No. 765,592. PATENTED JULY 19, 1904.

A. PELOUX.

ELECTRIC METER.

APPLICATION FILED OCT. 16, 1902.

NO MODEL.

Fig. 1

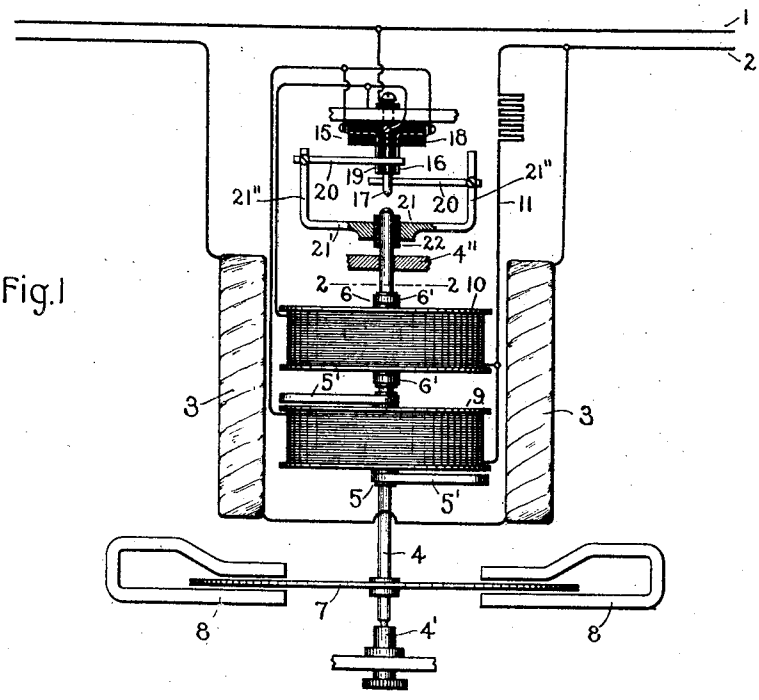


Fig. 2.

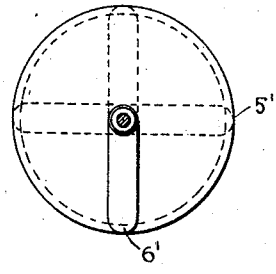


Fig. 3

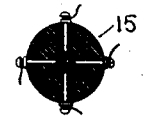
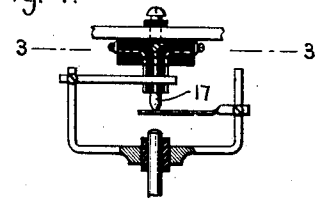


Fig. 4.



Witnesses.
C. Ellis Glenn.
Helen A. Ford

Inventor.
Albert Peloux.
by Allen H. Gerhardt
Atty.

No. 765,592. Patented July 19, 1904.

UNITED STATES PATENT OFFICE.

ALBERT PELOUX, OF GENEVA, SWITZERLAND, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 765,592, dated July 19, 1904.

Application filed October 16, 1902. Serial No. 127,468. (No model.)

To all whom it may concern:

Be it known that I, ALBERT PELOUX, a citizen of the Swiss Republic, and a resident of Geneva, Switzerland, have invented certain new and useful Improvements in Electric Meters, of which the following is a specification.

My invention relates to an improved form of motor-meter.

With motor-meters, as is well known, one very prolific source of trouble is the friction which is produced between the current-introducing brushes and the surface against which they bear.

The object of my invention is the production of a meter in which the engaging parts are so formed as to reduce this friction to a minimum.

The points of novelty possessed by my invention are pointed out in the appended claims, forming a part of this specification.

In the accompanying drawings, Figure 1 is an elevation, partly diagrammatic, showing the general arrangement of a meter embodying my invention. Fig. 2 is a section taken on the line 2 2, showing the construction of shunt-coils and rotating member. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 4, showing the construction of the commutator. Fig. 4 is a detailed view in elevation, showing a modified method of arranging the contacting surfaces.

The circuit in which the consumption of energy is to be measured includes the mains 1 2. In the main 2 are located in series the two large current-coils 3, which are placed with their axes horizontal and coincident. The rotating member of the meter comprises a vertical shaft 4, upon which a pair of magnetizable members 5 and 6 are rigidly secured. The shaft 4 is supported in suitable bearings 4′ and 4″.

The members 5 and 6 are similar in construction and consist of sleeved portions which surround the shaft 4 and pairs of arms 5′ and 6′, which extend perpendicularly and oppositely from the sleeved member. The members 5 and 6 are staggered with respect to one another, as is clearly seen in Fig. 2, and are placed one above the other. At the lower end of the shaft 4 is the usual disk 7, which, in conjunction with the magnets 8, operates in the ordinary manner to retard the rotation of the shaft.

