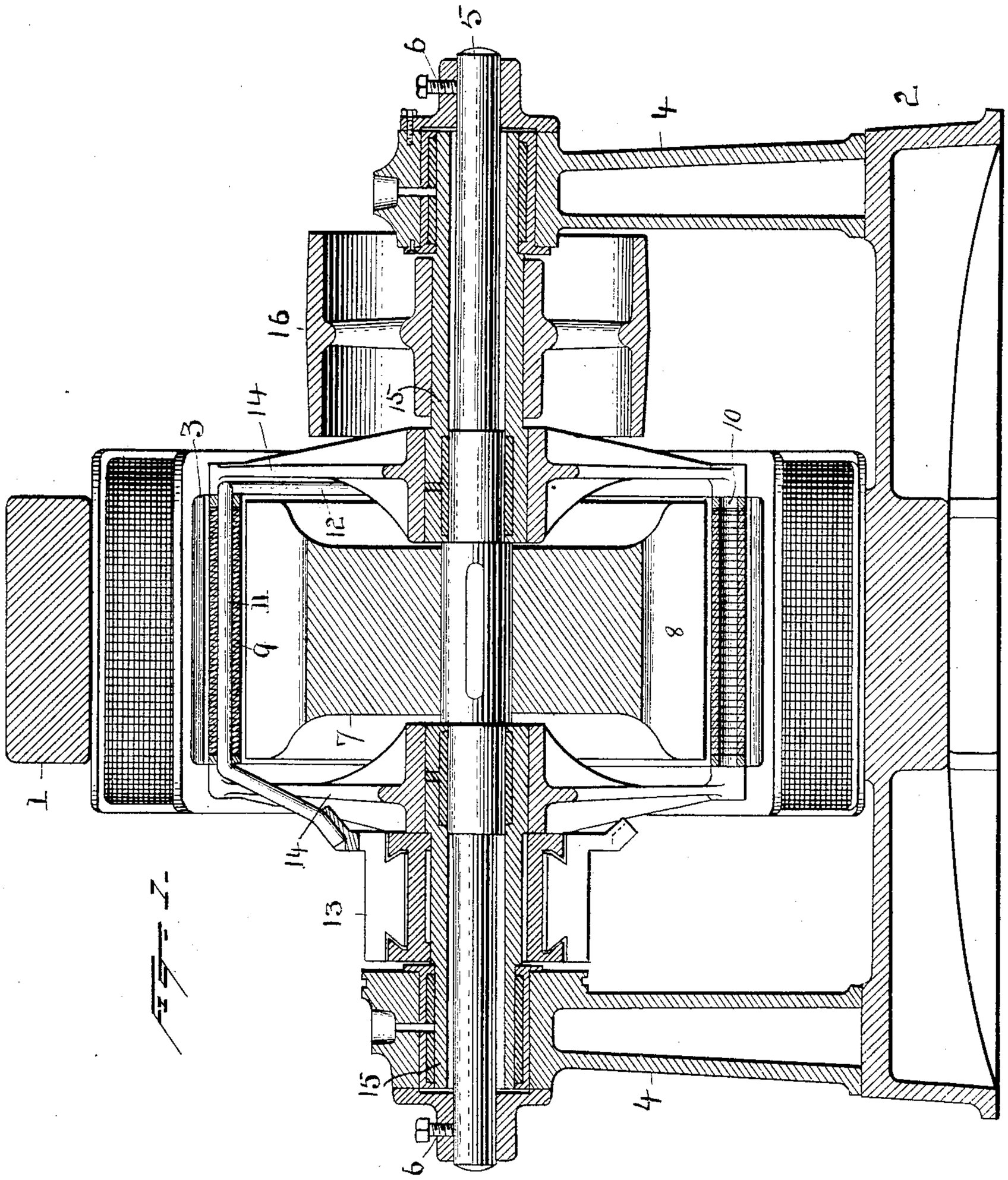
(No Model.) 2 Sheets—Sheet 1.

H. F. PARSHALL.

ARMATURE FOR DYNAMO ELECTRIC MACHINES.

No. 534,079. Patented Feb. 12, 1895.



