

No. 706,508.

Patented Aug. 12, 1902.

A. H. ARMSTRONG.

ARMATURE WINDING FOR INDUCTION MOTORS

(Application filed Nov. 3, 1897.)

(No Model.)

Fig. 1.

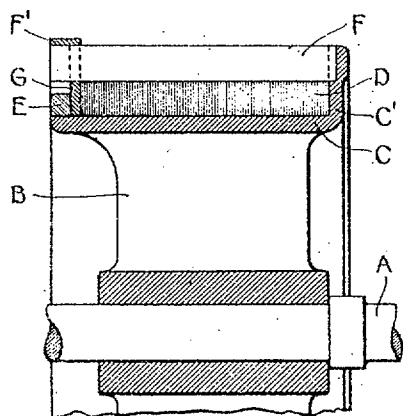


Fig. 2.

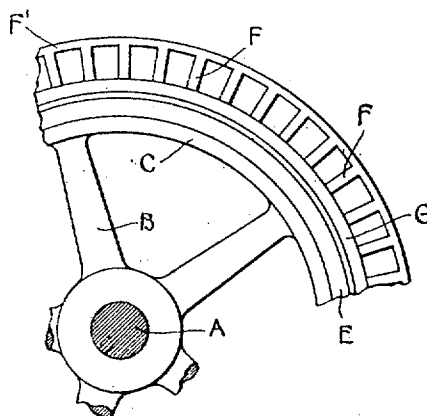
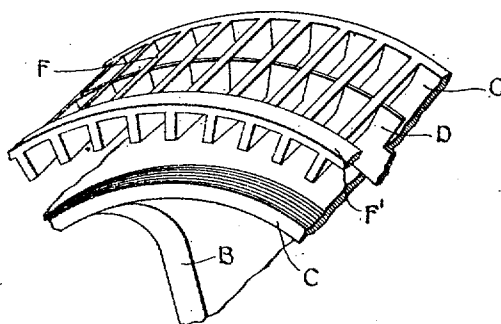


Fig. 3.



Witnesses.
J. Ellis Glenn.
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UNITED STATES PATENT OFFICE.

ALBERT H. ARMSTRONG, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ARMATURE-WINDING FOR INDUCTION-MOTORS.

SPECIFICATION forming part of Letters Patent No. 706,508, dated August 12, 1902.

Application filed November 3, 1897. Serial No. 657,229. (No model.)

To all whom it may concern:

Be it known that I, ALBERT H. ARMSTRONG, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Armature-Windings for Induction-Motors, (Case No. 490,) of which the following is a specification.

In certain kinds of induction-motors squirrel-cage armatures are employed, comprising a number of copper bars extending parallel with the shaft and soldered to rings at each end, which connect them in closed-circuit relation. The heating of such an armature is limited to the melting-point of the solder used in its construction.

My invention has for its objects to decrease the labor of construction and to provide an armature in which no solder is used and which will stand overheating up to the melting-point of copper without being destroyed.

In the accompanying drawings, Figure 1 is a sectional view of one form of my improved armature. Fig. 2 is a partial side elevation of the same; and Fig. 3 is a perspective of an armature of the type shown in Fig. 1, showing the method of assembling the laminæ.

Mounted on shaft A is a spider B, comprising a hub and a number of radial arms connected at their outer end to a cylinder C, which forms a support for laminæ D. Formed integral with and at right angles to cylinder C is a flange C'. The conductors F extend parallel to shaft A and are connected at their opposite ends by rings cast or otherwise formed integral with the conductors instead of soldering or riveting the conductors to the rings, as has heretofore been done.

One method of constructing the armature is to prepare a mold in the usual manner and place conductors F in a circle at suitable intervals in the sand. The molten metal forming the spider and end ring C', Fig. 1, is then poured into the mold, which securely welds the conductors to flange C'. It is preferable that the conductors F be separately formed of drawn copper on account of its conductivity. In this case ring F' is a casting and may be cast around the conductors at the same time as the spiders and end ring C'. The outer periphery of cylinder C is then

turned true and the toothed laminated punchings D slipped into place in the manner shown in Fig. 3. The laminæ D are provided with teeth D', which occupy the space between adjacent conductors. The outer diameter of the teeth is such that they will pass under the ring F', and the slots in the laminæ are deep enough to receive conductors F. After the proper number of laminæ have been assembled end ring G is mounted in position and clamping-ring E employed to retain the end ring and laminæ in place. No insulation has been shown on the conductors; but they may be insulated, if desired.

With the construction described it will be seen that the conductors are welded to flange C' at one end and to ring F' at the other and that no solder is employed. The joint thus formed between the conductors and end rings is for all practical purposes the equivalent of making the conductors and end rings of a single casting. At the same time the increased conductivity of the drawn copper is obtained.

A modification of the construction disclosed herein constitutes the subject-matter of my application, Serial No. 43,615, filed January 17, 1901, as a division of this application.

By the construction above described I am enabled to dispense with the binding-bands commonly employed, and the labor of assembling is greatly decreased.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination, a plurality of conductors of drawn metal, and end connections formed integral therewith uniting said conductors in closed-circuit relation.

2. In combination, a plurality of separately-formed conductors, and end connections cast integral therewith.

3. In an electrical apparatus, the combination of a body of toothed laminæ, a support for the laminæ, a winding having separately-formed conductors mounted in the laminæ-slots, and an end ring formed integral with the conductors.

4. In an induction-motor, the combination of a body of toothed laminæ, a support therefor, copper conductors mounted in the laminæ-slots, and end rings uniting the copper con-

ductors in closed-circuit relation, formed by casting metal around the conductors.

5 5. In a closed-circuited armature, the combination of a cast-metal spider, an end flange formed integral therewith, copper bars formed integral with the flange which unites them in closed-circuit relation, and a ring at the opposite end of the armature, also formed integral with said bars.

10 6. In a closed-circuit armature, in combination, a cast-metal spider, an end flange therefor, copper bars formed integral with the flange which unites them in closed-circuited relation, and a short-circuiting ring uniting the opposite ends of the said bars.

15 7. In a closed-circuit armature, the combination of a cast-metal spider, an end flange

formed integral therewith, a body of toothed laminæ, a clamping-ring for holding the laminæ against the flange, copper bars formed integral with the flange which unites them in closed-circuit relation, and a ring at the opposite end of the armature also formed integrally with the conductors, so arranged that the laminæ can be assembled by slipping them inside the ring.

In witness whereof I have hereunto set my hand this 1st day of November, 1897.

ALBERT H. ARMSTRONG.

Witnesses:

B. B. HULL,

J. L. D. LANGDON.