

F. BAIN.
DYNAMO ELECTRIC MACHINE.

No. 287,610.

Patented Oct. 30, 1883.

Fig. 2.

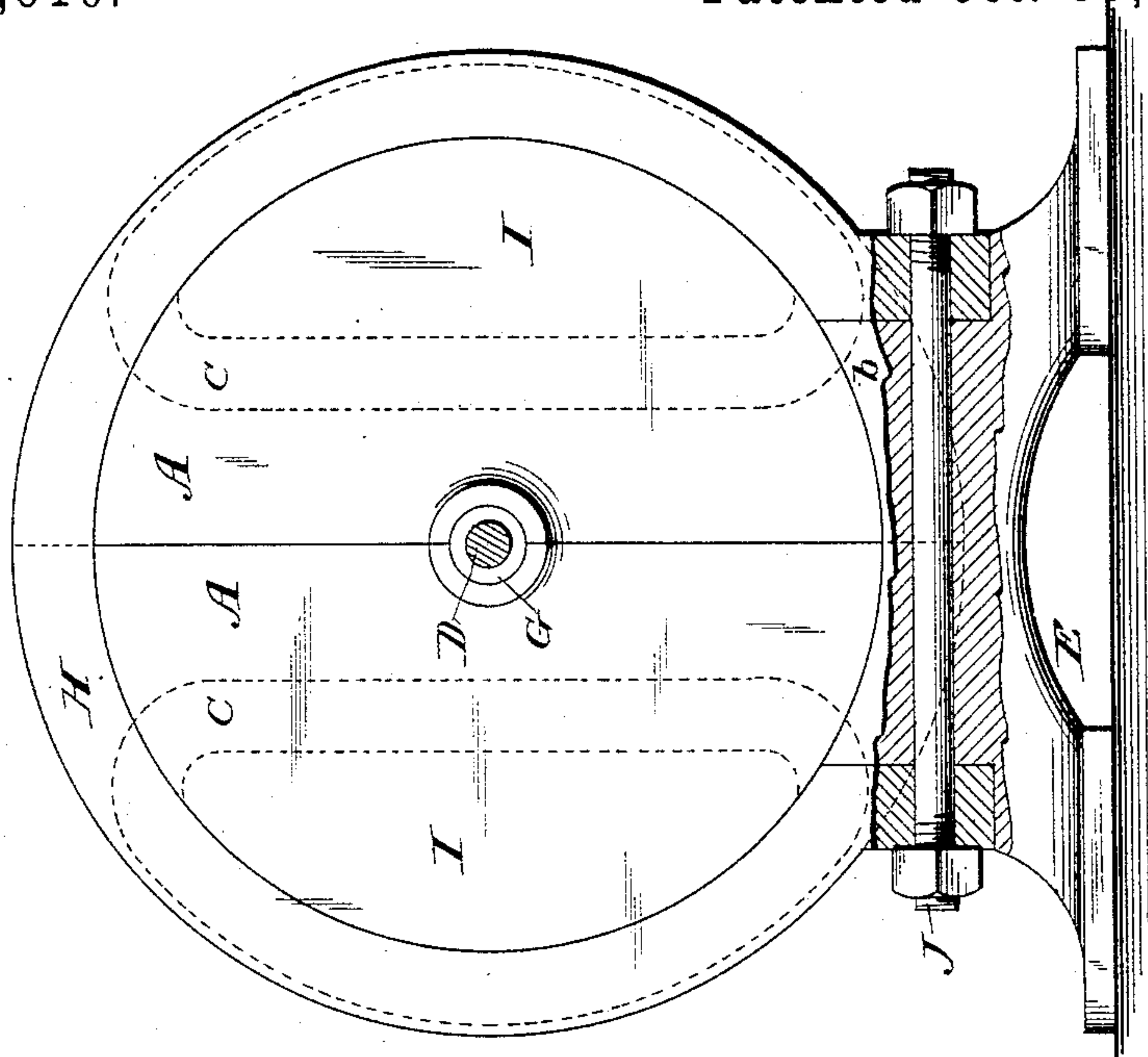
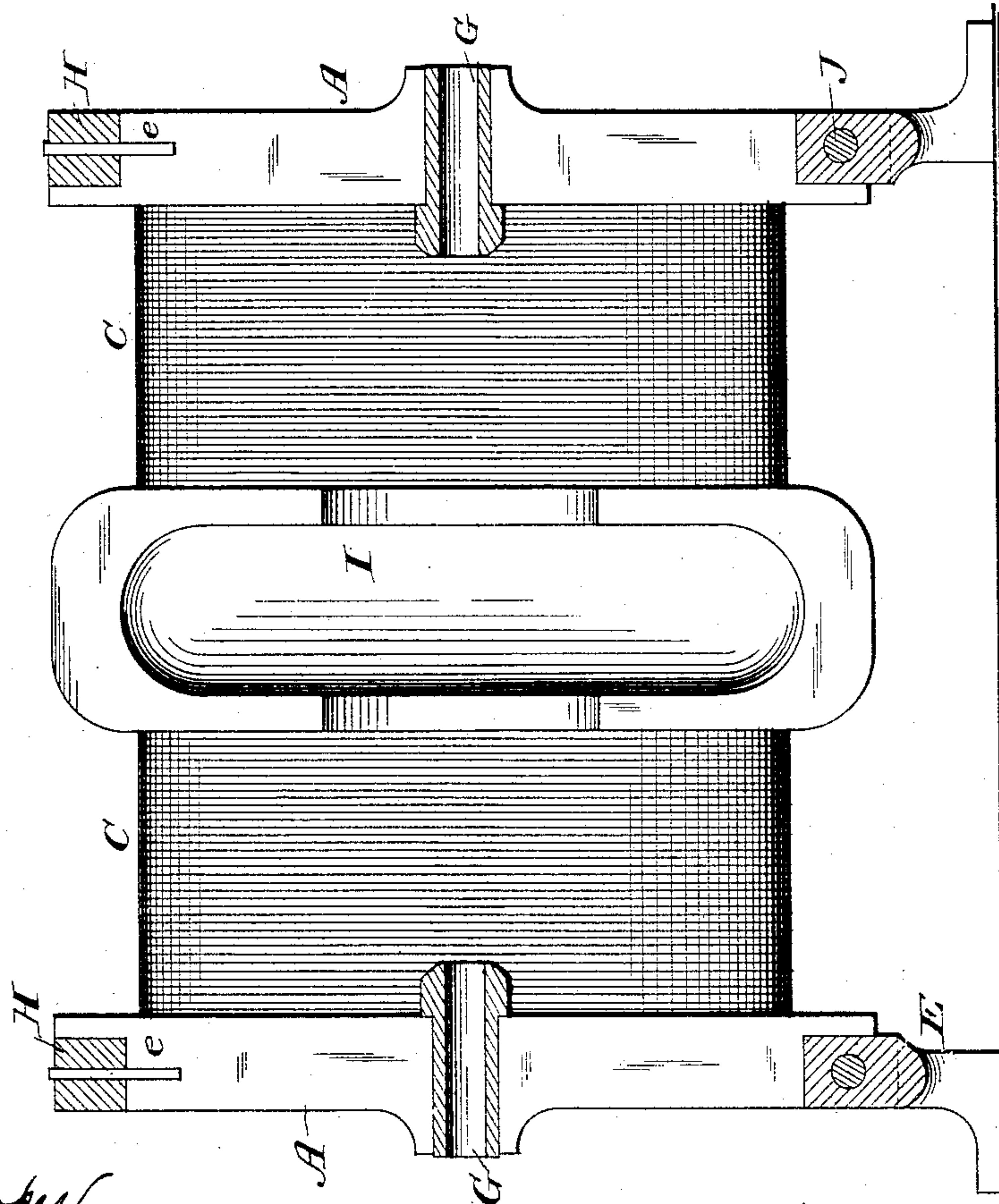