Witnesses
Morris A. Clark.
M. F. Oberly

Inventor
H. F. Parshall
By his Attorneys
Dyer & Seely.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

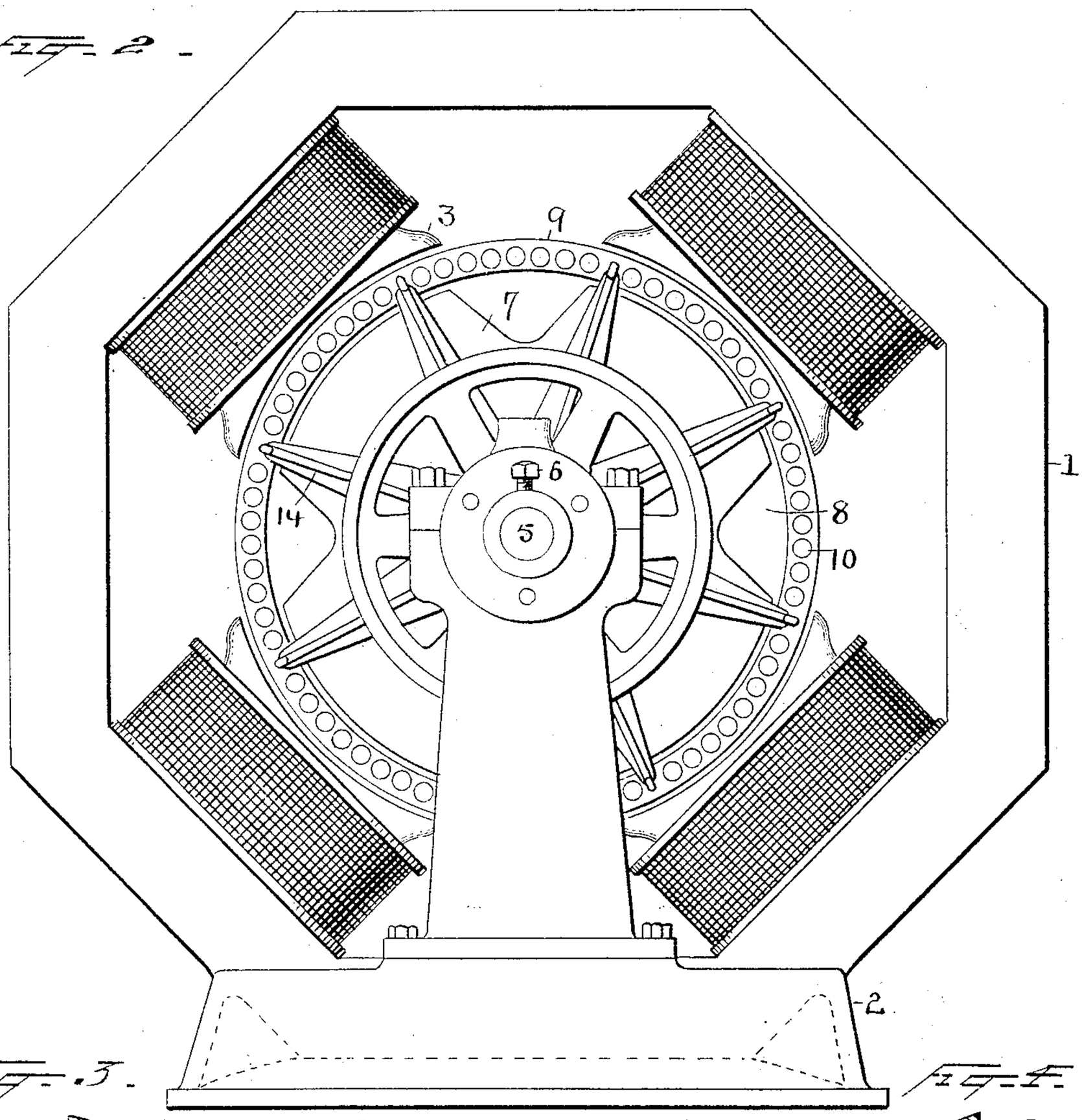


Fig. 3.

