Sept. 2, 1924. 1,506,753

S. C. HOEY

SUPPORT FOR ROTOR WINDINGS

Filed May 14, 1921

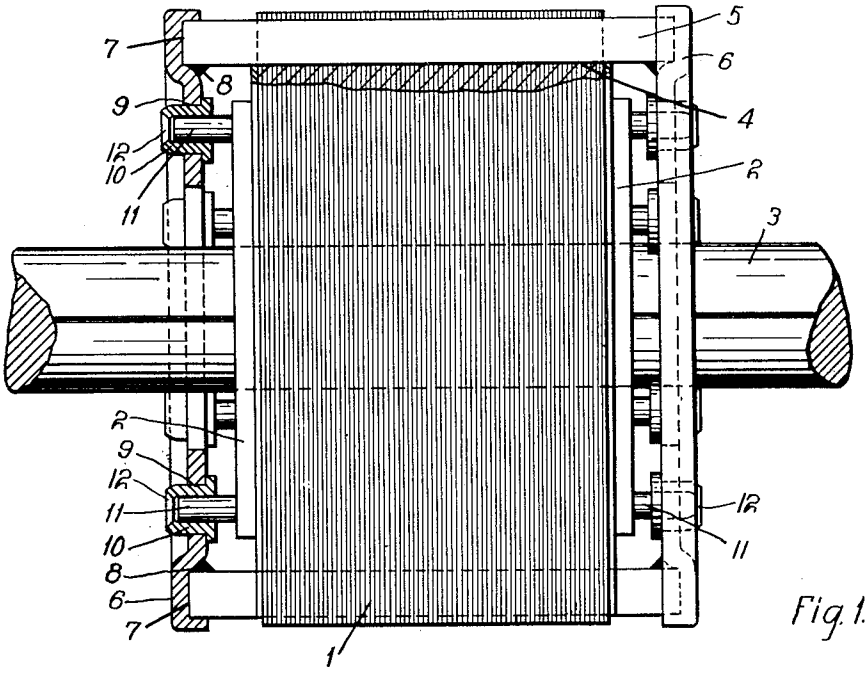


Fig. 1.

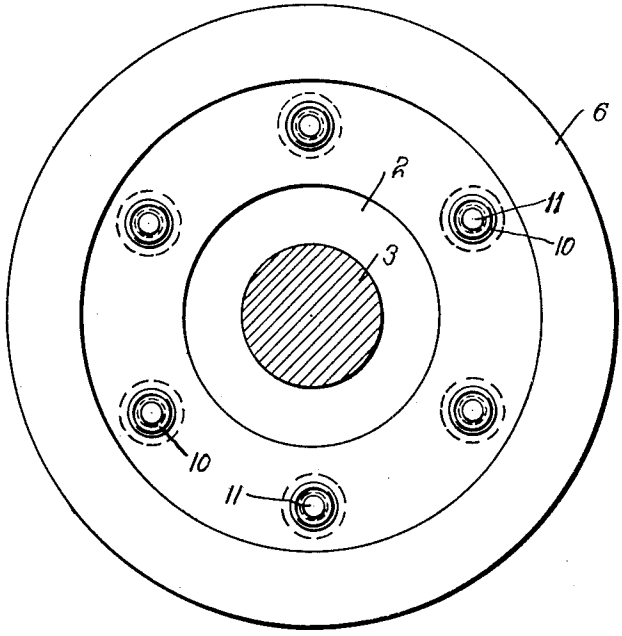


Fig. 2.

WITNESSES:

H. B. Funk.

Marshall Lowe

INVENTOR

Samuel C. Hoey

BY

Wesley G. Carr

ATTORNEY

Patented Sept. 2, 1924. 1,506,753

UNITED STATES PATENT OFFICE.

SAMUEL C. HOEY, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

SUPPORT FOR ROTOR WINDINGS.

Application filed May 14, 1921. Serial No. 469,677.

To all whom it may concern:

Be it known that I, SAMUEL C. HOEY, 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 Supports for Rotor Windings, of which the following is a specification.

My invention relates to winding supports for dynamo-electric machines and it has particular relation to supports for the rotor conductors for machines of the squirrel-cage type.

Heretofore, it has been observed that, when machines of the above designated type become heated during the operation thereof, the conductor bars carried by the rotor member frequently expand to such an extent as to exert considerable strain upon the supporting and short-circuiting rings. In such instances, the elongation of the conducting members, upon a rise in temperature, either damages the means of attachment of the supporting rings or results in the distortion of the conducting bars.

One of the objects of my invention is to provide a support for the ends of the conductor bars of a squirrel-cage motor that may move axially according to the amount of expansion or elongation of the conductor members occasioned by a rise in temperature.

