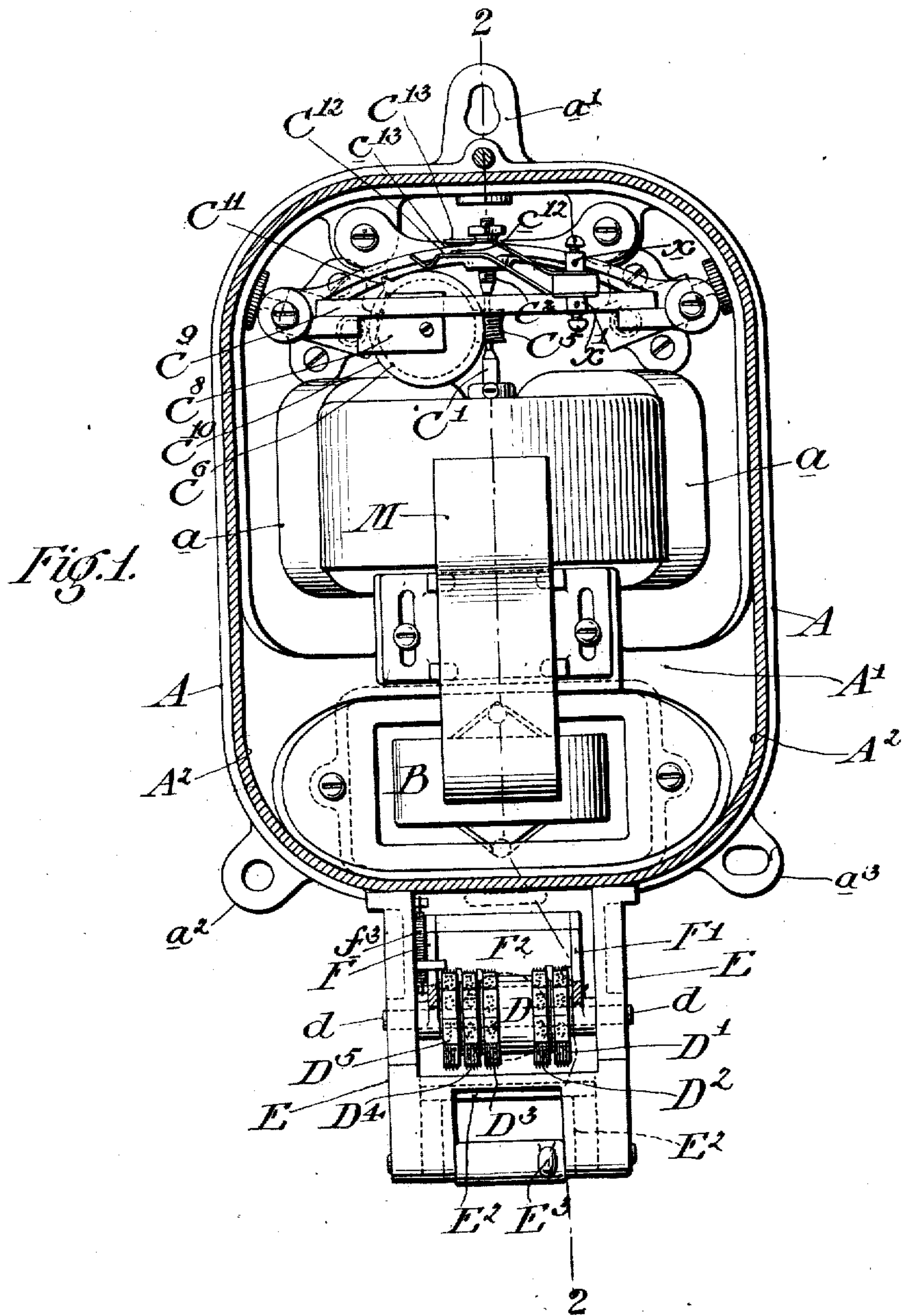


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APPLICATION FILED MAY 5, 1908.

Patented Apr. 27, 1909.  
3 SHEETS—SHEET 1.



