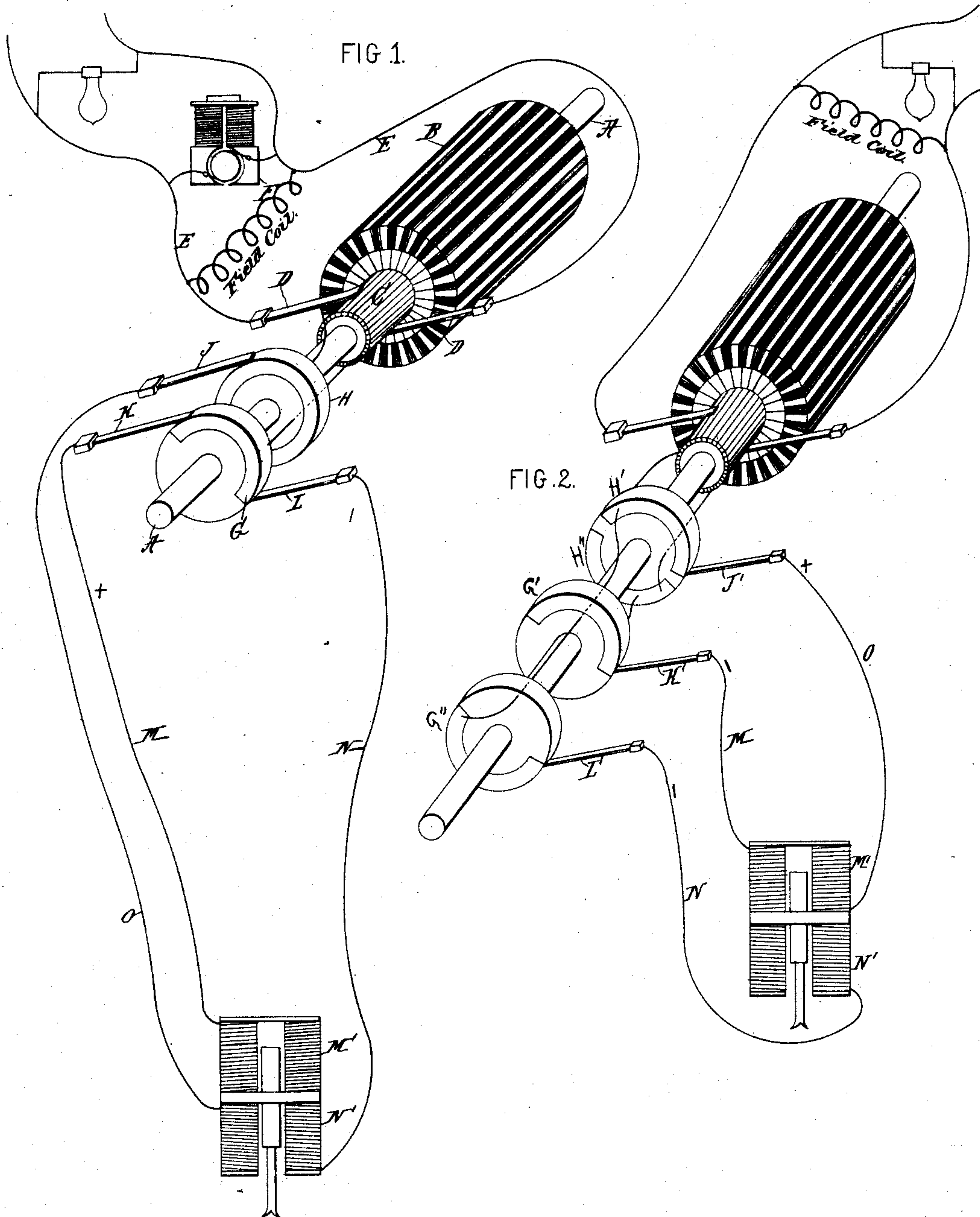


H. N. MARVIN
ELECTRO MAGNETIC DRILL SYSTEM.

No. 431,170.

Patented July 1, 1890.



WITNESSES,

Ernest Leopoldson
Frank B. Murphy.

INVENTOR,

Harry N. Marvin
By Duncan, Curtis & Page
attys.

(No Model.)

