No Model.)

T. A. EDISON.

DYNAMO ELECTRIC MACHINE.

No. 265,785. Patented Oct. 10, 1882.

Fig. 1.

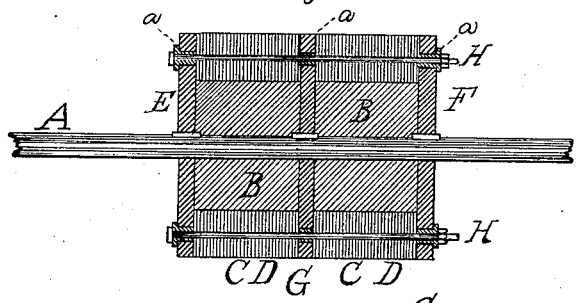


Fig. 2.

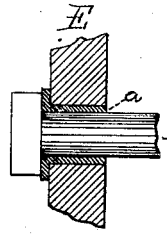


Fig. 3.

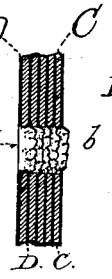


Fig. 4.

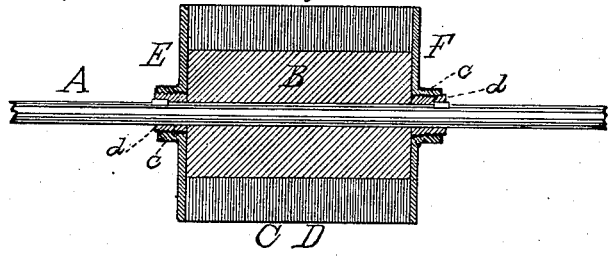
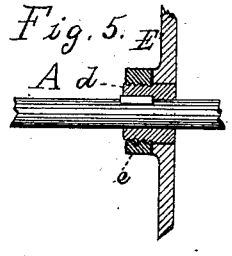


Fig. 5.



WITNESSES:

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H. W. Seely

INVENTOR:

Thomas A. Edison,

By Richd. N. Dyer.

Atty.

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 265,725, dated October 10, 1882.

Application filed August 14, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Dynamo or Magneto Electric Machines, (Case No. 462;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object of this invention is such an improvement upon the solid cylindrical armature-cores of dynamo or magneto electric machines, having a continuously-wound bobbin, composed wholly of wire or of longitudinal bars and suitable cross-connecting disks or plates, that the circulation of Foucault currents in the core will be in a greater measure prevented than heretofore, and the machine will be made more efficient by reason of better obviating the loss of energy caused by this generation of heat; and a further object is to produce simple and efficient means for this purpose.

This invention relates more especially to an improvement in matter of detail upon the construction described in my application No. 5,537, filed March 20, 1880.

The object is accomplished by constructing the armature-core of an interior core of wood or other suitable insulating material, which is slipped upon the shaft of the armature, and serves to support the magnetic portion of the armature-core, composed of iron rings made of thin sheet metal, of from ten to twenty thousandths of an inch in thickness, (more or less,) divided by rings of insulating material, tissue-paper being preferred for the purpose. Clamping-plates of cast-iron are used at the ends of the armature-core, and if the core is long enough to require it one or more intermediate clamping-plates may be used, which may be plates extending to the shaft and requiring a division of the interior wooden core; or the intermediate clamping-plates may be rings resting like the thin sheet-iron rings upon the wooden core. The clamping-plates are preferably drawn and secured together by means of bolts passing through the clamping-plates and through the rings of thin sheet-iron and tissue-paper. Thimbles of proper insulating material—such as vulcanized fiber—are placed around the bolts, where they pass through the clamping-plates, to prevent the circulation of currents between such clamping-plates. The clamping-bolts are also insulated from the thin sheet-iron rings. This is done by punching the holes in the sheet-iron rings slightly larger than the bolts and forcing such bolts through the rings of tissue-paper, which are not punched in advance, causing such tissue-paper to pack in the holes around the bolts, protecting the edges of the sheet-iron rings and effectively insulating such rings from the bolts. In this way the circulation of currents between the thin sheet-iron rings along the clamping-bolts is prevented. The clamping-plates are keyed or otherwise secured to the armature-shaft, making of the whole a rigid and strong structure.

