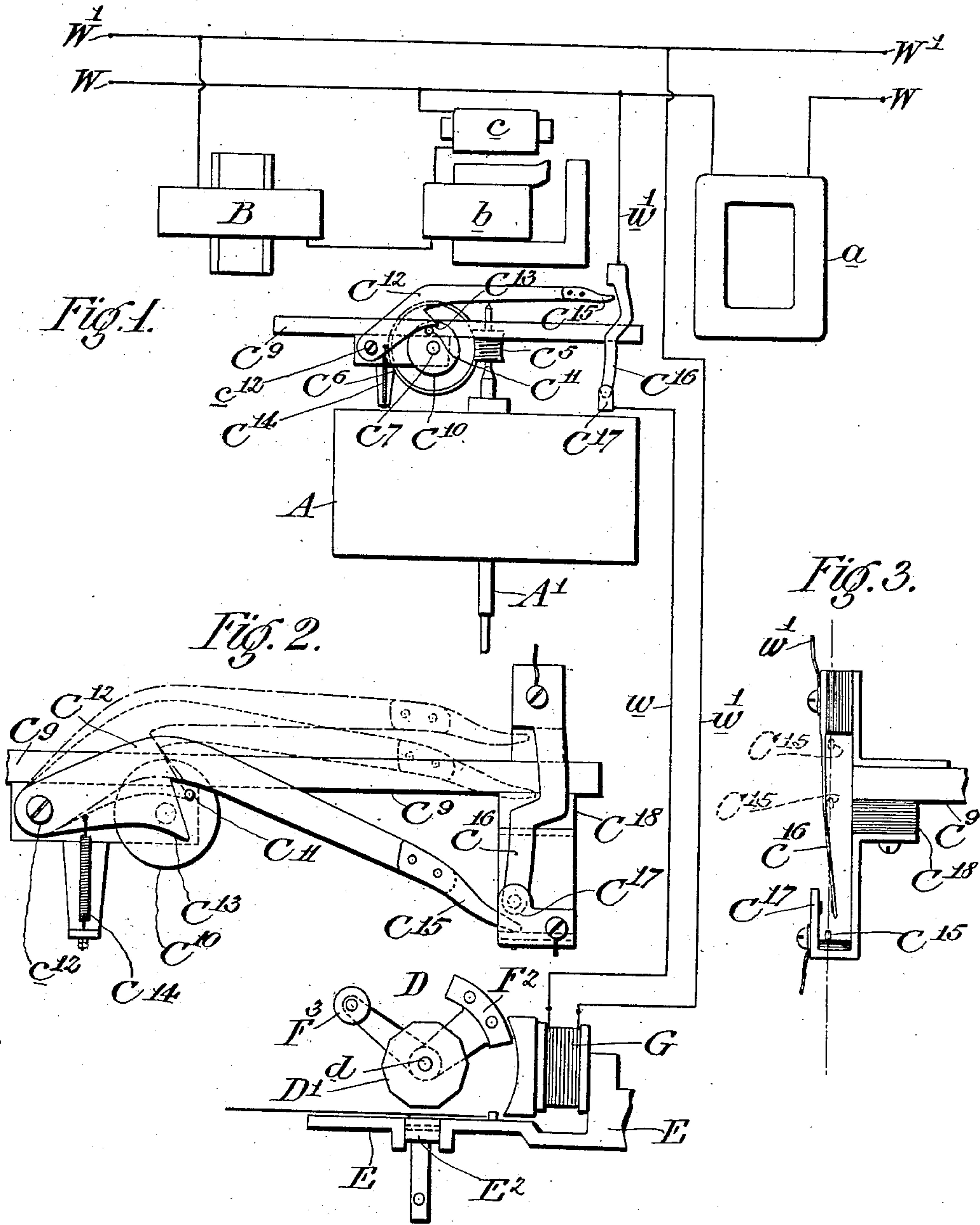


H. A. SELAH.  
RECORDING AND PRINTING METER.  
APPLICATION FILED AUG. 3, 1908.

920,089.

Patented Apr. 27, 1909.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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## RECORDING AND PRINTING METER.

No. 920,089.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed August 3, 1908. Serial No. 446,507.

*To all whom it may concern:*

Be it known that I, HOWARD A. SELAH, a citizen of the United States, residing at Wildwood, in the county of Cape May and State of New Jersey, have invented certain new and useful Improvements in Recording and Printing Meters, of which the following is a specification.

My invention relates to improvements in electric meters and embodies further improvements in the device shown and described in an application filed by me May 5, 1908 Serial No. 430,956.

My present invention resides in the novel construction and arrangement of the mechanism for controlling the current to the magnet for actuating the armature of the recording and counting device, as hereinafter fully specified and particularly pointed out in the claims.

In the accompanying drawings forming part of the specification, Figure 1 illustrates a diagrammatic view of the arrangement of the coils and the paths taken by the current in an electric meter together with the mechanism for closing and opening the circuit to the magnet of the recording and printing mechanism. Fig. 2 is a front elevation of the arm for controlling the switch member and its connections and Fig. 3 is an enlarged end view of the same.

The type of meter to which my invention is applicable is one having a rotatable meter armature A, made in the form of an inverted metal cup which is mounted upon a vertical shaft A<sup>1</sup> adapted to rest in jewel bearings. Suitable windings are employed which are operative in driving the armature and the shaft upon which the same is firmly secured. The windings employed in operating the meter-armature are indicated by letters a, b, and c. The coil a indicating a series coil and the coil b and c shunt coils. The shunt coils b and c are adapted to be supported within the armature A, and are together with the inductance coil B connected in shunt with the main source of current.