Fig. 1.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

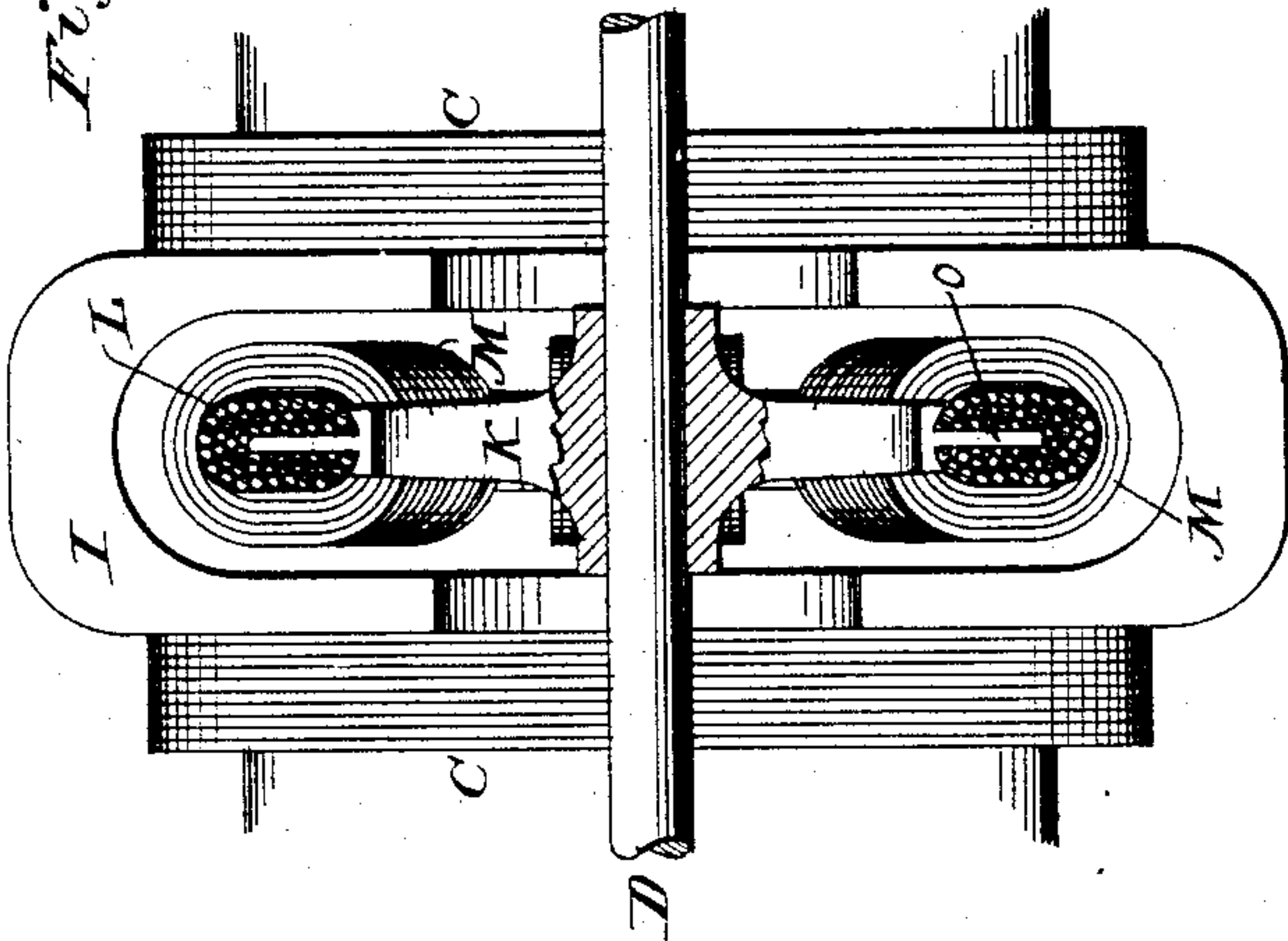


Fig. 3.

