No. 638,872. Patented Dec. 12, 1899.

C. A. LINDSTROM.

MULTIPOLAR ELECTRIC MOTOR.

(Application filed Oct. 16, 1899.)

(No Model.)

Fig. 1.

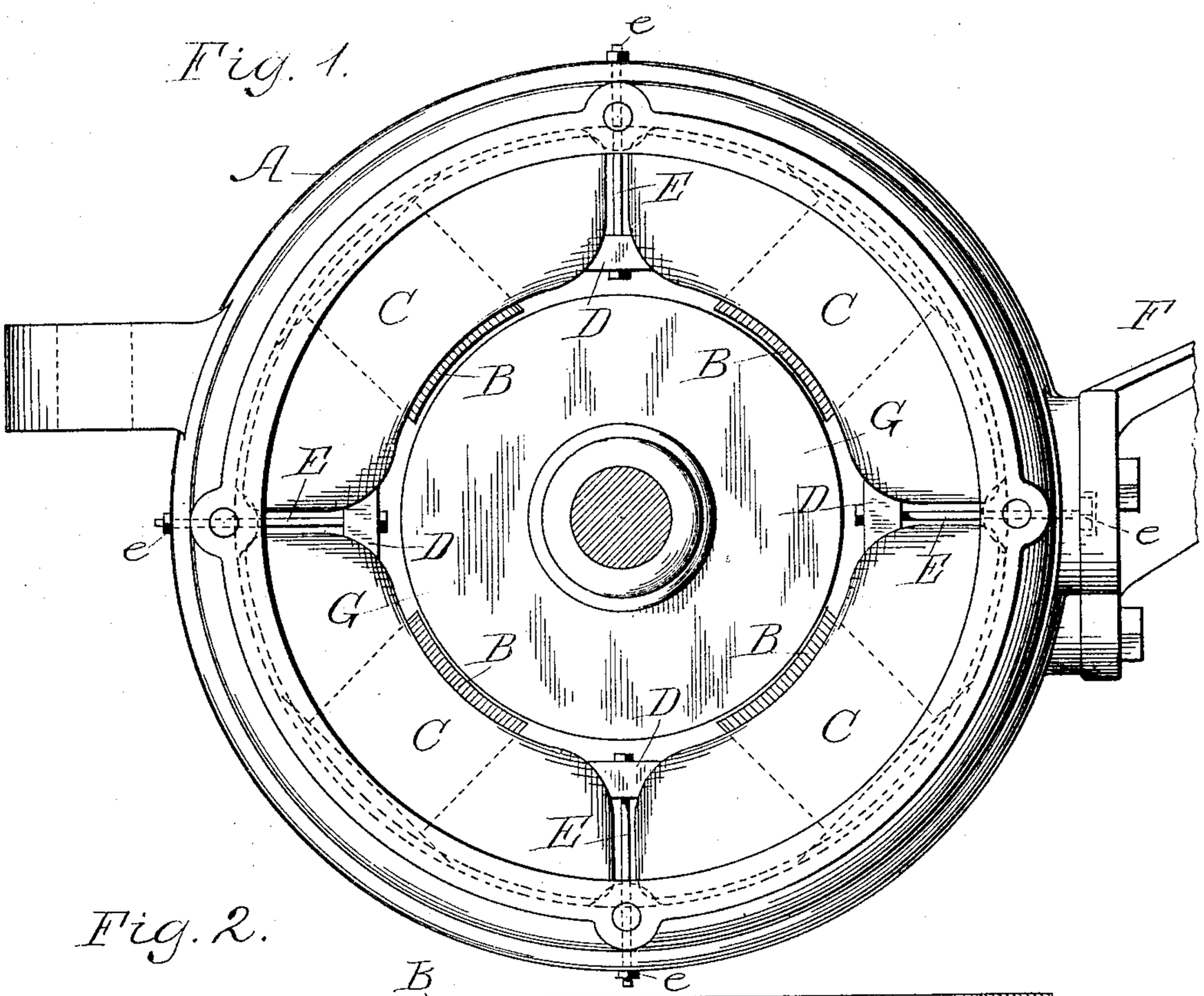
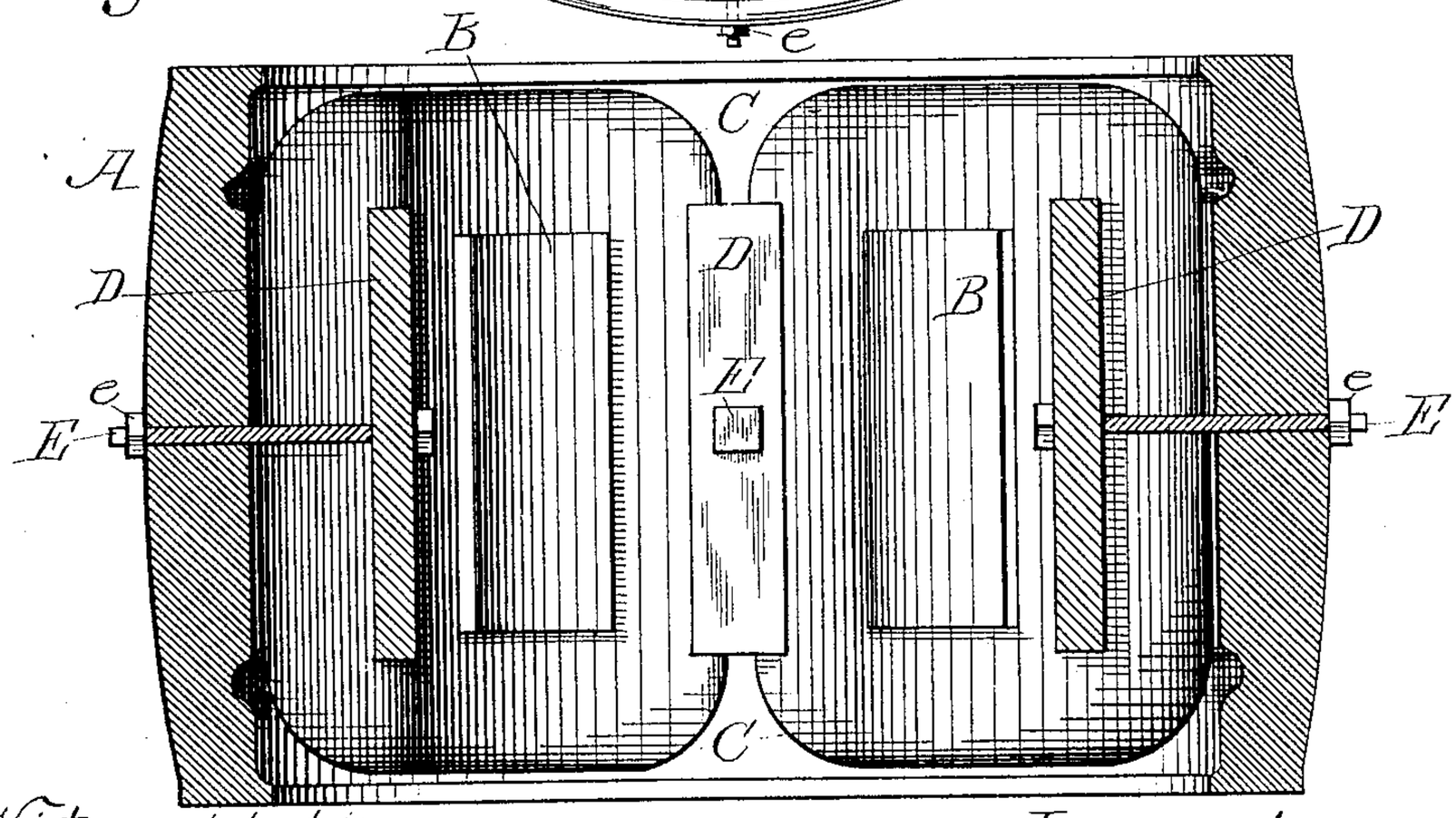


