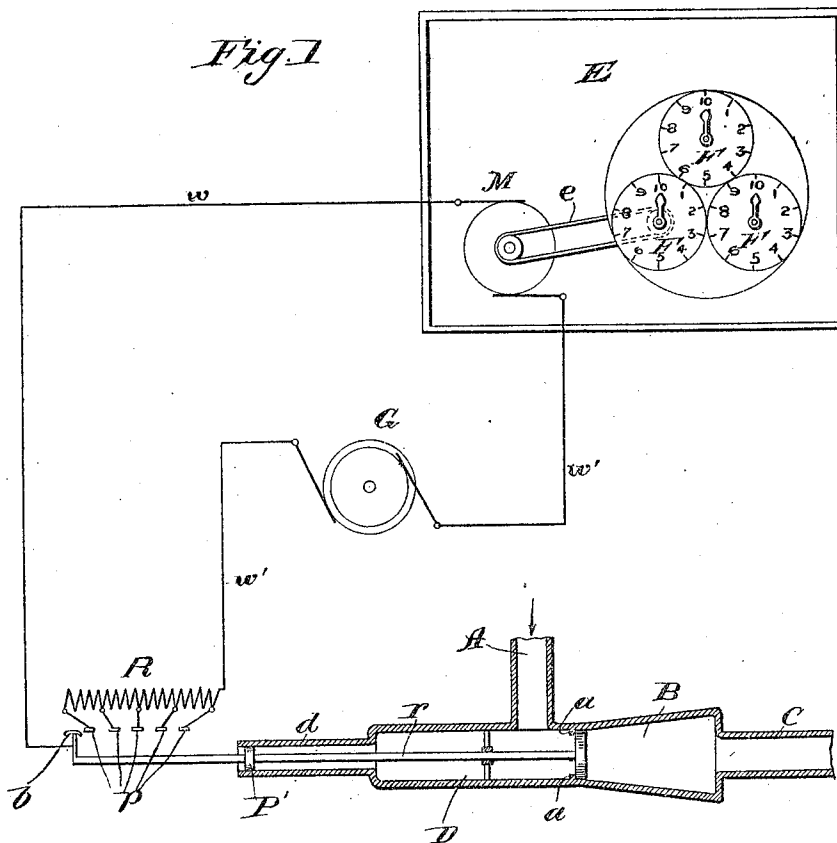
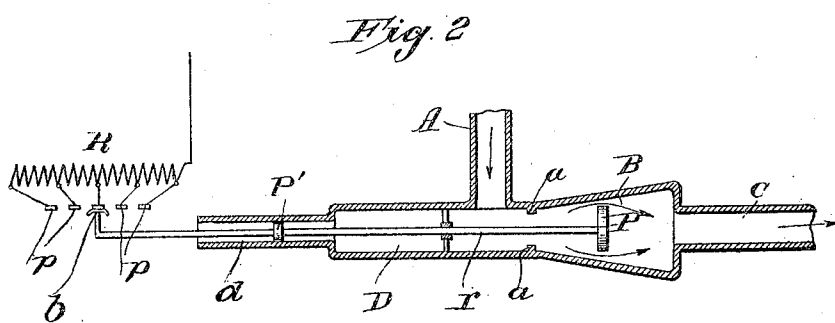


No. 808,562.

PATENTED DEC. 26, 1905.

R. H. MILTON.
ELECTRIC WATER METER.
APPLICATION FILED FEB. 14, 1905.



WITNESSES:

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RICHARD HOLMES MILTON, OF REIDSVILLE, NORTH CAROLINA.

ELECTRIC WATER-METER.

No. 808,562.

Specification of Letters Patent.

Patented Dec. 26, 1905.

Application filed February 14, 1905. Serial No. 245,576.

To all whom it may concern:

Be it known that I, RICHARD HOLMES MILTON, a citizen of the United States, residing at Reidsville, in the county of Rockingham and State of North Carolina, have invented a new and useful Improvement in Electric Water-Meters, of which the following is a specification.

The object of my invention is to provide a water-meter in which all the registers of the various water-takers may be assembled at one central station and under the supervision, inspection, and control of the water company or municipal government, while the register-actuating devices shall be on the premises of the water-takers.

To this end my invention consists in the novel construction and arrangement of an electrically-operated water-meter, which I will now proceed to describe with reference to the drawings, in which—

Figure 1 is a view of all of the parts of my system, the mechanical elements representing the hydraulic features being shown in section, while the electrical features are shown diagrammatically. Fig. 2 is a view of the same parts of the hydraulic feature, but in another position.

In the drawings, A represents the service-pipe of a water-taker, which receives its water from the street-main.

C is the water-pipe of the house, which leads to the various spigots, flush-tanks, and other outlets.

B is an enlarged chamber interposed between the pipes A and C.

D is a receiving-chamber in open communication with the pipe A and having between it and the enlarged chamber B a valve-seat *a*.