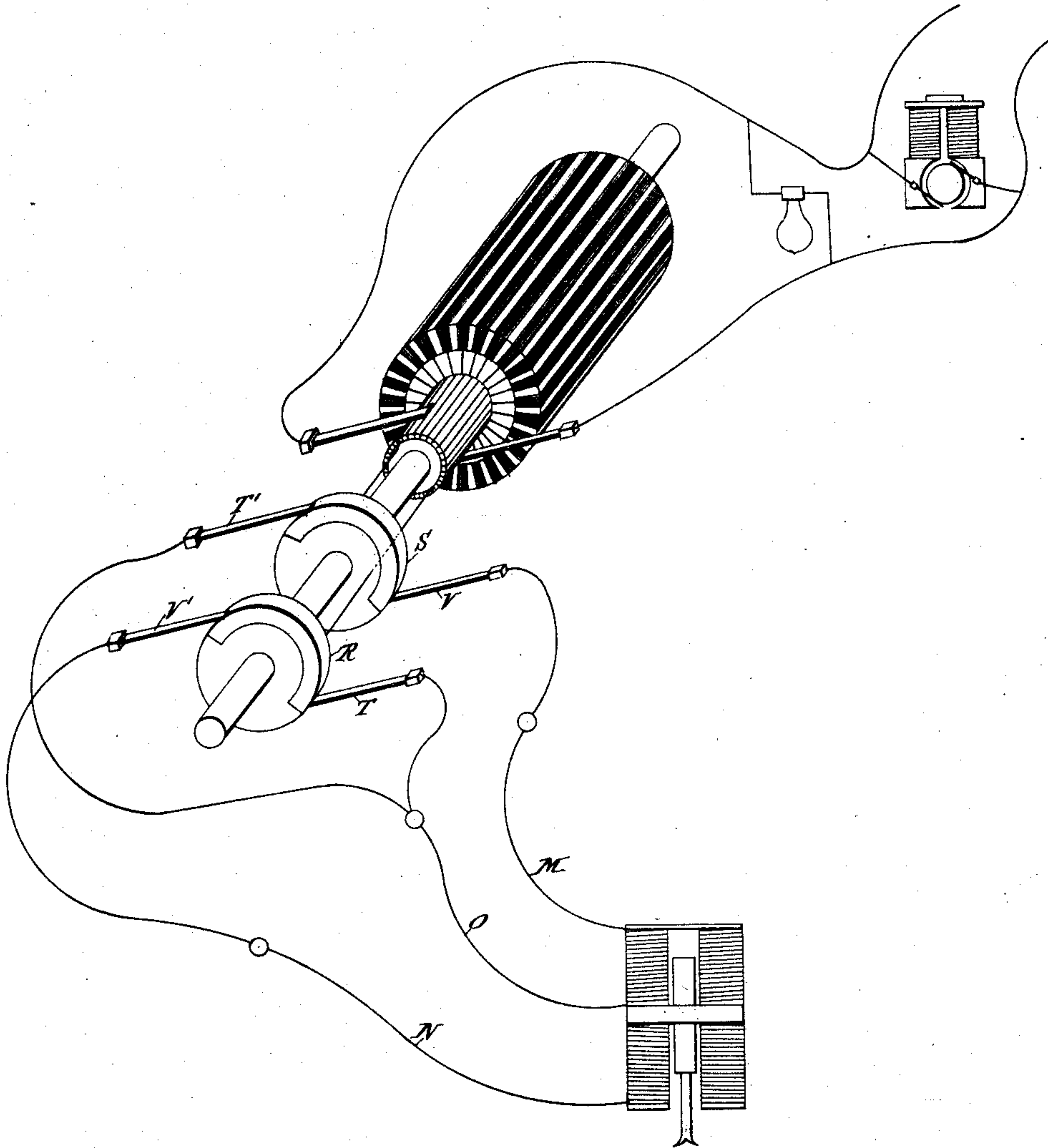
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FIG. 3.



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UNITED STATES PATENT OFFICE.

HARRY N. MARVIN, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE MARVIN
ELECTRIC DRILL COMPANY, OF SAME PLACE.

ELECTRO-MAGNETIC DRILL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 431,170, dated July 1, 1890.

Application filed December 17, 1889. Serial No. 334,027. (No model.)

To all whom it may concern:

Be it known that I, HARRY N. MARVIN, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Electro-Magnetic Drill Systems, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

This invention relates to systems of electrical generation and distribution, and resides more particularly in the generator, which is constructed with the special object in view of supplying to one set of conductors a direct or continuous current and at the same time supplying alternately two other sets of conductors with rising and falling current phases or pulsations.

The invention, subject of the application, is more particularly designed for use with my system of operating rock-drills or other reciprocating tools, described in an application filed by me June 6, 1888, Serial No. 276,184, and in which I have shown a reciprocating plunger surrounded by two solenoidal coils, in combination with a generator and intermediate circuits, including said coils respectively, and in which, by the operation of the generator, pulsations of current are developed in alternation; but while it is especially devised for and adapted to this system the present invention is capable of other applications and uses, as will hereinafter more fully appear.

