

(No Model.)

C. J. VAN DEPOELE.  
ARMATURE FOR ELECTRIC MOTORS.

No. 461,296.

Patented Oct. 13, 1891.

Fig. 3.

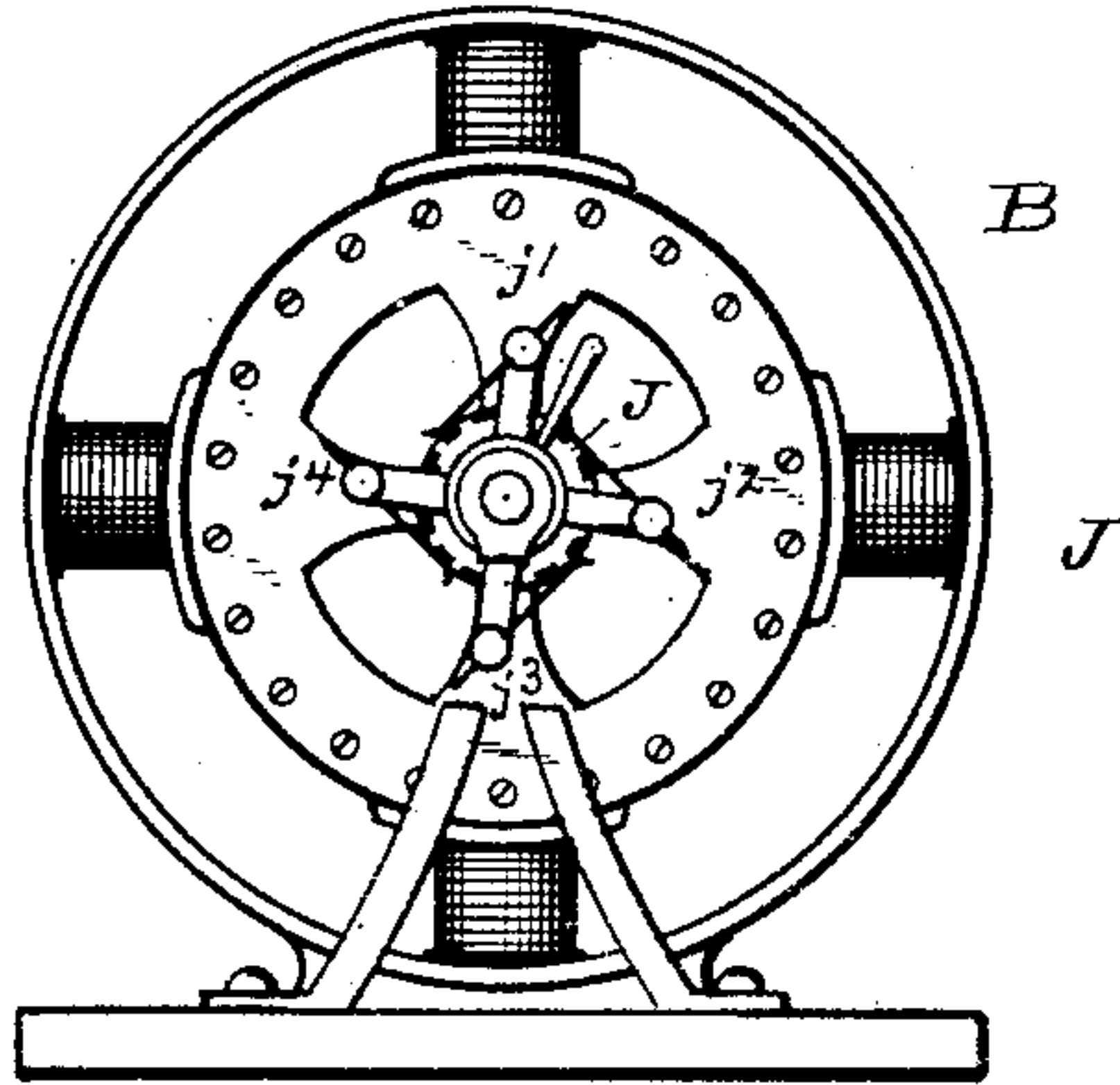


Fig. 1.

