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R. H. JORDAN

1,823,979

LAMINATION FOR DYNAMO ELECTRIC MACHINES

Filed May 3, 1929

Fig. 1.

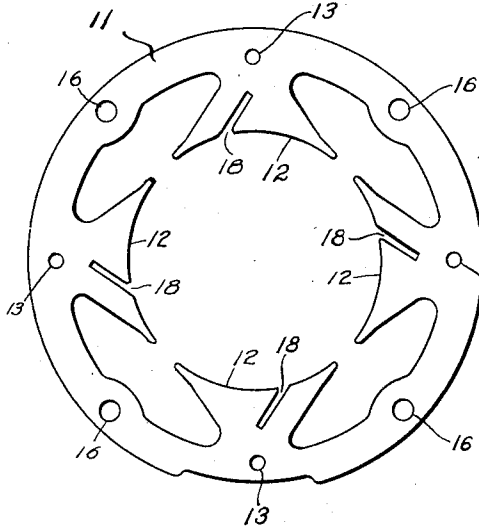


Fig. 2.

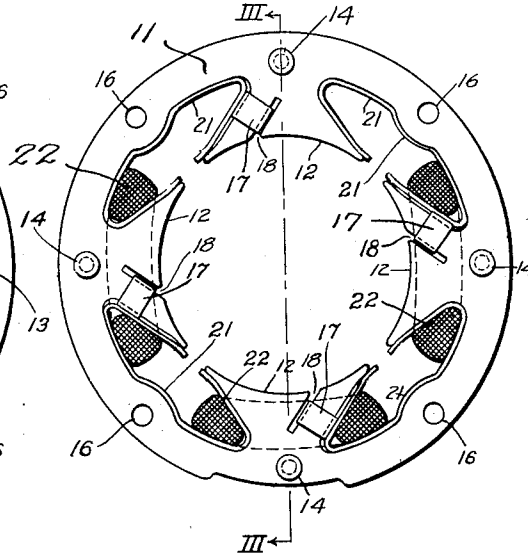


Fig. 3.

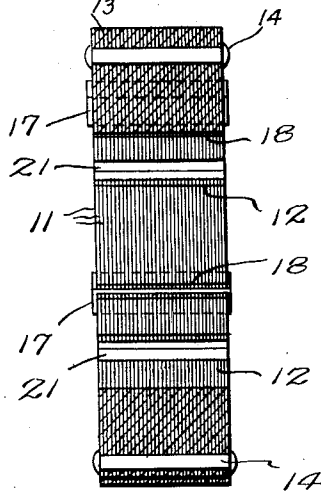


Fig. 4.

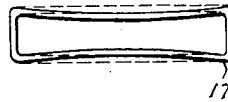
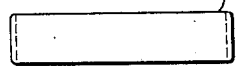


Fig. 5.



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LAMINATION FOR DYNAMO-ELECTRIC MACHINES

Application filed May 3, 1929. Serial No. 380,279.

My invention relates to dynamo-electric machines and particularly to field-magnet laminations.

An object of my invention is to provide a punching with a plurality of symmetrical pole pieces, of largest possible pole area said pole pieces embodying slots for the reception of parts of shading coils.

Another object of my invention is to permit the use of small shading coils while obtaining comparatively large shaded-pole areas.

Another object of my invention is to provide a salient pole piece having a slot therein for the reception of one side of a shading coil of resilient metal, thereby eliminating the need of additional holding means.

In practicing my invention, I provide a punching of magnetic material with a plurality of pole pieces integral therewith and extending radially therefrom, each of said pole pieces having a shading-coil slot therein extending substantially tangential to the surface of a cylinder that is concentric with the inner faces of the pole pieces and being particularly adapted to receive one side of a shading coil of inherent resiliency.

In the single sheet of drawings,

Figure 1 is a view, in front elevation, of a single lamination having a plurality of pole pieces and shading-coil slots therein,

Fig. 2 is a view, in front elevation, of a plurality of laminations partially wound, the main field coils being shown in section,

Fig. 3 is a view, in longitudinal section, of a plurality of assembled laminations taken on the line III—III of Fig. 2, the field coils being omitted,

Fig. 4 is an end view of a resilient shading coil, and

Fig. 5 is a top plan view of the same shading coil.

A sheet-steel punching comprises a yoke portion 11, a plurality of salient pole pieces 12 integral therewith and extending radially therefrom, each pole piece being substantially symmetrical relative to a radial line there-through, a plurality of peripherally spaced holes 13 being provided for receiving rivets 14, (see Fig. 3) the end of which may be

headed over. A set of laminations is adapted to be held in proper operative position in a housing (not shown) by supporting rods (not shown) which extend through holes 16. As these latter elements constitute no part of my invention and are well known in the art, I have not deemed it necessary to illustrate or describe them in detail.

Referring to Figs. 2 and 3, I show a plurality of assembled laminations each including the yoke portion 11 and a plurality of salient pole pieces 12, each of said pole pieces having a pole face the peripheral width of which is substantially larger than the peripheral width of its neck portion. One side of a resilient shading coil 17, (Figs. 4 and 5), is located in a shading-coil slot 18 that is substantially parallel to one side of the pole piece 12 which contains it, the shading coil being of substantially rectangular form, the longer sides of which are sprung inwardly during the process of manufacture. When placed in operative position on the pole piece 12, the shading coil assumes the form indicated by the broken lines in Fig. 4 and is held in proper operative position by its inherent resiliency.

Flexible insulating material 21 adaptable to any irregularities in the inner contour of said laminations, extends along the inner periphery of the yoke between the pole pieces and also along the outer surfaces of the pole pieces. A coil 22, of proper form and size, and represented in section, is located in proper operative position around the neck portion of each of the pole pieces 12, substantially as shown in Fig. 2.

I have shown laminations suitable for mounting inside a supporting frame of a dynamo-electric machine and adapted for the reception of a rotor between the axis of the said laminations and the periphery of its pole-piece faces. It is obvious that my invention is not limited to stator laminations but may be applied to either stator or rotor laminations or to both.

By using a substantially symmetrical pole piece, the saturation of the punching is substantially equal all along the flux path, and the addition of a shading-coil slot substan-

tially tangential to a cylinder that is concentric with the pole faces of the laminations requires only a shading coil, of small width, and results in a decrease in the copper loss therein, while obtaining a relatively large shaded-pole area.

It will also be noticed that, by producing substantially symmetrical pole pieces the size of the laminations, and, consequently, that of the entire machine may be decreased for a given output, since the available iron is made more effective, both electrically and mechanically, or, conversely, a greater main-coil area and resultant greater output may be obtained for a given stator punching.

Among the several advantages of my invention are the simplicity of installing pole windings and their subsequent ease of replacement, economy in manufacture, and added efficiency of operation because of better action of the larger shaded pole area and the increased main-coil area.

Various modifications may be made in the device embodying my invention without departing from the spirit and scope thereof, and I desire, therefore, that only such limitations shall be placed thereon as are imposed by the prior art or set forth in the appended claim.

I claim as my invention:

A laminated core structure embodying a plurality of laminations each including a yoke portion, a plurality of pole pieces each having a smaller area of neck portion than the area of the pole face such that the straight sides of the pole pieces are substantially tangential to the cylinder defined by the pole-piece faces and each pole piece being substantially symmetrical relative to a radial line centrally therethrough, each pole piece having a slot therein parallel to the adjacent straight side, and a shading coil of resilient metal frictionally gripping the edges of the pole portion enclosed thereby.

In testimony whereof, I have hereunto subscribed my name this 29th day of April, 1929.

RICHARD H. JORDAN.