310-178

No. 873,072. PATENTED DEC. 10, 1907.

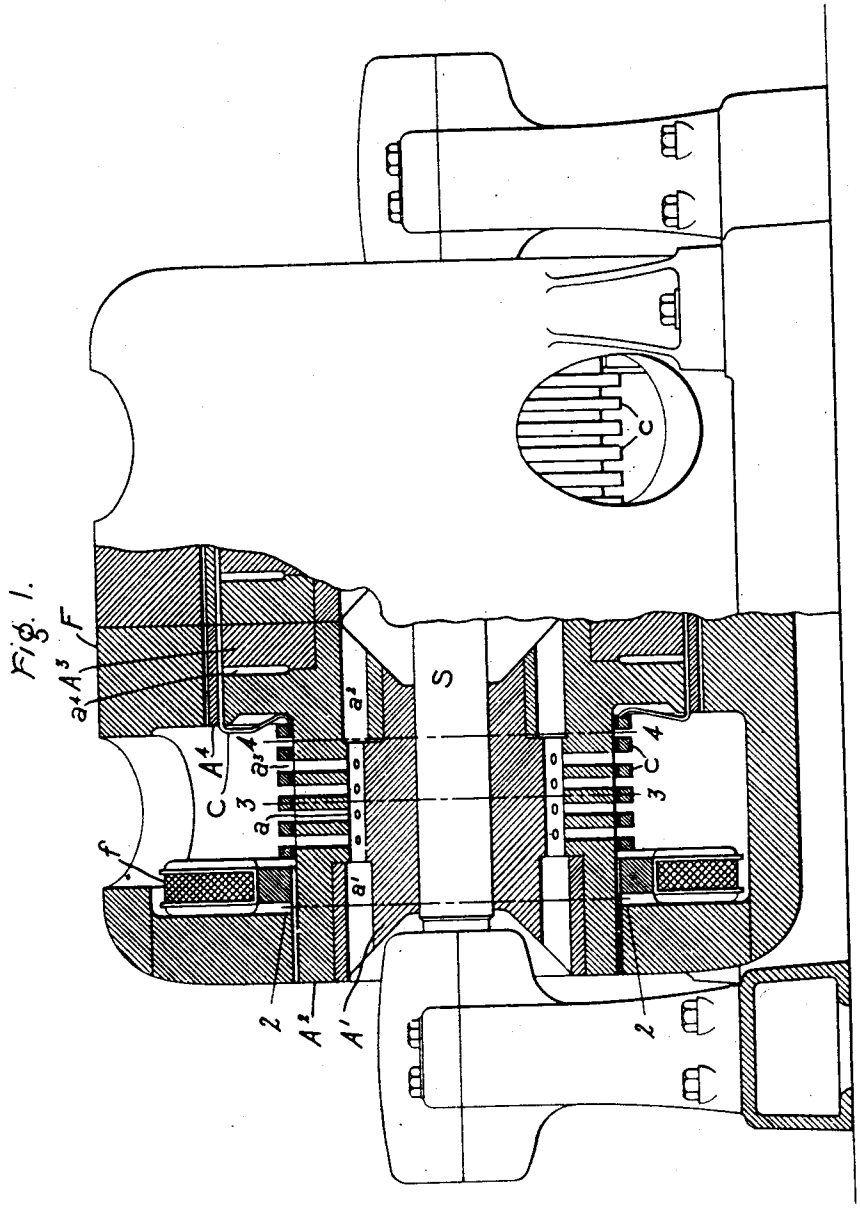
J. E. NOEGGERATH.

DYNAMO ELECTRIC MACHINE.

APPLICATION FILED SEPT. 22, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses
J. Ellis Glen
Helen A. Ford

Inventor.
Jakob E Noeggerath.
by Albert G. Davis
Atty.

THE NORRIS PETE [illegible] TON, D. C.

No. 873,072. PATENTED DEC. 10, 1907.

J. E. NOEGGERATH.

DYNAMO ELECTRIC MACHINE.

APPLICATION FILED SEPT. 22, 1905.

2 SHEETS—SHEET 2.

Fig. 2.

