(No Model.)

B. F. ORTON.

ARMATURE FOR DYNAMO ELECTRIC MACHINES AND ELECTRIC MOTORS.

No. 323,362. Patented July 28, 1885.

Fig. 1.

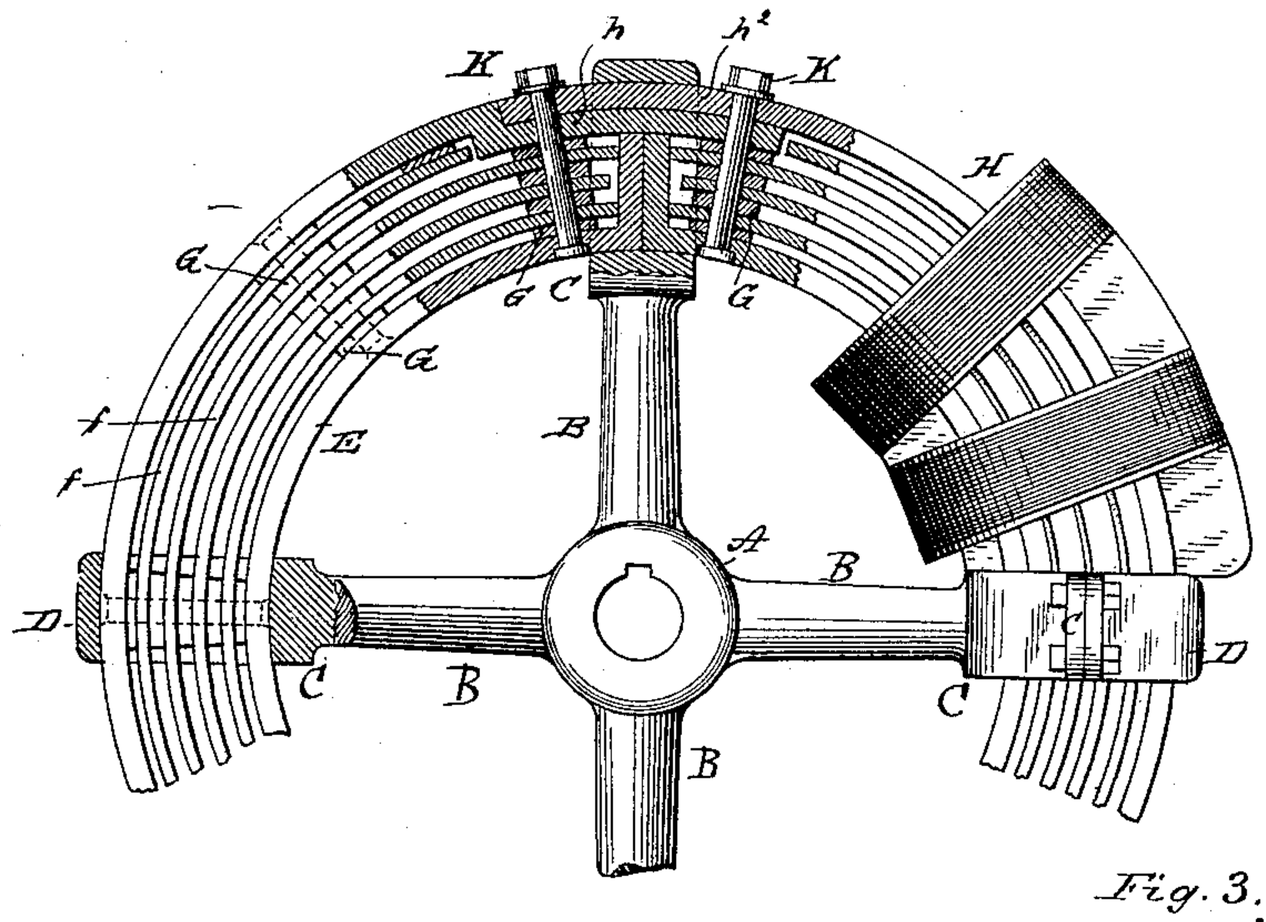


Fig. 3.

