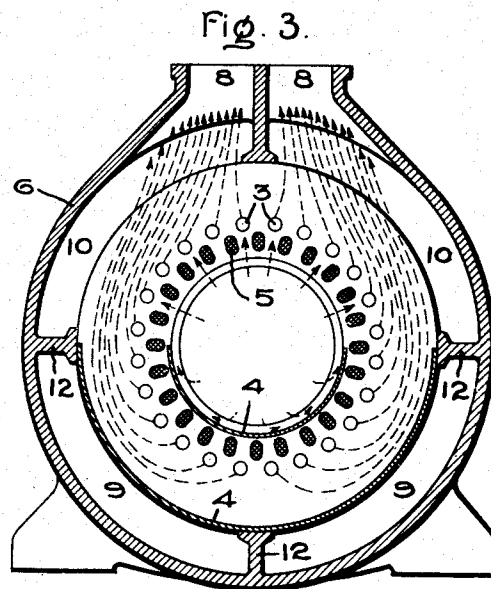
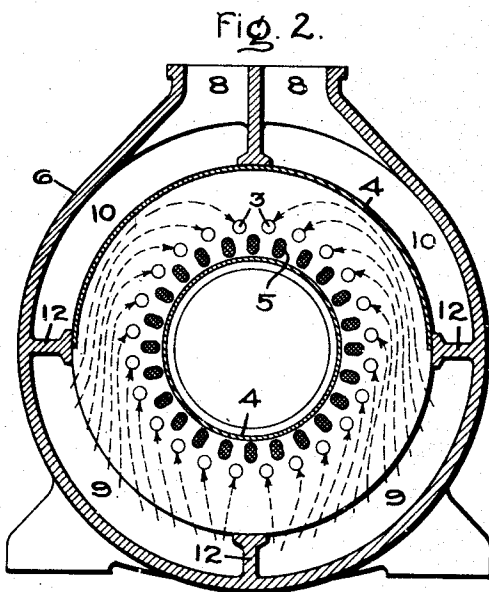
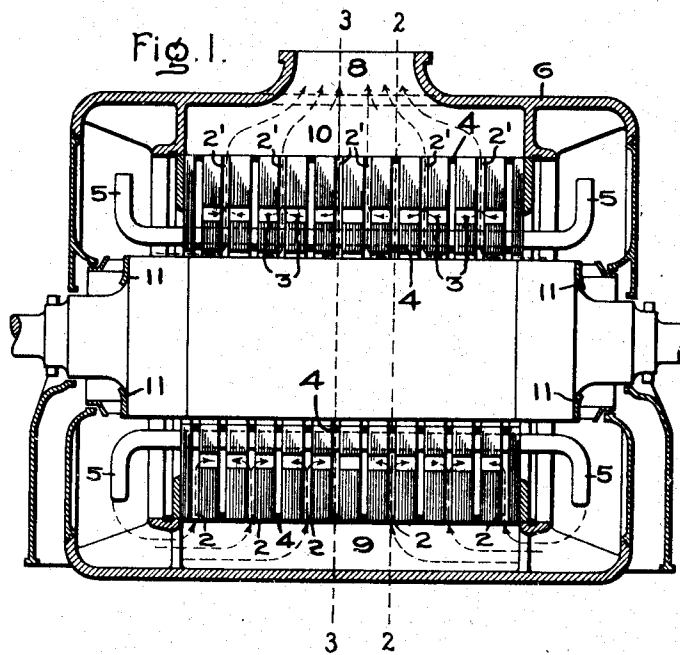


H. ROOS.
 MEANS FOR COOLING DYNAMO ELECTRIC MACHINES.
 APPLICATION FILED NOV. 23, 1909.

957,103.

Patented May 3, 1910.



Witnesses:

Earl G. Klock.
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Inventor:

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 by *Wm. H. Davis*
 His Attorney.

UNITED STATES PATENT OFFICE.

HERMAN ROOS, OF BERLIN, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY,
A CORPORATION OF NEW YORK.

MEANS FOR COOLING DYNAMO-ELECTRIC MACHINES.

957,103.

Specification of Letters Patent.

Patented May 3, 1910.

Original application filed October 18, 1907, Serial No. 398,029. Divided and this application filed November 23, 1909. Serial No. 529,566.

To all whom it may concern:

Be it known that I, HERMAN ROOS, a subject of the Emperor of Germany, residing at Berlin, Germany, have invented certain new and useful Improvements in Means for Cooling Dynamo-Electric Machines, of which the following is a specification.

My invention relates to dynamo-electric machines and has for its object to provide improved cooling means for such machines, whereby the heat generated during their operation may be carried away in a quick and effective manner. The cooling of high speed generators, such as turbine driven machines, presents great difficulties, since the radiating surface is small in proportion to the losses which must be dissipated.

To the above end my invention consists in certain novel features of construction, which will be pointed out with particularity in the claims appended to and forming a part of this specification.

For a better understanding of my invention reference may be had to the following detailed description taken in connection with the accompanying drawing, in which—

Figure 1 is the cross-section of a dynamo-electric machine embodying my invention; Fig. 2 is a vertical section of the machine shown in Fig. 1 on the line 2—2; and Fig. 3 is a similar section on the line 3—3.

