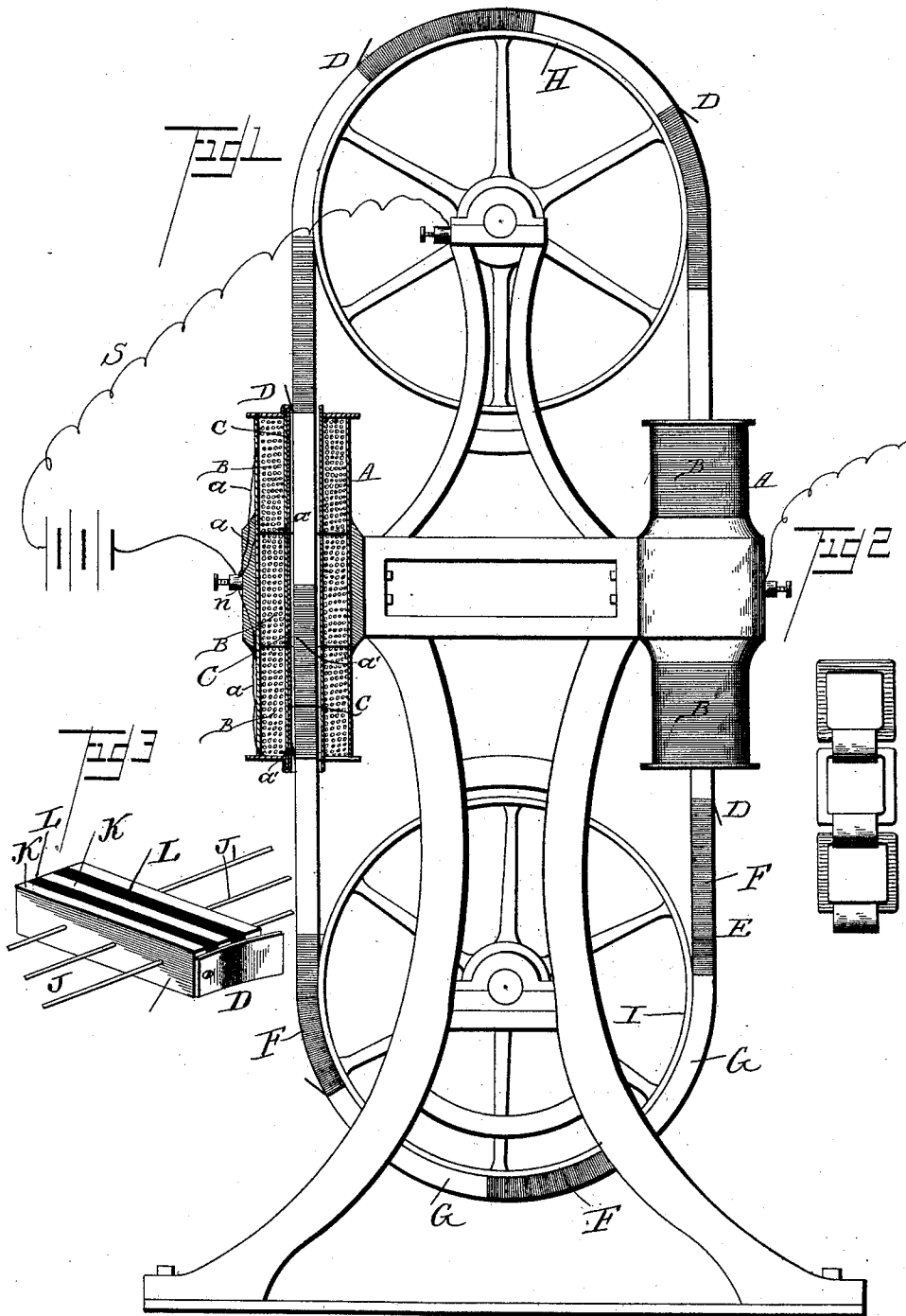


(No Model.)

M. H. COLLOM.
ELECTRIC MOTOR.

No. 464,063.

Patented Dec. 1, 1891.



WITNESSES

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UNITED STATES PATENT OFFICE.

MARTIN H. COLLOM, OF DENVER, COLORADO.

ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 464,063, dated December 1, 1891.

Application filed January 27, 1891. Serial No. 379,257. (No model.)

To all whom it may concern:

Be it known that I, MARTIN H. COLLOM, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Electric Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as it appertains to make and use the same.

This invention relates to electric motors, and particularly to that class which operate continuously without any reciprocatory or oscillatory motion.

The object of the invention is to obtain the maximum amount of available force from a given amount of electric energy and apply the same in an economic manner.

A further object of the invention is to provide a motor of a given capacity that can have its efficiency increased or diminished at will without an increase of current or an increase of wire, and which will possess all the advantages gained by varying the size of the armature in an electric motor of usual construction, the electrical force remaining the same.

The improvement consists of a solenoid and an endless core, the latter being composed of alternate magnetic and non-magnetic sections and provided with brushes at proper intervals, which are in electrical connection with a conductor in the core and which serve to close the circuit through the solenoid at the right moment. The solenoid may be composed of a series of independent sections, which are electrically insulated, or comprise a number of separate solenoids which are juxtaposed. One terminal of the wire of the solenoid is in electrical connection with a metal plate or contact-strip placed within the said solenoid to be engaged by the brush on the endless core to complete the circuit, and the other terminal is connected with one pole of the battery or dynamo. The endless-core conductor is in connection with the other pole of the said battery or dynamo.