Another object of my invention is to provide a device of the character described which may be adjusted axially in accordance with the normal length of the conducting members.

A further object of the invention is to provide a supporting ring for the conductors of a squirrel cage motor that may be easily constructed and quickly assembled with a minimum of time and expense.

In the accompanying drawings,

Figure 1 is a view, partially in side elevation and partially in vertical longitudinal section, of the rotor member of a squirrel-cage motor, the conducting members of which are supported in accordance with my invention.

Fig. 2 is an end view of the structure illustrated in Fig. 1.

Referring to the drawings, 1 indicates the laminated core member of a squirrel-cage rotor which is mounted upon a suitable spider 2 carried by a shaft 3. The core 1 is provided with the usual conductor slots 4 about the periphery thereof, within which the conductor members 5 are adapted to be secured, the ends of the latter extending outwardly slightly beyond the ends of the rotor.

Supporting short-circuiting rings 6 are disposed concentrically with the shaft 3 and in spaced relation to each end of the rotor 1 and are provided with annular channel portions 7 within which the extremities of the conductor members 5 project and are secured, preferably by brazing, as indicated at 8.

The rings 6 are further provided with a plurality of spaced apertures 9 within which are disposed flanged bushings 10. Pins 11 are mounted within the bushings 10 and extend inwardly and into engagement with the face of the spider 2. The outer edges of the bushings 10 are crimped inwardly, as indicated at 12, to prevent the outward displacement of the pins 11 after they have been adjusted to the desired positions.

From the foregoing, it will be apparent that the conducting members 5 are positively supported at each end against any tendency toward radial displacement caused by centrifugal action and are also maintained against axial movement within the slots by the pins 11 engaging the spider 2.

In the event that the conductor members 5 become heated during the operation of the machine, and, as a consequence thereof, expand or elongate, the rings 6 may move axially away from the rotor to accommodate the increased length of the conductors. When the temperature of the machine again becomes normal and the conductors shrink to their initial length, the rings 6 will be returned to their normal positions, with the pins 11 in abutting engagement with the spider 2.

I claim as my invention:

1. A rotor for dynamo-electric machines comprising a core member, a plurality of conductors carried by said core member, a support for said conductors and means for normally spacing said support an adjustable distance from said core with freedom of movement away from said core when said conductors are heated.

2. In a dynamo-electric machine, the combination with a core member and a plurality of conductors associated therewith and having end connections, of means operable re-

gardless of slight discrepancies in the relative lengths of the core member and the conductors, and adapted to maintain said conductors in a predetermined position with respect to said core member and free to move axially upon the expansion of said conductors.

3. A support for the conductors of a core member comprising an annular end-ring member adapted to be engaged by said conductors and means for normally maintaining said annular member in adjustably spaced relation with respect to the end of said core member, said means permitting said annular member to move away from the end of said core member upon expansion of said conductors.

4. A support for the conductors of a rotor core member comprising an annular member adapted to be engaged by said conductors and a plurality of adjustable spacing members carried by said annular member for abutting engagement with said core member to limit the movement of said annular member towards said core.

5. A support for the conductors of a rotor core member comprising an annular member provided with a channel portion adapted to engage the extremities of said conductors and a plurality of axially adjustable spacing members carried by said annular member for abutting engagement with said core member to limit the inward movement of said annular member.

6. A support for the conductors of a rotor core member comprising an annular channel member adapted to receive the ends of said conductors and provided with a perforated flange portion, a plurality of sleeves disposed within said apertures, a plurality of pins disposed within said sleeves for abutting engagement with said core member and adjustable means for maintaining said pins in any desired position within said sleeves.

7. In a dynamo-electric machine, a support for the conductors of a core member comprising a continuous perforated member adapted to support said conductors, a plurality of spacing members disposed in said perforations for abutting engagement with said core member and adjustable means for maintaining said spacing members in any desired position within said perforations.

8. In a dynamo-electric machine, a support for the conductors of a core member comprising a continuous perforated member adapted to support said conductors, a plurality of sleeves disposed within said perforations and a plurality of pins disposed in said sleeve in engagement with said core member, said sleeves being crimped over the ends of said pins to maintain said perforated member in a predetermined position regardless of the relative lengths of the core member, the conductors and the pins.

9. A rotor member comprising a core provided with a plurality of slots, conductors disposed within said slots and extending out of the ends thereof, a plurality of annular members adjacent to said core and in axial alinement therewith and having a channel formed therein to receive and retain the ends of said conductors, and a plurality of axially adjustable spacing members carried by said annular member to maintain said annular members and said conductors in normal predetermined positions with respect to said core member with freedom of axial movement upon expansion of said conductors.

In testimony whereof, I have hereunto subscribed my name this 10th day of May, 1921.

SAMUEL C. HOEY.