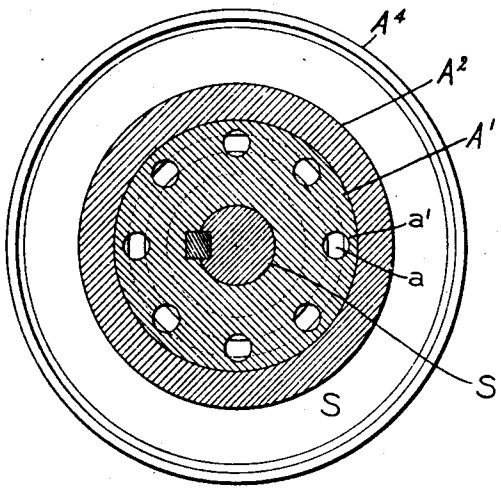


Fig. 3.

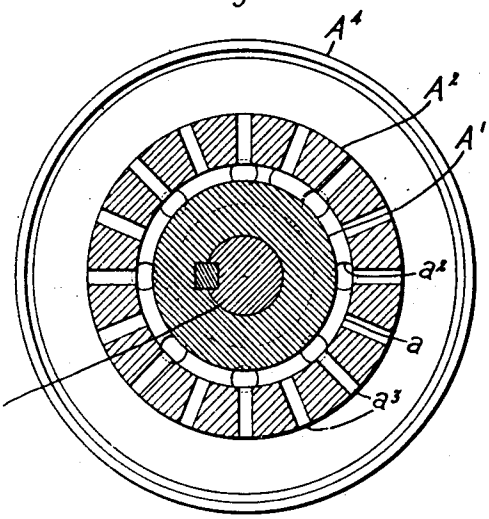
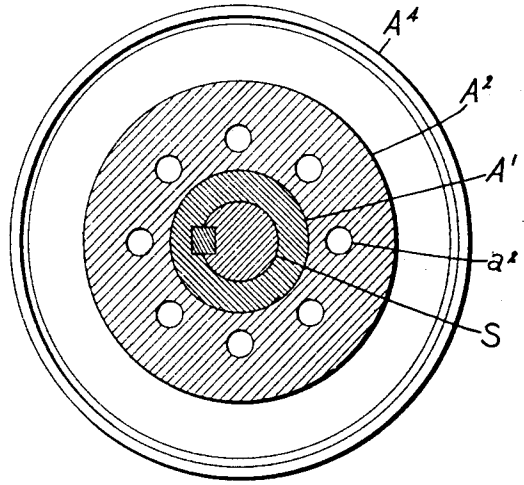


Fig. 4.



Witnesses.
J. Ellis Glen.
Helen A. Ford

Inventor
Jakob E. Noeggerath.
by Albert G. Davis
Atty.

UNITED STATES PATENT OFFICE.

JAKOB E. NOEGGERATH, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

DYNAMO-ELECTRIC MACHINE.

No. 873,072. Specification of Letters Patent. Patented Dec. 10, 1907.

Application filed September 22, 1905. Serial No. 279,624.

To all whom it may concern:

Be it known that I, JAKOB E. NOEGGERATH, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Dynamo-Electric Machines, of which the following is a specification.

My invention relates to dynamo-electric machines, particularly to machines of the unipolar type, and its object is to provide a novel construction of the rotating member adapted to afford thorough ventilation and cooling.

My invention consists in forming the rotor body of superposed cylindrical members shaped so as to form an air-chamber within the body of the rotor and provided with passages extending to the surface of the rotor. With this construction free passages are afforded for air through the body of the rotor, and since this air is thrown outward by centrifugal force when the machine is running thorough ventilation is obtained.

The arrangement described above is particularly suited for use in unipolar machines, since in this type of machine the rotor is in a uniform field and consequently does not need to be built up of laminations as in an ordinary multipolar machine, but may be constructed of solid castings. When this construction is employed in a unipolar machine radial passages from the air-chamber or chambers within the rotor body may be arranged with their outer ends adjacent to the collector rings, so as to afford efficient cooling for the rings, which in operation are heated not only by the current passing through them but also by brush friction.

