(No Model.)

J. F. McLAUGHLIN.

ELECTRICAL SYNCHRONAL ESCAPEMENT.

No. 359,805. Patented Mar. 22, 1887.

Fig. 2.

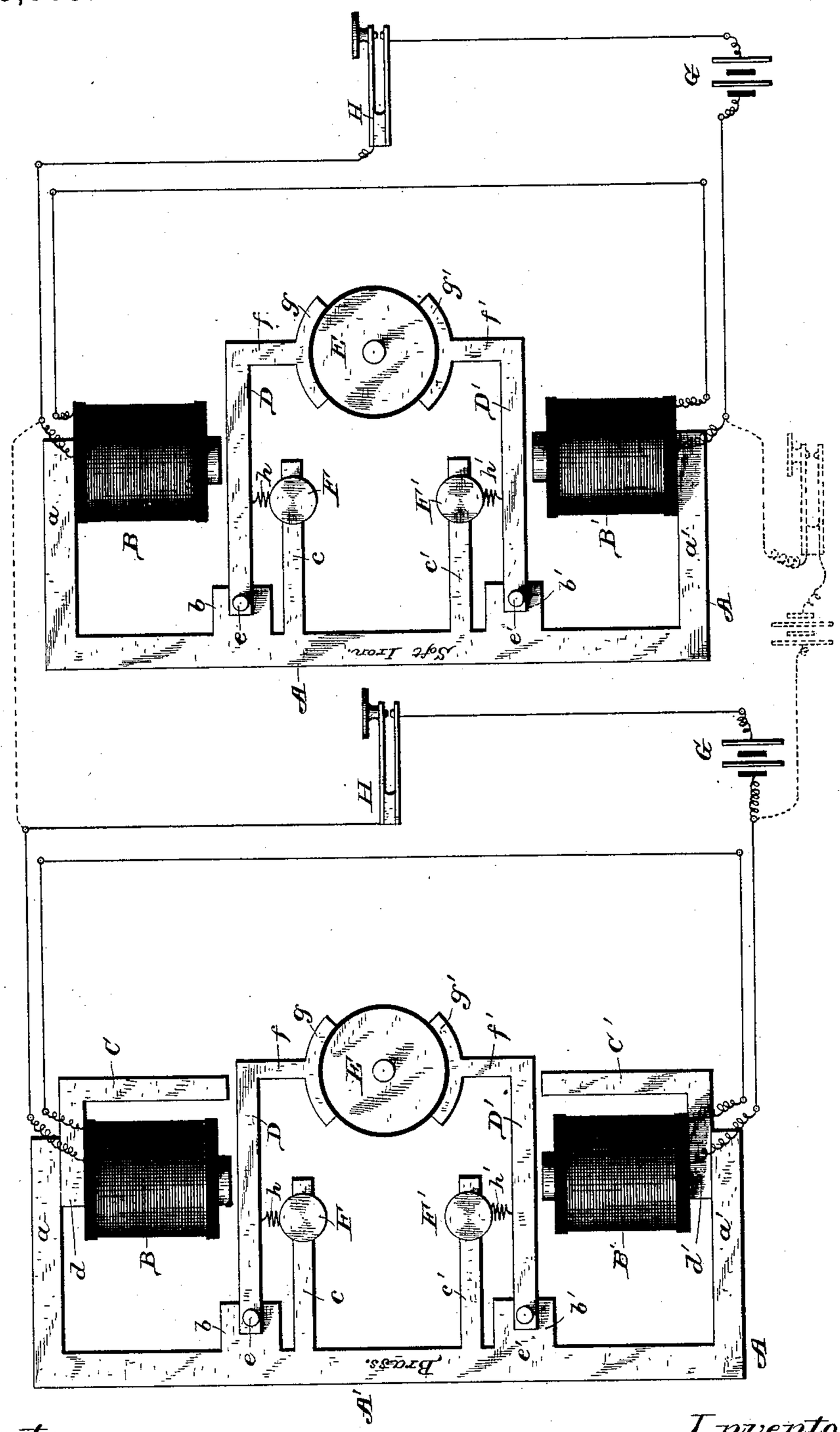

Fig. 1.

Attest:

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UNITED STATES PATENT OFFICE.

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ELECTRICAL SYNCHRONAL ESCAPEMENT.

SPECIFICATION forming part of Letters Patent No. 359,805, dated March 22, 1887.

Application filed November 12, 1886. Serial No. 218,697. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McLAUGHLIN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electrical Synchronal Escapements; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to a new and improved electrical synchronal escapement device for electrical or mechanical motors; and it has for its object, first, to regulate the speed or power of any motor designed to actuate electrical or mechanical instruments or apparatus, whereby the action of said motor may be directed at the proper time necessary to actuate or impart motion to any part or parts of such instruments or apparatus, so as to utilize, concentrate, and preserve the power necessarily expended by the continuous operation of said motor; second, to furnish such a device which will be automatically and simultaneously operated by the instrument or apparatus to which it is attached.

