(No Model.)

H. BURGER & W. H. McFALL.

ELECTRIC METER.

No. 571,036. Patented Nov. 10, 1896.

Fig. 1.

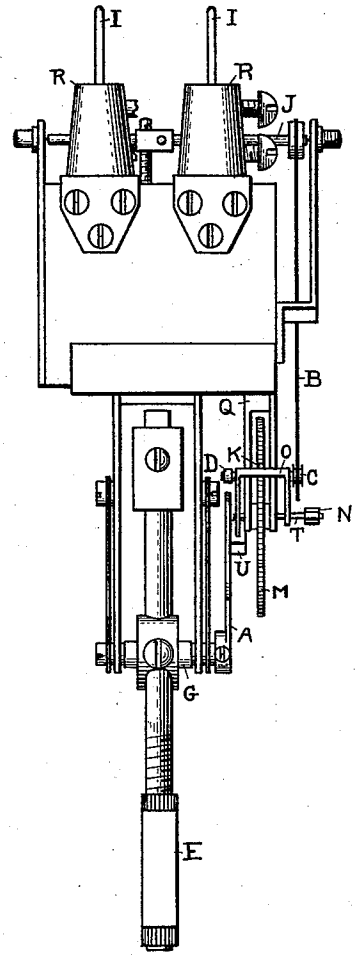
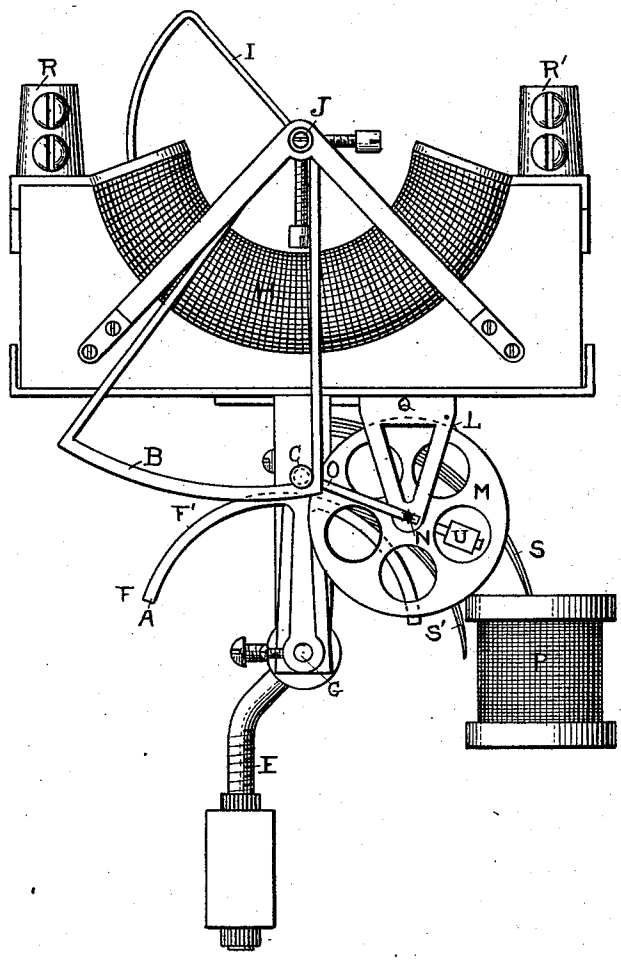


Fig. 2.



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UNITED STATES PATENT OFFICE.

HERMAN BURGER AND WILLIAM H. McFALL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNORS TO THE AMERICAN ELECTRIC METER COMPANY, OF SAME PLACE.

ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 571,036, dated November 10, 1896.

Application filed March 7, 1896. Serial No. 582,292. (No model.)

To all whom it may concern:

Be it known that we, HERMAN BURGER and WILLIAM H. McFALL, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Electric Meters, of which the following is a specification.

Our invention relates to electric meters of the class described in the application for patent of Charles Wirt, filed November 30, 1894, Serial No. 530,365, in which an oscillating electric motor is employed for driving a register, the register movement being controlled at each oscillation of the motor by a cam whose position is controlled and adjusted by a current-indicator connected in the circuit of which the current is to be measured. In that meter the pawl or clutch working the register is carried by an oscillating shaft worked directly by the motor and is arrested suddenly in its forward motion by the controlling-cam, while the motor is allowed to continue its movement by means of a spring connection. In that form of device there is a tendency to produce an overthrow of the register-wheels, caused by the sudden arresting of the actuating device, and, further, the pendulous movement of the motor is retarded in one direction and accelerated in the other direction by the spring connection between the motor and the register-actuating mechanism, which action introduces an element of disturbance in the operation of the meter. The object we have in view is to provide such a meter with a register-operating mechanism which will not be subject to these objections.

