A. KIMBLE.

ELECTRODEPOSIT WINDING.

APPLICATION FILED MAY 12, 1919.

1,433,827.

Patented Oct. 31, 1922.

Fig. 2.

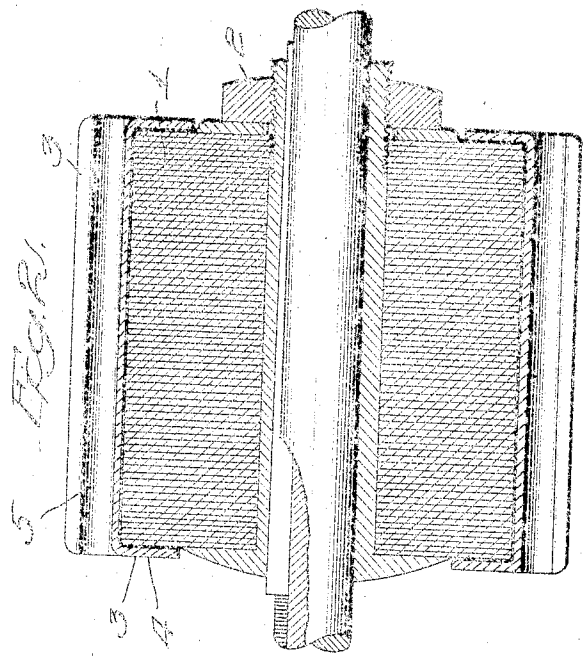


Fig. 3.

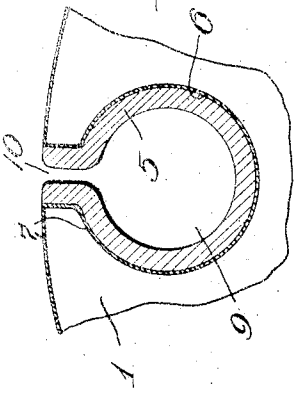


Fig. 1.

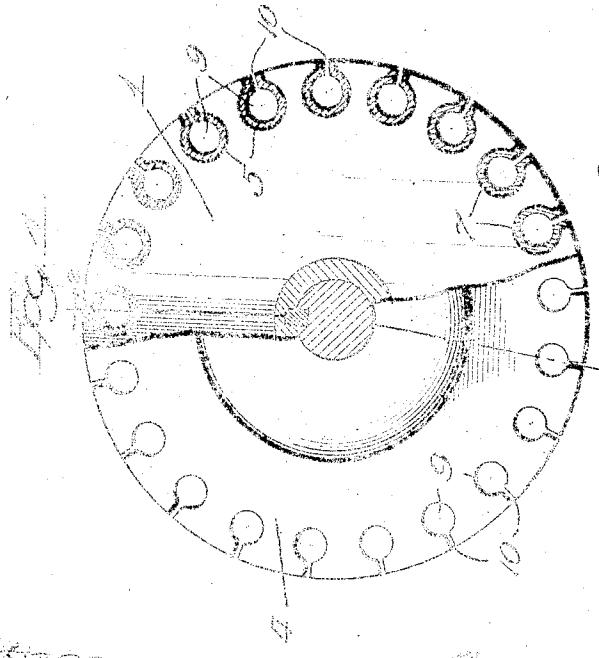
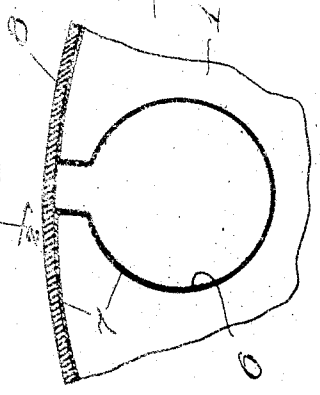


Fig. 4.



Witness:

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Attorneys

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UNITED STATES PATENT OFFICE.

AUSTIN KIMBLE, OF WAUSAU, WISCONSIN, ASSIGNOR TO MARATHON ELECTRIC MFG. COMPANY, OF WAUSAU, WISCONSIN, A CORPORATION OF WISCONSIN.

ELECTRODEPOSIT WINDING.

Application filed May 12, 1919. Serial No. 296,846.

