

(No Model.)

C. J. VAN DEPOELE.
ELECTRIC MOTOR.

No. 323,982.

Patented Aug. 11, 1885.

Fig. 2.

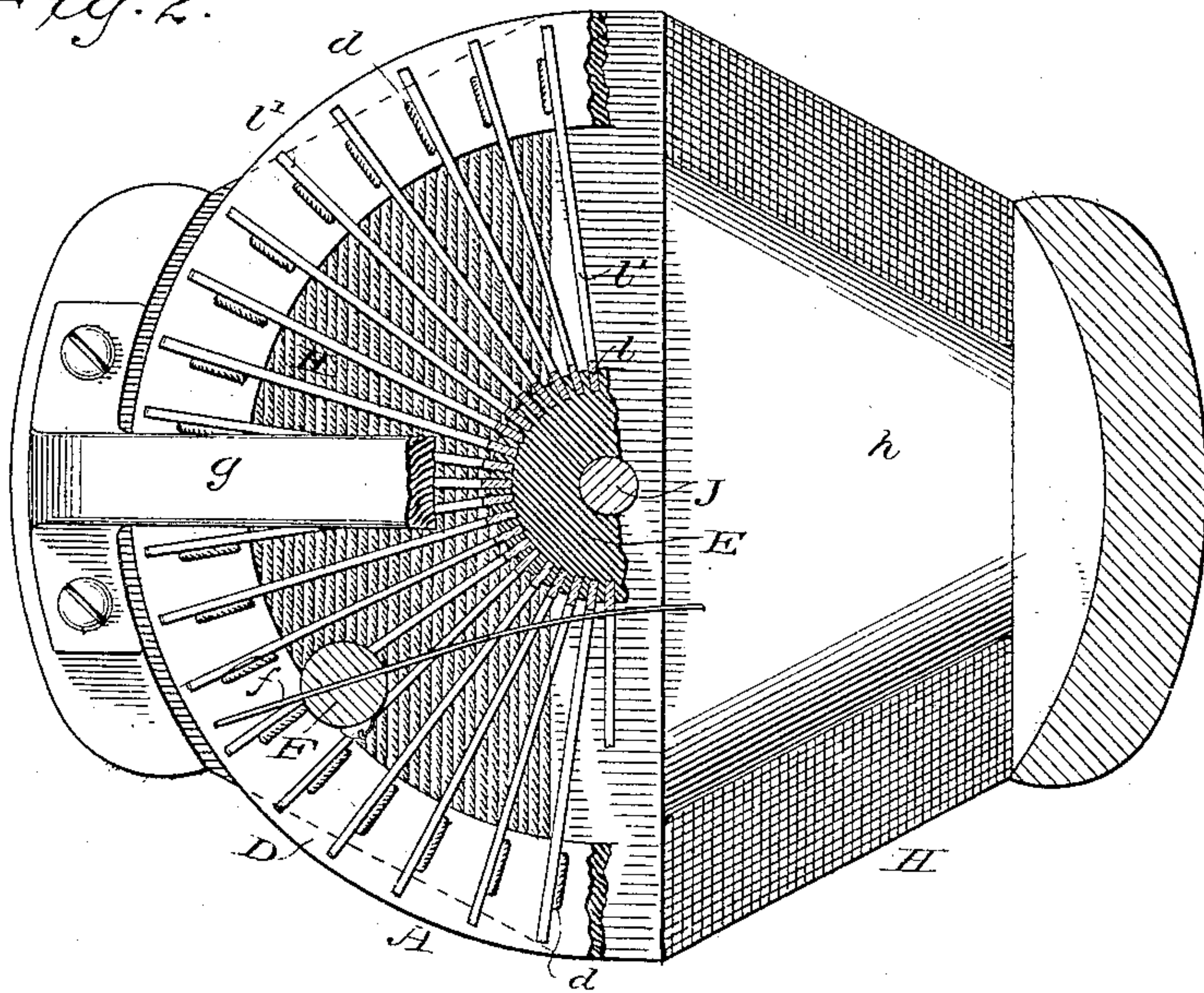
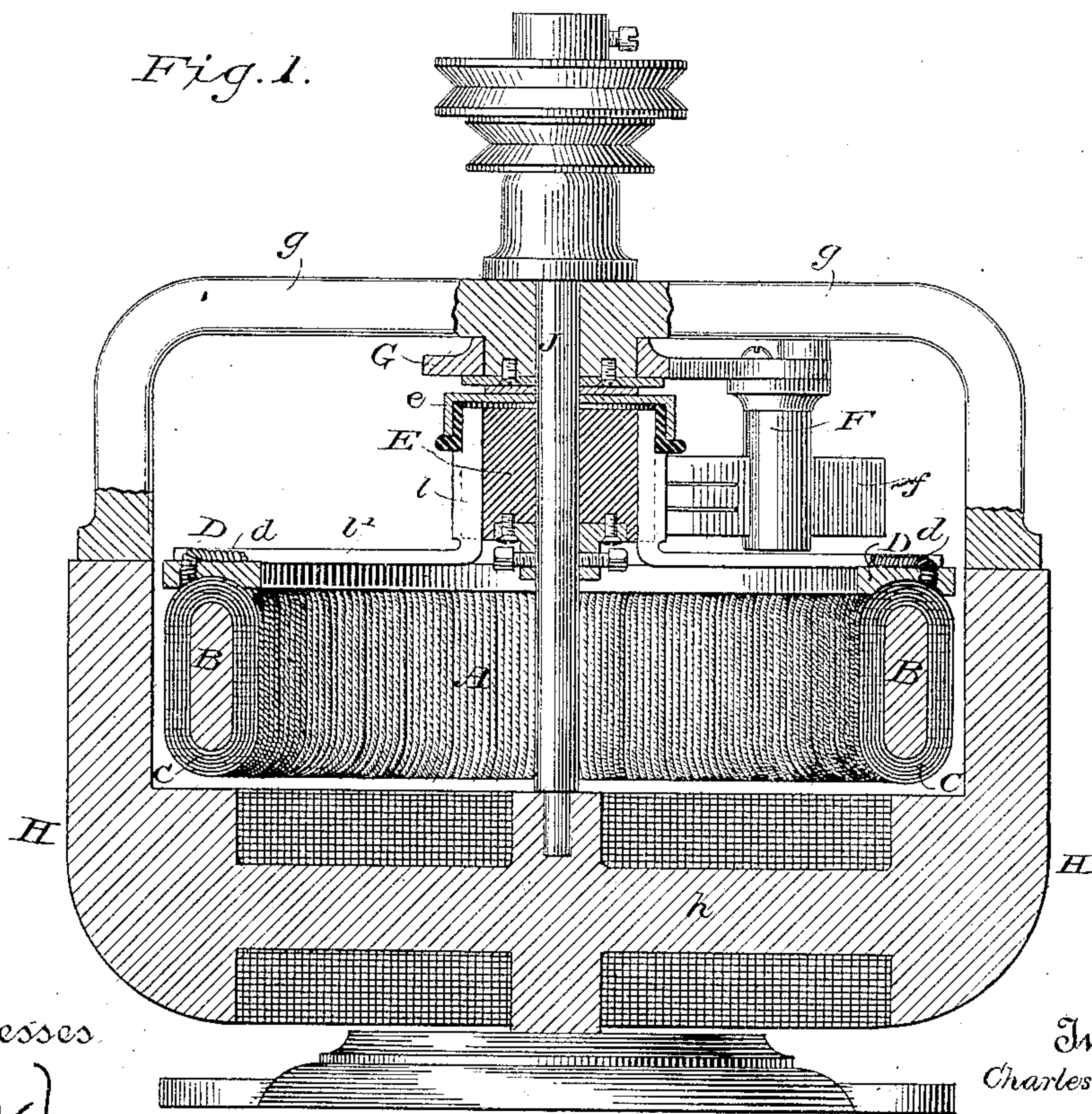


