

R. E. HELLMUND.
 COIL SUPPORTING DEVICE FOR DYNAMO ELECTRIC MACHINES.
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1,329,242.

Patented Jan. 27, 1920.

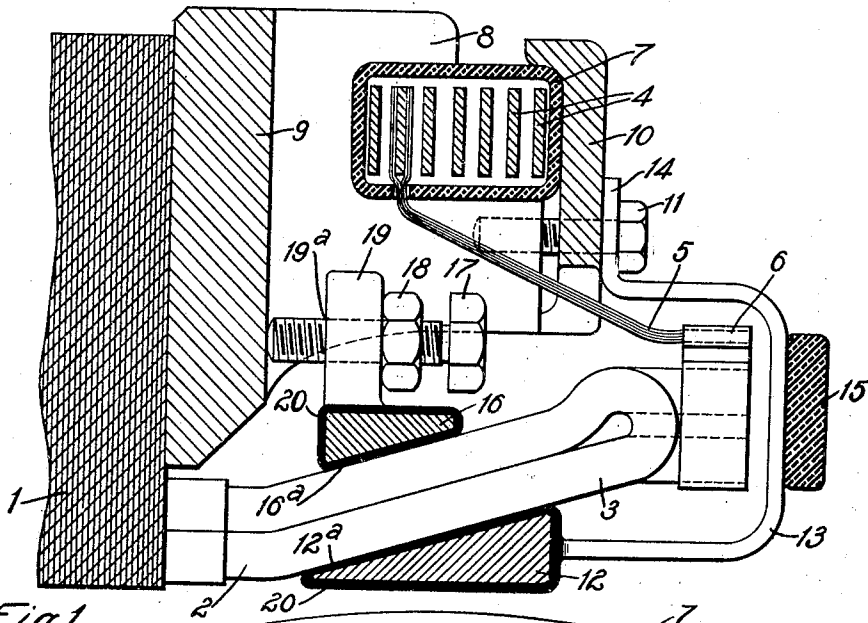


Fig. 1.

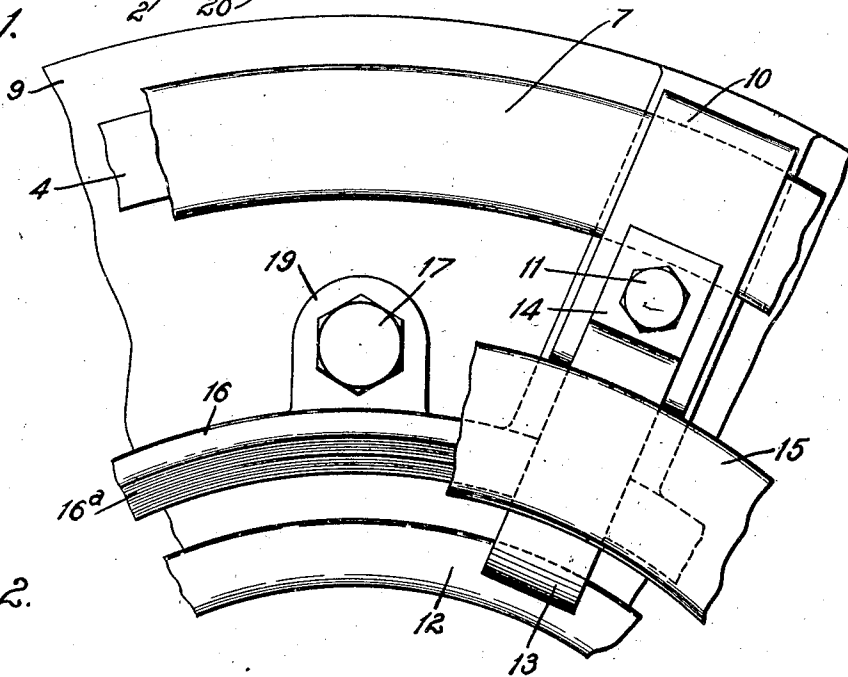


Fig. 2.

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COIL-SUPPORTING DEVICE FOR DYNAMO-ELECTRIC MACHINES.

1,329,242.

Specification of Letters Patent. Patented Jan. 27, 1920.

Application filed July 11, 1916. Serial No. 108,568.

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 Swissvale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Coil-Supporting Devices for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to coil-supporting devices for dynamo-electric machines and has for its object to provide means for readily securing and bracing the portions of the coils of the winding of a dynamo-electric machine that project beyond the ends of the core members.

Further objects of my invention are to provide means for protecting projecting coil portions from injury and for allowing relative movement between the coils and the cross-connecting members that are connected thereto.

In the accompanying drawings, Figure 1 is a view, partially in section and partially in side elevation, of a portion of the core member of a dynamo-electric machine provided with a coil-supporting device constructed in accordance with my invention; Fig. 2 is a view in front elevation of the core member shown in Fig. 1, with parts broken away and the coils removed therefrom to show the details of the construction.

An annular magnetizable core member 1 of a dynamo-electric machine is provided with a plurality of coils 2 that respectively comprise a looped portion or end-turn 3 projecting beyond the end of the core member 1, in accordance with the usual practice. The end-turns 3 are bent away from the longitudinal axis of the annular core member 1 so that they collectively form a substantially hollow frusto-conical structure. A plurality of cross-connecting rings 4 are connected to the end-turns 3 of coils 2 by means of flexible conductors 5 and connectors 6. The cross-connecting rings 4 are surrounded by a cell 7 of insulating material that is supported by ribs 8 provided on the end plate 9 of the core member 1. The cell 7 is secured in position by a clamping ring 10 and bolts 11 co-acting with the ribs 8.

