R. J. SHEEHY.

ELECTRO-MAGNETIC MOTOR.

No. 191,478. Patented May 29, 1877.

Fig. 1.

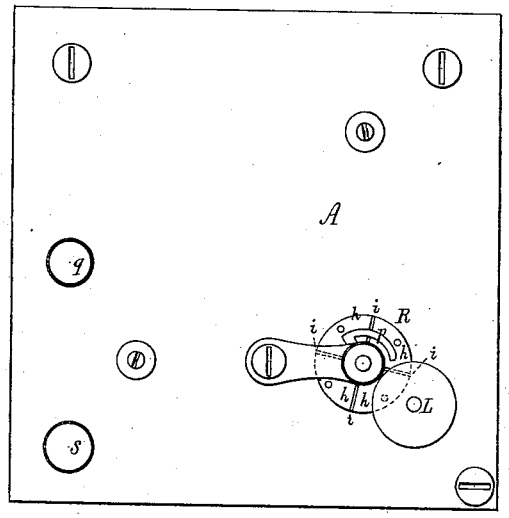


Fig. 4.

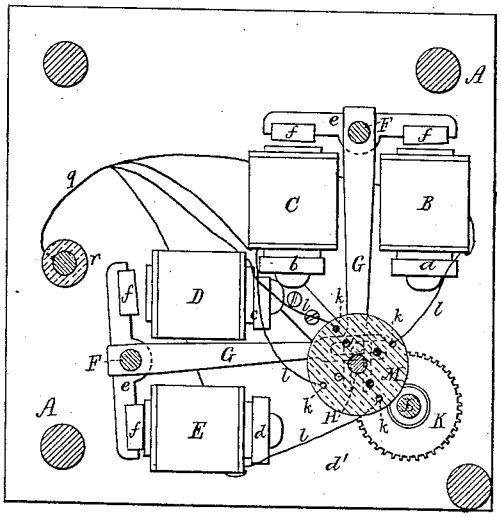


Fig. 2.

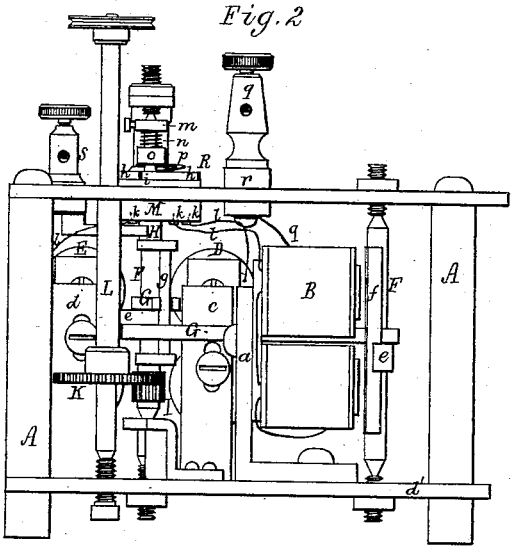
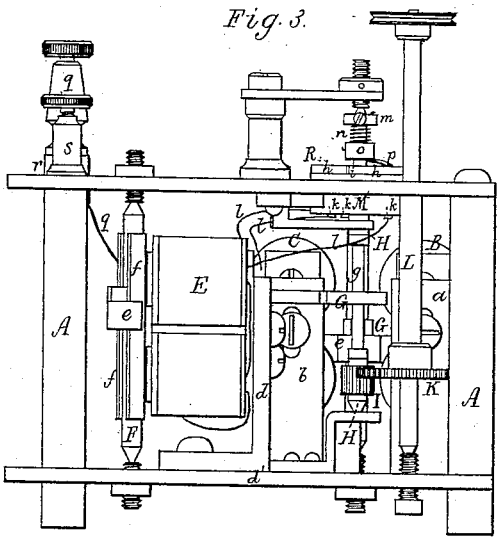
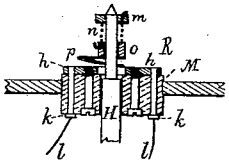


Fig. 3.





Witnesses
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by his attorney.
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UNITED STATES PATENT OFFICE.

ROBERT J. SHEEHY, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN ELECTRO-MAGNETIC MOTORS.

Specification forming part of Letters Patent No. **191,478**, dated May 29, 1877; application filed February 20, 1877.

To all whom it may concern:

Be it known that I, ROBERT J. SHEEHY, of Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Electro-Magnetic Motor; and do hereby declare the same to be described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, Figs. 2 and 3 side elevations, and Fig. 4 a horizontal section, of it.

In such drawings, A denotes the frame for supporting the main operative parts. Within the said frame, and fixed to standards *a b c d*, projecting vertically from the base-plate *d'* of the frame, are four electro-magnets, B C D E. Between each pair of said magnets an upright shaft, F, is arranged, as shown, such shaft having a cross-bar, *e*, fixed to and extended from it in opposite directions, and supporting the armatures *f f* of such magnets. When one of such armatures is in contact with its magnet the other armature is out of contact with its magnet.

From the said shafts two forks, G G, are extended at about a right angle to each other, the prongs of such forks being made to embrace a bell-crank, *g*, of a vertical shaft, H, arranged as shown.

To the said shaft a pinion, I, is fixed to engage with a gear, K, fixed on another shaft, L. The shaft H goes up concentrically through a hole in an insulator or circular block, M, of vulcanite, inserted in the upper plate of the frame A. There are fixed on the top of the insulator four metallic segments, *h*, between which and the shaft is a space. Furthermore, there is a radial space, *i*, between each segment and that next to it.

Fig. 5 is a vertical section of the insulator and the segments, there being extended down from each of the latter and through the insulator a stud, *k*. The circuit-wires *l* of the magnets are respectively fixed to the four studs *k k k k*, and thus are in electric connection with them.

Furthermore, there is fixed to the upper part of the shaft H a collar, *m*, to which one end of a helical spring, *n*, encompassing the shaft, is fastened. The lower end of the said spring is secured to another collar or ring, *o*, which is free to turn on the shaft, and supports an arm or bent metallic spring, *p*, that near its free end rests on the upper surface of one of the segments *h*, it being carried around from one segment to the other while the shaft H may be in revolution.

The circuit-wires of the four magnets also branch from a battery-wire connection, *q*, which is electrically insulated from the frame A by an insulator, *r*, of vulcanite. The frame A also has fixed to it another battery-wire connection, *s*.

Were the arm *p* rigidly fixed to the shaft H a fly-wheel would be necessary to cause the forks to revolve the crank past its dead-points. By having the arm supported by the helical spring fixed to such shaft the necessity of a fly-wheel is obviated, as the friction of the arm on the upper surface of a segment while such arm is traveling over such surface will retard or hold back the arm a little until such time as the crank has been moved past the dead-point. The crank having passed the dead-point, the helical spring draws the arm around to the next segment and transfers the current to another or the next magnet to be put in action.

The series of insulated segments and the rotary arm constitute a current-transferrer, R, or means of transferring the electric current to the magnets successively, to cause them to effect the alternate vibratory movements of the forks necessary to produce the revolutions of the bell-crank.

I claim—

1. The four electro-magnets B C D E, their armatures *f*, and the two forks *g*, arranged and applied as described, in combination with the shaft H, its crank *g*, and the current-transferrer R, substantially as specified.

2. The current-transferrer composed of the series of inverted segments *h*, the shaft H, and the arm *p*, connected with such shaft by a helical spring, *n*, as set forth, all being arranged and to operate essentially as specified.

ROBERT J. SHEEHY.

Witnesses:
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