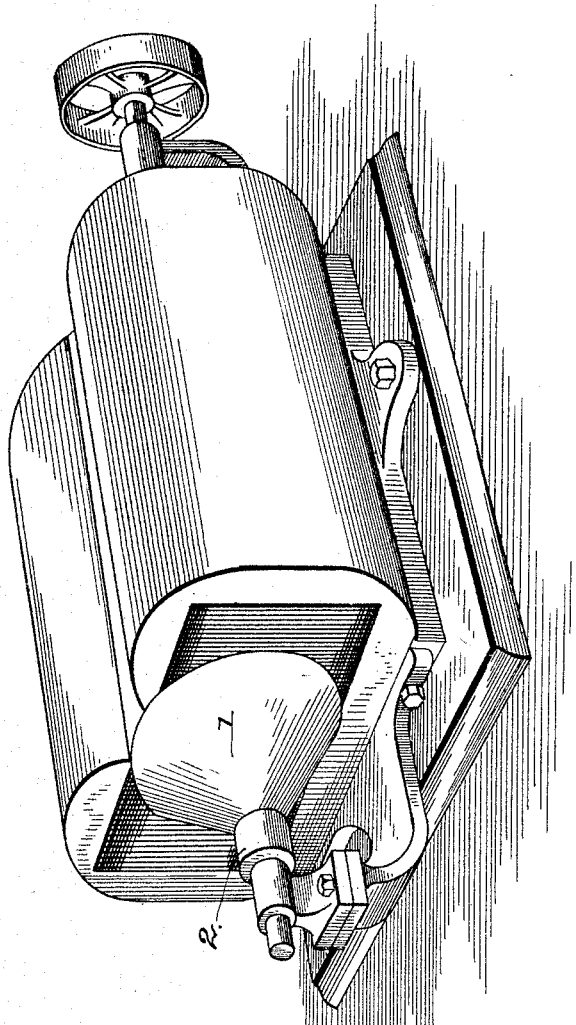
(No Model.) 2 Sheets—Sheet 1.

W. E. FREEMAN.

DYNAMO ELECTRIC MACHINE.

No. 492,151. Patented Feb. 21, 1893.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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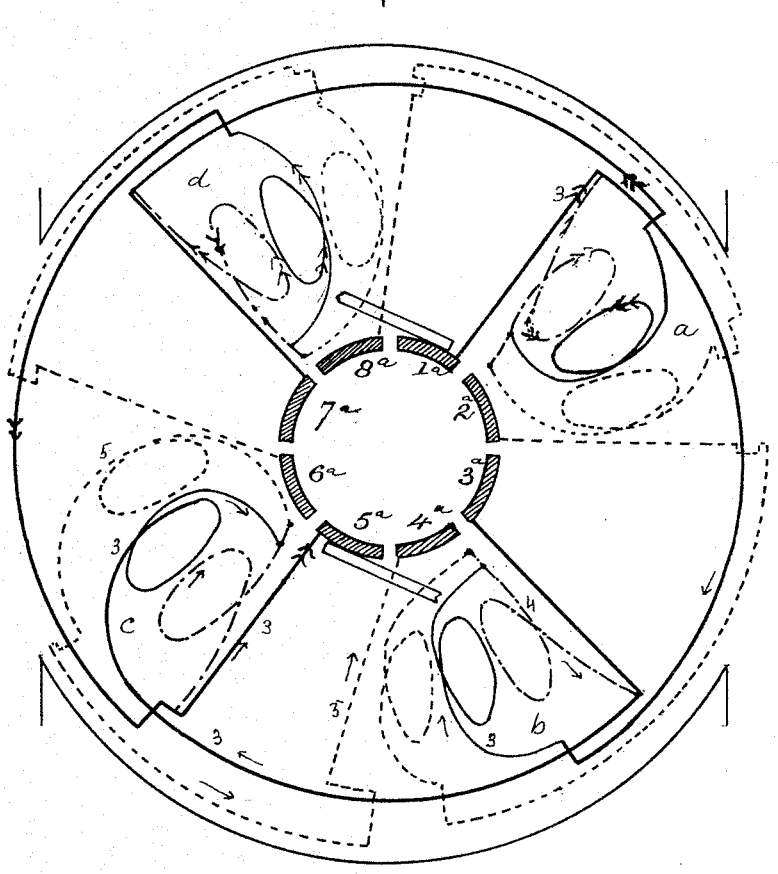
Fig. 2.