On this valve-seat there normally rests a piston-valve P. This piston works within the chamber B and is attached to a rod *r*, which at its outer end bears a piston P' of smaller diameter than P. The receiving-chamber D has a small cylindrical barrel *d* formed on its end, in which the piston P' moves. The piston-rod *r* is extended beyond the piston P' and carries on its end a brush or rubbing electrical contact-plate *b*. This contact-plate is adapted to pass over and touch the several contact-plates *p* of a rheostat R or be forced outwardly, so that it does not touch any of them.

The action of the hydraulic features of my invention is as follows: Whenever a householder or water-taker draws water or opens

an outlet in his house from the pipe C, the pressure of the water in chamber B is relieved and the pressure of the water in chamber D, exercising a greater power on the large piston P than it does on the small piston P', causes the two pistons P P', with rod *r* and contact-plate *b*, to move to the right to the position shown in Fig. 2. This causes piston P to leave its seat *a* and water flows from pipe A around piston P into the enlarged chamber B and then through the house-pipe C to the spigot or other outlet. This position is maintained as long as water flows through the discharge-outlet. When, however, the outlet is closed, the water-pressure becomes equalized in chambers D and B, and it then has no influence on the piston P; but the water-pressure in chambers D and *d* slowly but steadily forces the piston P' outwardly, drawing piston P against its seat *a* again. This action, it will be seen, is wholly automatic, requiring nothing more than the usual consumption of water from the various outlets about the house. This automatic movement of the piston-rod *r* is made to open or close an electric circuit through a rheostat to an electrically-operated register. This register E is to be located in the company's office and any distance away from the water-taker, being connected to the water-taker's apparatus by circuit-wires *w w'*. The register has a small electric motor M, which, through a belt *e* or by other suitable mechanism, turns the register-wheels E. This motor of the register has one pole connected to the circuit-wire *w*, which extends to the sliding contact *b* of the piston-rod in the water-taker's premises. The other pole of the register-motor connects with wire *w'*, which leads to one end of the rheostat R of the water-taker's apparatus. In one of the wires *w* or *w'* is placed an electric generator G or a battery. When the parts are in the position shown in Fig. 1 and no water is flowing, the brush-plate *b* of the piston-rod is out of contact with the plates of the rheostat, and the motor-circuit of the register being open the latter is not working. When, however, water is drawn and the rod *r* and brush-plate *b* move to the right, the circuit is closed as soon as the brush-plate *b* touches the first contact of the rheostat, and the continued movement of the pistons and rod causes the brush-plate *b* to pass on to the other contact-plates of the rheostat and gradually cuts out the resistance, thus increasing the energy of the

motor in proportion to the rush or volume of the water passing to the outlet.

It will be seen that the shape of the enlarged chamber B is that of a cone diverging from the piston P, so that the space between the piston and the walls of the chamber B increases with the distance of the travel or throw of the piston. When only a small stream of water is allowed to issue from an outlet, the piston P only travels a short distance and the register-motor is operated but weakly on account of the resistance of the rheostat being only slightly cut out. When, however, there is a large or forceful volume of water drawn at an outlet, the piston moves a greater distance, and this gives a large annular space around the piston for its passage.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A water-meter comprising an electrically-operated register located at a distance from the water-taker; combined with circuit-wires, an electric generator, a circuit-closer and a hydraulic moving device for the circuit-closer consisting of a casing with an enlarged end arranged in the water-supply pipe of the water-taker and a longitudinally-moving rod with differential pistons arranged in the case and operated automatically by the discharge of the water through the service-pipes as described.

2. A water-meter comprising an electrically-operated register located at a distance from the water-taker, combined with circuit-wires, an electric generator, a circuit-closer having a variable resistance and a hydraulic moving device for the circuit-controller consisting of a casing with an enlarged end arranged in the water-supply pipe of the water-taker and a longitudinally-moving rod with differential pistons arranged in the case and operated automatically by the discharge of water through the service-outlets, said piston-rod having an external brush-contact

for the variable resistance, substantially as described.

3. A water-meter comprising a register and a hydraulic actuating device for the register consisting of a receiving-chamber having an inlet for water, a valve-seat with enlarged chamber at one end of the receiving-chamber and a cylinder of relatively small diameter at the other end, a piston-rod with a large piston-valve on one end arranged to cooperate with the valve-seat and a small piston on the other end working in the cylinder, and means for connecting the piston-rod to the register substantially as described.

4. A water-meter comprising an electric register, an electric circuit and generator for the same, a rheostat with graduated resistances and contact-plates, a sliding brush arranged to contact with and move over the said plates, a piston-rod attached to the brush and bearing two pistons of different diameters and a receiving-chamber having valve-seat and enlarged chamber for the large piston at one end, a cylinder of smaller diameter for the small piston and a water-inlet substantially as shown and described.

5. A water-meter comprising a register and a hydraulic actuating device for the register consisting of a receiving-chamber having an inlet for water, a valve-seat at one end of the receiving-chamber, an enlarged conical chamber diverging from the valve-seat and a cylinder at the other end of smaller diameter than the valve-seat, a piston-rod with a large piston playing in the conical receiving-chamber and a small piston at the other end working in the cylinder, said pistons and rod having an extent of movement varying with the volume of the flow of water as described.

RICHARD HOLMES MILTON.

Witnesses:

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