(No Model.)

W. K. FREEMAN.

ARMATURE FOR DYNAMO ELECTRIC MACHINES OR MOTORS.

No. 302,554. Patented July 29, 1884.

Fig: 2.

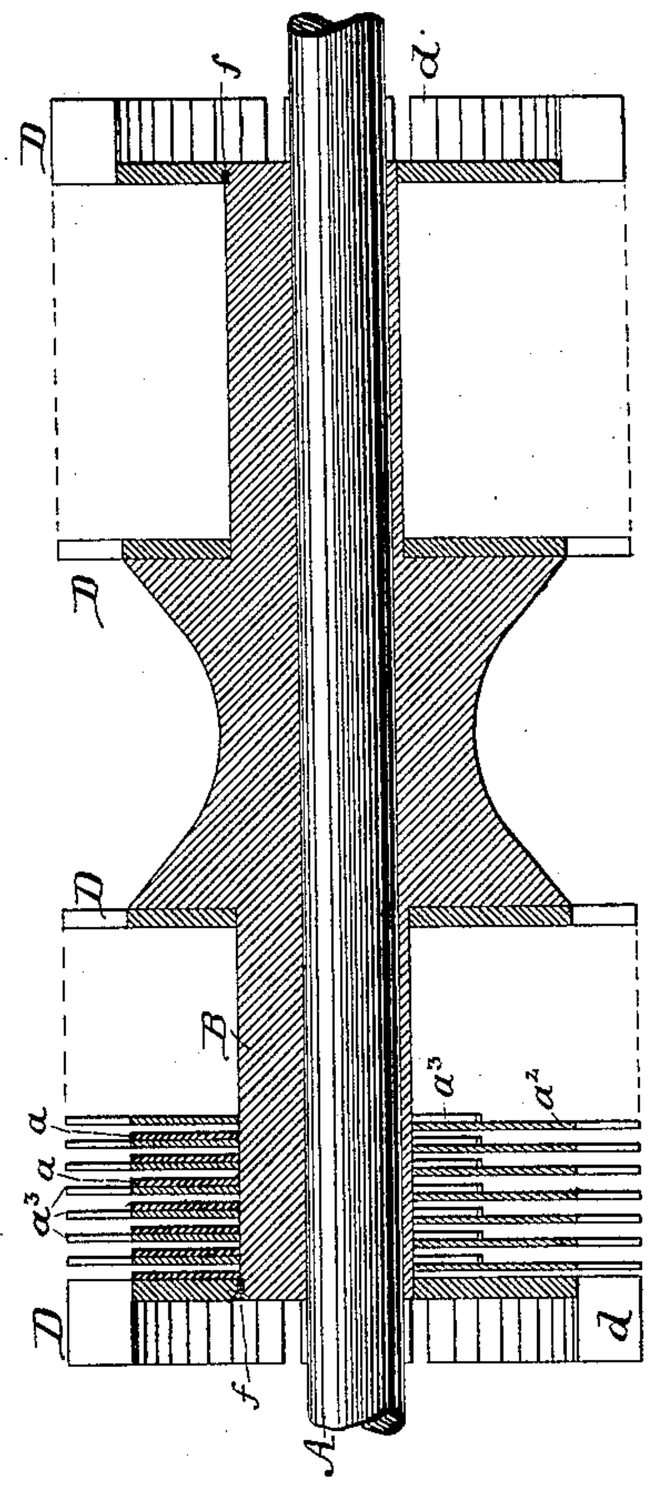


Fig: 4.

