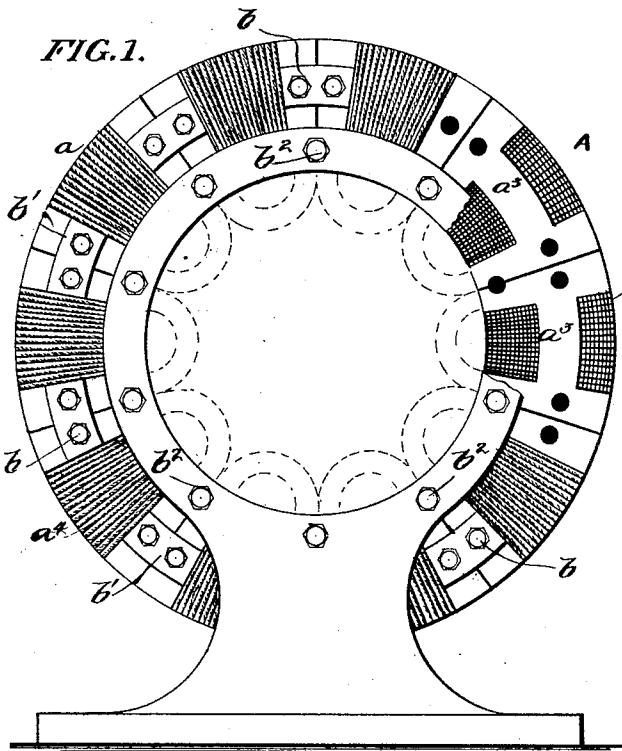
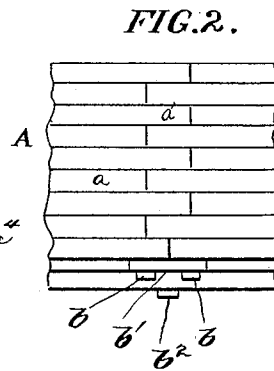
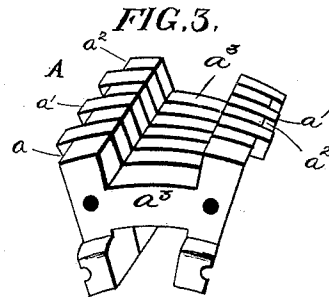
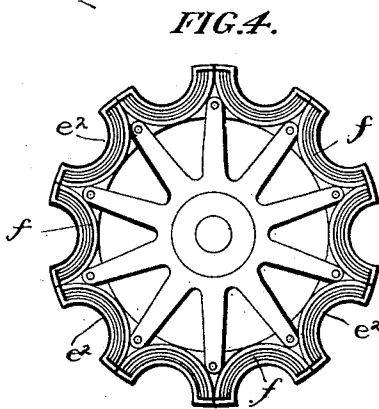
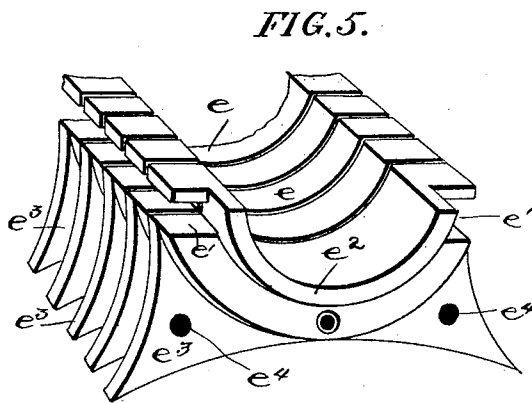


(No Model.)

L. C. RICE.
DYNAMO ELECTRIC MACHINE.

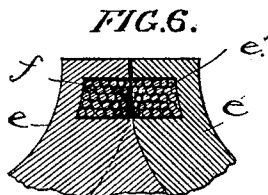
No. 451,574.

Patented May 5, 1891.



WITNESSES:

Frank S. Ober
Wm. H. Rainey



INVENTOR
Lewis C. Rice
BY *W. D. Johnston*
ATTORNEY.

UNITED STATES PATENT OFFICE.

LEWIS C. RICE, OF DENVER, COLORADO.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 451,574, dated May 5, 1891.

Application filed May 14, 1890. Serial No. 351,718. (No model.)

To all whom it may concern:

Be it known that I, LEWIS C. RICE, a citizen of the United States, residing in Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Dynamo-Electric Machines, of which the following is a specification.

