(No Model.) 3 Sheets—Sheet 1.

H. GEISENHÖNER.

DYNAMO ELECTRIC MACHINE.

No. 414,900. Patented Nov. 12, 1889.

Fig. 1.

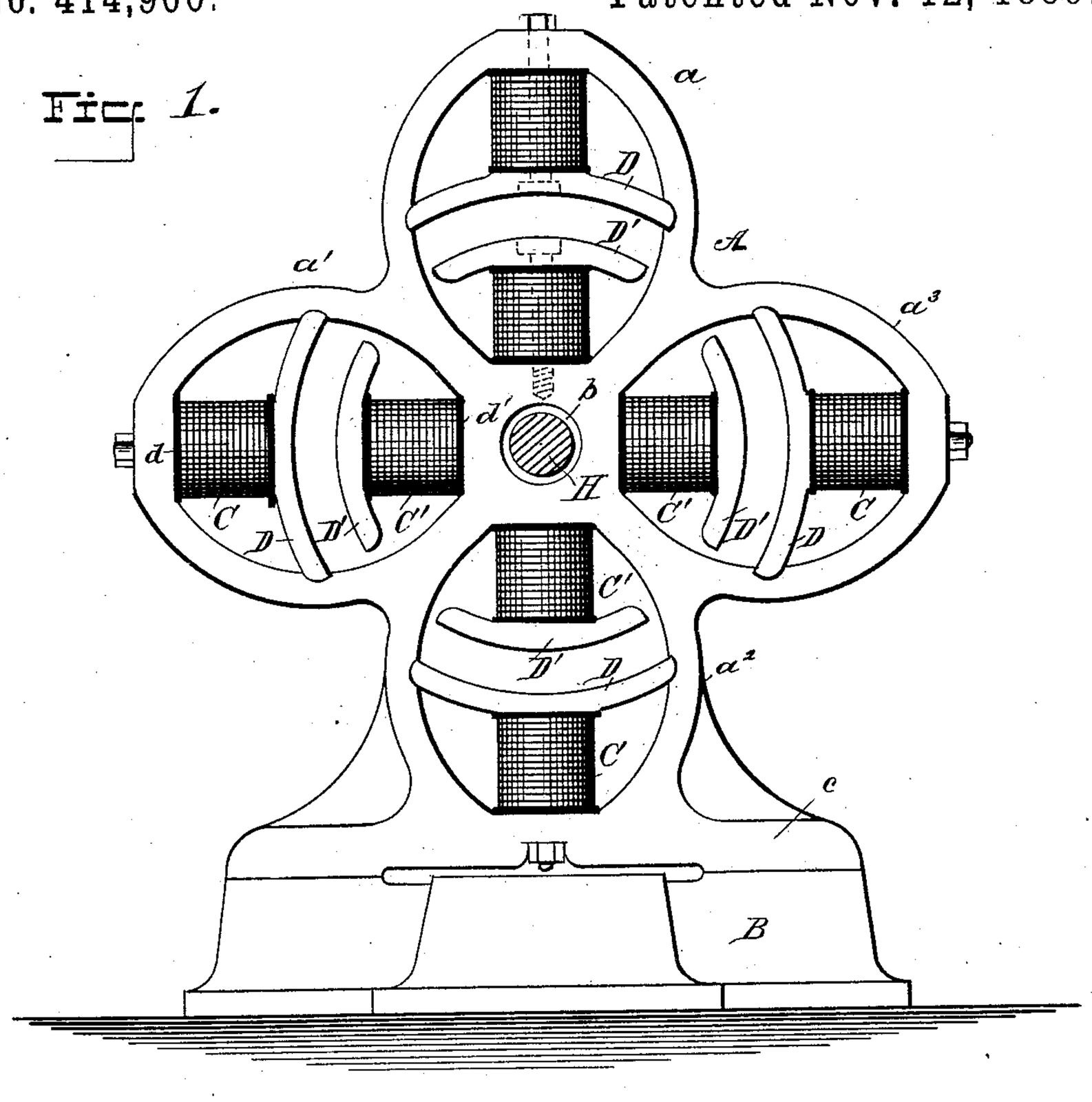

Fig. 2.

