R. K. BOYLE.

ELECTRICAL INDUCTION APPARATUS.

No. 169,514. Patented Nov. 2, 1875.

Fig. 1.

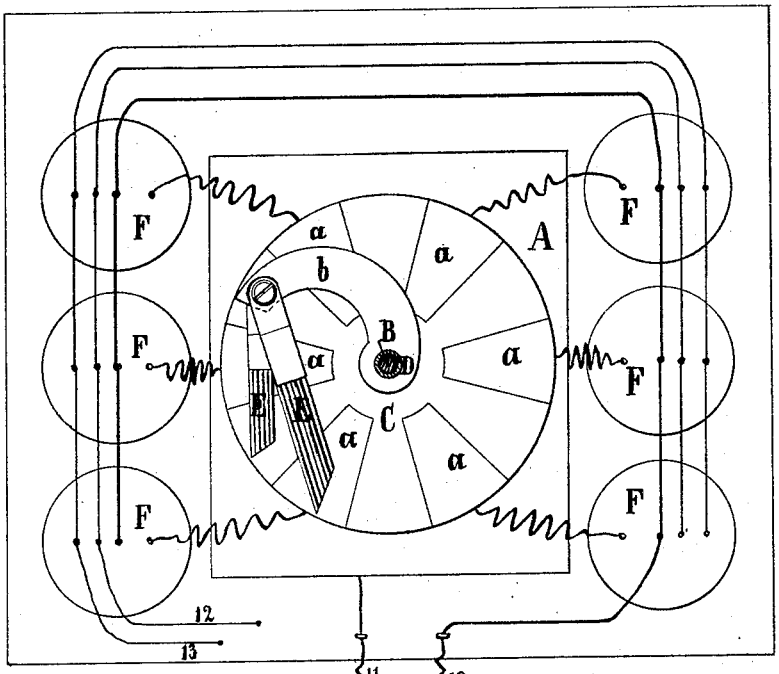
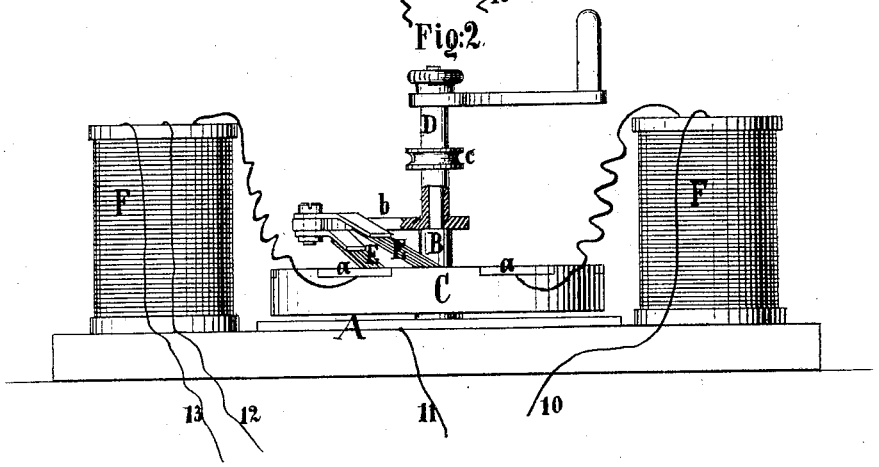


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

ROBERT K. BOYLE, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN ELECTRICAL INDUCTION APPARATUS.

Specification forming part of Letters Patent No. **169,514**, dated November 2, 1875; application filed March 16, 1875.

To all whom it may concern:

Be it known that I, ROBERT K. BOYLE, of Brooklyn, Kings county, New York, have invented a certain new and Improved Induction Apparatus, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which Figure 1 represents a plan or top view. Fig. 2 is a side view of the same.

Similar letters indicate corresponding parts.

This invention consists in combining, with a series of induction-coils, a brush or key moving over a surface composed of alternating segments of non-conducting and conducting materials, each of the conducting-segments being connected to the inducing-helix of one of the induction-coils in such a manner that, by the action of the moving brush or key, electric currents of the same polarity are induced successively in the induction-coils, and thereby a constant current of electricity of either kind can be produced with great facility.

In the drawing, the letter A designates a metallic plate, from which rises a metallic spindle, B, on which is firmly mounted a disk, C, which is made of hard rubber, glass, or other non-conductor of electricity, and in the surface of which are arranged a series of metallic segments, *a*, leaving said surface smooth and even. On the spindle B is fitted a tubular arbor, D, from which extends an arm, *b*, that carries one or more brushes or keys, E. A belt, running over a pulley, *c*, serves to impart to this arbor a rapid revolving motion. On the sides of the metal plate A, but insulated from the same, are placed a series of induction-coils, F, constructed according to Ruhmkorff, or in any other desirable manner suitable for this purpose. One end of the inner or inducing helix of each of these coils connects with one of the metallic segments *a*, while the other ends of the inducing-helices of all the coils are connected to each other, and, by means of a wire, 10, to one of the poles of a galvanic battery. The other pole of this battery connects, by a wire, 11, with the metal plate A. The inner ends of the fine or induction helices of the several coils are connected to each other and to a wire, 12, while the outer ends of said induction-helices are connected to a wire, 13. These wires may either be connected in the proper manner to a magneto-electric machine, or any other apparatus to be acted on by an electric current; or, one of them may be grounded, and the other connected to the line-wire of a telegraph; or, for short distances, both wires may be carried over the line.

By imparting to the arbor D a rapid revolving motion the brushes E are caused to sweep over the surface of the disk C, and whenever one of the brushes comes in contact with one of the metallic segments *a* the circuit through the corresponding inducing-helix is closed, and as the electric current passes through this helix another current is induced in the induction-helix of the same coil. This action is almost instantaneous, and it ceases as soon as the brush has passed the appropriate metallic segment; but immediately a similar current is induced in the next coil, and so on, so that a constant current of electricity flows over the wires 12 and 13.

By this arrangement an induced current of great strength can be produced, since each of the coils, after having been charged, has ample time to discharge before it is again thrown into the circuit, and the reducing effect of the returning current is avoided, as each coil is disconnected before any secondary action can take place.

If desired, the induction-coils F may be so connected with the disk C that two or more of them are thrown into the circuit simultaneously, and a constant current of high tension may be produced.

It must be remarked that the brushes or keys might be so arranged that a reciprocating motion could be imparted to them; and in this case the form of the disk would be changed accordingly.

The brushes or keys might also remain stationary; and in this case a suitable motion would have to be imparted to the disk, plate, or cylinder carrying the segments *a*.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of a series of induction-coils with one or more brushes or keys, and with a surface composed of alternating segments of a non-conducting and conducting material, either the keys or the surface being made movable, substantially in the manner and for the purpose herein shown and described.

In testimony that I claim the foregoing, I have hereunto set my hand this 12th day of March, 1875.

R. K. BOYLE.

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.