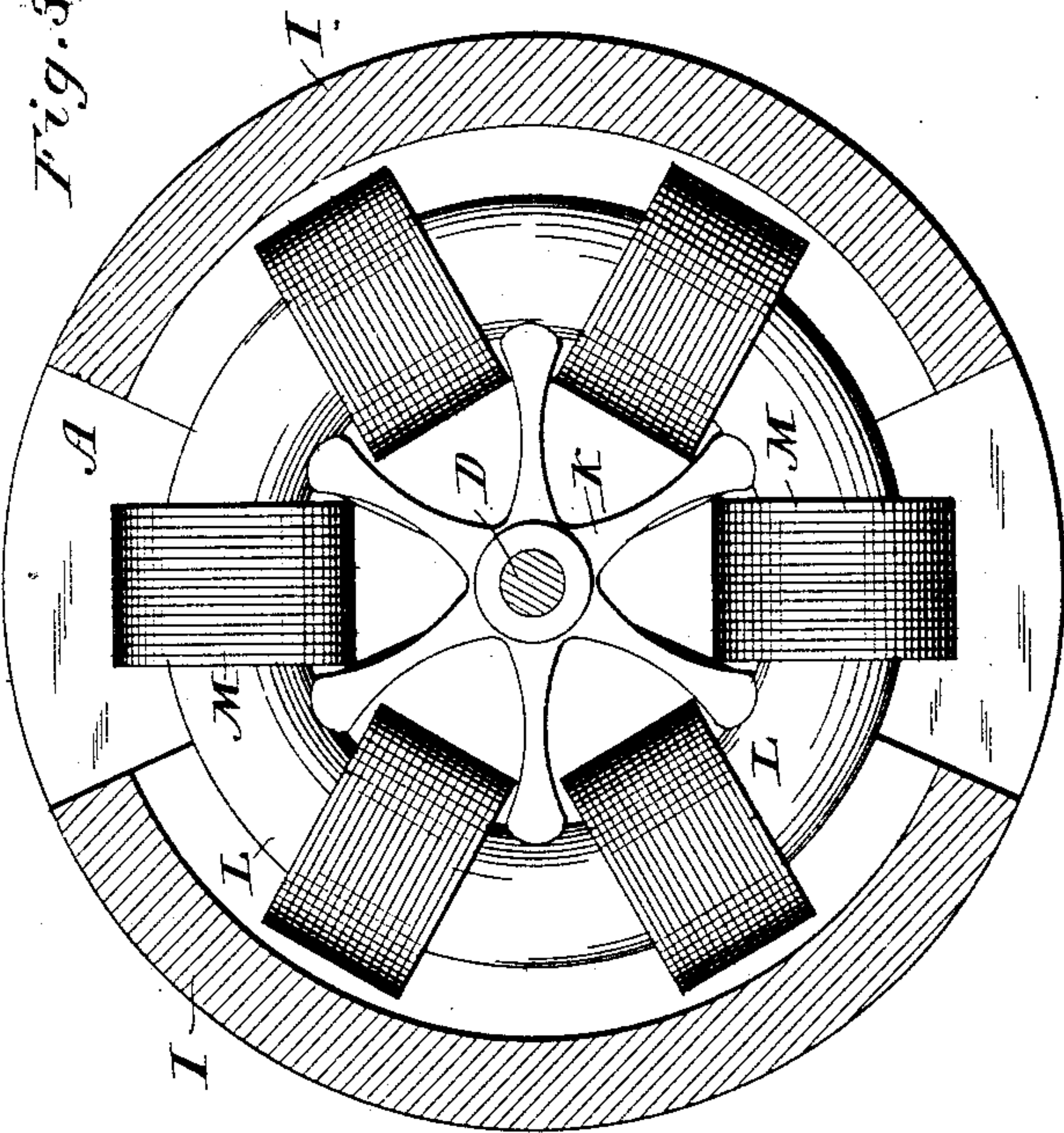


Fig. 6.