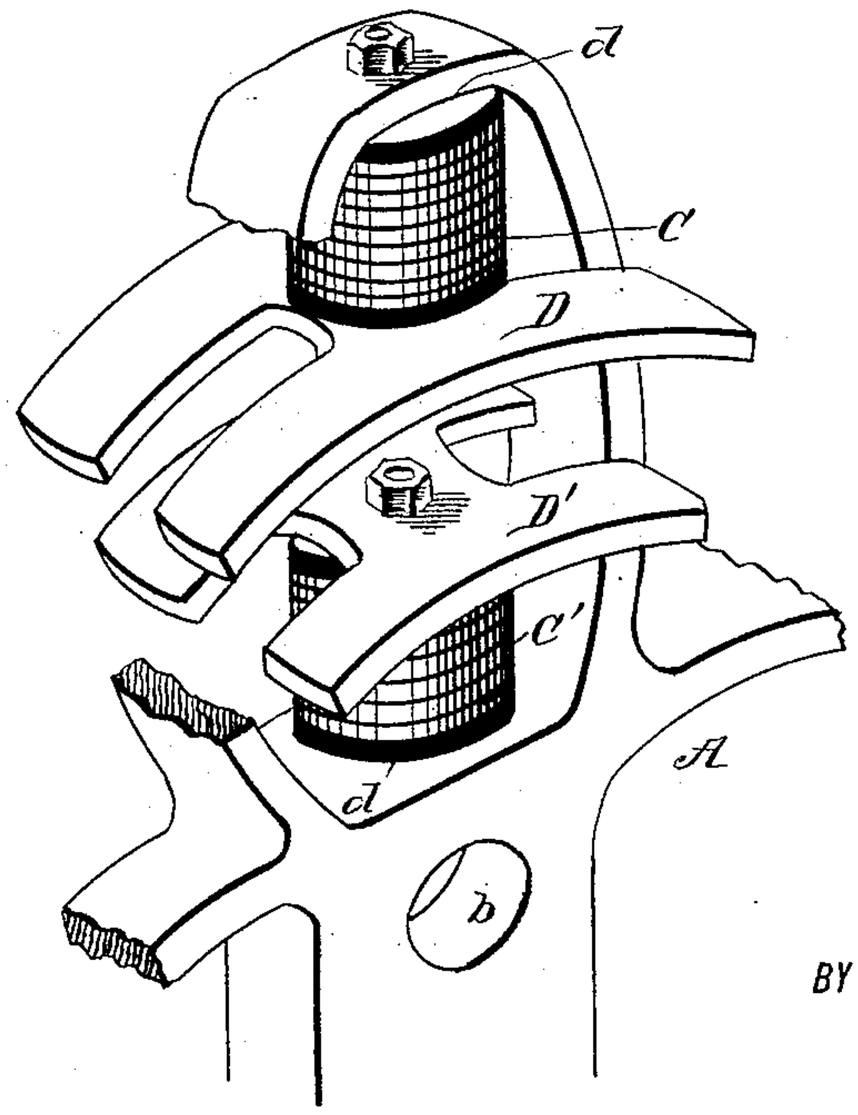

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Fig. 3.

