(No Model.)

T. A. EDISON.

Dynamo or Magneto Electric Machine.

No. 431,018. Patented June 24, 1890.

Fig. 2.

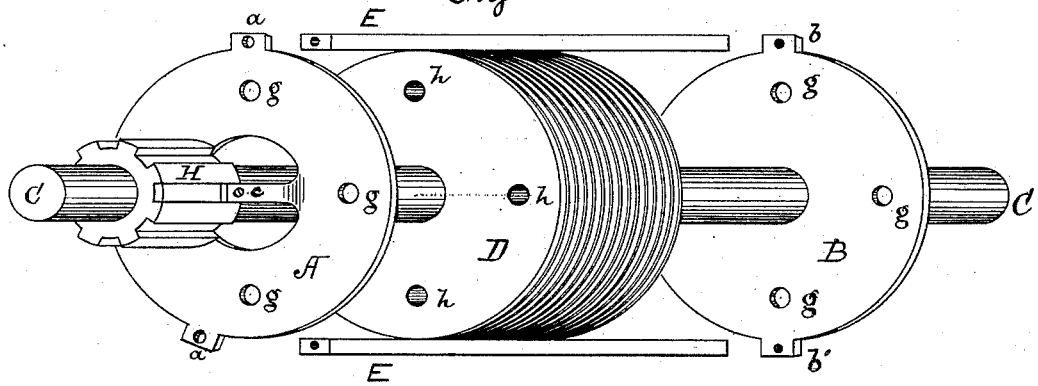


Fig. 1.

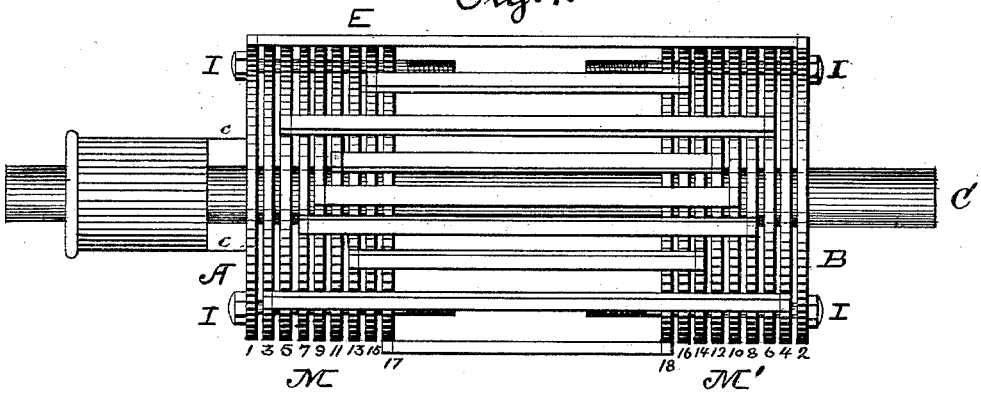
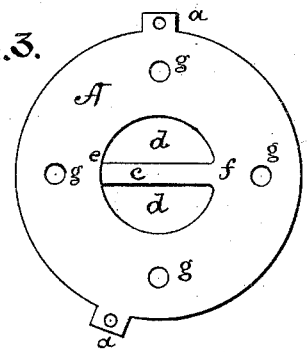


Fig. 3.



Attest:

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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

DYNAMO OR MAGNETO ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 431,018, dated June 24, 1890.

Application filed February 21, 1881. Serial No. 26,665. (No model.) Patented in England March 21, 1881, No. 1,240.

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 Magneto or Dynamo Electric Machines, (for which I have obtained a patent in England, dated March 21, 1881, No. 1,240;) 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.

In an application for a patent for improvements in dynamo or magneto electric machines and engines hitherto made by me and bearing Serial No. 22,302, is set forth the desirability of dispensing with the inert and practically useless mass of wire upon the ends of a revolving armature, consequent upon the ordinary methods of winding such armatures. In that application is shown also means for attaining that end.

The object of this invention is to furnish another means for the same purpose; to which end it consists in the features more particularly hereinafter set forth and claimed.