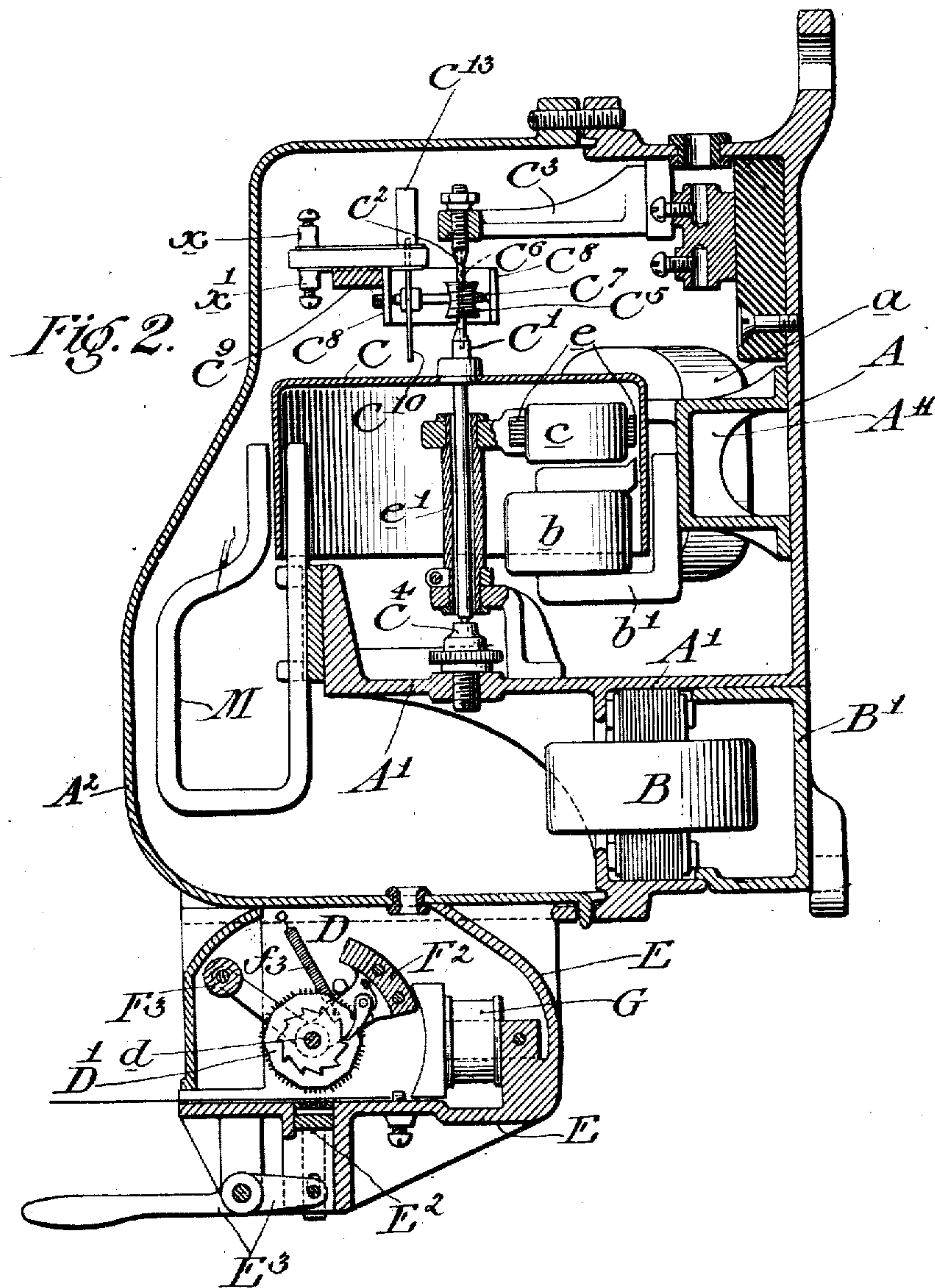
Witnesses:  
John E. Hubbell  
James J. Brady

Inventor:  
Howard A. Selah,  
by his Attorney  
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# UNITED STATES PATENT OFFICE.

HOWARD A. SELAH, OF NORTH WILDWOOD, NEW JERSEY, ASSIGNOR OF ONE-HALF TO JAMES  
McLINDEN, OF NORTH WILDWOOD, NEW JERSEY.

## RECORDING AND PRINTING METER.

No. 920,088.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed May 5, 1908. Serial No. 430,956.