The improvement also consists of the novel features and the peculiar construction and combination of the parts, which will be hereinafter more fully described and claimed, and

which are shown in the annexed drawings, in which—

Figure 1 is a front view, parts being broken away, of a motor embodying my invention. Fig. 2 is a detail view of a portion of the endless core. Fig. 3 is a detail view of a portion of a modified form of endless core.

The solenoid A is of usual construction, being formed on a tubular center, and is preferably composed of a series of sections or independent solenoids B B B, which are juxtaposed and in alignment, the sections or solenoids being insulated from each other at their opposing ends. The terminals *aaa* of the solenoid-sections B B B unite with one common conductor at *n*, by means of which they are connected with one pole of a battery or dynamo in the usual manner. The other terminals *a'* are connected with contact-strips C, which are located within the solenoid, one being provided for each section or separate solenoid within the path of the brush D on the endless core E. These contact-strips C extend axially of the solenoid or sections thereof a proper distance, preferably the entire length of each section or separate solenoid.

The endless core E is composed of a series of magnetic and non-magnetic sections F and G, respectively, which are preferably of a length about equal to the length of a section or separate solenoid B, and passes over two pulleys H and I, one of which pulleys is connected electrically with the other pole of the battery or dynamo by the conductor S. The endless core E may be composed of metallic links after the fashion of any ordinary drive-chain, as shown in Fig. 2, the links being assembled to form alternate magnetic and non-magnetic sections. The links of the magnetic sections are made from iron or other magnetic substance, and the links of the non-magnetic sections are formed from brass or other non-magnetic material. Obviously in this form of core the sections F and G are electric conductors and obviate the intervention of other means for conducting the current from the pulley I to the brushes D, the latter being attached to the said links in any convenient manner.

In the form of core shown in Fig. 3 the magnetic and the non-magnetic sections are

mounted on wires J and comprise strips K, of iron or other magnetic material, and strips L, of leather, rubber, or other non-magnetic substance. The strips K are separated by strips
 5 L, of rubber or leather, to give sufficient flexibility to the core to enable it to pass freely and readily over the pulleys. The brushes D are attached to the magnetic strips. Obviously the wires J form conductors to complete the circuit through the solenoid.

There may be one or more solenoids A, and in the event of two being employed they will be disposed at diametrically-opposite points, as shown in the accompanying drawing.

15 The operation is manifest to one skilled in the art from the foregoing detailed description, reference being had to the drawings. However, it may be well to state that the brushes are so disposed with reference to the
 20 solenoid and the core that the circuit is closed through the solenoid or a section thereof at or about the instant the magnetic section is entering the said solenoid or section, and the circuit is interrupted through the said solenoid or section about the time the magnetic
 25 section of the core is emerging therefrom at the end opposite that at which it entered. The direction of the motor is reversed by changing the position of the brushes and placing them at the opposite end of the magnetic
 30 sections. The power is taken from one of the pulleys or the shafts on which the pulleys are mounted.

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

1. An electric motor comprising a solenoid and an endless core forming an electrical conductor to convey the current to and adapted to complete the circuit through the said solenoid, substantially as described.

2. An electric motor comprising a solenoid, the latter composed of a series of sections or separate solenoids in juxtaposition, and an
 45 endless core composed of a series of magnetic and non-magnetic sections, said endless core being an electrical conductor and adapted to convey the current to and complete the circuit through the said sections or series of
 50 solenoids, substantially as and for the purpose set forth.

3. The combination, with a solenoid having a contact in the plane of its core-opening and

having one terminal of its wire in electrical connection with the said contact and the other
 55 terminal connected with one pole of a current-generator, of an endless core provided with brushes which are in electrical connection with the other pole of the said current-generator, substantially as and for the purpose described.

4. The combination, with a solenoid having a contact in the plane of its core-opening and having one terminal of its wire connected with the said contact and the other terminal
 65 in electrical connection with one pole of a current-generator, of an endless core composed of a series of magnetic and non-magnetic sections, the magnetic sections being in electrical connection with the other pole of the said
 70 current-generator, substantially as set forth.

5. The combination, with the solenoid having one terminal of the wire in electrical connection with a pole of the current-generator and having the other terminal within the
 75 plane of the core-opening, of an endless core composed of an alternate series of magnetic and non-magnetic sections and provided with brushes at proper intervals in its length which are electrically connected through the core
 80 with the other pole of the said current-generator, and which close the circuit through the solenoid when in engagement with the said contact, substantially as described.

6. The combination, with a solenoid composed of a series of independent sections or separate solenoids, each section or separate solenoid having one terminal in electrical connection with a contact which is in the
 90 plane of the core and its other terminal in electrical connection with one pole of a current-generator, of an endless core composed of a series of magnetic and non-magnetic sections and provided with brushes which are electrically connected with the other pole of
 95 the current-generator and close the circuit through the said sections or separate solenoids consecutively, substantially as described, for the purpose specified.

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

MARTIN H. COLLUM.

Witnesses:

ORLANDO KLING,
 FRANK L. WOODWARD.