(No Model.)

H. F. PARSHALL.

ARMATURE FOR DYNAMO ELECTRIC MACHINES.

No. 523,776. Patented July 31, 1894.

FIG. 1.

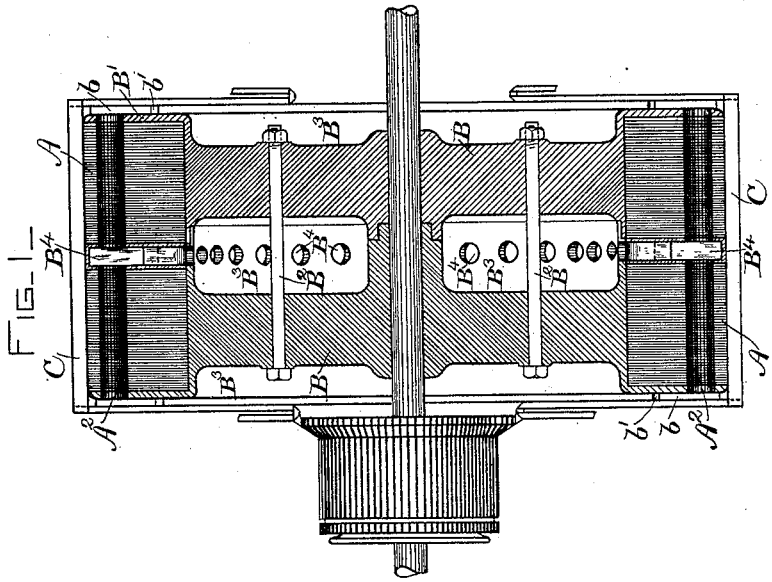
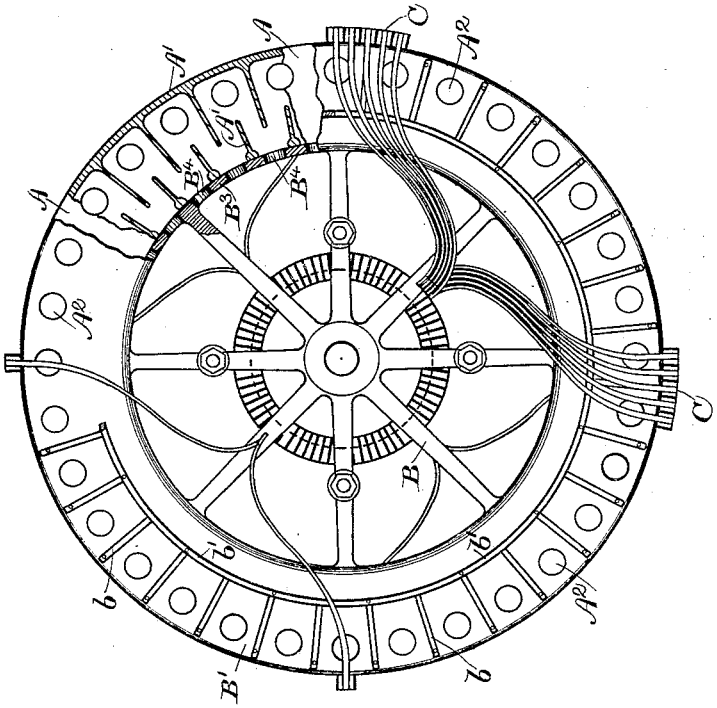


FIG. 2.



WITNESSES—
Henry C. Westendarp.
H. J. Livermore

INVENTOR—
Horace F. Parshall,
By Bentley & Blodgett
Attys.

UNITED STATES PATENT OFFICE.

HORACE F. PARSHALL, OF LYNN, ASSIGNOR TO THE THOMSON-HOUSTON ELECTRIC COMPANY, OF BOSTON, MASSACHUSETTS.

ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 523,776, dated July 31, 1894.

Application filed January 31, 1894. Serial No. 498,606. (No model.)