Instead of using bolts to secure the clamping-plates together, such plates may have screw-threaded hubs turning upon screw-threaded metal thimbles keyed or otherwise secured to the armature-shaft; or the clamping-plates may be slipped upon such thimbles and secured by nuts turning upon the thimbles and impinging against the clamping-plates, forcing such clamping-plates upon the rings of thin sheet-iron and tissue-paper. After the clamping-plates are secured the armature-core is mounted in a lathe and turned down smooth, when it will be ready to receive the bobbin, whether composed of wire or of longitudinal bars and suitable cross-connecting disks or plates.

The foregoing will be better understood from the drawings, in which Figure 1 is a longitudinal section of the armature-core; Fig. 2, a separate sectional view of a clamping-plate around a bolt passing therethrough; Fig. 3, a separate sectional view, on an enlarged scale, of portions of several rings of thin sheet-iron and tissue-paper; Fig. 4, a longitudinal section of a modified form of the armature-core; and Fig. 5, a sectional view of the hub of a clamping-plate, showing a further modification.

A is the armature-shaft, and B the interior core, of wood or other suitable insulating material, which may be made in one piece or in two or more sections. The magnetic portion of the armature-core is composed of rings C, of sheet-iron, of from ten to twenty thousandths of an inch in thickness, (more or less,) separated by suitable insulating material, rings D of tissue-

paper being preferably used. These rings of iron and paper are clamped into a solid mass between rigid clamping-plates E F of cast-iron, one or more intermediate clamping-plates, G, Fig. 1, being used if the length of the armature requires such a construction. This intermediate clamping-plate may be a disk extending to the shaft, as shown, and necessitating a division of the wooden core into sections, or it can be made as a ring, resting upon such wooden core. The clamping-plates, are preferably secured together by bolts H, Figs. 1 and 2, which are surrounded by thimbles *a* of insulating material—such as vulcanized fiber—where they pass through the plates, in order to prevent the circulation of currents between the clamping-plates. The clamping-bolts are also insulated from the thin sheet-iron rings by making the holes in the sheet-iron rings slightly larger than the bolts. The rings of tissue-paper are not punched in advance, but the bolts are forced through them, spreading the tissue-paper into the holes over the edges of the sheet-iron rings, as shown at *b* in Fig. 3. The clamping-plates are keyed or otherwise secured to the armature-shaft.

Instead of being secured together by bolts, the clamping-plates may have screw-threaded hubs *c* and be turned upon screw-threaded thimbles *d*, keyed or otherwise secured to the armature-shaft, Fig. 4, or the clamping-plates may be slipped upon these thimbles and be secured by nuts *e*, turned thereon, Fig. 5. After the clamping-plates are secured the armature-core is mounted in a lathe and turned down smooth, when it is ready to receive the bobbin.

I am aware of the description of Schuckert's dynamo-electric machine in Dingler's Polytechnical Journal, volume 223, pages 587 and 588; but I do not believe that such machine embodies the features of construction described by me and essential in the class of machines to which my dynamo or magneto electric machine belongs.

What I claim is—

1. In a solid cylindrical armature-core, the combination of an interior core of suitable insulating material with a magnetic portion composed of rings of thin sheet-iron separated by insulating material, substantially as set forth.

2. An armature-core having its magnetic portion composed of rings of thin sheet-iron separated by insulating material, in combination with clamping-plates, substantially as set forth.

3. In a solid cylindrical armature-core, the combination of the interior core of suitable insulating material with the magnetic portion composed of thin sheet-iron rings separated by insulating material, and the clamping-plates, substantially as set forth.

4. In an armature-core, the combination, with the rings of thin sheet-iron separated by insulation and clamped between plates, of the clamping-bolts insulated from the clamping-plates, substantially as set forth.

5. In an armature-core, the combination, with the thin sheet-iron rings separated by insulation, of clamping-bolts passing through such thin sheet-iron rings and insulated therefrom, substantially as set forth.

6. A solid cylindrical armature-core composed of an interior core of insulating material, a magnetic portion of thin sheet-iron rings separated by insulation, clamping-plates, and clamping-bolts insulated both from the clamping-plates and from the thin sheet-iron rings, the parts being constructed, arranged, and combined substantially as set forth.

This specification signed and witnessed this 7th day of July, 1882.

THOMAS A. EDISON.

Witnesses:
RICHD. N. DYER,
EDWARD H. PYATT.