Fig. 2.



Witnesses:

M. Fried.

D. F. Martin

Inventor:

Charles A. Lindstrom.

By Frank D. Thomason,

Atty.

UNITED STATES PATENT OFFICE.

CHARLES A. LINDSTROM, OF CHICAGO, ILLINOIS.

MULTIPOLAR ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 638,872, dated December 12, 1899.

Application filed October 16, 1899. Serial No. 733,698. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. LINDSTROM, a citizen of the United States, and a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Multipolar Electric Motors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of my invention is to retain the field-magnet coils of an electric motor, and particularly a multipolar motor, in place in such manner that the field-poles are not affected nor the lines of magnetic force disturbed. This I accomplish by an effective yet simple and cheap device which can readily be employed in the construction either of a motor or a dynamo, substantially as hereinafter fully described, and as particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of an electric motor, showing my invention applied thereto. Fig. 2 is a vertical transverse section through the same.

In the drawings, A represents the field-ring or frame of an electric motor or dynamo. B B B B represent the field-magnets, preferably cast in one piece with said field-ring, and C C C C represent the field-coils surrounding said field-magnets in the usual manner. In making field-magnet coils the insulated wire is wound about a suitable frame until the proper number of ampere-turns are obtained. Then the said coils are removed and wound with tape and then shellacked and dipped in some insulating material and finally baked. Of course I do not herein desire to be limited to this particular method of making the field-coils, but only refer to the above usual method to convey the idea that the field-coils are, when in condition to be placed or wound around the field-magnets, a stiff body of wire which will retain its shape without the assistance of other means. In their final shape the field-coils form a rectangular frame having a central opening of slightly-greater dimensions than the cross-section of the field-magnets over which they are placed and usually having the outer edges thereof rounded and of such dimensions that they do not extend beyond the ends of the field-ring A and cover nearly a quadrant of the inner circumference of said ring. I retain these coils C in place by means of a wedge or block D, preferably of wood or other non-conducting material, the length of which corresponds, preferably, to the length of the field-magnets and the longitudinal sides of which, facing said coils, are beveled so as to conform to the rounded ends of the adjacent coils C, against which they bear. There are four of these blocks, one between the ends of each pair of coils, and they are held in position by means of a brass bolt E, the head of which comes against the inside of the block and the barrel of which extends through the center of length of the same radially out through the ring A and has a suitable nut *e* screwed on its outer screw-threaded end, with which to tighten it and adjust the wedge or block D against the ends of the coils. Should said motor or dynamo be supported by a bracket F, as shown in Fig. 1, or its equivalent, and should the outer end of the bolt strike into the contact area of said bracket with the motor, I recess the attaching of said bracket so as to accommodate the presence of the outer end of bolt E and the nut *e*, as shown in dotted lines in Fig. 1.

I do not wish to be confined to the use of but one bolt E for each block D, as it is evident that two or more may be employed, especially in the larger sizes of dynamos and motors, if considered desirable.

It is obvious that by the employment of this simple device it is impossible for the magnetic lines of force between the pole-pieces and the armature G to be disturbed, and it is also obvious that should the field-coils become loose, as when used in motors or electric automobiles, they can be readily tightened from the outside of the field-ring without inconvenience or the dismantling of the motor itself.

What I claim as new is—

1. In an electric motor or dynamo the combination with the field-ring, field-magnets thereof, and field-magnet coils, of radially-disposed devices bearing outward against the ends of said coils.

2. In an electric motor or dynamo the combination with the field-ring, field-magnets thereof, and field-magnet coils, of radially-disposed devices placed between and bearing outward against the ends of said coils.

3. In an electric motor or dynamo, the com-

bination with the field-ring, field-magnets thereof, and field-magnet coils, of radially disposed and adjustable devices placed between and bearing outward against the ends of said coils.

4. In an electric multipolar motor or dynamo, the combination with the field-ring, field-magnets thereof, and field-magnet coils, of a wedge-shaped block placed between and bearing radially outward against the adjacent ends of said coils.

5. In an electric multipolar motor or dynamo, the combination with the field-ring, field-magnets thereof, and field-magnet coils, of radially-adjustable blocks placed between and bearing outward against the adjacent ends of said coils.

6. In an electric multipolar motor or dynamo, the combination with the field-ring, field-magnets thereof, and field-magnet coils, of radially-adjustable longitudinally-elongated wedge-shaped blocks placed between and bearing outward against the adjacent ends of said coils.

7. In an electric multipolar motor or dynamo, the combination with the field-ring, field-magnets thereof, and field-magnet coils, of blocks placed between the adjacent ends of said coils, and a radially-disposed non-magnetic member adjustably connecting said blocks to said field-ring.

8. In an electric multipolar motor or dynamo, the combination with the field-ring, field-magnets thereof, and field-magnet coils, of blocks of non-conducting material placed between the adjacent ends of said coils, and a radially-disposed non-magnetic member adjustably connecting said blocks to said field-ring.

9. In an electric multipolar motor or dynamo, the combination with the field-ring, field-magnets thereof, and field-magnet coils, of wooden blocks placed between the adjacent ends of said coils, and a radially-disposed brass member adjustably connecting said blocks to said field-ring.

10. In an electric multipolar motor or dynamo, the combination with the field-ring, field-magnets thereof, and field-magnet coils, of longitudinally-elongated wedge-shaped wooden blocks placed between the adjacent ends of said coils, and radially-disposed brass bolts adjustably connecting said block to said field-rings.

CHARLES A. LINDSTROM.

Witnesses:
M. FRIEL,
F. D. THOMASON.