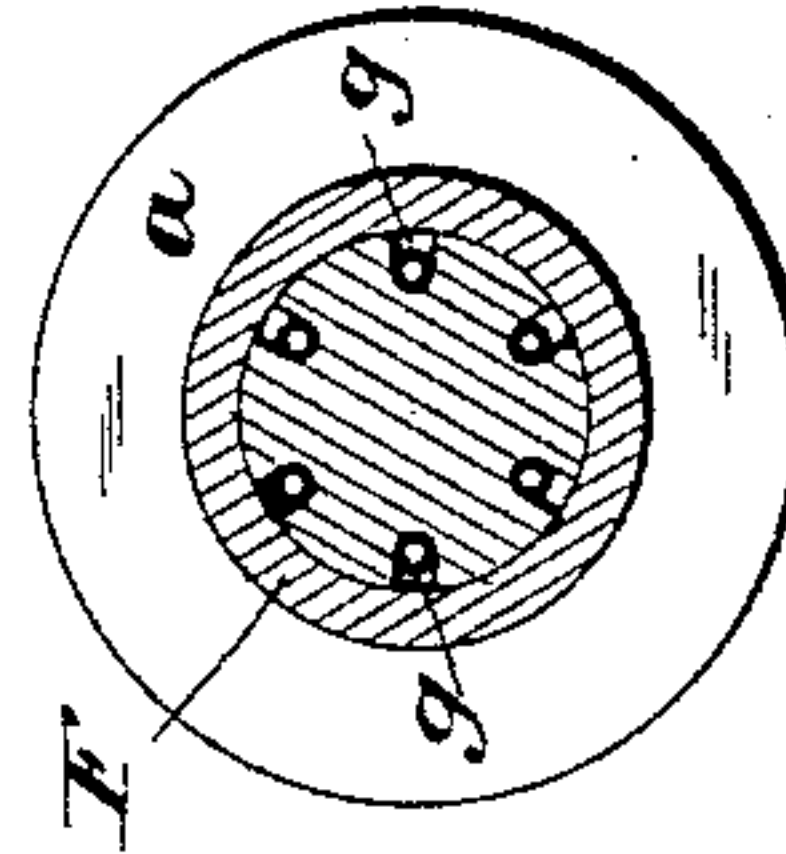
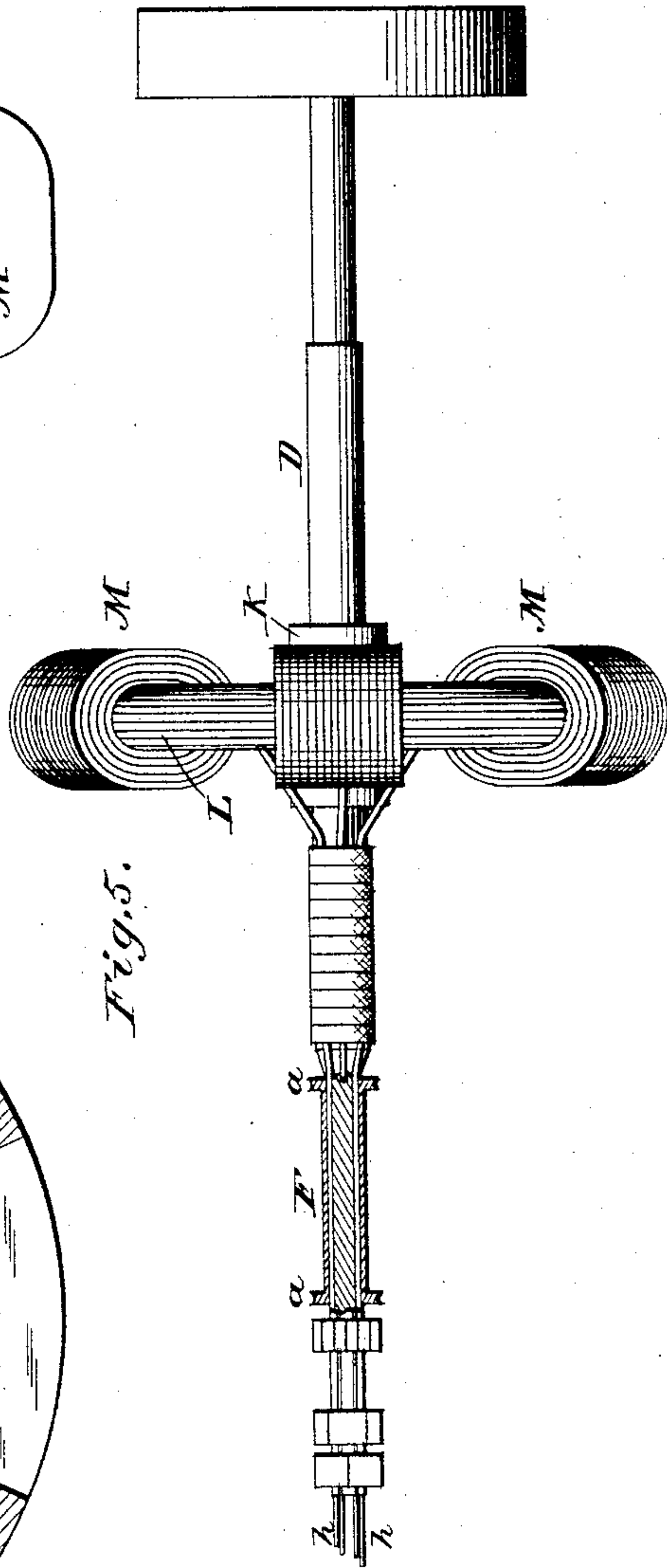