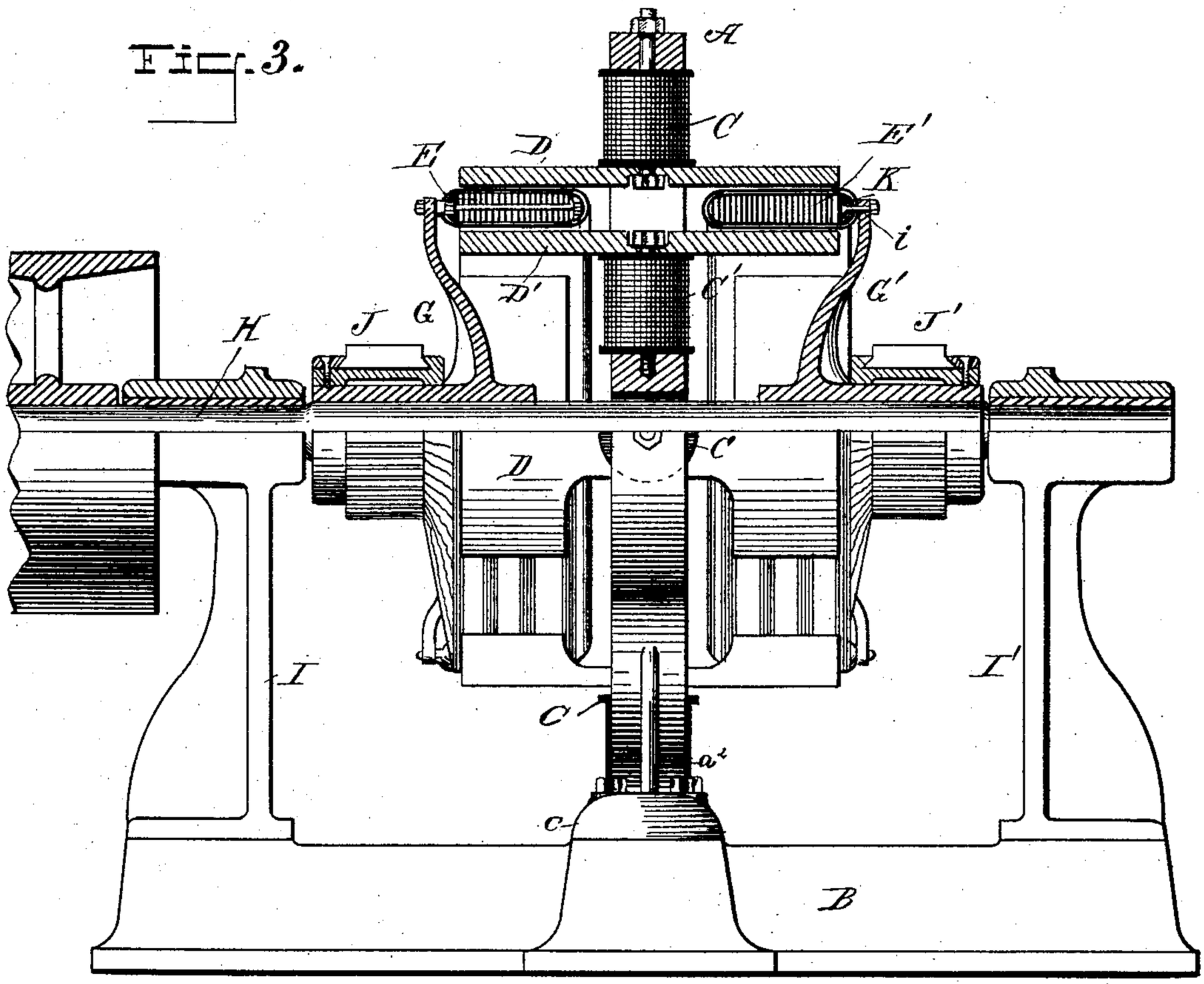

Fig. 4.

