

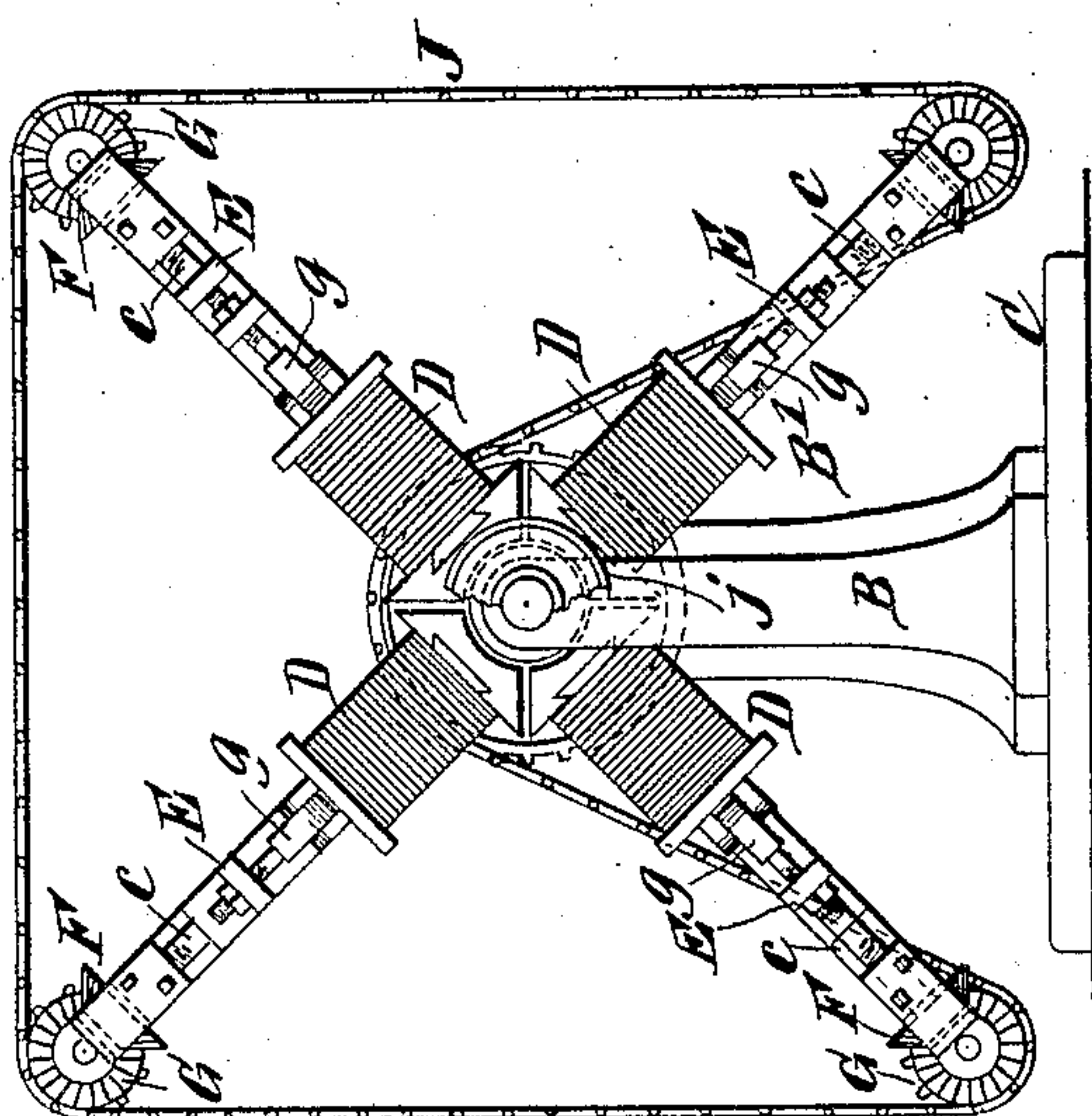
