

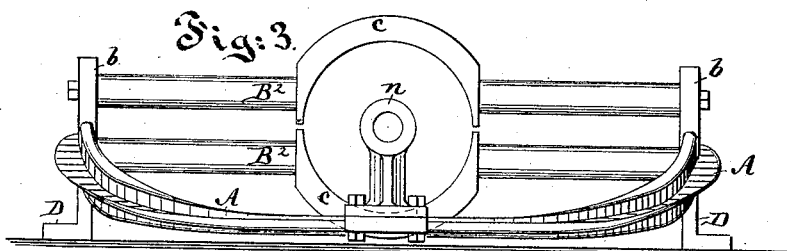
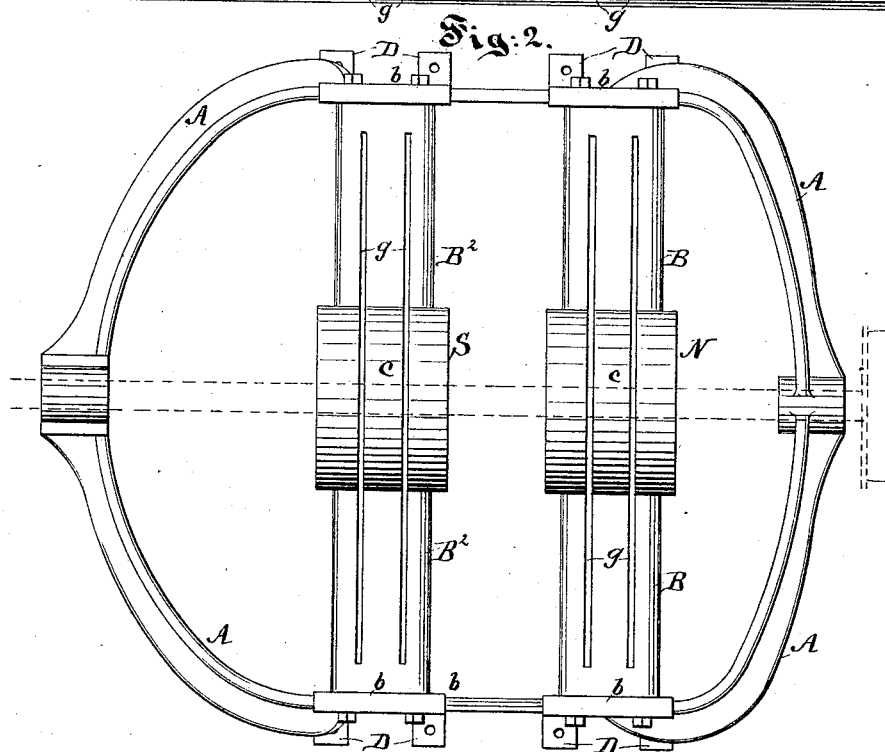
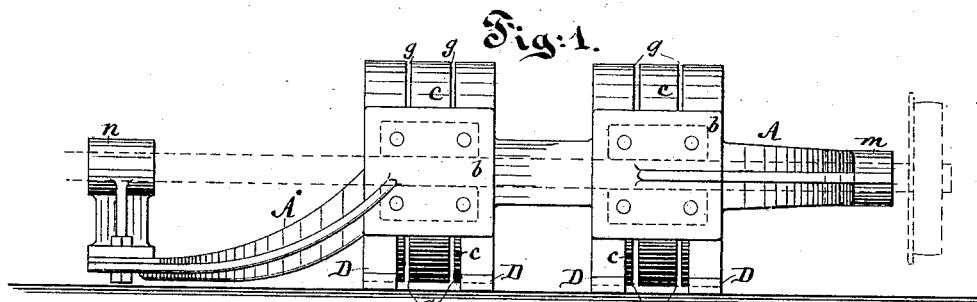
(No Model.)

W. K. FREEMAN.

FIELD OF FORCE MAGNET FOR DYNAMO ELECTRIC MACHINES.

No. 302,556.

Patented July 29, 1884.



Witnesses:

A. J. Freeman
Thos. Torrey

Inventor:

W. K. Freeman

by his Atty:

H. C. Townsend

UNITED STATES PATENT OFFICE.

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

FIELD-OF-FORCE MAGNET FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 302,556, 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 certain new and useful Improvements in Field-of-Force Magnets and Frames for Dynamo-Electric Machines and Motors, of which the following is a specification.

My invention relates to the construction of the field-of-force magnet and frame for dynamo-electric machines or motors; and its objects are to so construct the same as to form a more complete magnetic union of the field-magnets, thereby increasing their strength and efficiency, to make a frame simple and compact, and at the same time adapted to form a support for the armature-shaft, while also permitting said armature to be removed without detaching the parts of the field-magnet frame proper.