Referring to the drawing, the laminations are divided into bundles separated by radial inlet and outlet ventilating spaces 2 and 2'. These ventilating spaces are connected together by the axial channels 3 formed in the bundles of laminations.

5, 5 are coils of the stator windings, and 6 the cast iron casing of the stator.

Although the axial channels 3 are shown in the drawing in their most advantageous position, namely, as near as possible to the inner periphery of the laminations where the greatest heating takes place, it would, of course, only be a special embodiment of my invention to put the axial channels more toward the outer periphery of the laminations. Likewise, it is not absolutely necessary to form the channels 3 in a circle about the inner periphery of the laminations, but these may be distributed in any desired arrangement.

All of the inlet spaces 2 are connected with a common inlet chamber 9 formed in the casing, and all the exit spaces 2' with a common outlet chamber 10, also formed in the casing. The latter chamber opens into the funnel 8. It is necessary to separate the inlet chamber 9 together with the inlet air, or ventilating spaces 2 connected therewith, from the outlet chamber 10, and the exit spaces 2' by means of a suitable arrangement of the spacing or separating blocks 4. This consists in arranging the blocks 4 for the inlet spaces 2 in the upper half, and for the exit spaces 2' in the lower half of the outer periphery. The inner periphery of the inlet air spaces 2 are closed by separating blocks 4. These blocks are connected to axially directed ribs 12 preferably formed on the casing so that the desired separation of the inlet chamber 9 from the outlet chamber 10 is secured.

As seen in Fig. 1, the exit spaces 2' may remain partially open to the air gap between the stator and rotor so that the cooling air flowing in the air gap between the stator and rotor finds an outlet through the exit spaces 2'. An arrangement like this latter one increases the ventilation, as both the air from the air gap and the channels 3 tends to flow away from the rotor. The cooling air is drawn from the exterior of the machine into entrance chambers 12 situated at both ends of the machine, by fans 11 and driven against the coils, from there to the inlet chamber 9, thence through the inlet spaces 2, through the axial channels 3, through the exit spaces 2' and into the exit chamber 10, passing from there through the funnel 8 into the open air. In the arrangement shown in the drawing, it is not necessary to separate the channels 3 from each other but they may be carried through all the bundles of laminations in communication with each other.

The terms "stator" and "rotor" are used throughout this specification in their broad sense of stationary and rotary members.

This application is a division of my prior application Serial No. 398,029, filed October 18, 1907.

I desire it to be understood that my invention is not limited to the particular construction shown and described, and I aim in

the appended claims to cover all modifications which do not depart from the spirit of my invention.

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

1. In a dynamo-electric machine, a rotary member, a stationary laminated core body having radial inlet and outlet ventilating spaces, axial channels connecting the spaces
10 so arranged that cooling air flows into the inlet spaces, through the axial channels and out through the outlet spaces, and separating blocks to close the inlet spaces and partially close the outlet spaces from said rotary member.
15

2. In a dynamo-electric machine, a casing having inlet and outlet chambers, a stationary laminated core body having radial inlet and outlet ventilating spaces and axial
20 channels connecting the spaces, and separating blocks to close the inlet spaces and partially close the outlet spaces on the inner periphery of the core body, and also to close the inlet spaces against the outlet
25 chamber and the outlet spaces against the inlet chamber, said inlet spaces communicating with said inlet chamber, and said outlet spaces with said outlet chamber.

3. In a dynamo-electric machine, a casing
30 having inlet and outlet chambers, a stationary laminated core body having radial inlet and outlet ventilating spaces and axial channels connecting the spaces, and separating blocks to close the inlet spaces and partially
35 close the outlet spaces on the inner periphery of the core body, and also to close the inlet spaces against the outlet chamber and the outlet spaces against the inlet chamber, said inlet spaces communicating with said
40 inlet chamber throughout a portion only of

the outer periphery of the core body and said outlet spaces with said outlet chamber throughout a portion only of the outer periphery of the core body.

4. In a dynamo-electric machine, a rotary
45 member, fans secured to both ends of said rotary member, a casing having entrance chambers at both ends for the admission of air and inlet and outlet chambers, said entrance chamber communicating with said
50 inlet chamber or chambers, a funnel communicating with said outlet chamber or chambers, a stationary laminated core body having radial inlet and outlet ventilating spaces and axial channels connecting the
55 spaces, and separating blocks to close the inlet spaces and partially close the outlet spaces on the inner periphery of the core body and also to close the inlet spaces against the outlet chamber and the outlet
60 spaces against the inlet chamber, said inlet spaces communicating with said inlet chamber throughout a portion only of the outer periphery of the core body and said outlet spaces with said outlet chamber throughout
65 a portion only of the outer periphery of the core body.

5. In a dynamo-electric machine, a rotary member, a stationary laminated core body having radial inlet and outlet ventilating
70 spaces and axial channels connecting the spaces, and separating blocks to close the inlet spaces and partially close the outlet spaces from said rotary member.

In witness whereof, I have hereunto set
75 my hand this fourth day of November, 1909.

HERMAN ROOS.

Witnesses:

KARL SULSBERGER,
THEODOR SÄHRIG.