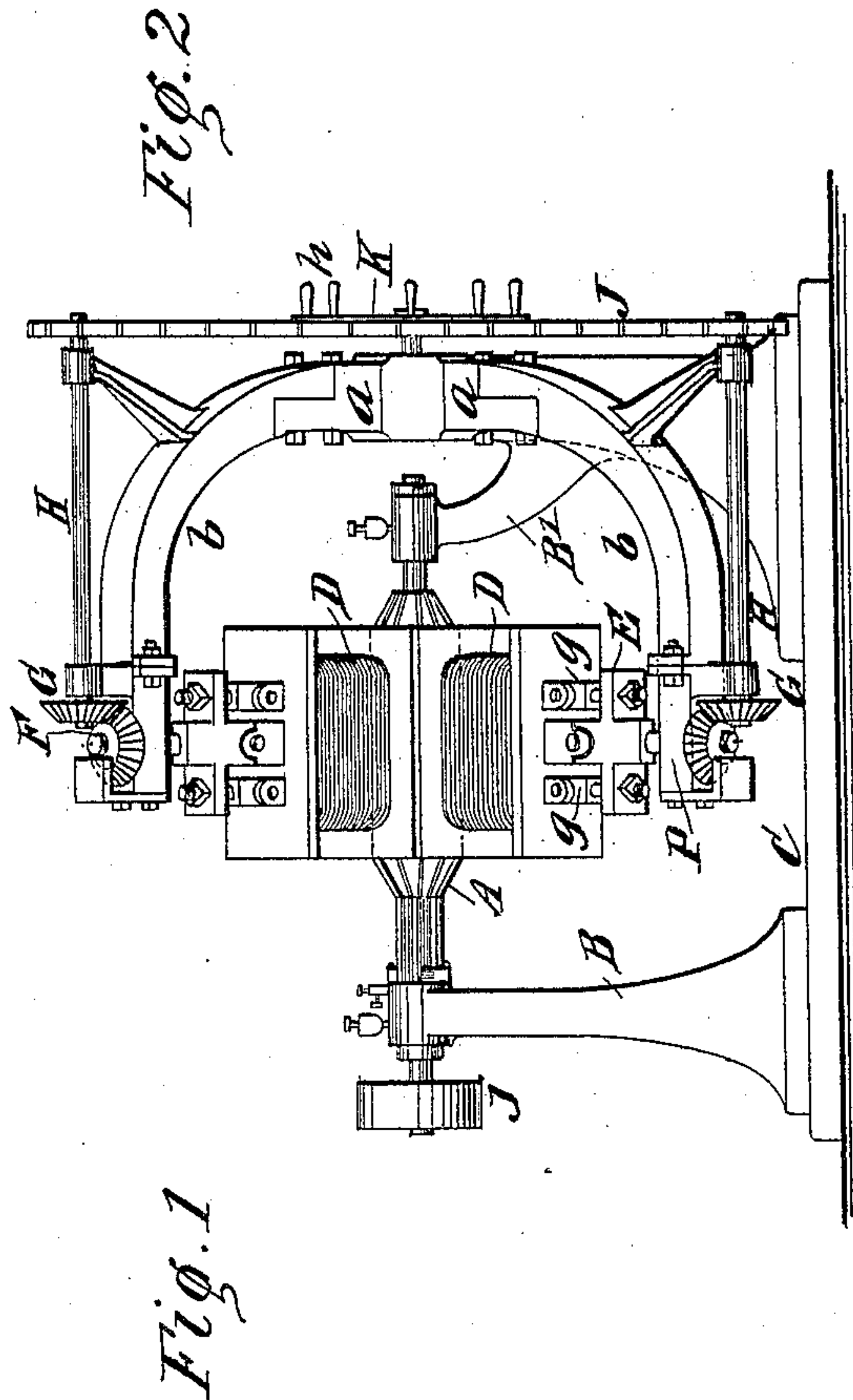
(No Model.)