Fig. 5.



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UNITED STATES PATENT OFFICE.

FORÉE BAIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE BAIN ELECTRIC COMPANY, OF SAME PLACE.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 287,610, dated October 30, 1883.

Application filed September 7, 1883. (No model.)

To all whom it may concern:

Be it known that I, FORÉE BAIN, of Chicago, Cook county, and State of Illinois, have invented certain new and useful Improvements in Electric Generators, of which the following is a specification.

My invention relates to dynamo or magneto electric generators; and it has for its object to simplify and cheapen the construction of such generators, and to produce a machine that will generate the largest amount of electric energy at the smallest expenditure of mechanical force.

My invention consists in the construction of the various mechanical parts of the generator, and the combinations of the same, whereby the object is attained, as is more particularly pointed out hereinafter.

Referring to the drawings forming part of this specification, in which like letters apply to like parts in the various figures, Figure 1 is a vertical section of the generator, taken through the shaft. Fig. 2 is an end elevation of the generator with a portion in section. Fig. 3 is a vertical section, showing the armature and part of the pole-pieces. Fig. 4 is a cross-section of the same. Fig. 5 is a view of the armature and shaft, and Fig. 6 is an enlarged cross-section of the same.

Upon a suitable base-piece, E, are supported the field-magnets consisting of two like pieces or cores of metal, I I, provided at their ends with semicircular yoke-pieces A, and at their centers forming hollow pole-pieces, in which the armature revolves. The yoke-pieces A A serve as supports for the bearings or thimbles G of the armature-shaft D, and they are preferably grooved or rabbeted, as shown in Fig. 1, for the reception of the ring or segment H. This ring or segment is in form similar to an eccentric strap, and is made to embrace the yoke-pieces A A and clamp them closely and firmly together, the ends of the ring being bent outward, as shown in Fig. 2, and secured by the screw-bolt J to the base E. By this means it is seen that the field-magnets are securely bound together in a most rigid and yet simple manner, two screw-bolts only being needed to be adjusted to attach or detach the whole field-magnets and the base. Moreover, by this construction the joint between the

field-magnets is covered or connected by a solid metal connection, and the superficial contact of the ring or segment thereof around the yokes A A is so great that there is no "consequent point" at the joint, as is usually the case, as where the field-magnets are joined by bolts, &c.