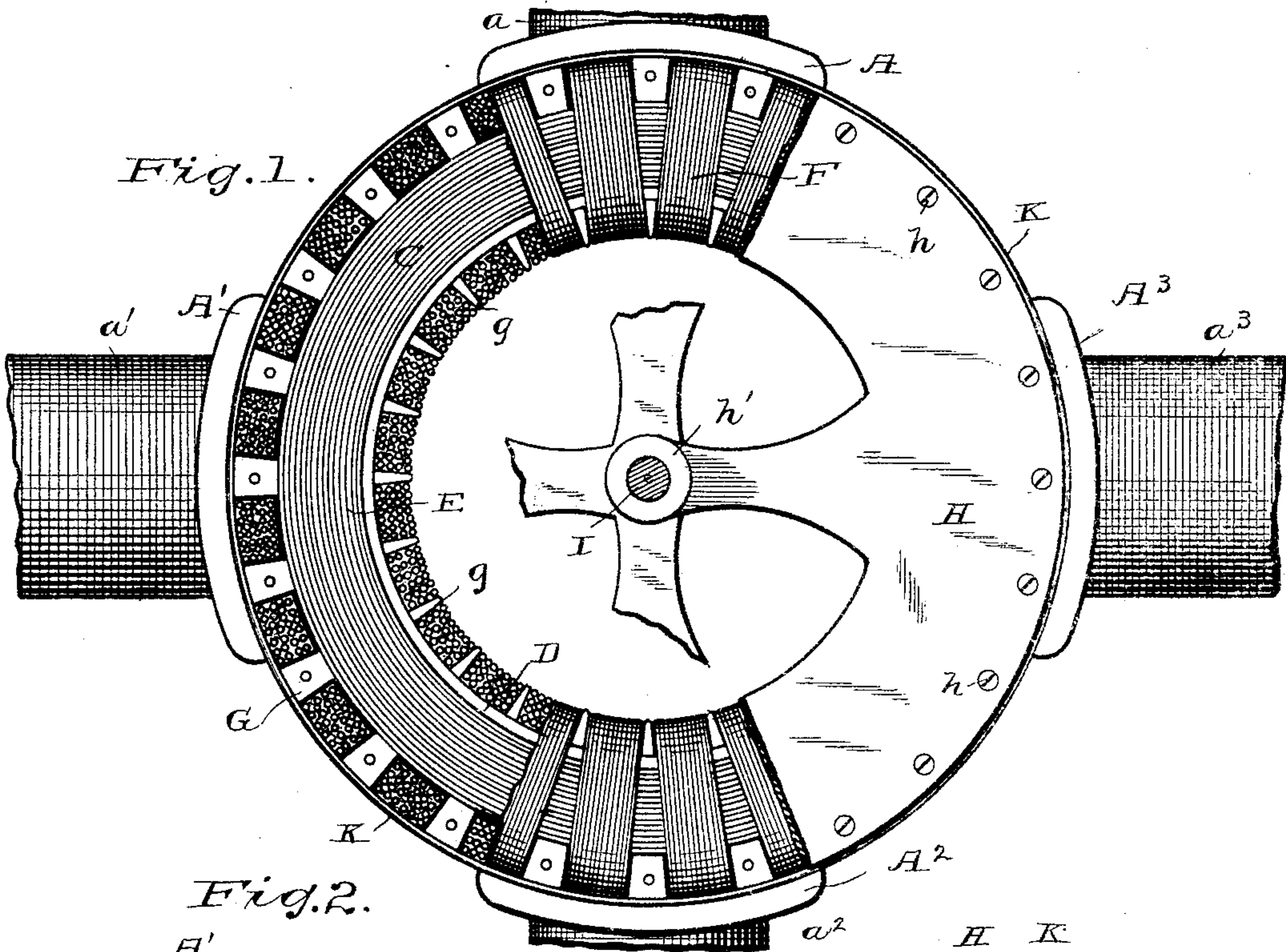
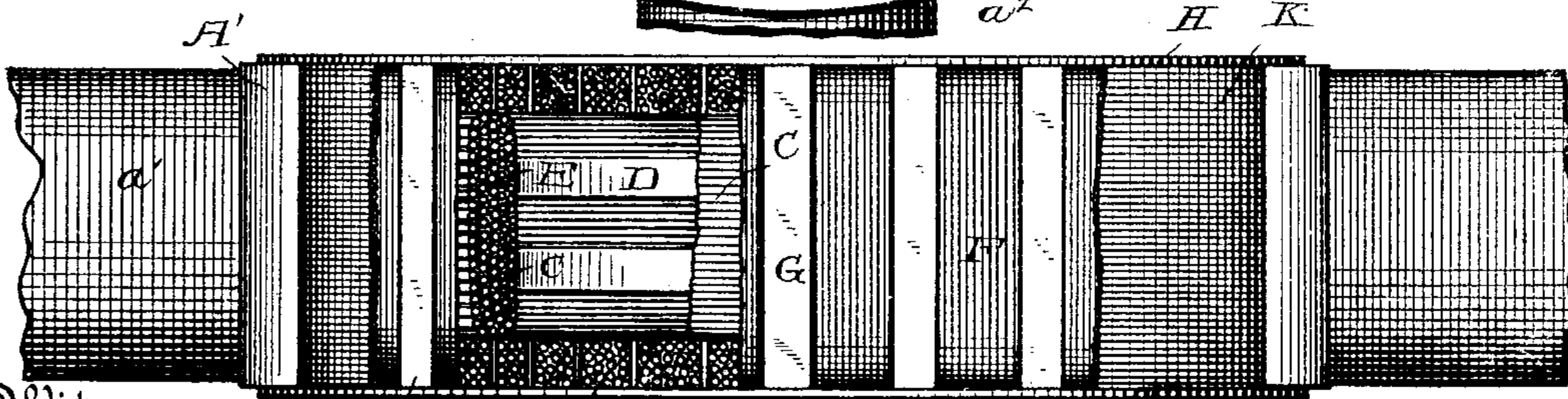