My invention will best be understood by reference to the accompanying drawings, in which

Figure 1 shows a side elevation partly in cross-section of a unipolar machine arranged in accordance with my invention; and Figs. 2, 3 and 4 show cross-sections of the rotor body on the dotted lines 2—2, 3—3 and 4—4, respectively, of Fig. 1.

In the drawings F represents the unipolar filed structure provided with energizing coils *f*.

S represents the armature-shaft which carries two cylindrical castings A^1 side by side, only one of which is shown in Fig. 1, as the two castings are just alike; the rotor being symmetrical in every way. Each of these castings is formed with an outer surface of three different diameters, as is clearly shown in Fig. 1. Superposed on each casting A^1 is a second cylindrical casting A^2, the inner surface of which is formed with three different diameters, the diameters of the end portions corresponding with the outer diameters of the end portions of the casting A^1, but the diameter of the central portion being greater than the outer diameter of the central portion of the casting A^1. Thus an air chamber *a* is formed between the castings A^1 and A^2 intermediate their length. Axial passages *a'* extend outwardly from the chamber *a* to the surface of the casting A^1, and similar passages a^2 extend from the chamber *a* through the casting A^2 to the inner surface of this casting. Radial passages a^3 extend outwardly from the chamber *a* through the casting A^2 to the outer periphery of the armature body.

A^3 represents a ring-shaped casting which fits over the inner end of the casting A^2 and with it supports the armature conductors C. This portion A^3 of the armature is formed as a separate casting in order that the slots a^4 may be formed in the armature body without cutting them in the solid casting. These slots serve to laminate the armature body in a measure and prevent the flow of eddy currents which might be caused by a somewhat uneven distribution of the field flux.

A^4 represents a ring surrounding the conductors C and holding them in place against centrifugal force.

c represents the collector rings at each end of the armature to which the armature conductors are connected and by means of which the armature current may be led off through suitable brushes, not shown.

With a construction as shown it will be seen that as the machine revolves, air will be drawn axially through the body of the armature into the air chamber *a* and expelled by centrifugal force through the radial passages a^3. This air serves not only to cool and ventilate the rotor structure, but also to cool the collector rings.

I do not desire to limit myself to the particular arrangement of parts here shown, but aim in the appended claims to cover all modifications which are within the scope of my invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is,—

1. In a dynamo-electric machine, a rotor body comprising two superposed cylindrical members shaped so as to form a chamber intermediate their lengths and provided with holes extending from said chamber to the surfaces of said members.

2. In a dynamo-electric machine, a rotor body comprising two superposed cylindrical members engaging each other near their ends and separated from each other near their centers so as to form an air chamber, and having substantially axial and substantially radial holes extending from said chamber to the surfaces of said members.

3. In a dynamo-electric machine, a rotor body comprising a cylindrical member having an outer surface of three different diameters, and a superposed cylindrical member having inner diameters corresponding to the outer diameters of the end portions of the first member, but greater than the outer diameter of the intermediate portion of the first member, so as to form a central chamber between said members, said members having substantially axial and substantially radial holes extending from said chamber to the surfaces of said members.

4. In a unipolar generator, an armature comprising two superposed cylindrical members shaped so as to form a chamber intermediate their lengths and provided with holes extending from said chamber to the surfaces of said members, and collector rings carried by the outer member adjacent to the outer ends of a portion of said holes.

5. In a dynamo-electric machine, a symmetrical rotor body made up of two similar halves placed end to end, each half comprising two superposed cylindrical members shaped so as to fit together and form a chamber intermediate their lengths and provided with holes extending longitudinally from said chambers to the end surfaces of said members.

6. In a dynamo-electric machine, a symmetrical body made up of two similar halves placed end to end, each half comprising a cylindrical member having an outer surface of three different diameters, and a superposed cylindrical member having inner diameters corresponding to the outer diameters of the end portions of the first member, but greater than the outer diameter of the intermediate portion of the first member, so as to form a central chamber between said members, said members having substantially axial and substantially radial holes extending from said chambers to the periphery and end surfaces of said body.

In witness whereof, I have hereunto set my hand this 19th day of September, 1905.

JAKOB E. NOEGGERATH.

Witnesses:
HELEN ORFORD,
E. C. HOLLISTER.