*To all whom it may concern:*

Be it known that I, HOWARD A. SELAH, a citizen of the United States, residing at North 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 electric meters and has for its object to provide a meter with an improved recording mechanism whereby the consumption of current in kilowatt hours may be read in money values as for instance in dollars and cents so that both the agent and the consumer will at once know the cost of the current which has passed through the meter during a given period of time. Thus for instance at the expiration of each month when it is customary for an inspector to take the readings of meters within a certain territory, instead of noting the consumption in kilowatt hours and sending a memorandum of same with the number of the meter to the office for commutation into money value, according to my improved meter he has merely to insert a folded slip of paper into a slot in the meter whence by pressing down a lever and removing the slip he will at once have a correct duplicate reading in dollars and cents of the cost of the current which has passed through the meter. The object of the duplicate slips being to provide one for the consumer and the other for the office of the distributing company which will facilitate the labor of preparing and sending out bills and eliminate error in the preparation of the same.

In carrying out my invention I employ a meter having a rotatable meter armature made in the form of an aluminum or copper cup which is mounted upon a vertical shaft supported by jewel-bearings. Suitable windings are employed which are operative in driving the armature and the shaft to which the armature is secured. The leading feature of my invention embodies a recording and counting device and mechanism fed by a step-by-step movement imparted by an armature which is controlled by a magnet, the windings of which are operatively connected in shunt with the main source of electrical energy.

A further feature of my invention consists

in the employment of a mechanism controlled by the shaft of the meter armature whereby the path of the current to the magnet of the counting mechanism will be closed and opened after a predetermined number of rotations of the meter armature.

My invention also consists in certain details of construction all of which are hereinafter described and pointed out in the claims.

Referring to the accompanying drawings: Figure 1 represents a front elevation of a meter provided with my recording mechanism and showing the cover broken away to show the operative parts located within the meter. Fig. 2 illustrates a vertical section through the meter with the cover secured in position, and Fig. 3 shows a diagrammatic view of the arrangement of the coils and the paths taken by the electric current.

Referring more particularly to Figs. 1 and 2 of the drawings, the working parts of the meter are shown inclosed in a metal case A, which is provided with supporting lugs  $a^1$ ,  $a^2$  and  $a^3$  for securing the same to a wall or other means of support. The lower part of the metal case is provided with a bracket  $A^1$ , which serves as a lower support for the working parts of the meter and incidentally as a means of securing the core of an inductance coil B, to the lower portion of the casing of the meter.

The windings which are employed in driving the meter-armature are indicated by letters  $a$ ,  $a$ ,  $b$ , and  $c$ . The coils  $a$ ,  $a$ , are the series coils of the meter and are supported from the frame A, by means of a bracket  $A''$ . As is customary in meters of this type the coils  $a$ ,  $a$ , are supported at an angle to each other in order to reduce the length of their magnetic circuit and also to bring them into a more effective position with respect to the shunt coils. The shunt-coils  $b$  and  $c$  as shown in Fig. 2 are suitably supported within the armature C. The coil  $b$ , is mounted upon a core  $b^1$ , the poles of which include the depending portion of the meter-armature and said core is carried by the bracket  $A''$ , which as before stated supports the series coils. The coil  $c$  is provided with a core  $c^1$ , carried by a sleeve  $c^2$  surrounding the armature shaft  $C^1$ , and together with the coil  $b$  is connected in shunt to the main source of current.



A permanent magnet M, acting as a retarding-magnet is supported from the outer end of a bracket A<sup>1</sup>, so that its poles include the depending portion of the armature C at a point opposite the motor winding so that it is removed from the influence of the motor-coils.

The inductance coil B, is secured in position by a support B<sup>1</sup>, which incloses the winding of the coil and serves as a means for securing the core of the winding to the bracket A<sup>1</sup>.

The inverted cap shaped armature C, which I style the meter armature consists of an aluminum or copper cup fastened upon a shaft C<sup>1</sup>, which is journaled in the usual manner in a bearing C<sup>2</sup>, at the top carried by a bracket C<sup>3</sup>, and at the bottom by a jewel bearing C<sup>4</sup>, carried by the bracket A<sup>1</sup>. The upper portion of the shaft C<sup>1</sup>, 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 journaled in a clamp C<sup>8</sup> which is mounted upon a support C<sup>9</sup> carried by the bracket C<sup>3</sup>. The shaft C<sup>7</sup>, is also provided with a circuit controlling or circuit closing disk C<sup>10</sup>, upon the periphery of which is a tooth C<sup>11</sup>, serving at each revolution of the disk to engage and elevate a spring-contact member C<sup>12</sup> and to press its platinum point c<sup>13</sup> against a similar point c<sup>13</sup> of a spring contact member C<sup>13</sup>. The spring contact members C<sup>12</sup> and C<sup>13</sup> are mounted upon opposite sides of an insulating block C<sup>14</sup> which in turn is secured to the support C<sup>9</sup>.