A ring 12, that is substantially trapezoidal in cross-section, is supported in concentric relation with the end-turns 3 by means of arms 13, the outer surface 12^a of the ring 12

being substantially parallel to the inner surface presented by the end-turns 3. The ring 12 is so proportioned that it effectively protects the end-turns 3 from injury, the inner cylindrical surface thereof being substantially flush with the inner periphery of the core member 1. The arms 13 are of substantially U-shape and are respectively provided with a laterally-projecting portion 14 that is secured to the clamping ring 10 by a bolt 11. A protecting ring 15, preferably formed of a strong and durable insulating material, is supported by the arms 13 adjacent to the connectors 6. A ring 16, similar in form to the ring 12, is located within the end-turns 3, the inner surface 16^a thereof being substantially parallel to the outer surface presented by the end-turns 3. The ring 16 is adapted to be spaced away from the end-plate 9 by means of bolts 17 and nuts 18 coating with threaded lugs 19 integral with and on the outer periphery of the ring 16. The rings 12 and 16 are respectively covered with a layer 20 of insulating material in order to protect the end-turns 3 from injury.

In assembling a dynamo-electric machine provided with my coil-supporting device, the ring 16 is temporarily secured to the ribs 8 by banding or other suitable means so that, when the coils 2 are placed in the slots of the core member 1, the inner surface 16^a of the ring 16 does not interfere therewith. The cross-connecting rings 4 and the ring 12 are then assembled, as previously described, the inner surface presented by the end turns 3 being substantially parallel to, but not in close contact with, the outer face 12^a of the ring 12. The temporary banding is then removed from the ring 16 and the bolts 17 are screwed into threaded openings 19^a provided in the lugs 19. After engagement of the bolts 17 with the face of the end plate 9, further turning thereof will cause the ring 16 to be forced away from the end plate 9 in a longitudinal direction. The adjusting bolts 17 are turned until the inner face 16^a of the ring 16 engages the end-turns 3 and forces them outwardly and into close engagement with the stationary ring 12. When the proper adjustment has been effected, the ring 16 is locked against further movement by the nuts 18.

It is apparent that my coil-supporting device, when once adjusted, will effectively brace the end-turns against any displace-

ment, such as is often caused by the excessive vibration encountered in vehicle motors and similar types of apparatus. Furthermore, the flexible conductors between the cross-
 5 connecting rings and the end-turns of the coils will permit of adjustment of the coil-supporting device after the machine has been assembled, for it is obvious that such adjustments could not well be made with the
 10 usual form of rigid conductors.

While I have shown my invention in a simple and preferred form, it is not so limited but is susceptible of various modifications within the scope of the appended
 15 claims.

I claim as my invention:

1. In a dynamo-electric machine, the combination with a magnetizable core member provided with coils having portions projecting beyond the ends thereof and inclined
 20 with respect thereto, of means for supporting the projecting coil portions comprising concentric annular members in engagement therewith and respectively provided with
 25 surfaces inclined to the common longitudinal axis of said members and means for causing longitudinal movement of one of said members to clampingly engage said coil portions between said inclined surfaces.

2. In a dynamo-electric machine, the combination with a magnetizable core member provided with coils having portions projecting beyond the ends thereof and inclined
 30 with respect thereto, of means for supporting the projecting coil portions comprising members of substantially wedge shape cross-section located on opposite sides of said projecting coil portions and in engagement
 35 therewith and means for causing longitudinal movement of one of said members to effect clamping engagement with said coil portions.

3. In a dynamo-electric machine, the combination with a magnetizable core member
 45 provided with coils having portions projecting beyond the ends thereof and inclined with respect thereto, of means for supporting the projecting coil portions comprising

members of substantially wedge shape cross-section located on opposite sides of said coil
 50 portions and in engagement therewith and provided with adjacent and substantially parallel inclined surfaces, and means for causing longitudinal movement of one of
 55 said members.

4. In a dynamo-electric machine, the combination with a magnetizable core member provided with coils having portions projecting beyond the ends thereof and inclined
 60 with respect thereto, of means for supporting the said projecting portions comprising coaxial concentric annular members and means for moving one of said annular members longitudinally with respect to the shaft to effect a clamping action on said project-
 65 ing portions.

5. In a dynamo-electric machine, the combination with a magnetizable core member provided with coils having portions projecting beyond the ends thereof and inclined
 70 with respect thereto, of a stationary supporting ring mounted on said core member and engaging the reflex angle side of said end portions and a coaxial ring member mounted on said core member and movable
 75 with respect thereto and adapted to clampingly engage said end portions.

6. In a dynamo-electric machine, the combination with a magnetizable core member provided with coils having portions projecting beyond the ends thereof and inclined
 80 with respect thereto, of a stationary supporting ring engaging the reflex angle side of said end portions and means for mounting said ring on said core member and a
 85 coaxial ring member mounted on said core member and adapted to clampingly engage said end portions on the obtuse angle sides thereof, and an additional ring mounted on said sta-
 90 tionary clamping ring supporting means for protecting said end portions.

In testimony whereof, I have hereunto subscribed my name this 29th day of June 1916.

RUDOLF E. HELLMUND.