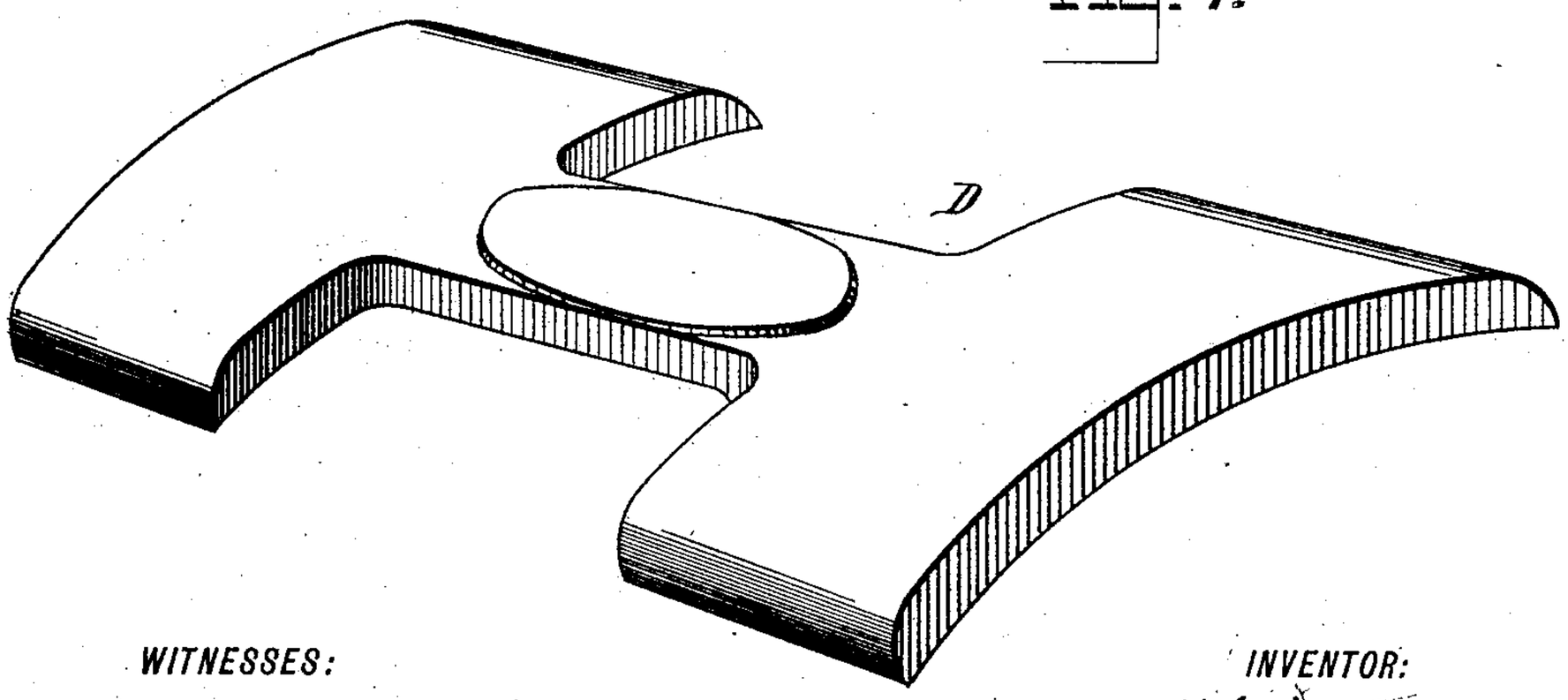

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Fig. 6.

