(No Model.)

2 Sheets—Sheet 1.

E. F. RECORDON.

ELECTRIC MOTOR.

No. 344,679. Patented June 29, 1886.

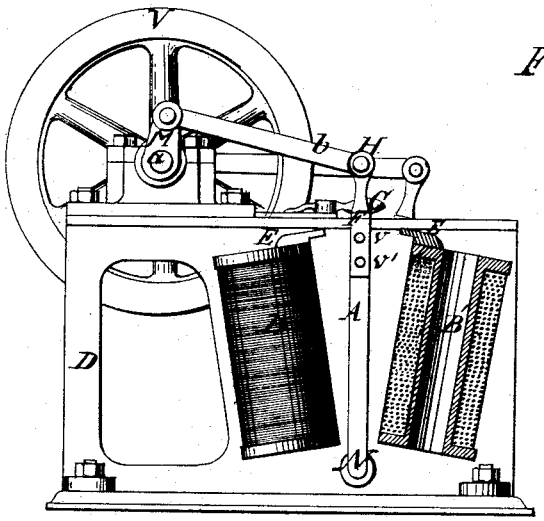

Fig. 1.

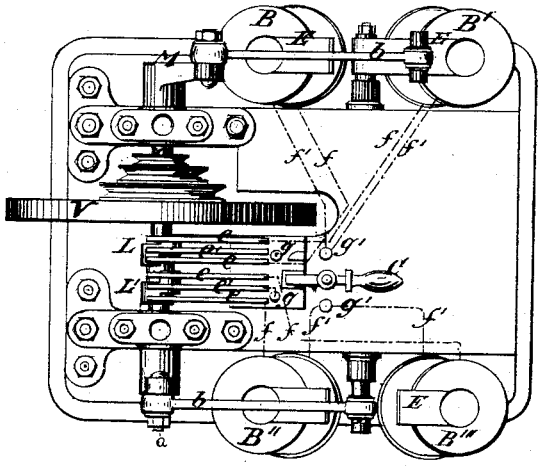

Fig. 2.

