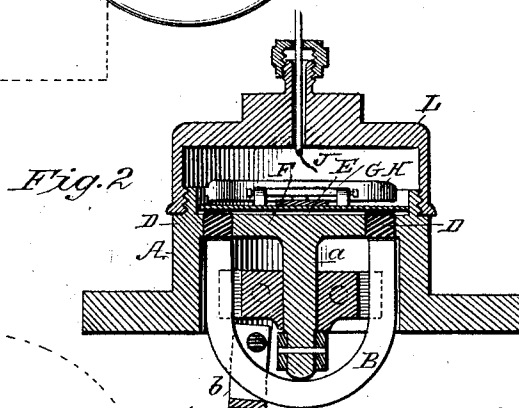
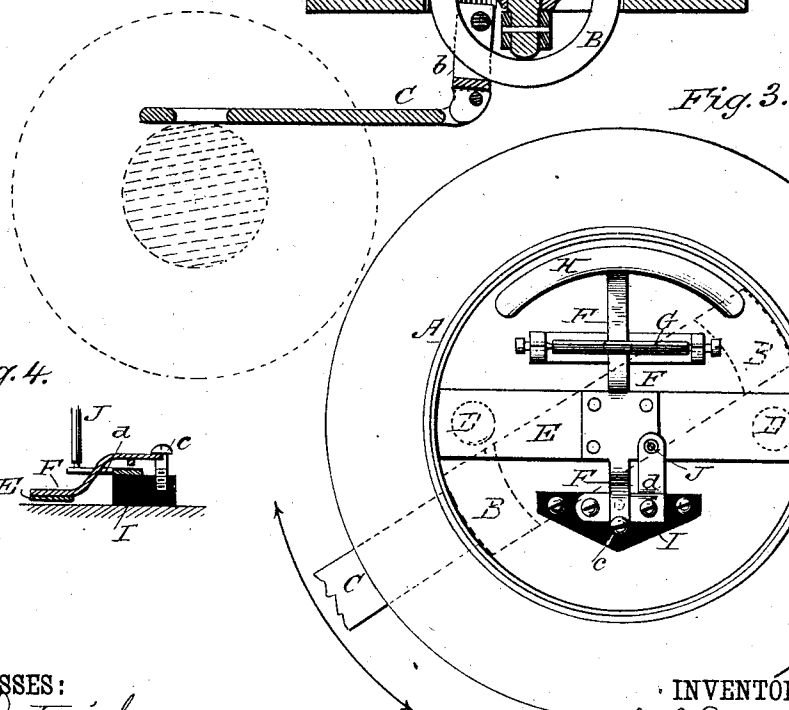
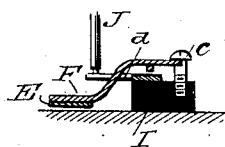


Fig. 4.



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MAGNETIC REGISTER-CONNECTION FOR WATER-METERS.

SPECIFICATION forming part of Letters Patent No. 369,595, dated September 6, 1887.

Application filed March 26, 1887. Serial No. 232,511. (No model.)

To all whom it may concern:

Be it known that we, ALBERT S. DIETZMAN and GEORGE CRESSEY, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Register-Connections for Water-Meters, of which the following is a specification.

Our invention is in the nature of an improvement in water-meters designed to record the number of strokes made by the piston or other working part of the meter through the agency of an electric circuit and register. In the Patent No. 245,139, granted to George Cressey, August 2, 1881, the same object was in view, but as the electrical contacts were immersed in water the battery had to contend with a permanently-closed circuit formed by the water, and it soon ran down and lost its efficiency.

Our present invention utilizes a permanent magnet moving in the water with the mechanism of the meter, and influencing, through the walls of the case, an armature with contacts controlling an electric circuit outside of the meter-case, which we will now proceed to describe.

Figure 1 is a plan view of the cap containing the register-connections, showing in dotted lines the relation of the piston of the meter to arm C. Fig. 2 is a central longitudinal section of the cap and meter-connections on a little larger scale than Fig. 1. Fig. 3 is a plan view of the cap A, with the top portion removed, the view being upon a still larger scale. Fig. 4 is a sectional detail of the electrical contacts.