My invention has reference to dynamo-electric machinery, with special reference to alternate-current machines.

The object of the invention is to increase the efficiency of such machines, while at the same time rendering their construction such that repairs may be quickly and cheaply made. The first object mentioned is accomplished by constructing the armature in such a manner that the majority of the lines of force in the magnetic fields are compelled to cut the armature-coils at the time when the said coils are in the position of maximum induction, and also by constructing the armature and locating the coils so that the latter will be iron-clad and therefore subject to a stronger magnetic field. The second object is attained by constructing both the field-magnet system and the armature in removable sections.

The details of the invention will be fully described with reference to the accompanying drawings, in which—

Figure 1 represents an end elevation of the field-magnet structure; Figs. 2 and 3, detail views of the field-magnets; Fig. 4, an end elevation of the armature; Fig. 5, a perspective detail of a section of the armature; and Fig. 6 is a detail.

The field-magnets A are each formed of a series of laminations or blocks *a* of substantially the shape of the letter H. One side of them is wider than the other, and they are placed together, so that a series of tongues *a'* will alternate with a series of spaces *a''*, and leaving smooth grooves above and below the cross-bars *a'''* to accommodate the single coil of wire *a''''*. When current flows in this coil, the sides of the core will assume opposite polarities. Each bobbin is of the same construction, and they are put together so that the tongues and grooves of the adjacent bobbins will interlock with one another. They are secured in this position by bolts *b*, plates *b'*, and bolts *b''*. The bolts *b* serve to

secure the blocks of each bobbin, while the plates *b'*, in combination with the bolts *b*, serve to hold the adjacent bobbins together. The bolts *b''* pass through holes formed on the line of junction between the bobbins, or, in other words, formed partly in each of the adjoining sides of the bobbins, and thus serve to center them and maintain the whole structure rigid. Poles of like sign are of course placed together, and the path of the lines of force will therefore be from pole to pole, as represented in dotted lines in Fig. 1. When repairs are to be made which necessitate the removal of the parts, the same may be accomplished with ease and dispatch by removing the proper end plates *b'* and bolts *b''*.

In the armature the same general plan of construction is followed as in the field-magnet—that is, it is built up of sections which interlock with one another, and each section carries a coil.

Each section consists of a series of laminations or blocks *e*. Their inner edges form the segment of a circle concentric with the axis of the armature, while their outer edges have a much sharper concave curve. The upper outer edges of the blocks are recessed or notched to form a rectangular chamber *e'*, and the end blocks of each section are provided with a longitudinally-extending rib or flange *e''*, which follows the curve on the outer edge of the block. The lower outer corners of the blocks are made in the form of thin webs *e'''*, with spaces between them, and these webs are perforated with a central hole *e''''* for a bolt. When the blocks of each section are properly together, the curved outer edges form a longitudinal semi-cylindrical groove, and the recesses or notches *e'* form rectangular grooves in the upper outer corners. The rectangular grooves form a seat in which the coil *f* may rest. It is wound through the grooves and at the ends down under the ribs *e''*. This construction thoroughly protects the coil and secures it in place without the use of end clips or binding-wires. When the sections are all together, the webs *e'''* of the adjacent sections interlock with one another and are held by passing a bolt through the holes *e''''*, one bolt holding two sets of flanges. This forms a hollow iron cylinder having longitudinal grooves in its surface. It is sup-

ported upon the shaft by means of two spiders, one at each end, the arms of the spider being secured by the same bolts which hold the sections together.

5 When the sections with the coils are together it will be seen that the active portions of the wire will be entirely surrounded by iron.

10 In operation the construction of the armature will have the tendency to set up a very strong induction in the coils at the moment when they are passing the pole-pieces, for the reason that the lines of force emanating from the poles will be deflected across the coils
15 into the projecting arm of the armature.

Having thus described my invention, I claim—

1. In a field-magnet structure, the combination, with the bobbins having grooves in

their adjoining sides, of the bolts *b b*, plates 20 *b'*, and bolts *b''*, passing through the holes formed by said grooves, for the purpose set forth.

2. An armature made up of a series of sections longitudinally grooved upon their outer 25 surface and suitably joined together, the upper portion of each section being cut away for the insertion of the coil, and the sections when joined together inclosing the coils at the points of contact.

30 In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEWIS C. RICE.

Witnesses:

WM. A. ROSENBAUM,
THOMAS K. TRENCHARD.