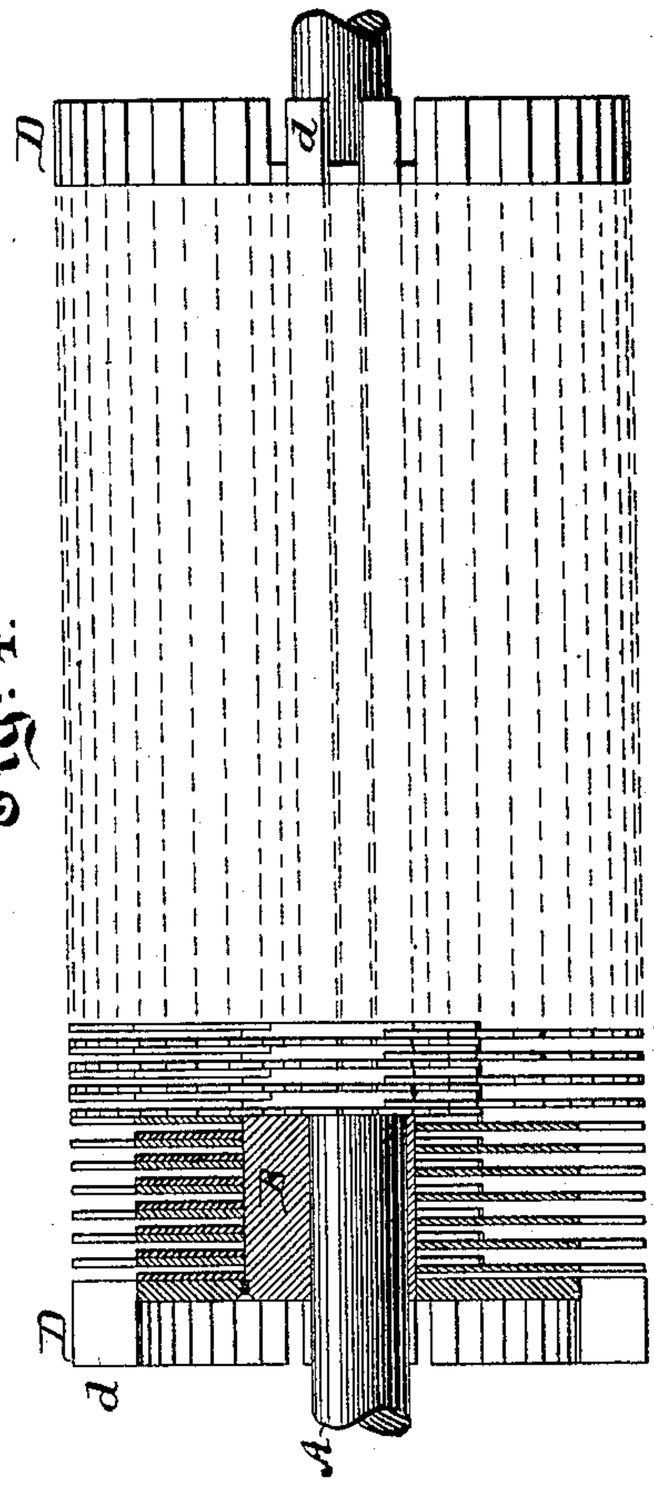


Fig: 1.

