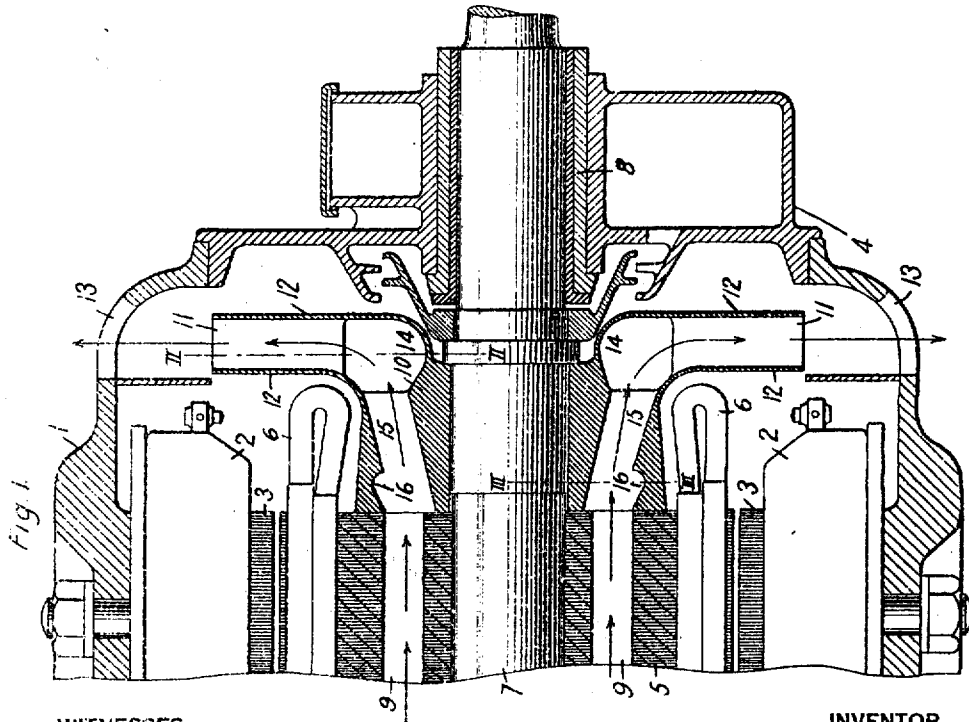
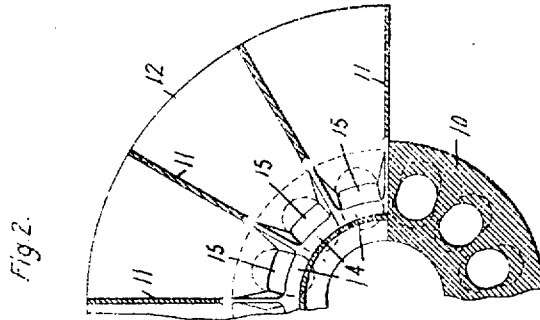


R. E. HELLMUND.
 VENTILATING CONSTRUCTION FOR DYNAMO ELECTRIC MACHINES.
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1,238,292.

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WITNESSES:

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VENTILATING CONSTRUCTION FOR DYNAMO-ELECTRIC MACHINES.

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Specification of Letters Patent

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To all whom it may concern:

Be it known that I, RUDOLF E. HELLMUND, a subject of the Emperor of Germany, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Ventilating Constructions for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to dynamo-electric machines provided with forced-draft ventilating means, and it has special reference to motors for railway service in which ventilating currents of air are caused to pass through end openings in the motor armatures by means of fans secured to the armature shafts.

The objects of my invention are to improve the efficiency of ventilating devices of the above indicated character and to prevent the entrance of water, or other foreign substances, through the ventilating openings.

In the accompanying drawing, Figure 1 is an axial sectional view of a portion of a railway motor equipped with ventilating means constructed in accordance with my invention, and Fig. 2 is a transverse sectional view taken partially along the line II—II and partially along the line III—III of Fig. 1.

