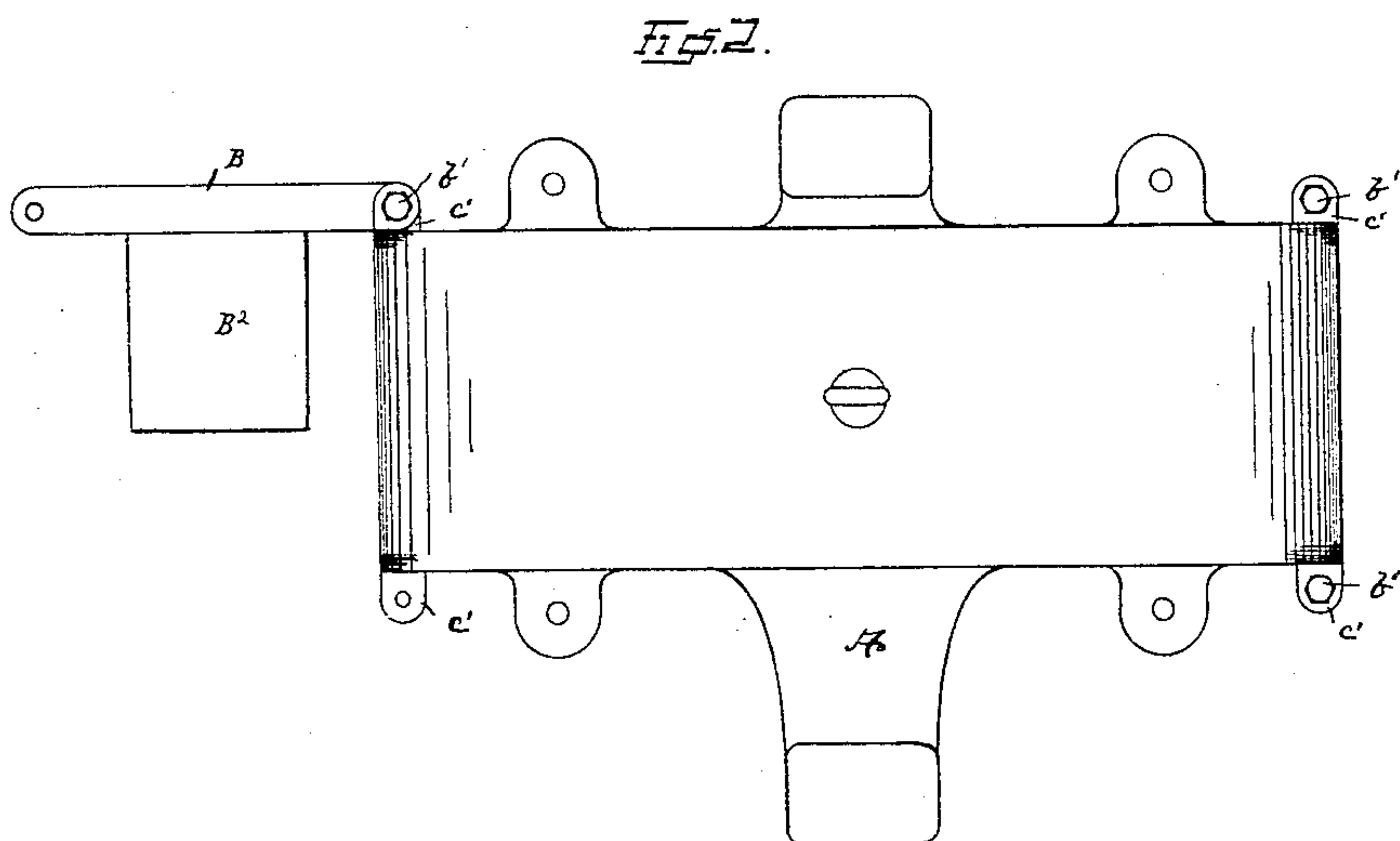