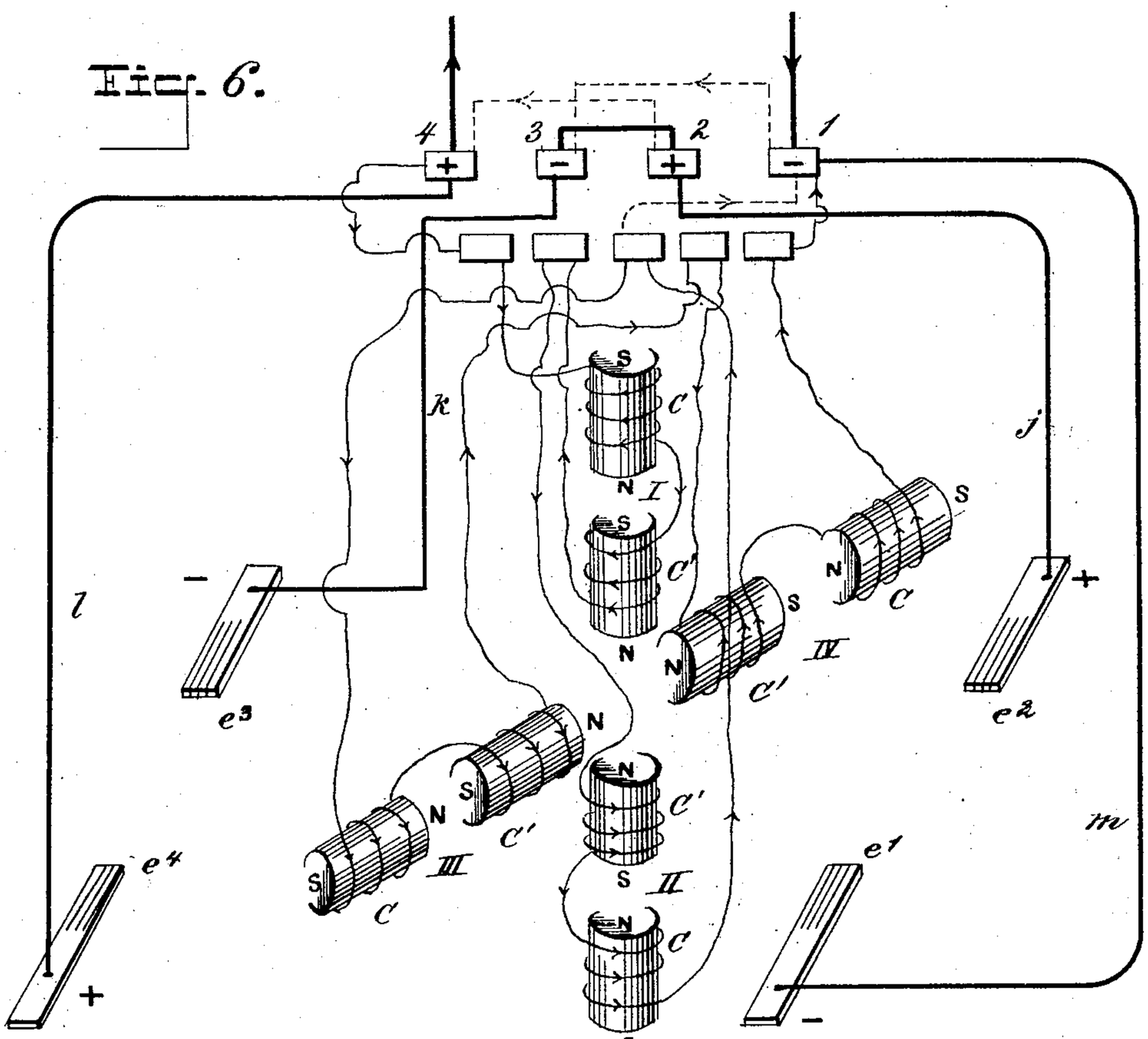
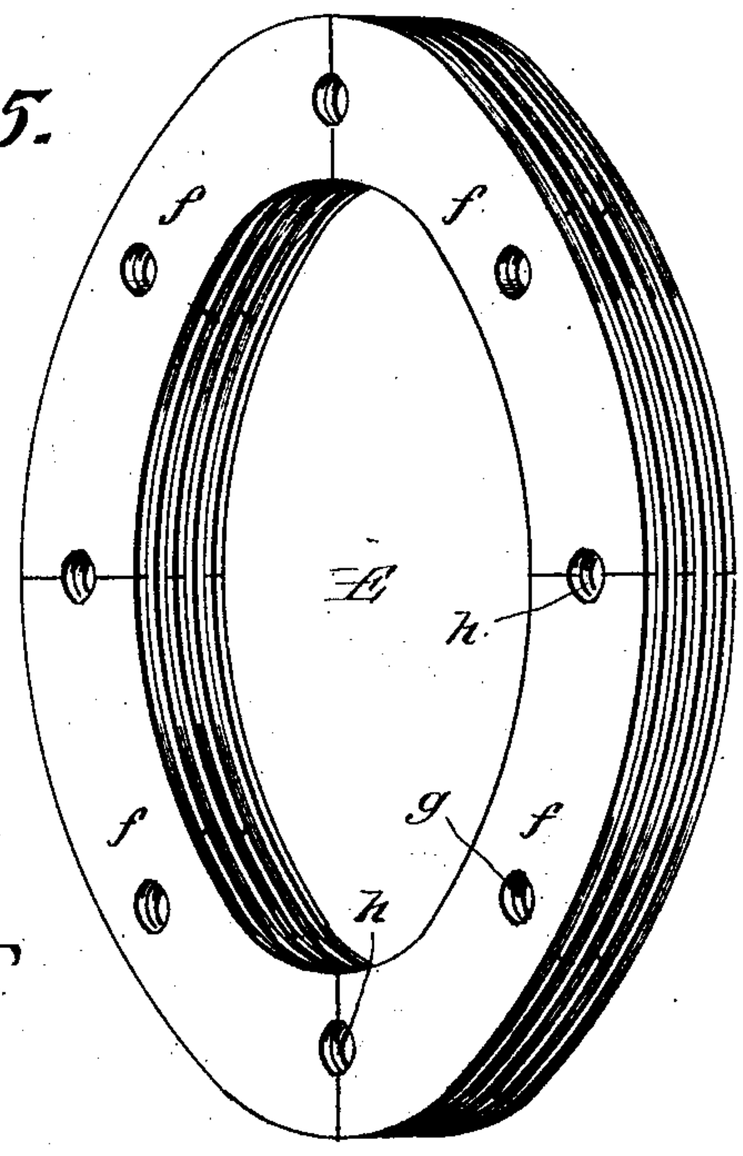