Fig. 2.



Witnesses

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# UNITED STATES PATENT OFFICE.

CHARLES J. VAN DEPOELE, OF CHICAGO, ILLINOIS.

## ARMATURE FOR ELECTRIC MOTORS.

SPECIFICATION forming part of Letters Patent No. 461,296, dated October 13, 1891.

Application filed April 7, 1891. Serial No. 387,922. (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, State of Illinois, have invented certain new and useful Improvements in Electro-Dynamic Motors, of which the following is a description.

My invention relates to improvements in electro-dynamic motors, the construction, arrangement, and operation of which will be fully hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a view in elevation, showing the field-magnets partly broken away, and in which several successive layers of the armature have been removed to show its interior construction. Fig. 2 is a plan view similar to Fig. 1, parts of the armature being broken away to show its interior construction. Fig. 3 is a view in elevation, showing a motor embodying my invention.

Similar letters denote like parts throughout.

As indicated in the drawings, my improved motor is designed to operate with a four-pole field-magnet, the polar extensions being indicated at  $A A' A^2 A^3$ , the outer ends of the cores of the field-magnets  $a a' a^2 a^3$  being attached to and supported by an inclosing iron ring or shell B. The field-magnets  $a a' a^2 a^3$  are formed of coils of insulated conductor, wound upon iron cores in the usual manner.

In the construction of the armature the core C is preferably composed of one or more foundation-rings D, of soft iron, upon which is wound galvanized-iron wire E until the desired thickness is reached, the wire E being secured by soldering at desirable points.