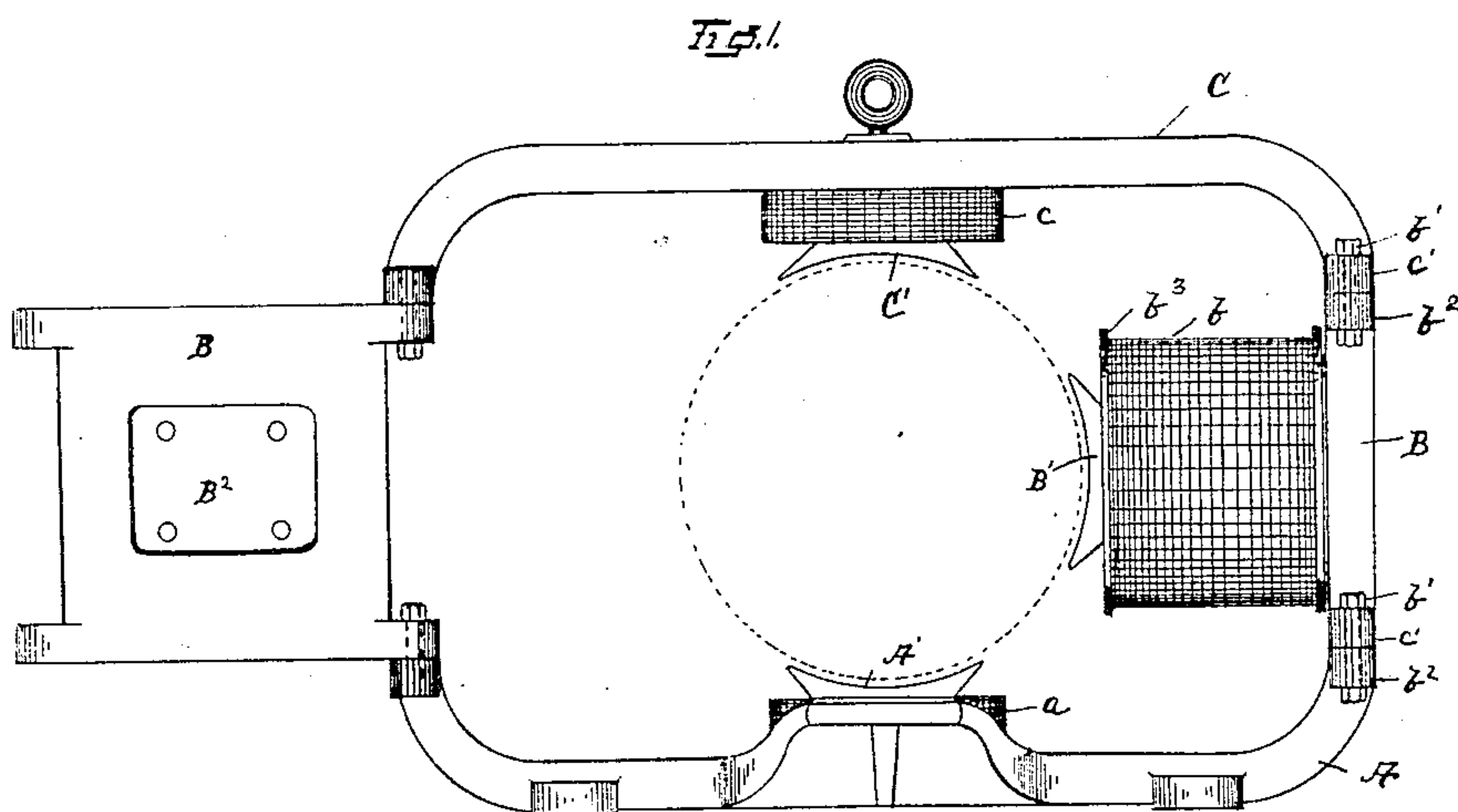