In carrying out our invention we operate the register through a ratchet-wheel cut with exceedingly fine teeth, and mount the operating-pawl upon a swinging lever whose falling movement is determined by the adjustment of the cam which is moved by the current-indicator, and whose rising movement is produced by a cam carried by the oscillating motor, the curve of the cam gradually approaching and finally terminating in a surface concentric to the axis of movement, so that the movement of the operating-pawl will be gradually diminished toward its end, without any sudden stoppage or jar, and hence without any overthrow of the ratchet-wheel, and so that the pendulous movement of the oscillating motor will not be varied by any spring connection with the register-operating mechanism.

A meter embodying our invention is illustrated in the accompanying drawings, in which—

Figure 1 is a partial side view, and Fig. 2 is a front view.

R R′ are the binding-posts of the solenoids H, through which the main current passes.

J is a shaft having secured to it the cores I of the solenoids H, and also the cam B, formed as an inverted arch.

G is the main shaft, to which are fastened the pendulum E and the cam A. The pendulum has fastened to its top the iron cores S S′. The cam A has a small portion F F′ concentric with G, and the remainder gradually diverges from the concentric circle until the proper eccentricity is attained.

P is a solenoid which actuates the pendulum E by its effect, when energized, upon the iron cores S S′.

Q is a hanger which supports the ratchet-wheel M, the pawl-arm O, and the detaining-pawl L. The ratchet-wheel M, cut with fine teeth, is fastened to the shaft T, which carries the pinion N, which is the driving-pinion of the register-train. (Not shown.) At its forward end the pawl-arm O has fastened on one side the roller C, which rests on the inside of the cam B. On the other side it has the roller D, which is placed above the cam A, and at its center it is provided with the actuating-pawl K. The pawl-arm may be counterbalanced by the weight U, but this weight is not sufficient to completely counterbalance the forward end of the pawl-arm, which tends to fall until stopped by the engagement of the roller C with the cam B.

The meter is so constructed that the pendulum can oscillate whether the current passes through H or not. When no current passes through the solenoids H, the roller C rests on the cam B at the nearest point to the axis J, and when the pendulum oscillates the highest point of the cam, as F′, just touches the roller D. When current passes through the solenoids H, the cores I are drawn in,

causing the cam B to swing through an angle. The roller C then falls through a distance due to this new position of the cam B, and is pushed up at each oscillation of the cam A into the original position, thus causing the ratchet-wheel M to revolve through an angle. By calibrating the cam B properly the ratchet-wheel can be made to turn through an increase in angle corresponding to the increase in current in the solenoids H, and the register will record these varying angles of movement, which, being proportional to the current flowing through the solenoids H, will form a correct registration of that current.

What we claim is—

1. In an electric meter, the combination with the current-indicator and a cam adjusted thereby, of a register-actuating device whose movement in one direction is controlled by said cam, a motor, and an oscillating cam driven by said motor, the working surface of said cam being constructed so as to move the register-actuating device in the other direction with a gradually-decreased speed of movement, substantially as set forth.

2. In an electric meter, the combination with a current-indicator and a cam adjusted thereby, of a register-actuating device whose movement in one direction is controlled by said cam, an oscillating electric motor, and an oscillating cam driven by said motor the working surface of said cam being constructed so as to move the register-actuating device in the other direction with a gradually-decreasing speed of movement, substantially as set forth.

3. In an electric meter, the combination with a current-indicator and a cam adjusted thereby, of a register-actuating device whose movement in one direction is controlled by said cam, a motor, and an oscillating cam driven by said motor and moving the register-actuating device in the other direction, the working surface of said cam having an eccentric and a concentric portion whereby the register will be driven with a gradually-decreased speed of movement, substantially as set forth.

4. In an electric meter, the combination with a current-indicator, of a cam in the form of an inverted arch adjusted by said indicator, a pawl for actuating a register-train having a projection engaging with said cam to limit the downward movement of the pawl, a motor, and a cam moved thereby having an eccentric and a concentric portion, and arranged to engage with the actuating-pawl and impart thereto a forward stroke of gradually-decreasing speed of movement, substantially as set forth.

This specification signed and witnessed this 2d day of December, 1895.

HERMAN BURGER.
WILLIAM H. McFALL.

Witnesses:
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