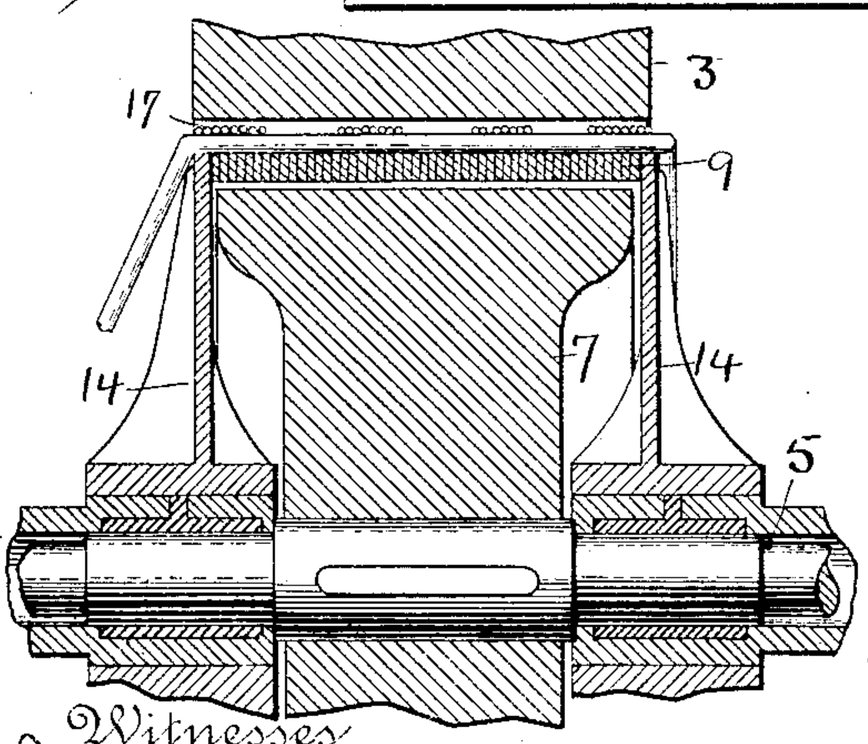
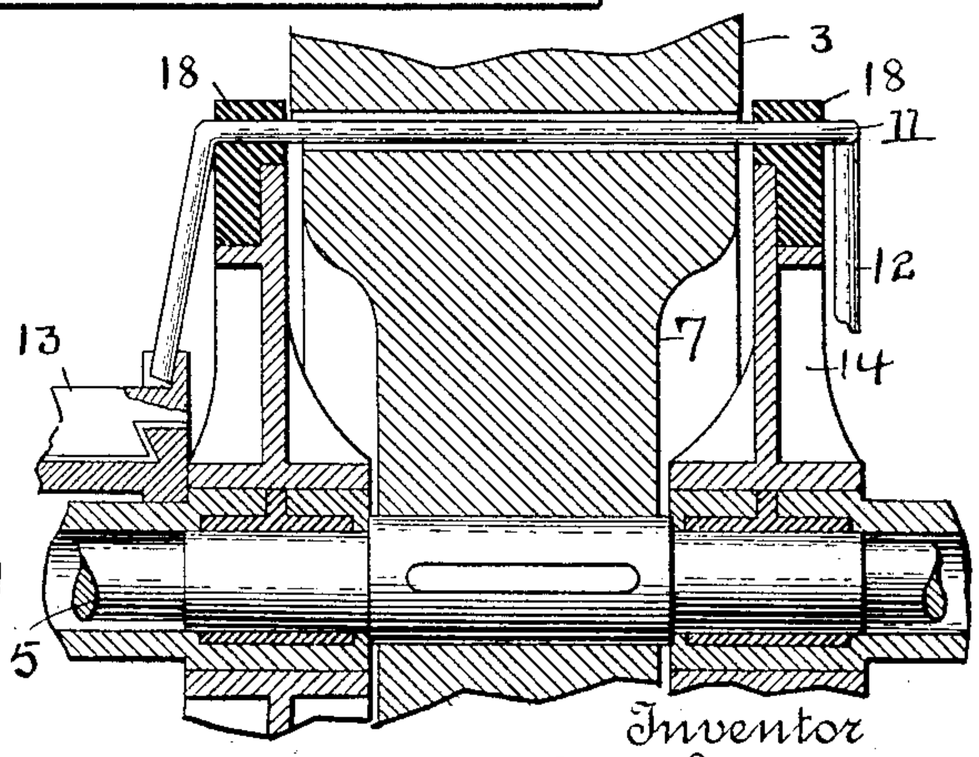


Fig. 4.



Witnesses
Norris A. Clark.
M. F. Oberly

Inventor
H. F. Parshall
By his Attorneys
Dyer & Seeley.

UNITED STATES PATENT OFFICE.

HORACE F. PARSHALL, OF SCHENECTADY, ASSIGNOR TO THE EDISON GENERAL ELECTRIC COMPANY, OF NEW YORK, N. Y.

ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 534,079, dated February 12, 1895.

Application filed February 20, 1892. Serial No. 422,200. (No model.)