A represents a diamagnetic brass cap of circular form, which is secured to the meter case by bolts or screws with a water-tight joint. Within this cap is formed or attached a rigid pivot-stem, *a*, upon which is hung to oscillate a permanent magnet, B, of the horse-shoe pattern, the poles of which magnet approach very closely the top of the cap.

Attached to the permanent magnet by a suitable coupling, *b*, is a hinged arm, C, which, with the permanent magnet, rests within the meter-case and is immersed in the water with which it is filled. The enlarged outer end of this arm is oscillated by some reciprocating

part of the meter. Thus, for example, when applied to meters of the "Worthington" type, which has two pistons on the same stem, said enlarged end of the arm rests in the space between the two pistons, as shown in dotted lines in Fig. 1, and the reciprocation of the pistons imparts an oscillating motion to the arm C and the permanent magnet.

At diametrically-opposite points in the top of the cap are two soft iron plugs, D D, which are finished flush with the interior face of the cap and extend through to the outside of the cap. When the poles of the permanent magnet within the case rest upon these iron plugs, the latter form conductors of magnetism (through the diamagnetic brass cap) to influence an armature on the outside of the cap. E is this armature, which is mounted upon a lever, F, fulcrumed in pivotal support G, and bearing on the opposite side of its fulcrum from the armature a weight, H. The opposite end of this lever plays between the head of a set-screw, *c*, (which limits the upward movement,) and a contact, *d*, fixed on an insulating-block of rubber, I, which contact is electrically connected to the conducting-wire J.

Now, it will be seen that if an electric register has one of its wires connected with wire J and the other with the metallic case A every time the piston of the meter brings the poles of the permanent magnet under the iron plugs D D the armature outside the case is attracted, and an electric circuit is closed by connecting the metal of the case and the wire. On the other stroke of the piston the permanent magnet is removed from the plugs D D, and, there being then no magnetic influence to hold the armature, it rises and breaks contact from the gravity of the weight on the opposite end of the lever. This closure of an electric circuit through an electric register, and the alternate breaking of the same, it will be seen, has the effect to give a step-by-step intermittent movement to said register, each of which records a volume of water equal to the discharge of the cylinder in which the piston moves. With this construction it will be seen that the normal condition of the battery-circuit is an open one, and as the contacts are not immersed in water the battery is not quickly exhausted

and there is no corrosion to impair the contacts, nor accumulation of slime to short-circuit the current, as all the delicate working parts are removed from the water-chamber.

- 5 To protect the armature and its associated parts, a screw-cap, L, is secured upon the top of cap A, and has a central outlet for the wire J.

Having thus described our invention, what
10 we claim as new is—

1. In a water-meter, the combination of a permanent magnet connected to and moved by the working parts of the meter within the water-chamber, the cap having one or more
15 iron plugs, an armature playing upon said plugs outside the cap, and electrical contacts operated by said armature for controlling an electric circuit, substantially as and for the purpose described.

- 20 2. The combination of the cap of a water-meter made of diamagnetic material, and having one or more soft-iron plugs extending through the same, a permanent magnet playing upon one side of said cap on said plugs,
25 and an armature arranged upon the opposite

side of said cap to be influenced by said permanent magnet through the plugs, substantially as shown and described.

3. The combination of the cap A with iron plugs D and stem *a*, the permanent magnet B
30 hung therein to oscillate, and having an actuating-arm, the armature E, and lever F, fulcrumed outside the cap, and having a weight at one end and contacts at the other, substantially as and for the purpose described. 35

4. The combination of the cap A with iron plugs D and stem *a*, the permanent magnet B, hung thereon and provided with an actuating-arm, the armature and contacts arranged upon the outside of the cap A, and the protecting-
40 cap L, secured to the top of cap A to inclose the armature and contacts, and having an outlet for the conducting-wire, substantially as and for the purpose described.

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