The field-magnets are each made of a single piece of casting, and, owing to their peculiar shape, it will readily be seen that they can be cleaned and turned up to the desired shape at a single operation, the cores, pole-pieces, and housings all being turned from a common center. Thus every part of the field-magnet is completed by a single "chucking." By this manner of construction it is easy to make each field-magnet the exact counterpart of the others, so that they are interchangeable, and they are all ready to be bound together by the ring H and secured to the base.

The base E is preferably provided with a concaved piece or extension, b b, into which a segment of the yokes A A of each field-piece rests. By this arrangement the field-magnets will not fall apart when the ring is loosened or removed, and they can be turned a quarter (more or less) around, and one of them easily removed when it is desired to get at the armature for any purpose. The field-magnets may thus be turned at any angle and clamped by the ring. A dowel-pin, e, may be passed through the upper side of the ring, to prevent lateral displacement.

The armature consists of a spider-frame, K, of the form or construction shown in Figs. 3 and 4, the ends being provided with blades o, upon which ends are wound wires L, of iron or other magnetic material, to form the body of the ring. It is preferable to cover the wire with some sort of insulating material, and to bind the coils or layers together with glue, shellac, &c., in the usual manner. By thus winding the wire on the prongs of the spider K and binding the coils together, a strong iron band or core is formed, which will not move on the spider-arms. The armature-bobbins M, consisting of coils of insulated wire, are then wound around the core and bound with cloth or canvas and shellac, as is usual. In this manner I form an exceedingly cheap, durable, simple, and effective armature.

The bobbins or coils may be connected in any desired series, as that forms no part of my present invention; but to connect the bobbins to the commutator-sections I have provided the armature-shaft with grooves *g g*, into which the terminals *h h* of the coils are placed, and a thimble or box, *F*, is secured upon it. This box furnishes a journal-bearing for the shaft, and allows the coils to be connected to the commutator, and in turn becomes a bearing in the yoke-pieces *A A*. In order that the bearing may be properly lubricated without danger of the oil coming in contact with the wires and injuring their insulation, the bearing-thimble *F* is provided with disks *a a*, having depressions or grooves in their peripheries.

Instead of making the ring of wire, ribbons, bands, or other masses of magnetic material may be used.

I claim—

1. A field-magnet for electric generators, consisting of core-pieces, pole-pieces, and end yokes, all turned from a common center, whereby the yokes may be clamped by a ring or segment thereof, substantially as described.

2. In electric generators, the combination of two field-magnets, constructed substantially as described—that is to say, with the cores, pole-pieces, and yoke-pieces all turned from a common center, whereby the magnets may be clamped together by a ring or segment thereof.

3. The combination, with field-magnets constructed substantially as described, of a clamping-ring for securing them together.

4. The combination, with field-magnets and base piece or pieces, of a clamping-ring embracing the magnets, and means for securing the ring to the base, substantially as described.

5. The combination, with field-magnets having yoke-pieces provided with grooves or rab-

bets, of clamping-rings, base-pieces, and means for securing the rings to the base, substantially as described.

6. The field-magnets consisting of the cores provided with semicircular yoke-pieces forming journal-bearings for the armature-shaft, and of a ring or segment thereof for securing the yoke-pieces together, substantially as described.

7. The combination, with the field-magnets, each being the counterpart of the other, and provided with semicircular yoke-pieces, of a ring or band of magnetic material embracing the field-magnets, as described, whereby consequent points are avoided, as set forth.

8. The combination, with the field-magnets having semicircular yoke-pieces, of base-pieces provided with concave projections, upon which the peripheries of the yoke-pieces rest, as set forth.

9. An armature-ring consisting of a spider-frame, the ends of which are provided with blades, and coils or layers of insulated iron wire wound or laid therein, substantially as described.

10. An armature for electric generators, consisting of a spider-frame, the ends of which are provided with blades, and of coils or layers of insulated iron wire wound therein and bound together, having bobbins or coils wound thereon, as set forth.

11. The combination, with the shaft and bearings of an electric generator, of a sleeve or thimble embracing the shaft and provided with grooved flanges, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

Witnesses:

FORÉE BAIN.

W. H. FRENCH,

RICHARD WATERMAN.