In my application above referred to I have shown a generator with its magnetizing or field coils connected with an independent source of direct currents, while the armature coil or circuit terminated in suitable collecting rings or plates from which alternating currents were taken off, first into one of the drill or working circuits and then into the other, by brushes or contacts. My present invention, however, involves the combination with a direct-current generator provided with the ordinary commutating devices and producing a continuous current in one circuit, of means for delivering alternately into two other circuits currents of a pulsating char-

acter suitable for the operation of reciprocating tools in accordance with my previous invention. Various forms of mechanism may be employed for this purpose, and my object in the present case is to show those most easily constructed and operated, and to claim, broadly, these and other modified means for accomplishing the same result.

Referring to the accompanying drawings, Figures 1, 2, and 3 are perspective views of the essential elements of three different devices or means for carrying out the invention, each with a diagram of circuit-connections.

A in Fig. 1 is the shaft of the generator. The field-magnets for this and the other generators are not shown, being of any ordinary construction. The armature mounted on this shaft is wound with a continuous coil B, which at a number of points is connected with the segments of a commutator C, the construction thus far being the ordinary construction common to the Siemens or Gramme machines. Brushes D D bear upon the segmental commutator and deliver into a circuit E E direct or continuous currents. This circuit includes the field-magnet coils of the generator, and it may also include such devices as a direct-current motor F, or electric lamps of various kinds or other devices which require for their operation a continuous or direct current.

Secured to the shaft A, but insulated therefrom, are a half ring or segment G and a complete ring H, connected, respectively, to diametrically-opposite points of the armature-circuit, preferably through opposite segments of the commutator C. Two brushes K L are in position to bear alternately upon the half-ring G, and from said brushes lead the conductors M N of two circuits, which include the coils M' N' of one or more reciprocating tools, and have a common return-wire O, which leads to a brush J, that bears continuously on the ring H. By means of this construction it is evident that in addition to the commutated current delivered into circuit E a rising and falling current-impulse will be delivered into each of the circuits M O and N O for each revolution of the armature, and it will also be noted in this case that while the current-impulses in each of the conductors M and N will

be in one direction those in the return-wire O will alternate in direction.

In Fig. 2 an equivalent result is secured by a somewhat different disposition. The armature-commutator and circuit E are the same in this case as in Fig. 1. The shaft, however, carries a ring made up of two segments H' H'' and two half-rings G' G''. The segments H' H'' are connected, respectively, to two opposite segments of the commutator C and the two half-rings G' G'' are connected, respectively, with the said segments. Three brushes are employed. Brushes K' and L' are in positions to bear upon the half-rings G' and G'', respectively, the latter being in such relation to the brushes that contact is made with one ring at a time. Brush J' bears upon the segments H' H'' alternately. The arrangement of conductors M, N, and O is the same as in the former figure, and during the movement of the generator rising and falling current-impulses are delivered in alternation by brushes K' J' into circuit M O and by brushes L' J' into circuit N O. By this disposition it will be noted that the impulses in each conductor M, N, or O are all in the same direction.

A third disposition is shown in Fig. 3. In this case two insulated half-rings R S, carried by the shaft A, are connected to diametrically-opposite commutator-segments. With each half-ring two brushes are employed in such position that the half-ring on leaving one brush comes into contact with the other. One brush of each set, as T T', is connected to the return-wire O, and the others, as V V', are connected, respectively, with the wires M N. By this disposition rising and falling current-impulses are sent in alternation through the drill-coils, the impulses in each conductor being all in one direction. There are other ways of securing the same or simi-

lar results, but the above will suffice to illustrate the general principle of the invention.

In an application filed by me April 29, 1889, Serial No. 309,129, I have described and claimed a specific form of mechanism for accomplishing the result secured by the means which I have shown herein. This device consists, generally, in the combination, with the commutator, of an ordinary direct-current machine, of a collector in connection with one section of the armature-coil, a brush at all times in contact therewith, a second collector in connection with diametrically-opposite section of the armature-coil, and two brushes alternately bearing thereon. This device or mechanism I do not claim specifically herein.

What I claim is—

1. The combination, with the armature-coil and commutator, of a direct or continuous current dynamo-machine and a field-exciting circuit supplied with direct currents therefrom, of two independent circuits and collectors in connection with opposite points of the armature-coil and adapted to connect said coil alternately with the two circuits, as set forth.

2. The combination, with a closed armature-coil, a segmental commutator connected to sections of said coil, brushes bearing on the commutator, and a field-exciting circuit connected therewith, of supplemental contact segments or collectors connected to opposite points of the armature-coil, brushes adapted to bear thereon, and independent circuits connected to said brushes, whereby the armature-coil is brought alternately into connection with the two circuits, as set forth.

HARRY N. MARVIN.

Witnesses:

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