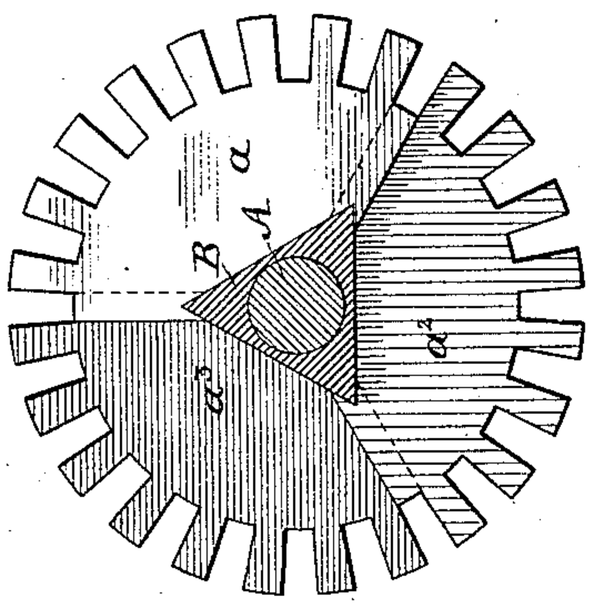
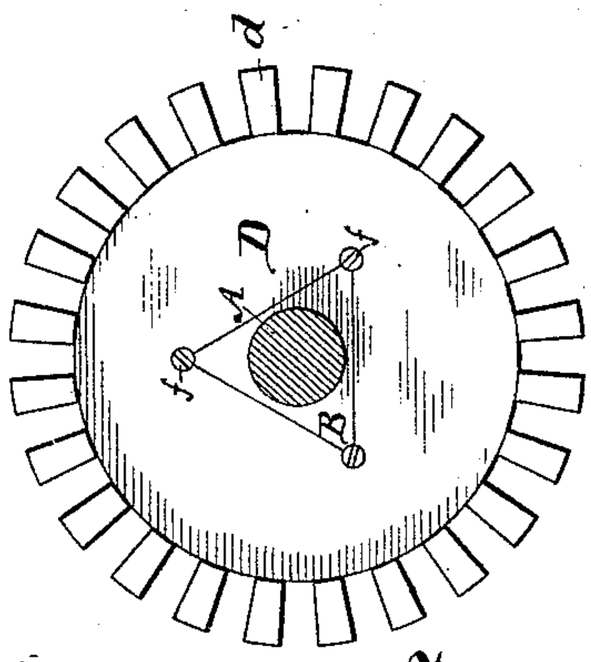


Fig: 3

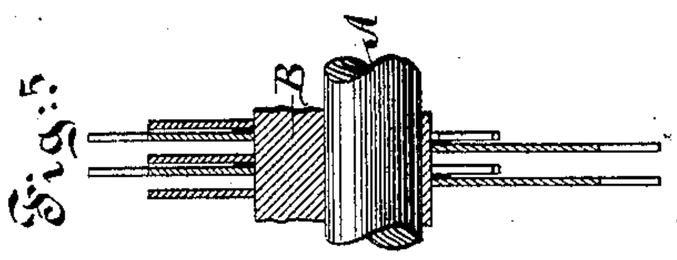


Witnesses:

A. D. Gentner 2nd

Thos. Toomey

Fig: 5.



Inventor:

W. K. Freeman

by his Atty:

F. L. Townsend

UNITED STATES PATENT OFFICE.

WALTER K. FREEMAN, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE MONARCH ELECTRIC COMPANY OF NEW YORK.

ARMATURE FOR DYNAMO-ELECTRIC MACHINES OR MOTORS.

SPECIFICATION forming part of Letters Patent No. 302,554, dated July 29, 1884.

Application filed November 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, WALTER K. FREEMAN, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Armatures for Dynamo-Electric Machines or Motors, of which the following is a specification.

My invention relates to the mechanical construction of armatures for dynamo-electric machines or motors, and more particularly to those forms of armature known as "cylindrical" armatures or carriers, upon the exterior of which the armature-coils are wound.

The general object of my invention is to make a simple and cheap armature of improved design, wherein the construction shall also be such as to allow proper ventilation of the armature, and to also prevent the circulation of so-called "Foucault" or induced currents in the body of the armature cylinder or carrier.

My invention consists in building up a cylindrical armature from a series of sector-shaped plates of iron or other suitable material, which are keyed or dovetailed to the armature-shaft, and are disposed in sets in different longitudinal planes, so that those upon one side or portion of the armature shall be separated from one another by a space equal to the thickness of the intervening plates of the other sets. Where the plates are disposed in three sets, each sector is made to cover a little more than one hundred and twenty degrees of the complete circle, and is separated from its neighboring plates on the same side of the armature by a space equal to the thickness, approximately, of two plates.