To all whom it may concern:

Be it known that I, HORACE F. PARSHALL, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Armatures for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to dynamo electric machinery, and consists in certain new and useful improvements in the construction of armatures, especially of that type known as "smooth-wound" armatures, whereby better ventilation is obtainable than in constructions hitherto employed. It has been proposed to ventilate and cool the ordinary laminated armature-core by slightly separating certain of the laminæ by means of ribs or skeleton separators, thus leaving an open space between the outer and inner surfaces of the core, and such a construction is set forth and claimed in Patent No. 508,637, dated November 14, 1893, to Henry G. Reist. While, however, this form is well adapted for use with armatures having their windings formed into groups of coils with open spaces between the coils, whether they be of the smooth Gramme or Pacinotti type, it becomes impracticable when applied to a "smooth-wound" armature, so called, since in the latter type the outer surface of the core is completely covered by the winding, so that the outer openings of said spaces are blocked or closed thereby. My invention provides means for obviating this difficulty, and consists briefly in providing transverse openings or air passages through the core with inlets thereto from the center of the armature.

In the accompanying drawings, Figure 1 is a cross-section through the center of an armature embodying my invention, and Fig. 2 is an end elevation thereof with part cut away to show a section through the center of Fig. 1.

Referring to Fig. 1, the armature core consists of two or more bundles or sections of annular laminæ A, held in place by flanges B′ at the periphery of the spider B. The said spider B, as shown in Fig. 1 consists of two sections fastened together by means of bolts B^2, thus clamping the laminæ firmly in place. This construction, however, is not essential, as any other known means of securing the core may be employed. The said sets of laminæ are separated from each other by means of ribs A′, shown in cross-section Fig. 2, or by any other skeleton separating device which will afford a ventilating passage from the inner to the outer surface of the core. The opening at the outer surface, however, is closed by the winding C, a portion of which is best shown in Fig. 2, and in order to provide an outlet for the passage afforded by the separators, a number of holes are punched in the laminæ so as to form when said laminæ are assembled transverse channels A^2 from one side to the other of the core. These holes are preferably punched near the outer edges of the laminæ where the magnetic changes are greatest and the most heat consequently generated. When, therefore, the armature is in motion a current of air is sucked into the spaces afforded by the separators and thence across through the channels A^2 near the outer surface of the core, thus tending to cool both the core itself and the winding thereon.

In the construction herein shown the spider B consists of a cylindrical shell B^3 carried at the ends of the spider arms and adapted to support the core between the flanges B′, as above described. The said shell B^3 has a number of holes B^4 therein, thus affording inlets to the spaces between the laminæ. The flanges B′ are provided with holes adapted to register with those in the laminæ and thus afford the necessary outlets for the channels A^2 at the sides of the armature. Upon the outer side of the flanges B′ are fastened or cast ribs *b* adapted to support an annular strip of insulating material *b′*, the purpose of which is to hold the coils away from the sides of the armature, thus allowing the air to circulate more freely.

My invention is not limited to the exact construction herein shown and described, nor do I intend to limit it to "smooth-wound" armatures, since it might be used to advantage with other types, nor is it necessarily limited to layers of laminæ having holes therein

adapted to register when assembled, since a core of any kind might be channeled in any suitable manner.

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

1. An armature core comprising two or more sections separated from one another so as to afford ventilating spaces therebetween, and channels in said sections leading through said ventilating spaces to the outer surface of the core, as set forth.

2. An armature core comprising two or more sections or bundles of laminæ, ribs or separators between adjacent sections, and transverse channels through said sections from one side to the other thereof.

3. An armature core comprising two or more sections or bundles of annular laminæ arranged in layers, channels through said sections from one side to the other thereof, and spaces between said sections, as and for the purpose set forth.

4. An armature core comprising layers of annular laminæ having holes therein adapted to register when said core is assembled, thus forming channels therethrough, in combination with ribs or separators adapted to provide spaces between some of the adjacent laminæ, as set forth.

In witness whereof I have hereunto set my hand this 29th day of January, 1894.

HORACE F. PARSHALL.

Witnesses:
JOHN W. GIBBONEY,
BENJAMIN B. HULL.