(No Model.)

J. G. GERMANN & F. B. DOWNING.
DYNAMO ELECTRIC MACHINE AND ELECTRIC MOTOR.

No. 562,179.

Patented June 16, 1896.



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN G. GERMANN AND FREDERICK B. DOWNING, OF ERIE, PENNSYLVANIA;
SAID GERMANN ASSIGNOR TO SAID DOWNING.

DYNAMO-ELECTRIC MACHINE AND ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 562,179, dated June 16, 1896.

Application filed March 26, 1896. Serial No. 584,993. (No model.)

To all whom it may concern:

Be it known that we, JOHN G. GERMANN and FREDERICK B. DOWNING, citizens of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Electric Dynamos and Motors; and we do hereby 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.

This invention relates to frames for electric motors and dynamos; and it consists in certain improvements in the construction thereof, as will be hereinafter fully described, and pointed out in the claims.

The invention is illustrated in the accompanying drawings, as follows:

Figure 1 shows an elevation of a frame of our construction. Fig. 2 is a plan view of the same.

A marks the base of the machine, B B hinged field-magnet-core-carrying plates, and C a connecting-plate which as here shown forms the top plate of the frame. The dotted line indicates the path of the armature, adjacent to which are the field-shoes A', B', and C', which extend from the several field-magnet cores of the field-coils *a*, *b*, *b*, (not shown,) and *c*, respectively. The hinged field-magnet-core-carrying plates B are normally bolted into the machine, as shown, at the right of the figure, thus forming a rigid member of the frame. In the construction here shown the top plate, base and hinged plates are provided with the perforated ears *c'* and *b²* at the edges through which are passed bolts *b'*.

When the coil *b* burns out or for other cause needs repair, the bolts *b'* at one side of the frame are removed and the bolts securing the same plate at the opposite side slightly loosened, thus forming a hinge. The plate with the field-magnet core and coil is then swung out, thus exposing the different parts, so that if desired the shoe B may be removed and the spool *b³* replaced.

At the left of the figures the hinged plate B is shown swung out, the shoe and spool be-

ing removed, exposing the core B², which is preferably cast with the hinged plate B. 50

It will be noted that the hinges formed by the ears *c'*, *b²*, and bolt *b'* are at the sides of the frame, so that all parts of the shoe recede from the armature with the first outward movement of the plate. If the plate were hinged at a point in a line perpendicular to the face of the shoe at the center of the shoe, this swinging out of the field-magnet core and coil could not be effected without placing the field-shoe at a greater distance from the armature than is desirable, because the length of the radial line from the edges of the shoe to the hinge would be greater than the distance from the hinge to the armature. We therefore hinge the plate off the center of the shoe sufficiently to bring every point of the shoe as far from the hinge as the armature is at the nearest point by which the respective points of the shoe pass as the shoe is swung out. These hinged plates may be variously located, especially as the poles are increased and the method of hinging may also be changed, but in all constructions the axis of the hinge should be in a plane substantially at right angle to the axis of the armature. This allows the field-magnet core and coil to swing out sidewise, thus requiring but a small opening in the frame through which to swing, and also permits of a simple and strong structure for the frame. We prefer, however, the construction shown. 80

What we claim as new is—

1. In a motor or dynamo, the combination with the armature; of the field-magnet core having its shoe in proper relation to the armature; and a support for said field-magnet core hinged off the center of said shoe to allow the free movement of the field-magnet core and coil away from the armature, and having the axis of the hinge in a plane substantially at right angles to the axis of the armature. 85 90

2. In a motor or dynamo, the combination with the armature; of the frame composed of the members A and C and the members B B between the members A and C; bolts securing the members together, one or more of said 95

bolts being so located with relation to each member B as to form a hinge for said member when loosened with the axis of said hinge in a plane at substantially right angles to the
5 armature; and a field-magnet core supported by each member B with its face center at one side of the hinge.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN G. GERMANN.

FREDERICK B. DOWNING.

Witnesses:

CHAS. M. WARNER,

H. C. LORD.