

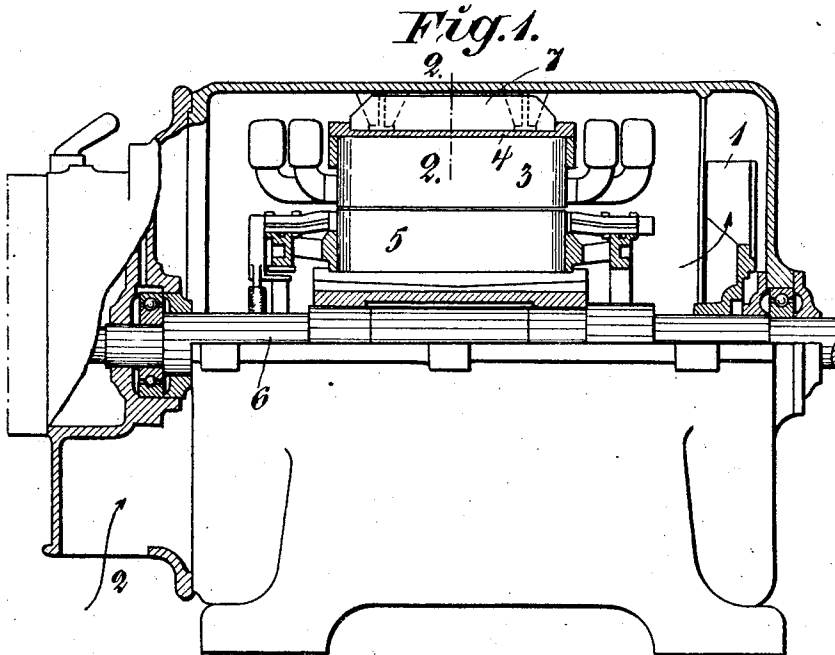
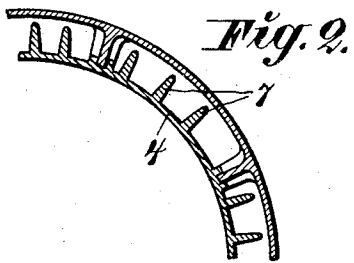
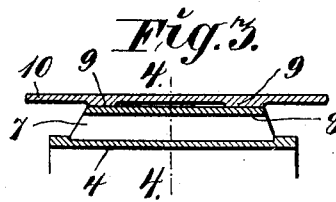
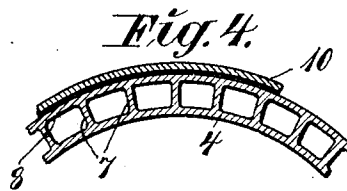
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COOLING MEANS FOR ELECTRIC MACHINES

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COOLING MEANS FOR ELECTRIC MACHINES

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For the cooling of electric machines air, as well known, may be forced by a fan or the like through holes provided in the plate bundles of the stator. The said holes, however, involve a loss of material and besides the material removed through the punching of the holes must be compensated, with regard to the necessary density of the magnetic lines of force, by the increasing of the plates radially, which involves an increasing of the width of the machine. According to this invention cooling is effected without the provision of holes in the plates of the stator. This is effected by providing ribs, projections or the like on the shell of the stator, to which ribs etc., a part of the generated heat is transmitted in order to then be removed by air forced through the spaces between the ribs, etc. Outside the ribs etc. a casing may be provided, if wanted, made integral with the same, the shell together with the ribs and the casing constituting longitudinal channels for the air, which then will be in contact with four sides, to which heat has been transmitted from the stator. The said channels may be effected also by making the shell and the casing of the machine and ribs located between the same integral with each other.

In the accompanying drawing Fig. 1 shows, partly in side elevation and partly in section, an electric machine provided with cooling means in accordance with the invention. Fig. 2 is a section on the line 2 to 2 of Fig. 1. Fig. 3 is a longitudinal section of a second form of execution of the cooling means. Fig. 4 is a section on the line 4 to 4 of Fig. 3.

The electric machine shown in Fig. 1 is of the normal type and arranged for axial ventilation. The air, forced by the fan 1 through the machine, enters at the inlet opening 2, passes the shell 4 of the stator 3 to the fan and leaves the machine through an opening provided in the casing of the same. 5 is the rotor and 6 its shaft, journaled in the end walls of the machine. In order now, without the aid of holes in the plates of the stator hitherto used, to effect the necessary cooling of the machine, the shell 4 of the stator is provided with longitudinal ribs 7. A part of the generated heat is transmitted

from the shell 4 outwards into the ribs 7 and the air forced forwards by the fan passes along the ribs and the outer side of the shell in contact with the same. The said ribs increase considerably the surface transmitting heat between the stator and the air, for which reason an effective cooling is gained.

According to Figs. 3 and 4 a casing 8 is cast integrally with the ribs 7, said casing 8 being supported by projections 9 on the casing 10 of the machine. The shell 4, ribs 7 and casing 8 constitute together channels for the cooling air. Owing to this arrangement heat is transmitted also to the casing 8, so that the heat transmitting surface, with which the air comes into contact is still more increased and thus also the effect.

In all the said forms of the invention described above and shown in the drawing the heat is removed in a wholly effective manner. Also other forms of execution than those shown and described as examples may, evidently, be used. For instance, projections or the like may be substituted for the ribs, as easily understood by those skilled in the art.

I claim:

1. In a dynamo-electric machine, a casing, a stator within said casing comprising a plurality of plates, a shell within said casing having longitudinal ribs forming a plurality of longitudinal passages for flow of air, said shell encircling said plates and forming therewith a separate unit adapted to be mounted in and surrounded by said casing, and means for causing flow of air through said passages.

2. In a dynamo-electric machine, a casing, a stator comprising a plurality of plates, an integral shell having a plurality of peripherally closed longitudinal passages therethrough, said shell encircling said plates and forming therewith a separate unit adapted to be mounted in and surrounded by said casing, and means for causing flow of air through said passages.

3. In a dynamo-electric machine, a casing, a stator comprising a plurality of plates, an integral annular shell comprising an inner ring closely engaging the full peripheries of

said plates, an outer ring and a plurality of longitudinal ribs connecting said rings to form a plurality of longitudinal passages through the shell, said shell and said plates forming a separate unit adapted to be mounted in and surrounded by said casing, and means for causing flow of air through said passages.

In testimony whereof I have hereunto affixed my signature.

WILHELM ROBERT UGGLA.