The upper end of the shaft A<sup>1</sup> upon which the meter armature is fastened is provided with a worm C<sup>5</sup>, which meshes with a worm wheel C<sup>6</sup>, mounted upon a shaft C<sup>7</sup>. The shaft C<sup>7</sup> is also provided with a disk C<sup>10</sup> having a small crank pin C<sup>11</sup>, adapted to engage the under side of a lever C<sup>12</sup> and to elevate the same as the disk C<sup>10</sup> revolves. The arm

C<sup>12</sup> is fulcrumed to a portion of the frame C<sup>9</sup> of the meter at a point c<sup>12</sup>, and is cut away at its free end leaving a ledge C<sup>13</sup>, to engage the crank pin C<sup>11</sup>. When the crank pin has turned to its uppermost position it will clear the ledge C<sup>13</sup> and the lever C<sup>12</sup> will be free to fall by gravity assisted if desired by a small spiral spring C<sup>14</sup> to its lowermost position. The free end of the lever C<sup>12</sup>, is provided with a finger C<sup>15</sup>, formed of vulcanite, hard rubber or other non-conducting material and is adapted to engage a switch member C<sup>16</sup>, which is at its upper end placed in electrical connection with the feed wire W, by a wire w<sup>1</sup>, and at its lower free end is adapted to engage the stationary contact C<sup>17</sup>. The stationary contact may be secured in any desirable manner to an insulating block C<sup>18</sup>, which in turn is adapted to be secured to the frame of the meter.

At the bottom of Fig. 1 is illustrated the recording and printing mechanism D, constituting an electro-magnet G, the windings of which are in electrical connection through the wire w with the stationary contact C<sup>17</sup> and with the main line W<sup>1</sup> through a wire w<sup>1</sup>. The recording mechanism is operated by an armature F<sup>2</sup>, moved in one direction by the magnet G and in the other direction by a weight F<sup>3</sup>. The armature F<sup>2</sup>, of the recording mechanism D, is loosely mounted upon a shaft d, as also are a number of counting dials D<sup>1</sup> one only of which is shown. A suitable frame E serves as a support for the magnet G and also acts as a support for a strip of paper which may be passed under the counting dials and printed or impressed by being moved into engagement with numerals on the counting dials by means of a plunger E<sup>2</sup>.

Returning to the devices for closing and opening the circuit to the electro magnet G, attention is called to the construction of the switch member C<sup>16</sup>, which is fashioned in such a manner that the lever C<sup>12</sup> can engage the switch member to close the circuit to the magnet, G, only for a short time during the downward movement of the lever and that during the period of travel of said lever under the influence of the crank-pin C<sup>11</sup> and while the lever is at rest at its lowermost point it will not act upon the switch member to close the circuit between it and the stationary contact C<sup>17</sup>. The object sought after and obtained by this arrangement is a comparatively short period of contact be-



tween the switch member and its stationary contact so that the magnet G, is energized only long enough to perform the work of moving the armature F<sup>2</sup> and the dials of the recording mechanism to the extent of one tenth of a revolution. In order to accomplish this result the switch member C<sup>16</sup>, is made in the form of a leaf spring which by its own elasticity is adapted to cause the circuit to remain normally open. By virtue of its curved surface as viewed from the end as in Fig. 3, the path of the finger C<sup>15</sup> in rising will be to the left of switch member until it reaches a point where the spring is off set as viewed from the front as in Fig. 2 where the finger will clear and, as the switch member presses forward the finger will occupy a position to the right of the switch member so that the lever C<sup>12</sup> in moving downward will press the switch member against its stationary contact where it will remain until the finger has passed below and out of engagement with the switch member.

By the construction and arrangement of the parts for controlling the current to the magnet G, I am enabled to reduce the friction upon the working part to a minimum and am able to prevent an undue waste of electrical energy by permitting the magnet G, to be energized only so long as is necessary to complete the work of moving the counting mechanism one step in advance.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. An electric meter comprising a meter-armature, a magnetically controlled recording mechanism having a circuit normally open, a lever adapted to be operated in one direction by the meter armature and in the opposite direction by gravity, and means for controlling the lever so that in falling it will momentarily close the circuit to the recording mechanism.

2. An electric meter comprising a meter-armature, an electrically controlled record-

ing mechanism having a magnet the windings of which are in shunt with the main circuit and normally open, a lever adapted to be operated in one direction by the meter armature, means to impart a quick return-movement to said lever and a switch member so arranged as to close the circuit to the recording mechanism by engagement with said lever during its return movement.

3. In combination with an electric meter, a meter armature, an electrically controlled recording mechanism, a spring actuated switch member adapted to normally open the electric circuit to the recording mechanism, and a lever adapted to be lifted by the meter armature and in falling to move the switch member and close the circuit of the recording mechanism.

4. A switch mechanism for electric meters comprising a lever adapted to be controlled by the meter armature, a switch member adapted to control the circuit of an electric recording mechanism, means adapted to be controlled by the meter armature for raising said lever and disengaging the same at the end of its upward stroke so that the lever is enabled to fall by gravity and in so doing move the switch member to close the electric current to the recording mechanism.

5. In combination with an electric meter, a meter armature, a circuit controlling switch member, a recording mechanism, a lever controlled when moving in one direction by the meter armature and by gravity when moving in the other direction, said lever being adapted to move the switch member and close a circuit to the recording mechanism when traveling a portion only of the distance between the two extremities of its movement.

In testimony whereof I affix my signature in presence of two witnesses.

HOWARD A. SELAH.

Witnesses:

JOHN BRIGHT,  
CHARLES MELLOY.