With these ends in view my invention consists in certain details of construction, arrangement, and combination of parts, which will be more fully described hereinafter, and the points of novelty in which will be specifically designated in the appended claims.

Referring to the accompanying drawings, Figure 1 is a view in elevation of the device complete, with the poles of the magnets thereof converted and brought around to the same plane of the other poles. Fig. 2 is a similar view showing the magnets without the converted poles.

Like letters of reference mark the same parts in all the figures of the drawings.

Referring to the drawings by letters, A is the frame, consisting of the upright standard or beam A′ and the arms or extensions *a a′*, *b b′*, and *c c′*, the whole being made of soft iron and cast in one single piece, with the arms *a a′* formed at the ends of standard A′ and at right angles thereto, the short plates *b b′* also at right angles and located at proper intervals apart, and the extended arms *c c′* formed at right angles to standard A′, and situated in between the plates *b b′* and at suitable distances apart, as will be seen from the explanation given hereinafter.

Upon the inside and near the forward free ends of each of the supporting-arms *a a′* is secured one pole of each of the magnets B B′. These magnets are of suitable construction, arranged, as shown in Fig. 1, with the poles adjacent to arms *a a′* converted and brought around on the same plane as inner poles, or may be secured to arms simply at their outer poles, as shown in Fig. 2.

D D′ are two armatures, made of soft iron, suitably inserted and trunnioned to short arms or plates *b b′*, respectively, at the points *e e′*, and are each provided at the forward ends with a downwardly-extending arm, *f f′*, and carrying at its end the arc-shaped brake or clamp C C′, which corresponds to the curvature of wheel E of the motor. The armature, its downwardly-extending arm, and the arc-shaped brake on the end thereof are all cast of soft iron and in one single piece.

Near the end of each of the arms *c c′* are suitably secured therein the thumb-screw F F′, holding one end of the tension or retracting springs *h h′*, which has its other end secured to the armature D D′, the object of this spring being to normally withdraw said armature from the magnet after its attraction is broken therewith.

The magnets, when it is desired to use the movement independently, are placed in circuit with battery G by suitable electrical wire connections, as shown, so that by depression of the ordinary circuit-closer, H, the magnets are charged and attract their respective armatures, thereby releasing the arc-shaped brakes from the wheel; but when the device is designed to be operated synchronously by the same electric circuit which actuates any part or parts of the instrument to which this device may be attached, the two escapements shown are respectively placed on the same and main circuit and connected, as shown in dotted lines, the battery G being cut out and the battery G′ (shown in dotted lines) substituted therefor.

It has been hereinbefore stated that the frame A, consisting of standard A′, and arms *a a′*, *b b′*,

and *c c'*, is made of soft iron and cast in one piece; but of course when the poles of magnets B B' are converted, as shown in Fig. 1, the frame A would be cast in one piece; yet it would be preferably made of non-magnetic metal, so as to prevent the diffusion of the magnetism of magnets B B'. In the construction of magnet B (shown in Fig. 2) the frame could be made of any suitable metal.

The wheel E, upon which the arc-shaped brakes bear, is designed to be suitably connected to the gearing of the driving mechanism of the motor, and a rubber band is placed upon its periphery to give sufficient friction or bearing.

The operation of this device will be readily understood without further explanation.

It will be obvious that the construction herein described and shown might be so arranged and reversed as to act in the capacity of a brake instead of an escapement.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The herein-described synchronal regulating device, consisting of two pivoted armatures provided each at their forward free ends with a depending brake-shoe, said armatures each being located in proximity to the pole or poles of their respective electro-magnets, the magnets, the line-circuit, and a suitable source of electricity, all arranged to operate by the make and break of the circuit, as specified.

2. In combination, the supporting-frame for the magnets, armatures, and retracting-springs, the pivoted armatures having each a depending brake-shoe at its free end and pivoted to the supporting-frame at the other extremity, the retracting-springs for said armatures, the electro-magnets, the electrical connections, a suitable source of electricity, and a means for making and breaking the circuit, substantially as described.

3. The combination of the pivoted armature brake-shoes, the magnets, the supporting-frame having rectangular extensions, as shown, the retracting-springs, and the circuit, substantially as set forth.

4. The herein-described armature brake-shoes, each pivoted at one end to a suitable support and provided with a depending rectangular extension terminating in an arc-shaped brake, the whole being formed of soft iron and cast in one single piece, as described.

5. The combination of two instruments, each located at an extremity of a line-circuit, and consisting each of the supporting-frame, the magnets, retracting-springs, and pivoted brake-shoe armatures, all constructed to operate as described, with the line-circuit connected with each set of magnets at their respective extremities of line, and the drums or wheels of separate motors, whereby the said instruments are synchronously and intermittently operated by the make and break of the circuit, substantially as specified.

6. The combination of instruments A and A', the wheels E E', and the line-circuit, as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES F. McLAUGHLIN.

Witnesses:

JULIUS SOLGER,

C. M. WERLE.