The counting mechanism or counter D, is of the conventional construction embodying a number of dials, D<sup>1</sup>, D<sup>2</sup>, D<sup>3</sup>, D<sup>4</sup> and D<sup>5</sup> to each of which is secured a ratchet wheel having ten teeth adapted to be operated upon by a suitable spring pressed pawl. The units dial as is usual is worked by its pawl separately, while all of the other pawls ride idly upon disks until a notch in one of the disks is reached when the pawl drops into the notch and being of sufficient width to cover the adjacent ratchet wheel on the second or tenth dial, it turns it one revolution and similarly with the hundred and thousand dials.

The counter mechanism as briefly described above is of the ordinary construction and hence forms of itself no part of my invention, aside from the means by which it is controlled and operated in connection with the meter mechanism. Moreover the specific means for operating the counter mechanism whereby the dials are returned to zero after a record has been taken will form the subject matter of a separate and subsequent application and therefore a description in detail of this particular portion of the mechanism has not been thought necessary here.

The dials D<sup>1</sup>, D<sup>2</sup>, D<sup>3</sup>, D<sup>4</sup> and D<sup>5</sup> are supported loosely upon a shaft d, which is carried by a lower casing E, depending from a

cover A<sup>2</sup> inclosing the main or body portion of the meter. The said shaft also forms a means of support for bell crank levers F and F<sup>1</sup> to the inner ends of which is fastened the counter-armature F<sup>2</sup>, and to the outer ends a counter-balance weight F<sup>3</sup>. The armature F<sup>2</sup>, is operated by the core of a magnet G, the windings of which are in shunt with the main circuit.

As shown in diagram Fig. 3 a wire w, conveys energy from the main circuit W to a binding post x of the contact member C<sup>12</sup>, and a wire w<sup>1</sup> continues the path from a binding post x<sup>1</sup> of the contact member C<sup>13</sup> to the windings of the magnet G, the opposite end of the line from the windings of the magnet G being established by a continuation of the wire w<sup>1</sup>, leading up to the wire W<sup>1</sup> of the main circuit.

The numerals on the dials D<sup>1</sup>, etc. are preferably outlined with projecting points for the purpose of perforating a strip of paper inserted between the dials and a plunger E<sup>1</sup>. When a strip of paper is inserted in the aforesaid manner, the plunger E<sup>1</sup>, is moved upward by means of a lever E<sup>2</sup>, and the projecting points will be pressed through the paper into openings in the top of the plunger and the record thus obtained on the perforated sheet will at once show the cost to the consumer of the current which has passed through the meter.

It is obvious that in lieu of the perforating means I may employ embossing letters or even ordinary printing without departing from the scope of my invention.

What I claim as new and desire to secure by Letters Patent is:

1. An electric meter comprising an armature shaft, a magnetically controlled meter armature mounted thereon, a counting mechanism, an armature for operating the counting mechanism, a magnet adapted to operate said armature, contact members controlling the circuit through said magnet and arranged to normally open said circuit, and a circuit closing disk controlled by the shaft of the meter armature and having a projection adapted to press one of the contact members into engagement with the other to close the circuit to the magnet of the counting mechanism.

2. In combination with an electric meter, a magnetically controlled meter-armature, a vertical shaft supporting the meter armature, a counting mechanism, an armature for operating the counting mechanism, a magnet controlling said armature having a winding the circuit of which is in shunt with the main circuit of the meter, contact members controlling the circuit to said magnet and adapted by their elasticity to hold the circuit open, a circuit closing disk operatively geared to the shaft supporting the meter-armature said disk having a tooth adapted

to move one of the contact members into engagement with the other to close the circuit to the magnet of the counting mechanism, and a plunger which when manually operated is adapted to press a strip of paper into engagement with the counting mechanism.

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

HOWARD A. SELAH.

Witnesses:

ARNOLD KATZ,

DAVID S. WILLIAMS.