In ventilated railway motors of the type in which the circulation of air is accomplished by means of centrifugal fans adapted to draw air through the armature and discharge it through openings in the motor housing adjacent to the fan, the most efficient ventilation can be obtained if the air leaving the fan is permitted to escape directly from the motor housing without being deflected. Such an arrangement, however, has the disadvantage that water, snow and other foreign substances can readily enter through the discharge openings and reach the armature core through the fan and its supply openings. According to my present invention, I so construct the air passages associated with the fan that any water which may enter the fan is trapped and drained out of the motor without entering the armature core.

Referring to the accompanying drawing, the machine here shown comprises a stationary frame 1 having field-magnet coils 2 mounted on polar projections 3, a bearing housing 4 and an armature having a lami-

nated core member 5, a winding 6 and a shaft 7. The armature shaft 7 is rotatably supported in bearings, one of which is shown at 8 associated with the bearing housing 4.

The laminated core member 5 of the armature is provided with longitudinal passages 9, and a centrifugal fan 10, provided with radially-extending blades 11 confined between annular plates 12, is secured to the shaft 7 between the armature core 5 and the bearing 8.

Adjacent to the outer periphery of the fan 10, the bearing housing 4 is provided with a series of discharge openings 13, shown in Fig. 1. It will be noted that air discharged from the fan is enabled to pass directly through the openings 13 without deflection.

The inner end of each of the passages formed by the fan blades 11 and the plates 12 is so shaped as to form a depression 14 which communicates, by means of a relatively restricted passage 15, with one of the longitudinal openings 9 in the laminated core 5. Another depression 16 is formed in the radially outer side of each passage 15, near its point of communication with the passage 9.

In the operation of the motor shown in the drawing, currents of air are caused to pass through the ventilating passages 9, by means of the fan 10, in the directions indicated by the arrows in Fig. 1. Any water or other foreign substance which may enter the fan through the openings 13 is trapped in the depressions 14 and is discharged through the lower openings 13 by the centrifugal force of the fan, assisted by gravity. The free escape of air from the fan is, therefore, unobstructed, while the entrance of water into the motor is effectually prevented.

It is to be understood that my invention is not restricted to the precise structural details which I have shown and described, but that any modifications may be effected within the spirit of my invention which fall within the scope of the appended claims.

I claim as my invention:

1. In a dynamo-electric machine, the combination with a stationary member, a rotatable member provided with longitudinal ventilating passages, a casing inclosing the said members and provided with ventilating

openings, and a fan embodying a set of air passages communicating with the ventilating passages in the said rotatable member and another set of passages communicating directly with said ventilating openings, of means located intermediate the said sets of passages for trapping foreign matter that may enter the fan through said openings.

2. In a dynamo-electric machine, the combination with a stationary member, a rotatable member, a casing inclosing the said members and provided with openings for the passage of air, and a ventilating fan associated with the said rotatable member and having a direct and unobstructed communication with the external atmosphere through the said openings, of means for trapping foreign matter that may enter the fan through the said openings.

3. A dynamo-electric machine comprising a stationary member, a rotatable member, a casing inclosing the said members and provided with openings for the passage of air, and a ventilating fan associated with the said rotatable member and embodying a trap for stopping foreign matter that may enter the fan through the said openings.

4. In a dynamo-electric machine, the combination with a stationary member, a rota-

table member provided with longitudinal ventilating passages, a casing inclosing the said members and provided with openings for the passage of air, and a fan embodying air passages communicating with the ventilating passages in the said rotatable member and adapted to force air directly, and without deflection, through the openings in the said casing, of means located at the entrance to the said air passages for trapping foreign matter that may enter the fan.

5. A dynamo-electric machine comprising a stationary member, a rotatable member provided with longitudinal ventilating passages, a casing inclosing the said members and provided with openings for the passage of air, and a fan embodying air passages communicating with the ventilating passages in the said rotatable member and other radially-disposed passages opening directly toward the openings in the said casing, the inner end of each of the said radially-disposed passages being provided with a water-trapping depression.

In testimony whereof, I have hereunto subscribed my name this 29th day of July 1915.

RUDOLF E. HELLMUND.