(No Model.) 2 Sheets—Sheet 1.

A. S. KIMBALL.

DYNAMO ELECTRIC MACHINE.

No. 288,818. Patented Nov. 20, 1883.

Fig. 1.

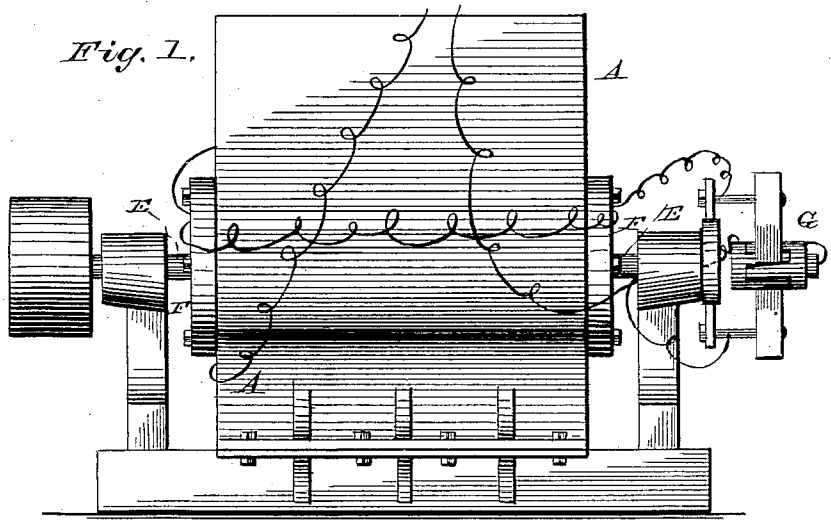


Fig. 2.

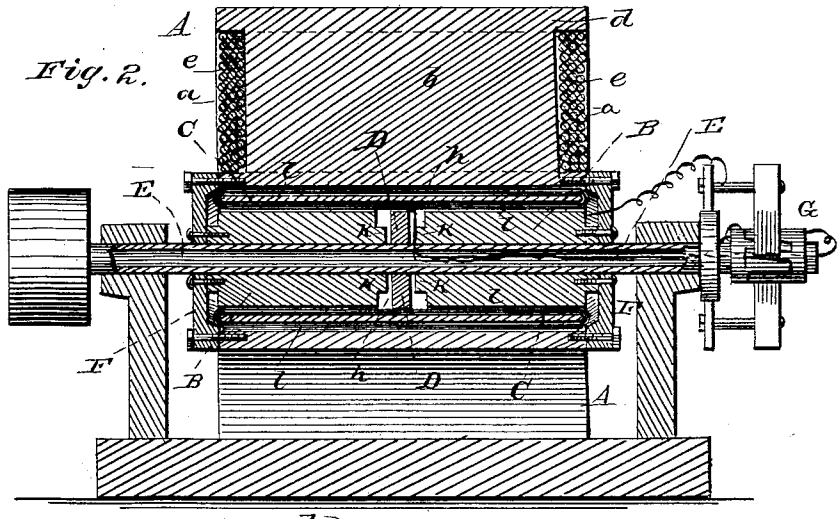
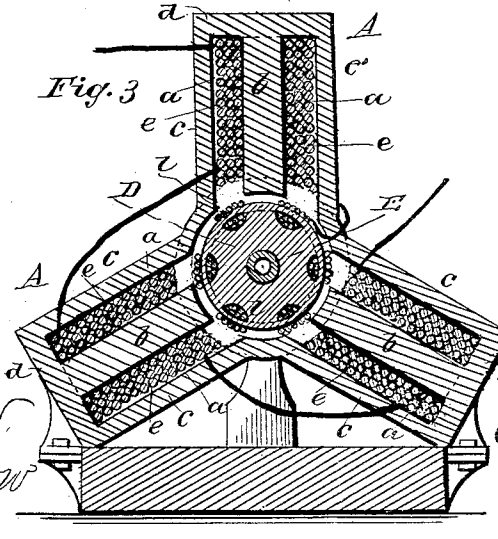


Fig. 3



WITNESSES

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Fig. 4.

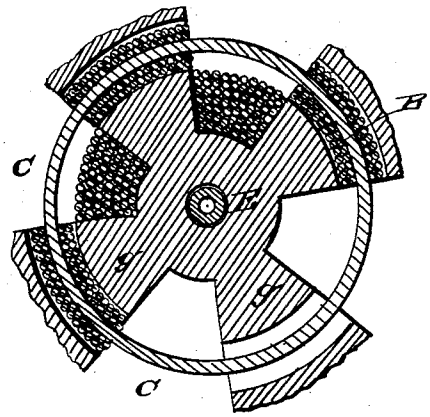


Fig. 5.