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UNITED STATES PATENT OFFICE.

WALLACE E. FREEMAN, OF LONG ISLAND CITY, ASSIGNOR TO LAWRENCE M. CLOSS, OF NEW YORK, N. Y.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 492,151, dated February 21, 1893.

Application filed July 8, 1892. Serial No. 439,310. (No model.)

To all whom it may concern:

Be it known that I, WALLACE E. FREEMAN, a citizen of the United States, residing at Long Island City, in the county of Queens and State of New York, have invented certain new and useful Improvements in Dynamo-Electric Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as 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 and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in dynamo electric machines and it has for its objects to enhance the efficiency of such machines and prevent the heating of the armatures thereof, and to this end the invention consists in a peculiarly wound armature as more fully hereinafter described.

In the accompanying drawings forming part of this specification Figure 1 represents a perspective view of a dynamo electric machine and Fig. 2 represents a diagram showing the method of winding the coils upon the armature thereof, according to my invention.

Referring to the drawings, the numeral 1 indicates the armature core which is constructed of soft iron, as usual, and 2 indicates the shaft or journal thereof, mounted in suitable bearings. The coils are wound in sections longitudinally upon the periphery of the core. Any desired number of sections may be employed, each section consisting of three separate layers or coils wound one upon another.

In winding the wire upon the armature, the coils or layers 3 are first wrapped. The sections are commenced by running the wires 3 from the left to the right hand end of the core, longitudinally, then over the right hand end of the core to one side of the journal, then back on the opposite side of the core upon a diametrically opposite line, then up over the left hand to the starting point and so on until a sufficient number of strands are wrapped, the terminals of each section being extended beyond the respective ends of the core. To the starting, or left hand portion of the wire 3 of each section, near the extremity is soldered one end of a wire 4, which is carried longitudinally around the core in a reverse direction over and upon the coil composed of the wire 3, until a sufficient number of turns are wound, when the terminal is extended beyond the right hand end of the core and soldered to the right hand projecting end of the wire 3 of the next succeeding section close up to the end of the core, and the projecting portion of the said wire 3 is cut off close up to the connection and the connecting points covered with suitable insulating material, to form a perfectly insulated joint, the wire 4 being then carried to the left hand end of the armature core in order that it may be connected to the proper commutator section or segment.

Referring to the diagram shown in Fig. 2 of the drawings four armature core sections are shown, with their proper commutator sections or segments. For convenience the coil sections are indicated, respectively, by the letters *a*, *b*, *c*, *d*, and the commutator sections or segments by the numerals 1^a, 2^a, 3^a, 4^a, 5^a, 6^a, 7^a, 8^a.

In the diagram the letters A, B, indicate the poles of the field magnet, between which the armature rotates. The course of the current in one direction is indicated by single headed arrows commencing at the commutator segment 1^a and passing through conductor 3, and its coil in section *b*, through wire or conductor 4 and its coil in same section; again to wire 3 and through the coil thereof in section *c* through coil 4 thereof and a portion of wire 3 to the commutator section or segment 5^a. The course of the current in the other direction is indicated by the double headed arrows, commencing with the segment 1^a through the wire or conductor 4 and the coil thereof on section *a*, through the coil of wire 3 of said section through the wire 3 leading to section *d* and the coil thereof, through the wire 4 of said section and its coil 3, and through a portion of the wire 3 to the commutator segment 5^a.

In passing through the magnetic field the coil 5 becomes charged and when it passes out of the field the charge passes off with the current being generated in the coils 3 and 4 of the

section passing through the magnetic field at the time, reducing the resistance in said coils and preventing the heating thereof, and of the armature.

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

An armature for dynamo electric machines, consisting of a core wound longitudinally with wire in sections of three layers each, the inner layers being wound in one direction and the outer layers in an opposite direction, the intermediate layers and the inner and outer layers having their wires connected as described, and the intermediate and outer layers having extended terminals adapted to be connected to the commutator segments, substantially as specified.

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

WALLACE E. FREEMAN.

Witnesses:

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R. B. CASON.