To all whom it may concern:

Be it known that I, HORACE F. PARSHALL, a citizen of the United States, residing at Schenectady, county of Schenectady, and State of New York, have invented a certain new and useful Improvement in Armatures for Dynamo-Electric Machines, of which the following is a specification.

The present invention relates to armatures for dynamo-electric machines, the main object of the invention being to increase the efficiency of the machine and to reduce the amount of heat generated in the armature. It is well known that in the armatures of ordinary dynamo-electric machines, the principal waste of energy is in the iron core and is due to hysteresis and eddy currents which cause heat to be generated in the core. If this heating could be done away with and the heat of the armature confined to the conductors, which are more advantageously situated with respect to radiation of heat, it would be possible to safely increase the power of the armature. I avoid heating the armature core by constructing the armature in two parts, one part being a stationary iron core, and the other part being a revolving coil mounted in a manner hereinafter described and surrounding the stationary core. This construction maintains the main magnetic body of the armature, which is intended to carry the greater part of the magnetic flux from the field-magnets, constantly in the same position with relation to the field-magnet poles, so that there are no magnetic reversals nor eddy currents, due to changing the magnetism in the iron core.

In the accompanying drawings, which illustrate the invention, Figure 1 is a central section, and Fig. 2 a side view, of one form of my improved dynamo. Figs. 3 and 4 are sections of portions of machines of slightly modified constructions.

Referring first to Figs. 1 and 2, 1 is an iron casting or other body, substantially octagonal in shape, and forming the yoke of the field-magnet, and having a suitable base, 2, adapted to support the machine. From alternate interior sides of the octagonal frame 1, project the pole pieces 3, having magnetizing coils in the usual manner.

4 are standards rising from the base and carrying suitable journals for the armature shaft.

5 is a central axis, which is held stationary by suitable bolts 6 and which carries an iron body 7, of unchanging polarity, keyed to the axis so as to remain at rest thereon. I prefer to make this body a solid casting, since there is no particular advantage gained by laminating it, although this may be done if desired. As shown in Fig. 2, this body 7 has channels or depressions across its face, as at 8, between each adjacent pair of poles and forming extensions on said body facing said poles. By thus notching the iron core, stray magnetism through the conductors is avoided, but these notches are not essential in all cases. The body 7 has a large mass, preferably being solid from the axis to the inner periphery of the rotating armature section. Between the faces of the pole pieces and the outer face of the stationary body is a narrow annular space, within which the movable part of the armature may be rotated, and this armature is preferably constructed as shown in Figs. 1 and 2, in which is shown a body 9, composed of iron and laminated and having perforations 10 through which insulated conductors 11 are extended. These conductors cross the ends of the armature as indicated at 12, the armature being of drum type.

13 is the commutator, to which the wires are connected in any suitable manner. The core or body 9 is supported by spiders 14 keyed to the sleeve 15, which also carries the commutator and the driving pulley 16. With this construction, it will be clear that the armature conductors with their magnetic inclosing body can be rotated without moving the core 7, and without changing the relative position of said core and the pole pieces, and in view of the construction of the core 9, the magnetic resistance of the space between the pole pieces and the body 9 is reduced to a very low point.

Instead of passing the insulated armature conductors 11 through holes in the rotating

portion of the armature body, as above described, said conductors may be carried on the surface of said body, this being shown in Fig. 3, the conductors being held in place by a circumferential winding 17.

Another way in which the armature conductor can be mounted is indicated in Fig. 4, in which the spiders 14 carry insulating blocks or rings 18 at their outer ends, through which the insulated conductors 11 pass, but in each case I employ the large stationary iron core 7 keyed directly to the stationary axis 5.

What I claim is—

1. The combination of a stationary field-magnet, a stationary armature core of iron, and a rotating armature body consisting of an iron ring in the annular space between the field-magnet poles and the stationary core, said ring having transverse passages, and insulated conductors in the same forming a winding for said armature, substantially as described.

2. The combination, in a dynamo-electric machine, of a stationary field-magnet, a stationary armature core of iron but without magnetizing coils, and a rotating armature body consisting of an iron ring in the annular space between the field-magnet poles and the stationary core, said ring being perforated, insulated conductors passing through said perforations and forming a drum winding for said armature, substantially as described.

This specification signed and witnessed this 11th day of February, 1892.

HORACE F. PARSHALL.

Witnesses:

L. O. WEBER,

T. A. BRANION.