W. T. HENSLEY.

FIELD WINDING COIL FOR DYNAMO ELECTRIC MACHINES.

APPLICATION FILED MAR. 9, 1908.

975,425.

Patented Nov. 15, 1910.

Fig. 1.

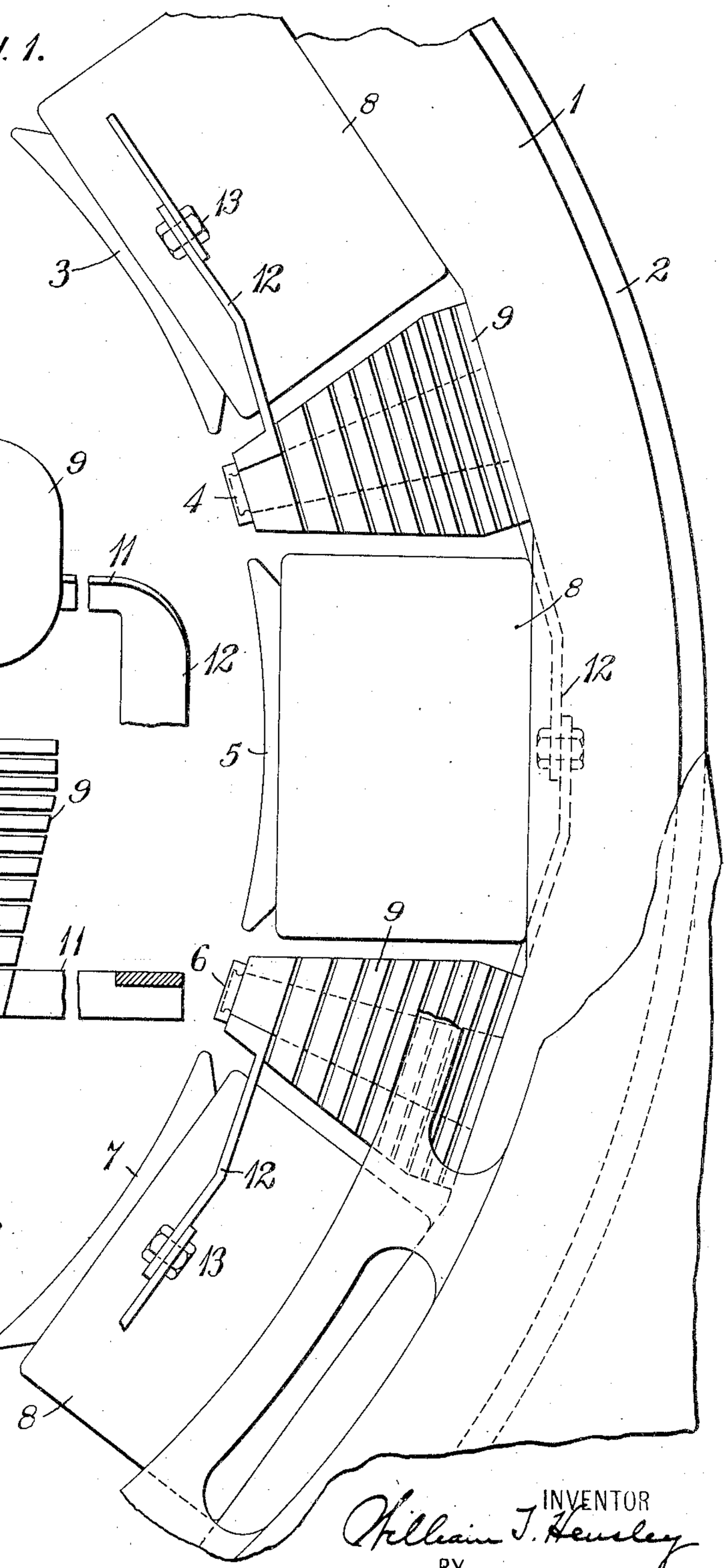


Fig. 2.