Fig. 1.



Witnesses

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CHARLES J. VAN DEPOELE, OF CHICAGO, ILLINOIS.

ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 323,982, dated August 11, 1885.

Application filed October 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DEPOELE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Motors, of which the following is a specification, reference being had to the accompanying drawings.

The present invention relates to improvements in the arrangement and construction of parts of electric motors, the details of which will be hereinafter fully described.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of my improved machine. Fig. 2 is a top plan view, partly in section, in which a portion of the armature is broken away to better show the shape of the field-magnet.

Similar letters denote like parts.

A represents the armature, of which B is the core and C the coils. D is a ring of insulating material, to which the armature-coils are secured by loops *d*, formed of the inner and outer terminals of each coil, which are passed through the material of the ring and joined on the other side, thereby firmly attaching them thereto.

E is a cylindrical hub, of insulating material, in the periphery of which are grooves or notches corresponding in number to the coils in the ring.

The above-described ring-armature is much larger in diameter than its commutator, to which it is connected, and by which it is at the same time wholly supported, as follows: L-shaped strips of copper are provided the short arms *l* of which are placed in the notches of the hub E, and secured in that position by means of a suitably-insulated metallic collar or cap, *e*, which is placed over the ends of all the segments, which, being so united, form an efficient and thoroughly insulated commutator. The longer arms *l'* radiate from the commutator like spokes, and when the extremity of each is soldered to one of the loops *d*, which extend upward from the armature-coils, the electrical connections are completed, and a strong, neat, and durably-constructed armature is produced, which is fastened to its driving-shaft by simply securing the hub E thereto in any well-known manner. The brushes *f* are adjustably mounted in posts F, which are

secured to a movable yoke, G, which is attached to the non-magnetic frame-piece *g* of the machine.

One of the brush-holding posts F is insulated from its support and thereby from the other, as is also its binding-post. Only one post and commutator-brush is herein shown, the second one being omitted for the purpose of more clearly illustrating the other parts of the device.

The field-magnet H is substantially U-shaped in elevation. Its wire is wound upon the lower or transverse portion only, the side arms becoming, respectively, north and south pole-pieces, between which the armature is horizontally mounted.

In order to obtain a very high degree of strength in the poles of the field-magnet H, I have departed from the usual forms and have enlarged the core *h* to such an extent that it is widest at the center of its length, from which point it tapers in both directions toward the pole-pieces. The wire is wound to about the same thickness upon all parts of the core, which, when completed, is diamond-shaped, except that the pole-pieces extend from the extremities of the wound portion of about the width thereof and at right angles thereto.

As is clearly shown in Fig. 2, the widest portion of the core is preferably of the same diameter as the armature, although these proportions may be varied without departing from the spirit of my invention.

The upper extremities of the pole-pieces are united by a yoke, *g*, of diamagnetic metal, which extends across the machine and supports the outer bearing of the driving-shaft J, the lower end of which is stepped into the metal of the field-magnet. It also carries the commutator-brushes and serves to firmly brace the entire structure.

When used as a motor, the current enters the armature and passes thence to the field-magnet in the usual and well-understood manner, and therefore the circuits have not been specially illustrated or more particularly described, it being obvious that other and well-known circuit combinations may readily be made.

I claim as my invention—

1. An armature consisting of a core, suitable coils upon said core, an insulated ring,

to which each of said coils is attached by a loop extending therefrom, and a commutator formed of metallic segments sufficiently elongated to be adapted, when permanently secured by their outer ends to the loops of the armature-coils, to form spokes radiating from the commutator and supporting said coils, substantially as described.

2. The combination of an insulating hub, secured to the driving-shaft, L-shaped metallic strips, the shorter arms of which are embedded in the surface of the hub, an insulated cap, *c*, for retaining the outer ends of said short arms, and a series of armature-coils, provided with loops, to which the longer and radiating arms are permanently secured, substantially as described.

3. In an electric motor, a field-magnet having a substantially diamond-shaped core, and

pole-pieces extending from the extremities thereof at right angles thereto.

4. In an electric motor, the combination of a U-shaped field-magnet having a centrally-enlarged or diamond-shaped core, and pole-pieces extending at right angles therefrom, a commutator mounted upon a shaft journaled vertically between said pole-pieces and having conducting-arms integral with the commutating segments, and extending radially at right angles therefrom, and an armature, the coils of which are secured to and supported by their respective conducting-arms.

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

CHARLES J. VAN DEPOELE.

Witnesses:

E. S. BALLOU,
THEO. P. BAILEY.