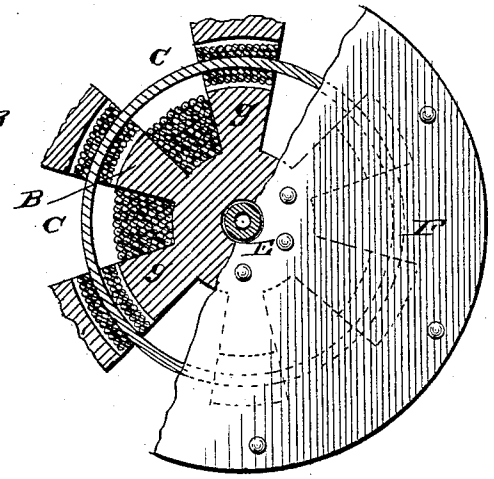


Fig. 6

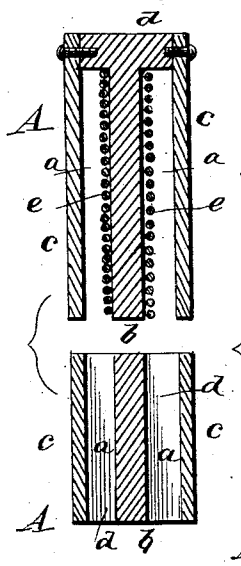


Fig. 7.

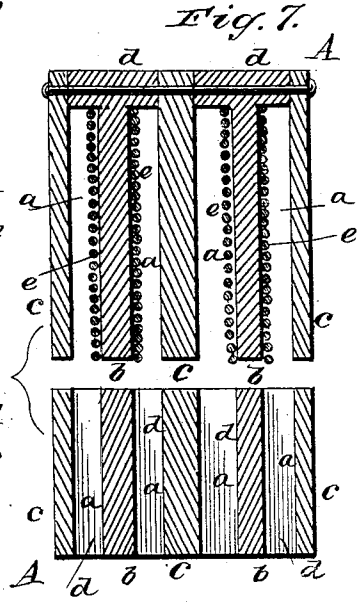
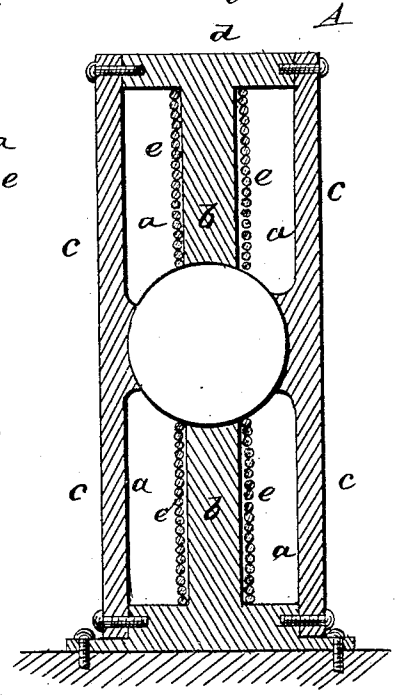


Fig. 8.



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DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 288,818, dated November 20, 1883.

Application filed May 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALONZO S. KIMBALL, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Dynamo-Electric Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a representation of a side elevation of my machine, showing a commutator and the connecting-wires. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a transverse sectional view, and Figs. 4, 5, 6, 7, and 8 are sectional detail views.

This invention has relation to improvements in dynamo-electric machines or motors; and it consists in the construction and novel arrangement of parts, as hereinafter set forth and claimed.

In the accompanying drawings, the letter A designates an external field-of-force magnet, having three, five, or a greater odd number of pole branches, *b* and *c*. These magnets are formed by connecting the required number of plates at the back by a yoke, *d*, and filling the interspaces *a* with coils, *e*, of wire, the wires of the coils being joined in the proper manner to make the poles *b*, which are inclosed by the wire, of similar polarity to each other and of opposite polarity to the adjacent pole branches, *c*. In constructing the machine, two, three, four, or a greater number of these branch magnets may be employed. In small machines an armature having as many polar faces as there are poles in the field is employed. In the large machines it is designed to employ internal field-of-force magnets, B, and a cylindrical or drum armature, C, which revolves in the annular interspace between the inner and outer systems of fixed field-magnets. The internal field-of-force magnets are of cylindrical form, having ribs or polar projections *g*, which are wound with wire, so that opposite polarities are opposed in the outer and inner field-of-force magnets. Two internal field-magnets, B B, are employed, relatively arranged in the end portions of the machine, and having between them an interval, *h*, in which moves the revolving disk D, which supports the drum-armature C from the shaft E. At their outer ends the internal field-magnets are supported by caps bolted to the external magnets and to the outer ends of the internal field-magnets, as indicated at F. At their inner ends the internal field-magnets are supported by bearings *k* on the shaft E of the armature.

The longitudinal armature-coils *l*, carried by the drum C, are as many in number as there are pole-faces in the external magnets, and said armature-coils are wound alternately in opposite directions and so connected that they have the induced currents in similar directions. The supporting-disk D may be arranged in the middle of the field, as shown in the drawings, or at one end of the field. If the cylindrical field is short, but one internal field-of-force magnet may be employed.

The field-magnets employed in this machine are easily constructed, and the machine is very compact in its arrangement.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. In a dynamo-electric machine, a field-magnet composed of coil-wound and plain branches, and having the plain branches united on each side of the coil-wound branches to form pole-pieces, substantially as specified.

2. In a dynamo-electric machine, the combination, with the field-magnets having the plain and coil-wound branches arranged as described, of the drum-armature, its supporting-disk, and shaft E, the caps F, with securing devices, and the internal field-magnet supports *k*, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

ALONZO S. KIMBALL.

Witnesses:
PETER S. MAHER,
E. A. KENNEN.