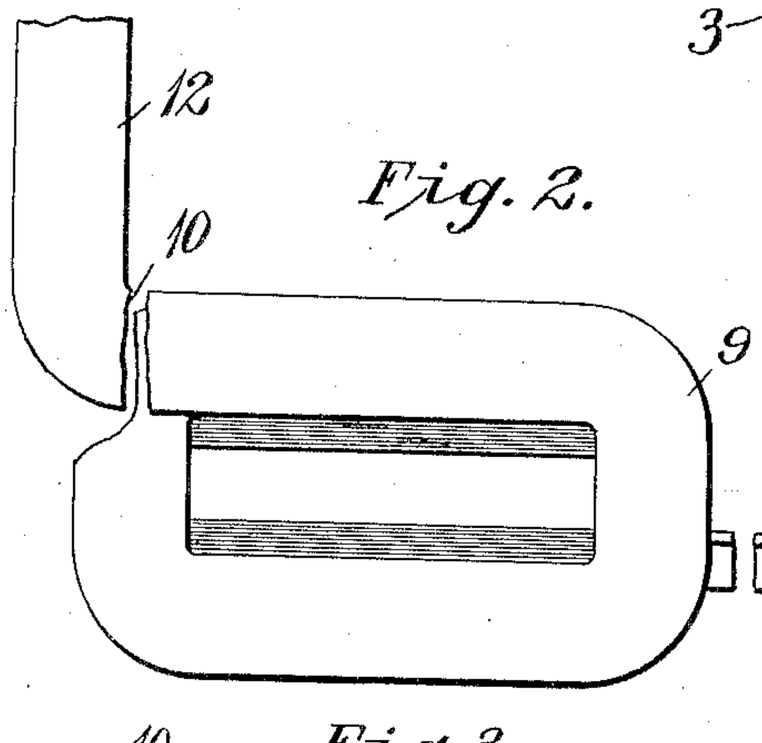


Fig. 3.

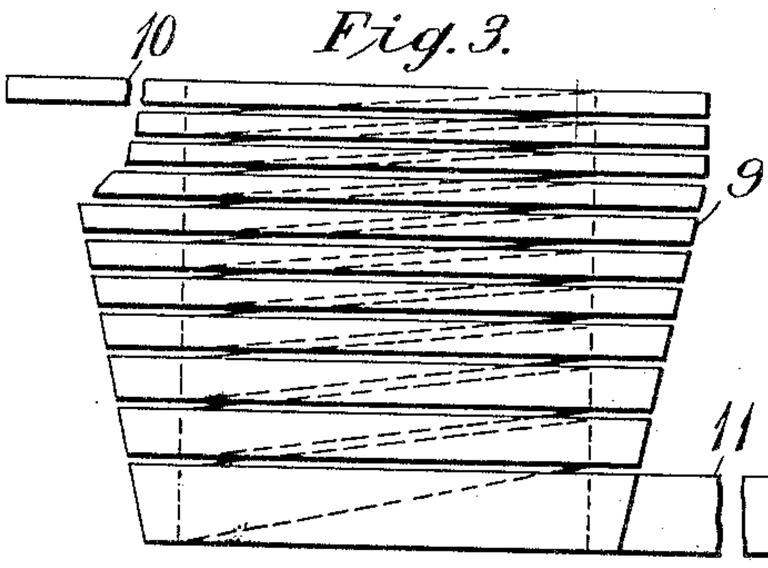
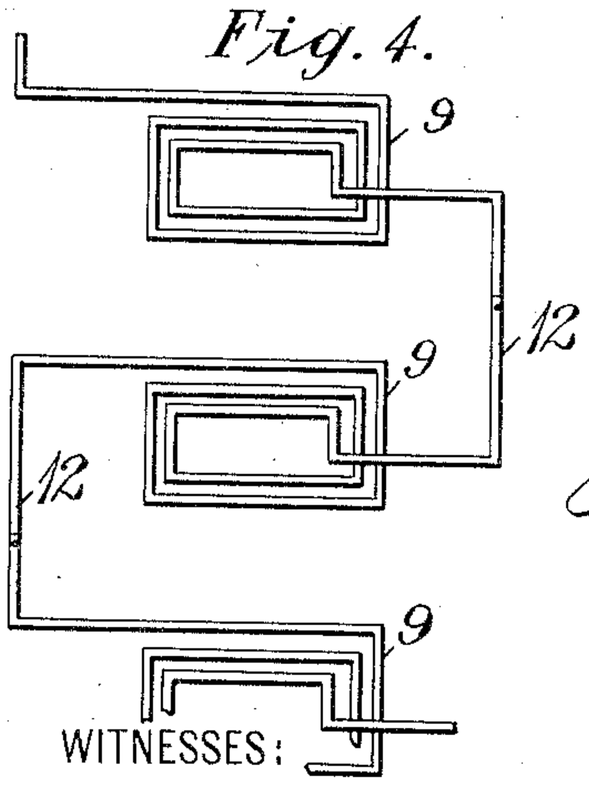


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM T. HENSLEY, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, OF EAST PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

FIELD-WINDING COIL FOR DYNAMO-ELECTRIC MACHINES.