Surrounding the sleeved portion of the members 5 and 6 and located between the oppositely-extending members 5′ 5′ and 6′ 6′, respectively, are two coils 9 and 10. These coils are both connected on one side to the main 2 through the line 11. The lines leading from the other side of these coils are bifurcated and are connected to the conductor portions of the commutator or current-introducing member 15. This commutator or current-introducing member comprises a cylindrical portion of insulating material 16, in which is axially inserted a rod 17, formed of good conducting material, as, preferably, silver. The upper end of this rod 17 is electrically connected to the main 1. Above the cylindrical portion 16 is another cylindrical portion of insulating material 18 of considerably larger diameter. The portion 18 is shown integral and coaxial with the portion 16, and the rod 17 passes through the portion 18 as well as the portion 16.

The conducting portions of the commutator or current-introducing member consist of four fine silver wires 19, which are embedded in the block of insulation. The wires 19 extend radially from points at the periphery of the enlarged portion 18 for some distance and then extend downward in a direction parallel to the axes of the cylinder and are partially embedded in grooves formed in the periphery of the block 16, having a portion exposed in order to contact with the brushes 20. The wires 19 are symmetrically disposed with reference to the block 16, occupying positions ninety degrees apart. To the opposite pairs of wires 19 the bifurcated conductors leading from the coils 9 and 10 are connected.

The brushes 20 are adjustably mounted on the frame or carrier 21. The framework of the carrier 21 consists of a horizontal portion 21′ and two vertical portions 21″, to which the brushes are attached.

The carrier 21 is mounted on the shaft at its upper end and is insulated therefrom by a

suitable bushing 22. One of the brushes 20 is adapted to bear upon the surface of the cylindrical portion 16, while the other bears against the projecting lower end of the rod 17. As the shaft 4 rotates, therefore, a circuit is made alternately through the coils 9 and 10 twice during each revolution of the shaft 4.

The passage of current through the coils 9 and 10 magnetizes the members 5 and 6, respectively. These members when energized tend to set themselves parallel with the magnetic field passing between the coils 3 3, as will be readily understood by those skilled in the art. This rotates the shaft 4, and as one of the members turns into the position occupied by the member 5 in Fig. 1 the circuit is automatically broken through the coil which energizes that member and is at the same time closed through the coil which energizes the other member, thus keeping up the rotation.

In the construction shown in Fig. 4 in order to still further reduce the friction I have pointed the end of the rod 17 and have placed the brush which engages with it so that its flat side bears against the end of the rod, the pressure between the two members being in the direction of the rod.

The meter which I have described is in general substantially like that shown in my Patent No. 632,144. This meter while generally satisfactory is yet open to the objections which exist with all meters of this character—viz., the friction due to the current-introducing brushes. With my present construction I am enabled to reduce the size of the commutator to a minimum, with a corresponding decrease in the amount of friction.

The commutator can be easily and cheaply made, and I have found it possible to construct a commutator of this character, the diameter of which is somewhat less than three millimeters. It will be readily understood by those skilled in the art that such a result is a desirable one and one which will materially reduce the friction of the meter.

While I have shown a meter in which there are two shunt-coils and in which the commutator has four conducting-segments, it will of course be understood that a different number of parts might be selected.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A commutator comprising a block of insulating material, said block consisting of two axial cylindrical portions, one of which is considerably larger than the other, and conducting members consisting of wires, a portion of each wire lying in axial grooves formed at the periphery of the smaller cylindrical portion, and another portion being embedded in the larger portion and extending substantially in a radial direction to the periphery of said larger portion.

2. In combination, a commutator comprising a cylindrical body of insulating material, having a conducting member axially disposed therein and other conductors parallel thereto at the periphery of said body, and a brush-carrying member, said brush-carrying member and said commutator being relatively rotatable, said brush-carrying member bearing a pair of brushes electrically connected with one another and adapted to make contact between the central conductor of said commutator and successive peripheral conductors as the brush-carrying member and commutator are relatively rotated.

3. In combination, a commutator comprising a cylindrical body of insulating material, having a conducting member axially disposed therein and other conductors arranged parallel thereto at the periphery of said body, and a contacting member, said commutator and contacting member being relatively rotatable, said contacting member being adapted to bear against the central conductor and the periphery of the cylindrical body so that contact is made between the central conductor and successive peripheral conductors as the brush-carrying member and commutator are relatively rotated.

4. In combination, a commutator comprising a cylindrical body of insulating material, having a conducting member axially mounted therein, one end of said conductor being pointed and extending beyond said cylindrical body, and other conductors parallel thereto, at the periphery of said body, and a brush-carrying member, said brush-carrying member and said commutator being relatively rotatable, said brush-carrying member bearing a pair of brushes electrically connected with one another, one of said brushes bearing against the periphery of said cylindrical body and the other of said brushes bearing against the end of said pointed central conductor.

5. In combination, a commutator comprising a cylindrical body of insulating material, having a conducting member axially disposed therein, other conductors parallel thereto at the periphery of said body, and short-circuited brushes for successively connecting successive peripheral conductors to the axial conducting member.

In witness whereof I have hereunto set my hand this 1st day of October, 1902.

ALBERT PELOUX.

Witnesses:
L. H. MUNIER,
FÉLICIER VULLIER-SERMET.