Witnesses

F. G. Fischer

W. Palmer

Inventor

Ernest F. Recordon

By his Attorney L. Deane

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

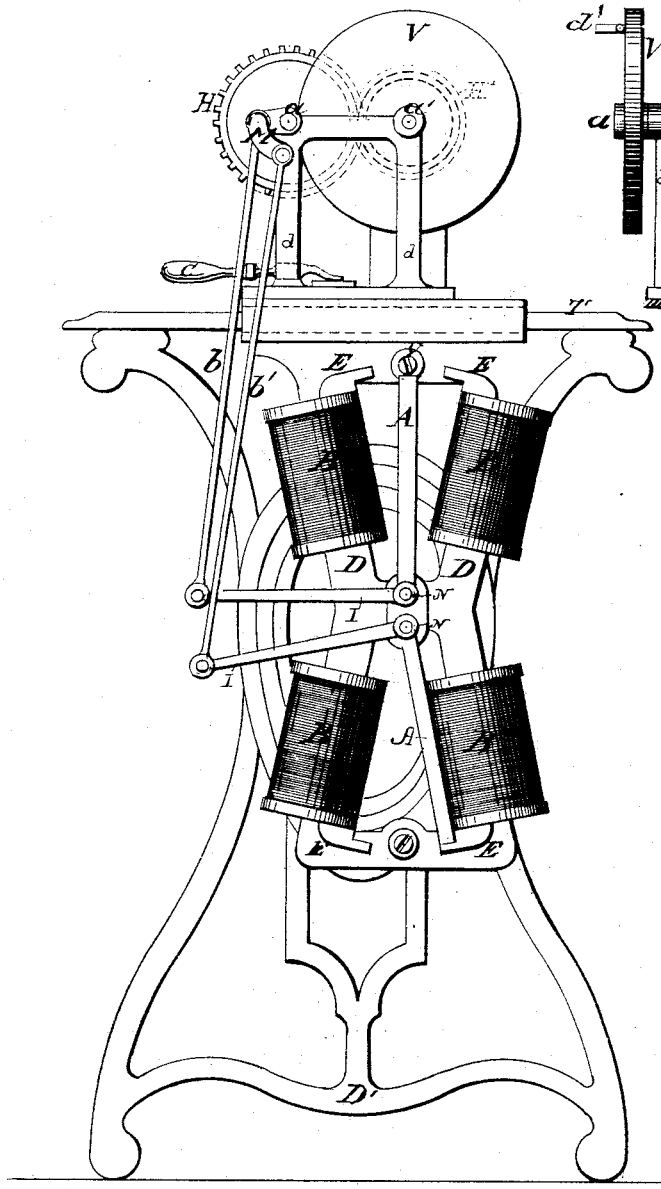
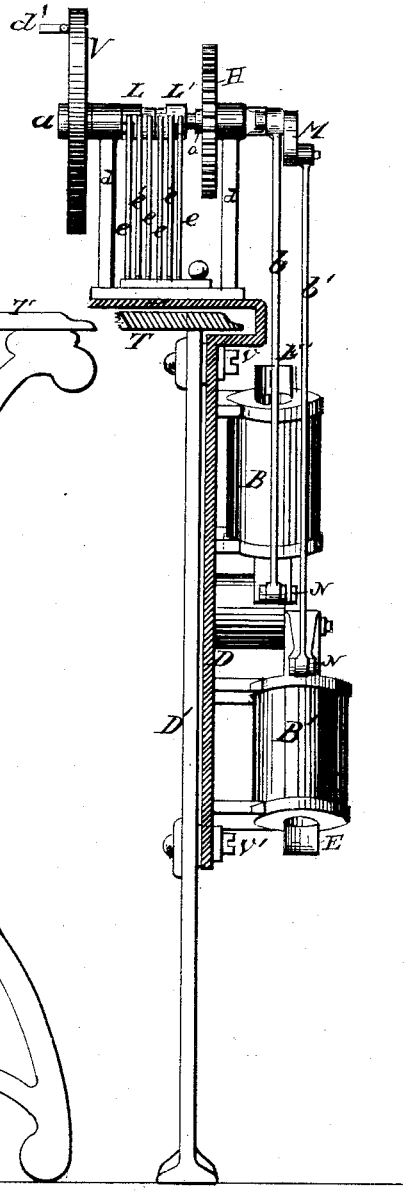


Fig. 4.



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W. Palmer

Inventor

Ernest F. Recordon.

By his Attorney L. Deane

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ERNEST FREDERIC RECORDON, OF PARIS, FRANCE.

ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 344,679, dated June 29, 1886.

Application filed June 10, 1885. Serial No. 168,251. (No model.)

To all whom it may concern:

Be it known that I, ERNEST FREDERIC RECORDON, a citizen of the Republic of Switzerland, residing at Paris, in the Republic of France, have invented certain new and useful Improvements in Magneto-Electric Motors for Sewing-Machines, Knitting-Machines, and other Small Apparatus, called "Electric Motor Recordon," of which the following is a specification, reference being had therein to the accompanying drawings.

This invention is based on the application of the electro-magnet shown in my Patent No. 168,251, to sewing-machines, knitting-machines, and other small apparatus, in order to derive motion from the attractive power the electro-magnet has upon its armature.

By means of an advanced lip or prolongation of one of the poles of my electro-magnet I contrive to equalize the intensity of attraction during the motion of the armatures toward the poles. This is an improvement of great importance, and contributes much to the practical utilization of the attractive force of my electro-magnets.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, showing the motor independent of any other device. Fig. 2 is a top plan view of Fig. 1, showing pulleys, &c., to transmit power. Fig. 3 is a side elevation showing the motor applied to a sewing-machine. Fig. 4 is a front view, partly in section, of device shown in Fig. 3.