My invention also consists in certain improvements in the details of the construction, the nature of which will be more fully hereinafter described, and will be specifically stated in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a transverse section of an armature constructed according to my invention. Fig. 2 is a longitudinal section of an armature of the general form contained and claimed in another application for patent filed by me, but of the particular construction forming the subject of the present invention. Fig. 3 is an end view of an armature constructed according to my invention. Fig. 4 is a side view, partially in section, of an armature of ordinary form embodying the construction forming the subject of this specification. Fig. 5 shows a portion of a modification in section.

A indicates the armature-shaft of a dynamo-electric or magneto-electric machine, and B a longitudinal triangular piece of any suitable material, fixed on said shaft by any suitable mechanical device, or cast thereon, and forming a spline, tongue, or tenon, upon which the individual plates having properly-formed grooves or recesses are slipped, so as to be held upon the shaft. The form of the piece B is immaterial, its office being to act as a spline to prevent the plates from turning upon the shaft, and to form, in conjunction with suitably-shaped inner ends of the plates, a dovetail joint, whereby the plates may be held upon the shaft. It is made triangular in the present case for the sake of simplicity.

At a a^2 a^3 are indicated the sector-shaped plates from which the armature is built up. Each covers approximately one hundred and twenty degrees of the circle, and is formed upon its periphery with grooves or notches to receive the armature-wire, and at its inner end, next the shaft, with a suitable groove or recess, to form, in conjunction with two angles of the piece, a dovetail joint. The armature is built up by slipping the plates upon the shaft in the order a a^2 a^3, and in three different positions or planes, as indicated, and repeating until the desired length of cylinder is obtained. At the ends the plates are held together by flanges D, which are also, by preference, so formed at their centers as to be held from rotation by the spline or tenon B. The exterior flanges D are provided with projections d, between which the windings of the armature-coils lie, so as to be held from circumferential displacement. They are also arranged, as shown, flush with the end of the shaft, so that the latter does not project in the way of the armature-coils. Screws f at the junction of the latter plates with the spline or tenon B serve to hold the parts together during winding of the armature.

If desired, the individual plates may be

separated at their inner portions by thin sheets of insulating or of non-magnetic material, as indicated in Fig. 5, although by the construction herein set forth the use thereof for obtaining separation of the plates merely is not necessary, as it is in those armatures that are built up from disks.

The plates may be of any desired size, and may extend through a greater or less angle than is herein described. With a decrease in their size, and a consequent increase in the number of sets, the space between those on the same side of the shaft or in the same longitudinal plane will obviously be increased.

It is obvious that each plate might be made to cover a little more than one-half the circle; but the space between those in the same longitudinal plane would then be less.

By the term "dovetail," as used in this specification and claims, I mean any union of the plates with the shaft by means of a notch or recess formed in the end of the plate, and adapted to be slipped endwise upon a correspondingly-shaped shaft, and to be held thereon against centrifugal action by reason of the form given to the notch or recess.

What I claim as my invention is—

1. A cylindrical armature built up from a series of plates disposed symmetrically, but in different longitudinal planes, and keyed upon a suitably-formed armature-shaft.

2. A cylindrical armature built up from a series of sector-shaped plates disposed symmetrically in different longitudinal planes, and secured upon the shaft by a dovetail joint.

3. The combination, with the three sets of sector-shaped plates, arranged symmetrically in three different armature-planes, of the triangular piece B upon the armature-shaft, for forming with the inner ends of the plates a dovetail joint.

4. A cylindrical armature built up of plates arranged in different longitudinal planes about the armature-shaft, and each having suitable notches or grooves at its outer edge for the reception of the armature-wires.

5. The combination, with the triangular piece B upon the armature-shaft, of the three sets of plates a a^2 a^3, as and for the purpose described.

6. The combination, with the spline or tenon upon the armature-shaft, of an end flange, D, flush with the end of the armature-shaft, and having at its circumference projections between which the armature-coils may be held.

Signed at New York, in the county of New York and State of New York, this 13th day of November, A. D. 1883.

WALTER K. FREEMAN.

Witnesses:

THOS. TOOMEY,

GEO. A. COFFIN.