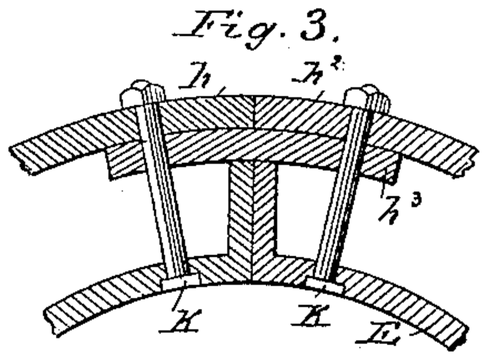
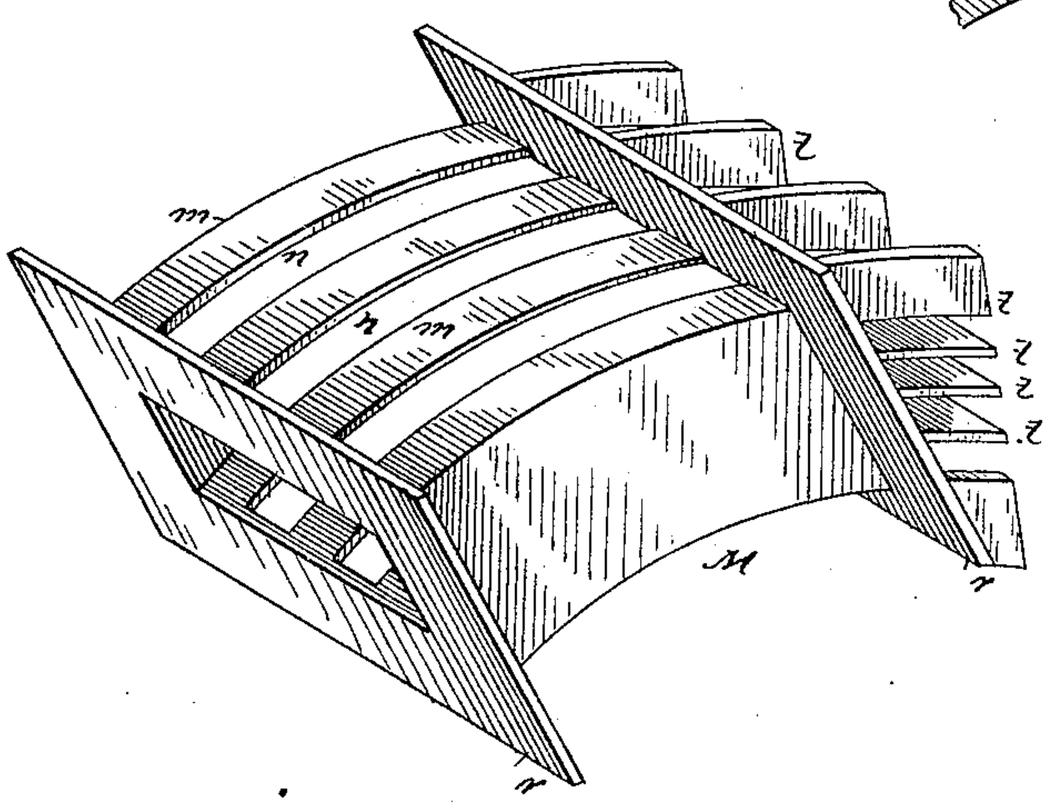


Fig. 2.



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ARMATURE FOR DYNAMO-ELECTRIC MACHINES AND ELECTRIC MOTORS.

SPECIFICATION forming part of Letters Patent No. 323,362, dated July 28, 1885.

Application filed May 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. ORTON, a citizen of the United States, and a resident of East Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Armatures for Dynamo-Electric Machines and Motors, of which the following is a specification.

My invention relates to the construction of armatures for dynamo-electric machines or motors, and more especially to those forms in which annular armatures are employed built up from curved segments or sections.

My invention is designed, among other things, to furnish a simple and improved device whereby the armature-bobbins may be held firmly in properly relative positions after having been slipped into place upon the core segments or sections, and also to provide an improved construction and method of applying and holding a retaining-band for the armature-core in place.

My invention relates, also, to the construction of the spool upon which the coils of the armature are wound, which spool carries the coils on the completed armature, and is, after being wound, slipped into place upon an armature-segment preparatory to the building of the armature.

My invention consists of certain specific improvements and combinations that will be described in connection with the accompanying drawings, and will be then specifically pointed out in the claims.

In the accompanying drawings, Figure 1 shows, partially in elevation and partially in vertical section, an armature embodying my invention. Fig. 2 is a perspective view of one form of my improved spool for an armature-coil. Fig. 3 illustrates in section a modified lap-joint for the retaining-band.

A indicates the hub and B B B B the arms or spokes of a frame or spider formed according to a previous application for patent, filed by me December 11, 1883, No. 114,161, and constituting the frame or support to which the armature is secured.

C C C C, &c., indicate enlarged heads or plates upon the ends of the arms B, said heads being extended transversely or in a direction parallel to the axis of the machine, to form extended seats or bearings upon which the armature-core may rest, either at abutting ends of the segments or sections from which the core is made up, or, when the segments are greater in number than the seats C, then at intermediate portions as well as at abutting ends of the sections.

E E indicate curved tray-like plates curved to the outline of the armature, and having upturned ends abutting against one another and resting upon a seat or bearing, C. The plates E are of iron, and constitute the supports or holders for a series of thin superimposed plates of iron, *f f*, also curved, and constituting with the plates E the body of the annular core. These parts are secured together by suitable bolts or otherwise. The plates are separated from one another by plates G G, preferably of iron, which permit ventilation of the core, and by separating the plates break up or prevent the circulation of induced or Foucault currents.