The inducing conductor of which the armature-coils F are formed is of the usual insulated copper wire wound in separated coils, as in what is known as the "Pacinotti armature." Between each two successive armature-coils is interposed a block, strip, or piece of iron G, which is of a shape to fit squarely between the coils and of the same depth as the total thickness of each coil, so that the outer coils and the faces of the blocks G form a substantially even peripheral surface. The blocks G may be secured to the core by bolts or screws passing through said blocks and

into the core, or they may be held in place by the winding during the manufacture of the armature, being permanently secured by screws passing into their ends from outer disks or plates hereinafter referred to. The blocks taper somewhat toward the core C, so that the channels or spaces for the coils are of even width throughout. Small pieces  $g$  of metal or wood extend from the inner circumference of the core C, so that the coils F may be separated on the interior as well as on the exterior of said ring, and at the same time to render the divisions between the armature-sections of even size throughout and thereby prevent crowding of the wires on the interior of the ring and promoting facility and perfection of manufacture. In order to still further prevent crowding on the interior of the ring and the irregular displacement of a considerable portion of the winding, as is necessary to carry the same around the spiders usually employed to support the armature upon its shaft, I provide supporting-disks H, which are attached on the exterior of said armature after the winding is completed, and desirably by means of screws  $h$ , passing through said disks and into the ends of the iron blocks G, thus completely inclosing the winding and protecting it from accidental injury, as also from contact with dirt, dust, and other objectionable matter. As shown, the plate H is centrally apertured to permit the circulation of currents of air on the interior; but this is not essential, and the said plate H may be imperforate, if desired. The plates H may be of any diamagnetic material and are supported upon and secured to the armature-shaft I by re-enforced or thickened portions  $h'$ . As indicated in Fig. 3, the armature-shaft I is provided with a suitable commutator J, upon which rest four brushes  $j' j^2 j^3 j^4$ . It will be entirely obvious, however, that I am not confined to the use of a four-pole field-magnet or four commutator-brushes, and that the armature of my improved motor, being constructed as described, may be operated with any other novel or desirable field-magnet. It will also be understood that the construction of the magnetic core of my improved armature need not necessarily be precisely as described and may be varied, provided a similar result is attained; also, that



the supporting-disks H, which may be of vulcanized fiber or similar material, may be employed without the iron blocks G, blocks of insulating material or diamagnetic metal being substituted as supports for said disks, thus providing improved means for supporting armatures and one that provides an entirely unobstructed interior for greater facility of winding.

When the armature, as described, is completed, the periphery is covered with one or more layers of iron wire K, forming and constituting a magnetic envelope therefor, and, in connection with said exterior winding, the magnetic separating-blocks G form a necessary part of the present invention. I have found that with such construction an armature is produced which, when employed in an electro-dynamic motor, requires very much less power to drive it, and is therefore of higher efficiency for such work.

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

1. In an electro-dynamic motor, an armature the sections of which are spaced by separating blocks or strips and which is enveloped by an exterior winding or covering, also of magnetic metal, substantially as described.

2. An electro-dynamic motor having an armature wound in sections, the sections being separated by blocks or strips extending from the periphery of the core to the circumference of the armature, separating the sections of winding, and an exterior metallic winding or covering inclosing the armature, substantially as described.

3. An armature for electro-dynamic motors, comprising a core formed of an iron ring or rings covered with one or more layers of galvanized-iron wire, iron strips or blocks ex-

tending from or attached to the periphery of said core and forming separate symmetrical channels for the winding of the sections, and an iron covering or winding covering the exterior of the coils and iron blocks, substantially as described.

4. An armature for electro-dynamic machines, comprising a core, a series of separating blocks or extensions not integral with the core and between which the inducing-conductor is wound, and plates or disks secured to the ends of the separating-blocks and adapted to be mounted upon and to support the armature upon its shaft, substantially as described.

5. An armature for electro-dynamic motors, comprising a core, a series of separating blocks or strips not integral with the core and between which the inducing-conductor is wound in sections, and inclosing plates or disks secured to the ends of the separating-blocks and adapted to be mounted upon and to support the armature upon its shaft, substantially as described.

6. An armature for electro-dynamic motors, comprising a shaft, two disks or plates of non-magnetic material secured upon said shaft, an armature-core having sectional winding thereon, independent divisional blocks between the sections of conductor, and connections between the ends of the blocks and the plates upon the armature-shaft for sustaining the armature in operative position, substantially as described.

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

CHARLES J. VAN DEPOELE.

Witnesses:

W. A. STILES,  
JOHN EASON.