A further object of my invention is to construct a field-magnet frame that shall be simple, compact, and effective, and at the same time adapted for use with the novel double armature forming the subject of another application for patent filed by me.

The manner of constructing a frame according to my invention will be readily understood from the accompanying drawings, taken in connection with the subjoined description.

In the drawings, Figure 1 is a side elevation of a frame constructed in accordance with my invention. Fig. 2 is a plan of the same, and Fig. 3 is an end view of the frame.

A indicates a piece of iron or other magnetizable material and of any desired shape, either circular, oblong, or otherwise. At the opposite points *b b* it is enlarged or spread out in a transverse direction to permit the attachment of four bridge-pieces of iron, *B B B' B'*, each of which latter is formed in any suitable manner to adapt it to receive the usual magnetizing-coils, and is also provided at its intermediate portion with a curved pole-piece, *c*, as indicated. Either pair, as, for instance, the pair *B B*, taken in connection with the vertical connecting portions *b* only of the frame or piece *A*, would constitute the field-magnet of a dynamo-electric machine or motor of the well-known form, in which a cylin-

dric or ring armature, wound with coils of wire, is made to rotate between curved field-of-force poles, one north and the other south.

That part of the piece *A*, indicated at *b*, which lies vertically between the ends of the cores *B B* or *B' B'*, constitutes the usual magnetic connection between the cores, to form the whole into a close magnet having consequent points at *N S*. In addition to such magnetic connection, the piece or frame *A*, lying in a plane transverse to the usual connecting-piece, constitutes an additional means of binding or uniting the field-magnets together into a unitary magnetic system.

In the present instance I have shown the ring or piece *A* as bridged by two pairs of cores, so as to form two fields of force. This is the form that I propose to employ in practice, as it is that adapted for use with a novel compound armature invented by me in which two cylinders or carriers on the same shaft are wound with the same system of armature coils or wires. I do not, however, limit myself to any particular number of bridges or connecting-cores.

In practice the piece *A* is preferably cast in one piece, and is formed, in the manner shown in Fig. 1, with a depressed portion at one end, to permit the armature to be withdrawn from between the field-of-force pole-pieces without taking the frame to pieces.

The journal-boxes for the armature are indicated at *m n*. One of them, *m*, may be formed in the piece *A*. The other, *n*, is upon the top of a pillar detachably secured to the depressed portion of the piece *A*, as shown. The latter construction permits the armature to be removed readily.

Feet or supports for the machine are indicated at *D D*, &c. These may be cast with or attached to the piece *A* at any desired portion of the same; but are by preference located, as shown, at the enlarged portions *b*.

The cores and pole-pieces are both slotted longitudinally, as indicated at *g*, to prevent the formation of induced or Foucault currents in the body of said core, and to also allow free circulation of air to keep the machine cool.

What I claim as my invention is—

1. In a dynamo-electric machine or motor, an endless frame, band, or ring of iron or simi-

lar material, in combination with a transverse bridge or connecting piece or pieces forming a core or cores for the field-magnet coil or coils, and having a pole-piece for acting upon the armature of the machine.

2. In a dynamo-electric machine or motor, field-of-force magnets having pole-pieces at their centers, and having their ends connected in two planes transverse to one another, as and for the purpose described.

3. In a dynamo-electric machine or motor, a field-of-force magnet and frame composed of the endless piece A, of magnetizable material, and two or more transverse bridge-pieces, B B, each adapted to receive the field-of-force magnetizing-coils, and having also a curved portion forming the usual curved pole-piece.

4. In a dynamo-electric machine or motor, the endless piece of magnetizable material, depressed at one end to allow the armature to be removed, in combination with the transverse connecting or bridge pieces having curved pole-pieces to form a field for the armature.

5. In a dynamo-electric machine or motor, the endless frame or piece A, arranged in a plane transverse to the plane of rotation of the armature, and depressed at one end to permit the armature to be removed, in com-

bination with a journal box or bearing detachably secured to such depressed portion, as and for the purpose described.

6. In a dynamo-electric machine or motor, an endless frame or piece of magnetizable material, A, having one or more enlarged portions, b, and connecting magnet-cores and pole-pieces extending transversely across from one portion b to another, as and for the purpose described.

7. In a dynamo-electric machine or motor, the combination, with two field-magnets, B B, having intermediate pole-pieces, c c, and magnetically connected at their extremities in any suitable manner, of the extra connecting-piece of magnetizable material A, connecting said magnets in a transverse plane.

8. The combination, with an endless piece or frame, A, of magnetizable material, of the two pairs of transverse connecting-magnets B B B' B', as and for the purpose described.

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

WALTER K. FREEMAN.

Witnesses:

THOS. TOOMEY,
GEO. C. COFFIN.