2 Sheets—Sheet 1.

G. L. CAMPBELL.
DYNAMO ELECTRIC MACHINE.

No. 575,210.

Patented Jan. 12, 1897.



WITNESSES:
J. B. Walker
Geo M. Hopkins.

INVENTOR
G. L. Campbell.
BY *Mum & Co*
ATTORNEYS.

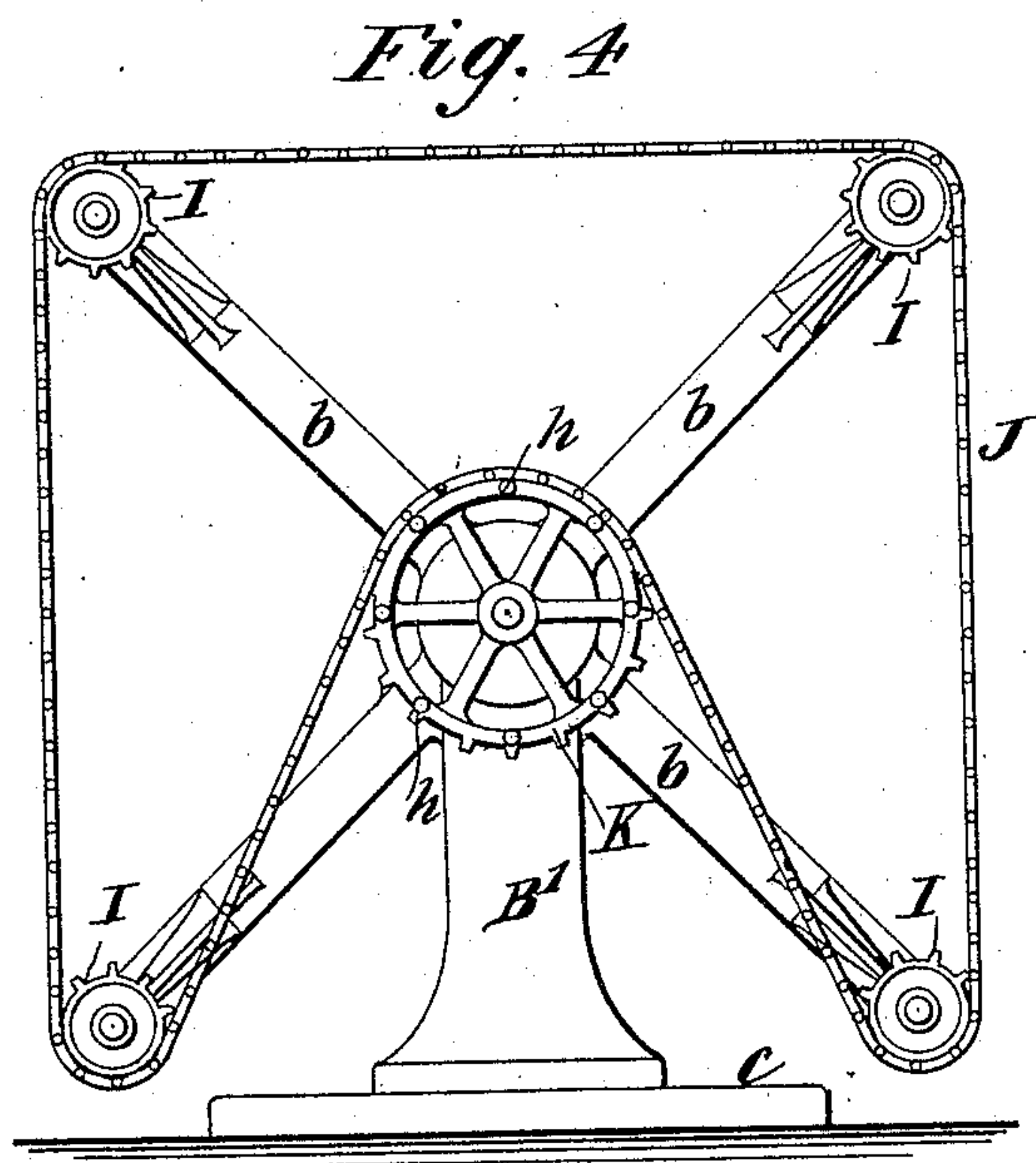
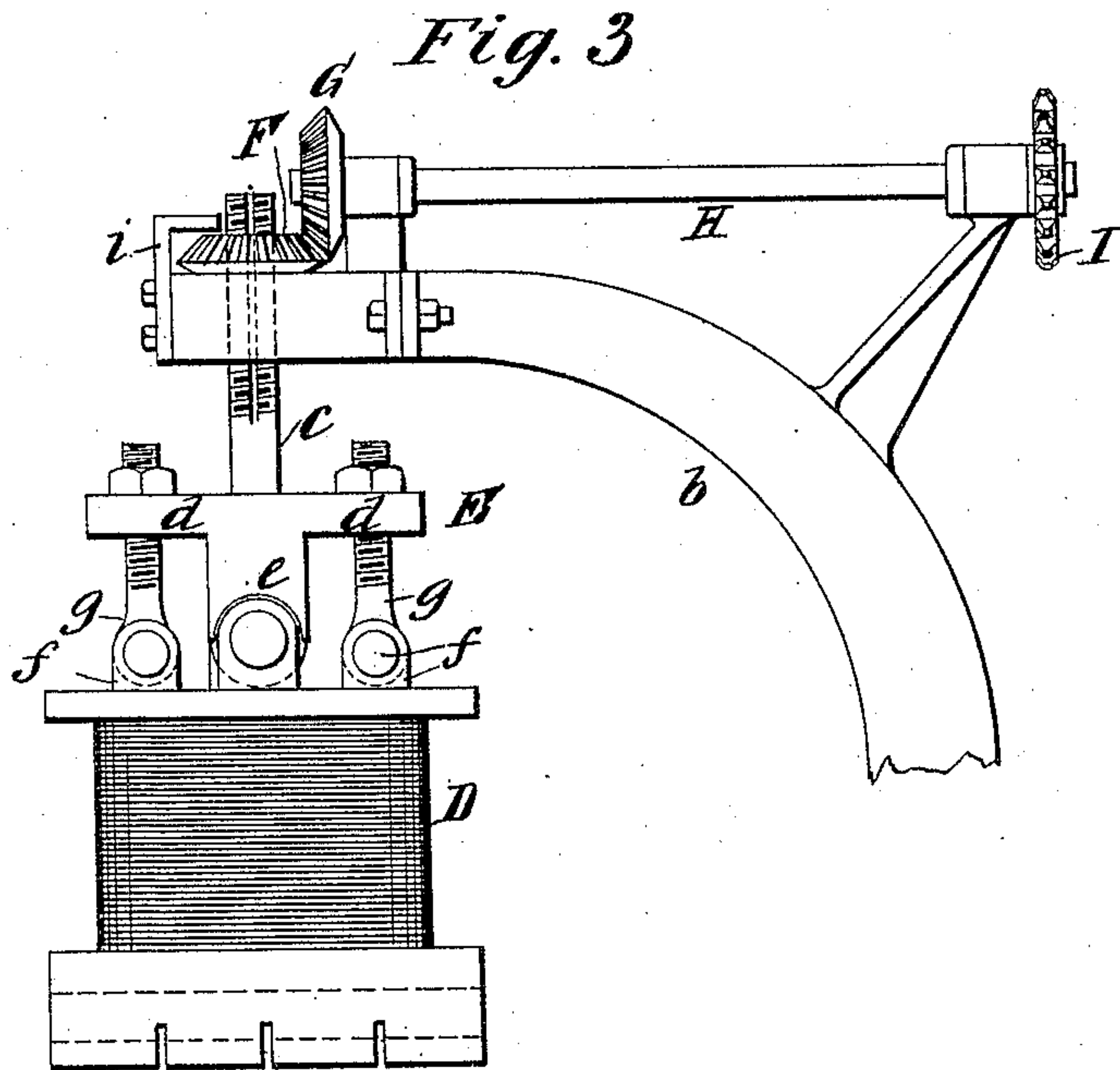
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UNITED STATES PATENT OFFICE.