For the active or generative portions of the armature coils of wire or naked bars are used, electrical connection from face to face being made through disks, as hereinafter described. If each longitudinal set of wires or each bar be considered as one coil, a series of disks equal in number to half the coils is used at each end of the armature. These disks are made of sheet metal, preferably copper, and are separated, each from the other, by a layer of insulating material, such as mica, paper, asbestus, wood veneer. Those of each series are fastened together by bolts passing through holes in all the disks of the series, the bolts being insulated therefrom by insulating-washers. The bolts take into screw-holes in the ends of the armature itself, so that they not only bind the members of a series together, but also secure the series to the armature itself. For the non-commutator end of the armature the disks are made of sheet metal perforated in the center to admit of the armature-shaft passing therethrough but insulated therefrom. Upon opposite sides of each disk is left a lug or ear by which the disk is attached to its proper bars or wires, so that the circuit at that end is completed between the two diametrically-opposite bars or coils. For the commutator end the disks are made of sheet metal, each disk having two ears or lugs upon its periphery for attachment of the wires or bars which it is desired to connect at that end. Near the center two semicircular pieces of the metal are cut out, leaving a metal tongue between them, which tongue is cut away from the body of the disk at one end and then bent outwardly at right angles. The tongue so bent out is carried to the commutator-block, forming the connection of the disk thereto. The lugs or ears upon the disks at this end of the armature are not diametrically opposite to each other, but are so arranged relatively to each other and to the tongue referred to that the coils or bars may be connected, as shown in my prior applications relating to dynamo or magneto electric machines, filed May 12, 1879, and December 15, 1880, respectively. This construction is illustrated in the drawings, in which—

Figure 1 shows the series of disks upon the armature-shaft. Fig. 2 is a perspective showing the elements of an armature segregated to show the construction; and Fig. 3 is a plan of a disk for the commutator end.

C is the armature-shaft, upon which is mounted the armature-core D, formed of sheet-iron disks separated from each other by their insulating-sheets.

B is an individual disk of the series M′ for the non-commutator end, made of sheet metal, with lugs or ears *b b* thereon. A is an individual disk of the series M of the commutator end provided with lugs *a a*. In each are cut the two semicircles *d d*, between which is left the tongue *c*, which is cut loose from the body of the disk at *e*. This tongue is bent outwardly and is fastened to the commutator-base H. The commutator H is formed of an insulating cylindrical body of one piece mounted upon the axis of the armature, and with grooves in its face equal in width to the tongue *c*. The disks A are arranged upon the shaft so that each has its tongue *c* opposite the proper groove in the commutator-cylinder. The tongue is then bent outwardly and secured in its proper groove. This is clearly

shown in Fig. 2, where the tongue *c* of one disk A is shown as connected to H. The others, as many as are used, are connected in the same way in proper order to H, two being shown in Fig. 1, the others being omitted so that the drawings be not obscured. Bolts I pass through holes *g* in the disks, but are insulated from the body of the disks, the disks being insulated from each other. The inner ends of the bolts are screw-threaded and take into screw-holes *h* in the body of the armature, thereby securing the disks together and the assemblage of disks to the armature. Appropriate disks of each series are connected together in pairs by the coils or bars E E, bars being preferable, the attachment of disks and bars being made by screws passing through the lugs into the bars. For instance, upon the side shown disks 1 and 2, 3 and 4, 5 and 6, 7 and 8, 9 and 10, 11 and 12, 13 and 14, 15 and 16, 17 and 18 are connected. Upon the side not shown the connection would be different, the lugs *a a* and tongue *c* of each disk being so arranged relatively to each other that the path of the current through the armature to the commutator on each side shall be as described in the prior applications hereinbefore noted, so that all or nearly all the coils shall always be in circuit.

It is evident that instead of having the lugs *a a* or *b b* the disks may be plain upon the edges and that the bars may be attached thereto by screws or solder or other suitable fastening, although the lugs or ears are preferable for attachment.

It is evident that instead of whole disks half or about half disks might be used, though for stability and firmness the whole disks are to be preferred.

It is evident that the bars E E are to be insulated from each other and from the core D. This is done, preferably, by a small intervening air-space, the bars being left naked.

What I claim is—

1. The combination, with the commutator, of an armature end composed of disks having tongues integral therewith for electrical union with the commutator, substantially as set forth.

2. The disks for the commutator end of a revolving armature, each provided with a tongue, substantially as set forth.

This specification signed and witnessed this 3d day of February, 1881.

THOS. A. EDISON.

Witnesses:

H. W. SEELY,

PHIL. S. DYER.