975,425. Specification of Letters Patent. **Patented Nov. 15, 1910.**

Application filed March 9, 1908. Serial No. 420,076.

To all whom it may concern:

Be it known that I, WILLIAM T. HENSLEY, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Field-Winding Coils for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to dynamo-electric machines and it has special reference to such machines as are provided with auxiliary polar projections or interpoles.

The object of my invention is to provide an improved coil of substantially wedge-shape that shall be specially adapted for use on the interpoles of a dynamo-electric machine having relatively large current-carrying capacity.

Field magnet coils for dynamo-electric machines, as usually constructed, are substantially rectangular in longitudinal section and, when mounted on radial polar projections, their outer adjacent surfaces are relatively close together. In applying interpoles and interpolar windings for the purpose of improving the commutation of such machines, the spaces at the inner ends of the polar projections which are available for occupancy by the auxiliary coils, are obviously restricted.

According to my present invention, I provide a wedge shaped coil of cast copper or other conducting material the turns of which have substantially uniform cross sectional area but vary in shape according to their location relative to the extremity of the polar projection, in order to increase the number of turns which may be applied to the interpole, and to provide ventilating spaces between the coils.

Figure 1 of the accompanying drawings is an end elevation of a portion of a dynamo-electric machine frame having interpoles which are equipped with coils constructed in accordance with my invention and Figs. 2 and 3 are detail views of the interpolar coil shown in Fig. 1. Fig. 4 is a diagram of circuit connections for the interpolar winding.

Referring to the drawings, a cylindrical, and preferably laminated, core member 1 is supported in the stationary frame 2 and is provided with a plurality of radial polar projections 3, 4, 5, 6, and 7 of which the projections 4 and 6 constitute interpoles. Each of the projections 3, 5, and 7 is provided with a magnetizing coil 8 of substantially rectangular form and each of the interpoles 4 and 6 is provided with a coil 9. The interpoles 4 and 6 are relatively narrow and their sides may be either parallel to each other or slightly tapered, as illustrated in the drawings. The coils 9 with which the poles 4 and 6 are provided, severally comprise a plurality of turns of varying widths and thicknesses but having substantially uniform cross sectional area, the turns of the coils being preferably so cast that they are slightly separated from each other in order to provide an air space for insulating and ventilating purposes. The turns of the coil which are adjacent to the core member are wide and flat and the turns nearer the outer extremity of the pole are relatively narrow and thick, since the available clearance space between the inner ends of the adjacent polar projections is materially less than that near the body of the core member. Intermediate turns of the coil are so proportioned that the sides of the completed coil lie in planes substantially parallel to the adjacent sides of the magnetizing coils 8. The end turns 10 and 11 of the coil extend laterally outward from the opposite sides and are bent to constitute cross connectors 12 between poles. These connecting projections may be joined together in any suitable manner, such as by a soldering process or by bolts 13, as shown.

While the improved coil of my invention is well adapted for use in the relations in which it is herein described and illustrated, it is not restricted thereto and it may be employed for any other suitable purpose.

I claim as my invention:

1. A wedge-shaped coil for electric apparatus having a plurality of single-layer turns of conducting material of varying widths and uniform cross-sectional area from one coil end to the other.

2. A field magnet coil for dynamo-electric machines comprising a plurality of rigid single-layer turns of conducting material, the turns at one end of the coil being wide and thin and the turns at the other end being narrow and thick.

3. A cast metal coil comprising a plurality of single-layer turns of gradually increasing

thickness from one end of the coil to the other and of uniform cross-sectional area.

4. In a dynamo-electric machine, the combination with a cylindrical frame having main polar projections and auxiliary polar projections the sides of which are tapered, and substantially rectangular coils mounted on the main polar projections, of coils for the auxiliary projections the turns of which gradually increase in thickness from one end of the coil to the other without change in cross sectional area.

5. In a dynamo-electric machine, the combination with a cylindrical frame having polar projections, of coils therefor having a plurality of single-layer turns of constantly varying cross sectional contour and of invariable cross sectional area from end to end, and cross connections between poles that extend from the end turns of the windings and are integral therewith.

6. A coil for electrical apparatus having turns of varying contours, the turns near one end of the coil being wide and thin and the turns at the opposite end being relatively narrow and thick.

In testimony whereof, I have hereunto subscribed my name this 2nd day of March, 1908.

WILLIAM T. HENSLEY.

Witnesses:
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R. J. DEARBORN.