GEORGE LUMAN CAMPBELL, OF KINSMAN, OHIO.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 575,210, dated January 12, 1897.

Application filed October 8, 1895. Serial No. 565,003. (No model.)

To all whom it may concern:

Be it known that I, GEORGE LUMAN CAMPBELL, of Kinsman, in the county of Trumbull and State of Ohio, have invented new and useful Improvements in Dynamo-Electric Machines, of which the following is a full, clear, and exact description.

The object of my invention is to construct a dynamo in which the voltage and current may be easily and quickly regulated while the dynamo is in operation.

My invention consists in certain features of construction hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of my improved dynamo. Fig. 2 is a side elevation. Fig. 3 is a side elevation of one of the sections of the field-magnet, and Fig. 4 is a rear elevation of the machine.

The armature A, which is of the ordinary well-known description, is journaled in the supports B B', attached to the base-plate C. The support B' in the present case has four projections *a*, to which are bolted the curved arms *b*, supporting the field-magnet sections D. In the outer end of each arm *b* is formed an opening, in which is inserted a screw-threaded rod *c*, which is slotted longitudinally and prevented from turning by a feather inserted in the arm *b*.

The rod *c* is provided with a cross-piece E, having arms *d* and *e*. The arm *e* is jointed to the end of the core of the magnet-section D, and to ears *f*, attached to the field-magnet core, are jointed swing-bolts *g*, which extend through the arms *d* of the cross-piece E and are provided with nuts by means of which the field-magnet core may be adjusted by swinging it on its jointed connection with the cross-piece.

In the present case I have shown four field-magnet sections, but my improvement obviously will apply to a greater or smaller number. These core-sections are arranged radially around the armature A and are provided with pole-pieces adapted to the armature. On each screw-threaded rod *c* is placed an internally-screw-threaded miter-wheel F,

which is engaged by a miter-wheel G, mounted on a shaft H, journaled in bearings supported by the arm *b*. Each shaft H has on its outer end a sprocket-wheel I, upon which is placed a chain J, the said chain passing around all the sprocket-wheels and around a sprocket-wheel K, mounted on a shaft journaled at the center of the frame formed by the arms *b* and the standard B'. The sprocket-wheel K is provided with handles *h*, by means of which it may be turned so as to cause all of the shafts H and beveled wheels F to revolve simultaneously. The miter-wheels F are prevented from moving up or down on the screw on the screw-threaded rod by the arm *b* and a plate *i*, attached to the end thereof. The plates *i*, when the arms are in their lower position, also serve to partly carry the weight of the field-magnets, and thus relieve the pressure on the teeth of the miter-wheels. The armature A is driven by means of a belt running over a pulley *j* on the armature-shaft.

By means of my improvement I may adapt the field-magnet to armatures of different sizes, and I may apply different pole-pieces, as may be required, the cores being for this purpose provided with dovetail slideways ranging longitudinally of the armature and adapted to receive the removable pole-pieces. (See Figs. 1 and 2.) The pole-pieces are practically quarter-sections of a rectangular prism of iron with the inner surfaces concaved to approximately conform to the shape of the armature. This construction provides a solid mass of iron around the armature and increases the efficiency of the machine. The pole-pieces are transversely grooved to prevent the formation of eddy-currents and to increase the output of the machine.

The field-magnet sections are excited in the usual way, either by being connected up in series or in a shunt-circuit or being separately excited, according to the system on which the machine is constructed. When the field-magnet sections are near the armature, the voltage and amperage are the highest. When it is desired to reduce the current and voltage, the field-magnet sections are withdrawn from the armature by turning the sprocket-wheel K, thus causing all the screw-threaded rods *c* to be drawn away from

the armature in radial directions, taking with them the field-magnet sections. The strength of the field being thus reduced, the current is reduced accordingly.

- 5 It is obvious that when the field-magnet sections are removed from the armature and it is desired to strengthen the current the reverse of what has been described takes place.

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

1. The combination of the armature, field-magnet supports movable toward and from the armature, field-magnets mounted to move

with said supports and pivoted thereto to 15 swing in planes extending longitudinally of the armature, and means for holding the field-magnets in position, substantially as described.

2. The combination of the armature, sup- 20 ports movable toward and from the armature, field-magnets pivotally carried by said supports, and means for holding the field-magnets in position, substantially as described.

GEORGE LUMAN CAMPBELL.

Witnesses:

R. H. KIDDLE,

ALFRED P. KINSMAN.