Fig. 5.



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UNITED STATES PATENT OFFICE.

HEINRICH GEISENHÖNER, OF SCHENECTADY, NEW YORK.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 414,900, dated November 12, 1889.

Application filed June 5, 1889. Serial No. 313,235. (No model.)

To all whom it may concern:

Be it known that I, HEINRICH GEISENHÖNER, of Schenectady, in the county of Schenectady and State of New York, have invented a new and Improved Dynamo-Electric Machine, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation of the field-magnets and frame of my improved dynamo-electric machine. Fig. 2 is a perspective view of a pair of field-magnets, a portion being broken away to more clearly show the construction. Fig. 3 is a side elevation, partly in section, of my improved dynamo-electric machine. Fig. 4 is a perspective view of one of the polar extremities of the field-magnet. Fig. 5 is a perspective view of the core of the armature, and Fig. 6 is a diagram showing the electrical connections of the machine.

Similar letters and figures of reference indicate corresponding parts in all the views.

The object of my invention is to construct a dynamo-electric machine in which a maximum of efficiency will be secured by a minimum of weight, and in which light or heavy currents of different intensities may be generated by changing the electrical connections of the machine.

My invention consists in a dynamo formed of a frame having four loops in which are arranged the field-magnet cores with their windings, the said cores being provided with polar extensions projecting on opposite sides of the frame, and two ring-armatures adapted to revolve between the polar extensions on opposite sides of the machine, all as will be hereinafter more fully described.

The field-magnet frame A of my improved dynamo is preferably formed of a single casting having four loops a a' a^2 a^3, arranged radially around a central opening b. The lower loop a^2 is formed integrally with a foot c, which rests upon the base B. Each loop is provided with two plane parallel faces d d', to which are attached the magnets C C′, which are wound in the usual way.

