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Patented June 18, 1901.

F. A. MERRICK.
POLE PIECE FOR DYNAMO ELECTRIC MACHINES.

(Application filed Mar. 20, 1901.)

(No Model.)

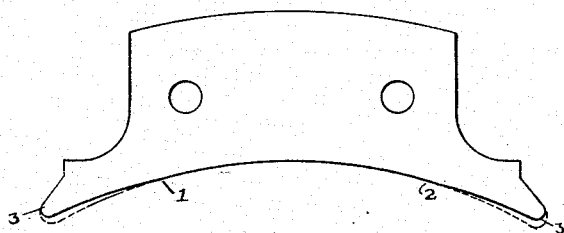


Fig 1

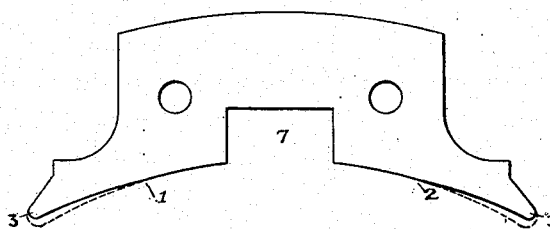


Fig 2

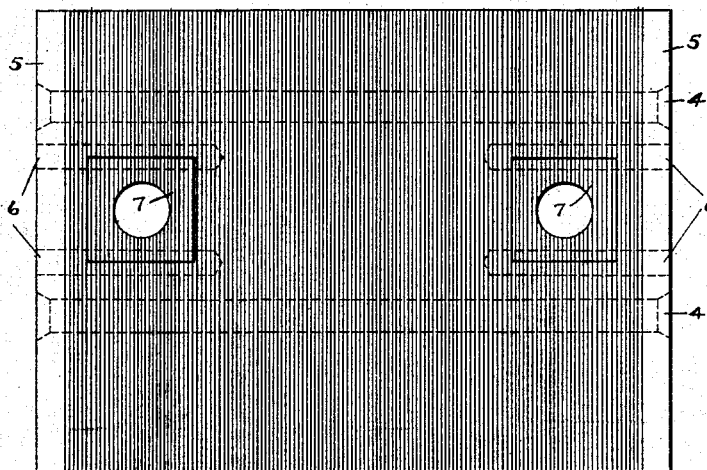


Fig 3

WITNESSES:

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POLE-PIECE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 676,439, dated June 18, 1901.

Application filed March 20, 1901. Serial No. 52,087. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. MERRICK, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Pole-Pieces for Dynamo-Electric Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to the construction of pole-pieces for dynamo-electric machines, and is designed to provide means for preventing or reducing distortion of the magnetic field due to cross magnetization of the rotating armature.

For well-known reasons pole-pieces are usually of laminated construction, and it has been common prior to my invention to counteract the distorting effect of cross magnetization by so shaping and assembling the laminæ that the polar edges of alternate laminæ or portions thereof extend nearer the periphery of the armature than the corresponding portions of adjacent laminæ, thus reducing the amount of metal at the polar face of the piece or at the tips thereof, to thereby produce magnetic saturation or supersaturation of the metal to such a degree that further passage of magnetic lines of force through those portions of the poles is checked. This requires either the use of two different forms of laminæ placed alternately with respect to each other or else the alternate assembling of counterpart laminæ. The first-named construction is objectionable in that two different dies must be employed in the production of the laminæ, and care must be taken in assembling, and this last-mentioned objection applies with still greater force to the construction in which counterpart laminæ must be assembled in alternate relation.

My invention provides for the use of counterpart laminæ, all of which in being assembled may be placed in exactly the same way, the laminæ being also of such construction that the end portions of each are also counterparts of each other, so that they may be assembled without regard to end relation.

My invention is also distinguished from the prior art above referred to in that instead of

utilizing the magnetic resistance of saturated metal to counteract the distorting effect of armature cross-magnetization I utilize the resistance of a somewhat-increased air-gap between the tip portions of the poles and the periphery of the armature, and thus tend to prevent saturation at such points.

Specifically considered, my invention consists in a plate or lamina for pole-pieces having a concaved inner or polar edge bounded by a compound curve whose central portion is concentric with the axis of the armature and whose end portions are each of a greater radius.

My invention also consists in a pole-piece composed of a plurality of counterpart laminæ of the character just described assembled without regard to end relation.

In the accompanying drawings, Figure 1 is a plan view of one of my improved laminæ; Fig. 2, a similar view showing how the lamina is cut away to receive the heads of the bolts which secure the pole-piece to its seat, and Fig. 3 is a plan view of a completed pole-piece.

Referring more specifically to Fig. 1, the central portion of the concaved edge of the lamina from the point 1 to the point 2 has a radius of curvature concentric with the armature-axis, while the curvature of the end portions 1 3 is on a slightly-greater radius, the radii of both such portions being from a common center. The intersection of the curves 1 3 with the curve 1 2 is at the points 1 and 2, as shown. The extent to which the radii of curvature of the end portions 1 3 are increased will depend somewhat upon the particular character of the machine, but is preferably from one-eighth to three-sixteenths of an inch. The effect of this increase in radius is, as indicated by the dotted line in Fig. 1, to gradually increase the width of the air-gap between the armature and the pole-piece from the points 1 and 2 outwardly to the tips 3, and thus oppose a proportionately-greater resistance to the passage of the lines of force, this increased resistance becoming so great toward and at the tips as to operate as an effective check to the piling up of such lines at one side of each pole.

In constructing a pole-piece from these

laminæ they are assembled side by side without regard to end relation and are secured together in any suitable or usual manner, as by rods 4 passing therethrough and secured in end plates 5 of greater thickness, said end plates being further secured by dowel-pins 6, driven in holes drilled after assembly. Certain of the laminæ are cut away, as shown at 7, to form a depressed or countersunk seat for the head of bolts which secure the pole-piece to its seat, the holes for such bolts being drilled after assembly. These bolt-holes cut certain of the laminæ in two parts; but such laminæ are held rigid by the dowel-pins 6.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A plate or lamina for use in the construction of the pole-pieces of dynamo-electric machines, said plate or lamina having a concaved polar edge bounded by a compound curve whose central portion is concentric with the axis of the armature, and whose end portions have each a greater radius of curvature.

2. A plate or lamina for use in the con-

struction of the pole-pieces of dynamo-electric machines having a concaved polar edge whose central portion is of one radius and whose end portions are of greater radii.

3. A plate or lamina for use in the construction of the pole-pieces of dynamo-electric machines, whose central portion is of one radius and whose end portions are of greater radii from a common center.

4. A plate or lamina for use in the construction of the pole-pieces of dynamo-electric machines having a concaved polar edge whose central portion is of one radius, and counterpart end portions of a different radius of curvature.

5. A pole-piece for dynamo-electric machines, composed of a plurality of counterpart laminæ assembled without regard to end relation, and having its central portion curved concentric with the axis of the armature and its end portions of greater radii.

In testimony whereof I have affixed my signature in presence of two witnesses.

FRANK A. MERRICK.

Witnesses:

CORA G. COX,
H. W. SMITH.