To all whom it may concern:

Be it known that I, AUSTIN KIMBLE, a citizen of the United States of America, and a resident of Wausau, county of Marathon, and State of Wisconsin, have invented certain new and useful Improvements in Electrodeposit Windings, of which the following is a specification.

This invention relates to dynamo-electric machines, and especially to the structure and method of forming a squirrel cage rotor.

The main objects of the invention are to provide a squirrel cage member of improved form adapted for high electrical efficiency, thorough ventilation, good starting characteristics and convenience in manufacture; and to provide an improved method of forming such a device.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which—

Fig. 1 is an end view of a squirrel cage rotor.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged cross section through one of the squirrel cage bars.

Fig. 4 is a section similar to Fig. 3 before plating.

In the construction shown in the drawings, the laminated core 1 is clamped rigidly together by any approved means, for instance as indicated at 2, and mounted on a shaft, as usual for such devices. On said core is a ventilated squirrel cage winding 3 comprising end rings 4 and connecting bars 5, said bars being disposed in the openings 6 of the slotted core 1. Said winding 3 is in the form of an electrodeposit of copper applied to an intermediate coating of zinc indicated at 7.

By this means a compound squirrel cage structure is provided in which a metal having substantial resistance is disposed against the core and a good conductor of much greater thickness is secured thereto and spaced from the core by the higher resistance metal. These metals, it is to be understood, are not necessarily limited to zinc and copper. The hot metal dip prepares the core for ready deposit of the plating.

The double walled bars 5 are hollow throughout their length and are thereby adapted for efficient ventilation. The compound structure of different resistance metals gives good starting qualities.

The method of forming the device above described is as follows: The laminated core, being clamped together, is first cleaned preparatory to galvanizing, then thoroughly galvanized, particularly over the areas to be occupied by the squirrel cage winding. After the galvanizing deposit 7 is in place, the device is coated with wax, except peripheral areas at the ends where the squirrel cage end rings are to be located and in the slots. A rubber band 8 may be applied to the outer face of the core in place of wax, to prevent the deposit of copper thereon. The device is then placed in a copper-plate bath, and a sufficient deposit of copper is applied to form the end rings 4 and connecting bars 5 directly over the galvanized surface. The thickness of the copper deposit may be greater or less, according to the design of the machine and the current capacity desired, one-sixteenth of an inch ordinarily being sufficient. The openings or slots 6 are so designed that after the core is galvanized and the copper has been deposited, ventilation openings 9 will remain. The slots are preferably round and disposed closely adjacent to the surface and may to advantage be open on their outer side as indicated at 10. The foregoing construction offers a very positive and useful advantage, namely, the application of ordinary dip and plating methods to produce a winding characterized by hollow bar ventilation and compound bi-metallic bar construction.

Although but one specific embodiment of this invention is herein set forth, it is to be understood that numerous details of the construction and method shown and described may be altered or omitted without departing from the spirit of the invention as defined by the following claims.

I claim:

1. A magnetic core, in combination with a compound bi-metallic squirrel cage winding molecularly integral therewith.

2. An open bar ventilated induction rotor comprising a laminated core with openings disposed lengthwise adjacent to the surface thereof, a layer of zinc set thereon in a position corresponding with that of a squirrel cage winding, and a layer of copper in the form of a squirrel cage winding over-

lying the zinc and set thereon, said parts being molecularly integral and said zinc serving as a binder for the copper.

3. The method of applying a squirrel cage winding to a laminated core, which consists in galvanizing the core, and applying an electro-deposit of copper thereto in the form of a squirrel cage winding.

4. The method of forming a squirrel cage rotor, which consists in galvanizing a slotted core, applying a rubber band around the cylindrical outer face of the rotor, applying wax to such other parts of the rotor as are not to be occupied by the squirrel cage winding, and then applying an electro-deposit of copper in the form of a squirrel cage winding, sufficient to partly fill the core slots, with the squirrel cage bars formed hollow and disposed in said slots.

5. An induction motor secondary member of integral character, comprising a laminated core, with slots extending lengthwise therethrough, a first coating of a metal of relatively high electrical resistance applied to the walls of said core including said slots, and a second coating of low resistance metal applied to said first metallic coating and together forming a double squirrel cage winding for said core.

Signed at Chicago this 9th day of May, 1919.

AUSTIN KIMBLE.