The magnet C is provided with a curved polar extension D, which extends outwardly beyond the sides of the field-magnet frame. In a similar way the magnet C′ is furnished with a polar extension D′, which projects laterally beyond the sides of the frame, and is arranged parallel with the curved polar extension D. The polar extensions thus supported form two fields in which the ring-armatures E E′ revolve, the said ring-armatures being supported from their outer edges by spiders G G′, secured to the armature-shaft H. The armature-shaft H is journaled in pillar-blocks I I′ and extends through the central opening b of the field-magnet frame A. To the bosses of the spiders G are secured commutator-cylinders J J′, which revolve in contact with brushes e e' e^2 e^3 in the usual way.

The core of the armature-ring is formed of segmental iron plates f, provided with apertures g at their mid-length and furnished with notches h at their ends. The segmental plates f of the different layers of the armature are arranged to break joints with each other, and are separated from each other by insulating material, such as thin paper. The apertures g, together with the apertures formed by the notches h, receive the bolts by which the rings are secured to the spiders G G′, each armature-ring at its outer end being provided with an annular brass support K, which is furnished with a series of bolts i, projecting through the winding of the armature and adapted to enter the bolt-holes in the extremities of the arms of the spiders G G′.

The ring-armatures are wound according to the Gramme method, and the terminals of the sections are connected with the bars of the commutators J J′. The circuits are represented in the diagram, Fig. 6, in which C C′ are the field-magnets, e', e^2, e^3, and e^4 the commutator-brushes, and 1 2 3 4 the terminals of the machine. 1 is the — and 2 the + terminal of the first armature, 1 and 2 being connected by the wires m and j to the — and + brushes e' and e^2, respectively. In the same way 3 and 4 are the — and + terminals of the second armature, connected by the wires k and l to the brushes e^3 and e^4, respectively. The current for the external circuit is to be taken from the two extreme terminals 1 and 4, and the terminals 2 and 3 have to be connected with each other when the obtained current is required to be that of the two armatures in series.

When it is desired to connect the armatures

in parallel circuit, the connection between the terminals 2 and 3 is discontinued, and the terminals 1 and 3, as well as 2 and 4, are joined electrically.

The current may flow through all the field-magnets in series, or it may be sent through only one or more pairs of opposite pairs of magnets, or by shifting the connections it may be made to flow through two or more pairs in parallel.

In Fig. 6 the current for exciting the field-magnets is taken from terminal 4 through pair I of the field-magnets, thence through pair II, thence through pair III, and finally through pair IV, returning to the terminal 1. Arranged in this way all the field-magnets are in series to each other and in shunt to both armatures.

When for any cause it is desired to diminish the power of the dynamo, the pairs III and IV of the field-magnets are cut out by establishing a connection between the end terminal of the pair I and machine-terminal 1. It will thus be seen that with my improved dynamo I am enabled to produce currents of different strengths and intensities to adapt it to various uses.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a dynamo-electric machine, a field-magnet frame consisting of a series of loops formed integrally in a single casting, and a series of magnets arranged in the said loops, substantially as specified.

2. An even number of magnet pairs arranged in loops of a frame, as described, the terminals of each two opposite pairs being brought to a terminal board, thus allowing to use two, four, or eight, &c., pairs of magnets, so that the same are connected either in multiple arc or in series, thus enabling to use the dynamo for a series of different capacities, as specified.

3. The combination, with a frame provided with a series of loops, of two magnets mounted in each loop and provided with polar extensions projecting from their adjacent ends, an armature-shaft passing through the said frame, and armatures carried by and arranged parallel with the shaft, substantially as herein shown and described.

HEINRICH GEISENHÖNER.

Witnesses:
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CHAS. HOSTMAN,
EVERETT SMITH.