The heads C extend outwardly at their ends, and are provided with the ears *c*, which serve, in conjunction with proper bolts, to hold the cap-pieces or stirrups D down upon the armature-core, and thus retain the armature or the parts thereof in place upon the carrier.

The parts so far as described are essentially the same as those described in my prior application, hereinbefore referred to.

In my prior application I employ a retaining-band, having upturned ends bolted together. In my present invention the retaining-band has a lap-joint, such as indicated at the top of Fig. 1. H indicates the retaining-band, whose ends *h* h^2 overlap, as shown, so as to leave a smooth exterior surface upon the band. The end *h* has an offset or depression, as shown, for this purpose. Bolts K K serve to hold the ends down and together. The latter pass also through the body of the core.

The lap-joint is preferably formed over the joint between the core segments or sections, and the band rests upon the upturned ends of the plates E, so that there will be two thicknesses of the iron retaining-band at the joint of the armature-core to assist in preserving the magnetic continuity of the latter. The cap-plate or stirrup D embraces the retaining-band and assists in holding the parts together. The bolts K might be dispensed with and the plate D relied upon for holding the ends of the band together.

An equivalent form of joint for the band to

that shown in Fig. 1 is shown in Fig. 3. In place of lapping the ends of the band, I make them abut against one another, and place beneath them a plate, h^2, preferably of iron, which itself is a tie-plate, the bolts K passing down through the plate h^2.

In place of the bolts K, screws might be used that should extend only through the joint without passing down into the body of the armature-core.

M, Fig. 2, indicates one form of my novel spool or carrier for an armature-coil. It is made in any suitable manner from iron, and is provided with a curved central bore of proper size to fit snugly upon the body of the armature-core and to permit it to be slipped into place upon said core after having been wound with armature-coils or helices. The body of the spool consists of the longitudinal bars or strips *m m*, &c., separated by free air-spaces *n n*, which latter form ventilating-openings. This construction also prevents the circulation of induced or Foucault currents in the spool itself. The openings might be of other shapes or formed in other ways, if designed for use as ventilating-openings only. The heads or flanges *r r* of the spool are also preferably made of iron, and one or both of them are provided with the projections *t t*, one or more, extending circumferentially so as to meet and abut against similar extensions or against the head or flanges on the adjoining spool. By this device the spools are held firmly at a determinate or regulated position with relation to one another, and the use of separate key-pieces or other devices for holding them apart is rendered unnecessary. The spools and coils are prevented from moving circumferentially on the armature-core by means of the heads or plates C, upon which the armature-core rests, or by other suitable means.

The spool may be made of one or more pieces. I preferably form the extensions *t t* upon the spool. The extensions *t t* are also preferably separated from one another to permit free circulation of air, and to thus prevent undue heating of the armature. The slots in the spool itself serve in a measure the same purpose.

If desired, the spool might be made in two pieces, joined on a circumferential line through the middle of the spool. This would facilitate the turning or finishing of the bore to obtain a close fitting of the spool to the body of the core.

What I claim as my invention is—

1. The combination, with the annular armature, of a coil spool or bobbin adapted to be slipped onto and off of an armature-core segment, and made of separated ribs or bars connected at their ends in the spool-heads.

2. In a dynamo-electric machine or motor, a spool or bobbin for the armature-coil, consisting of separated ribs or bars of iron parallel to the axis of the coil and joined or connected at their ends in spool-heads, also of iron.

3. In a dynamo-electric machine or motor having an annular armature, a spool for an armature-coil having a circumferentially-extending projection formed in one piece with said spool.

4. The combination, with the armature made up from thin, superposed iron plates, of the iron retaining-band and the radial bolts passing through the plates and band, as and for the purpose described.

5. The combination, with a sectional or segmental armature, of a retaining-band and a cap-piece or clamp applied to the band and segmental armature at a joint of the armature and band.

6. The combination, with an annular armature built up from superposed plates of iron, of a retaining-band formed with an offset at one end, where the joint is formed, so as to present a smooth exterior surface.

7. The combination, in an annular armature built up from segments or sections, of a retaining-band having a lapped joint formed, as described, so as to present a smooth exterior surface.

8. The combination, with a segmental or sectional armature, of a retaining-band having a lapped joint formed over the point of junction of the armature-segments, so as to present a double thickness of metal for assisting in preserving the magnetic continuity of the core.

Signed at New York, in the county of New York and State of New York, this 8th day of May, A. D. 1884.

BENJAMIN F. ORTON.

Witnesses:

THOS. TOOMEY,

GEO. C. COFFIN.