This invention relates to electric motors, and more particularly to the adaptation of such an electro-magnet as is found in my Patent No. 312,511, of February 17, 1885, for the purpose of producing power for driving sewing-machines and like devices; and the novelty consists in the means by which this object is accomplished.

In the accompanying drawings, B, B′, B″, and B‴ indicate electro-magnets suitably attached in pairs to a frame, and in each pair the magnets are placed a little way apart from each other and inclined in opposite directions, while there are shown a pair of electro-magnets on each side of the motor in Figs. 1 and 2, and two pairs of electro-magnets on one side in Fig. 3. I do not intend to limit myself to any exact number of pairs, or to the mere arrangement shown.

To the upper edge of each electro-magnet is fixed a lip, E, pointing toward the other electro-magnet of the pair, and between these lips is placed the armature A, which, being pivoted at its lower or upper end at N, as the electric current passes alternately through the magnets of each pair the armature is caused to vibrate back and forth on its pivotal point. These movements communicate power directly or intermediately to the rod *b*, that moves the crank M of the fly-wheel V or gear-wheel H, which is thence conveyed to the sewing-machine. This general arrangement and combination of parts can be readily embodied in an independent device, as shown in Figs. 1 and 2, whence, by suitable pulleys and band-connection, it is carried to the sewing-machine or other device, or the combination can be put on a frame, D′, and attached by screws *v v′* to the side of the frame D′ of the sewing-machine or other device, an edge of which is now indicated by the letter T, as shown in Figs. 3 and 4. In either case, however, the principle of operation is the same, the only change being in the mere mechanical adjustment and aggregation of the parts.

In Fig. 3 I have interposed the lever I I′ between the armatures A and the rods *b b′*, so as to adapt the various parts to act to the best advantage, and I have used two rods instead of one because of the increased number of the electro-magnets. In operating this motor the electric current is distributed by two commutators, L L′, Figs. 2 and 4, one commutator for each pair of magnets. The metal springs *e′ e′* are the conductors of the current, and the springs *e e* correspond with the four magnets. The handle C is used to open and to close the circuit. The current coming from the battery-terminals in *g g* goes to the commutators L L′, from those to the springs *e′ e′*, and thereafter through the other springs, *e e*, to the magnets, as indicated by dotted lines *f f′*, Fig. 2. Two buttons, *g′ g′*, are adapted to the wires for returning the current to the battery. When the current passes through the magnet B, the armature A will be attracted. Then the current passes through the magnet B′, which attracts also the armature. Thus the play of the armatures is alternate and is conveyed directly or intermediately by the connecting-rod *b* to the crank M, which turns the arbor *a*.

I may use the gear-wheels H and H′, as shown in Figs. 3 and 4, to turn the second arbor, *a′*, which carries the fly-wheel V.

Suitable provision is made for the support of the wheels H and V by the standards *d*, attached to the frame D.

The fly-wheel V has a pin, *d*, extending from some eccentric point in its circumference which may be used to connect with the fly-wheel of a sewing-machine.

This electromotor is very simple, and can be operated to advantage by an electric current of small power.

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

1. In an electric motor, the magnets placed in pairs and apart from each other and inclined in opposite directions, each magnet of each pair having at its upper edge a lip extending outwardly and toward the other magnet, in combination with an armature pivoted to swing between the magnets of each pair, substantially as described.

2. In combination with a motor composed of one or more pairs of magnets, each having lips extending toward the other, and an armature pivoted to swing between said magnets, the lever-rod and crank connecting with wheels adapted to operate a sewing-machine or like device.

3. In an electric motor, as described, the combination of the batteries *g* and buttons *g′* with the magnets B B′ B″ B‴, each having lip E, the armatures A, the rods *b b*, crank M, arbors *a a′*, gear-wheels H H′, springs *e e′*, fly-wheel V, having a pin eccentrically placed in its body, and handle C, substantially as and for the purposes set forth.

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

ERNEST FREDERIC RECORDON.

Witnesses:
GUSTAVE A. DITTMAR,
ROBT. M. HOOPER.