

(No Model.)

J. W. LANGLEY.

REGULATOR FOR DYNAMO ELECTRIC MACHINES.

No. 303,866.

Patented Aug. 19, 1884.

Fig. 1

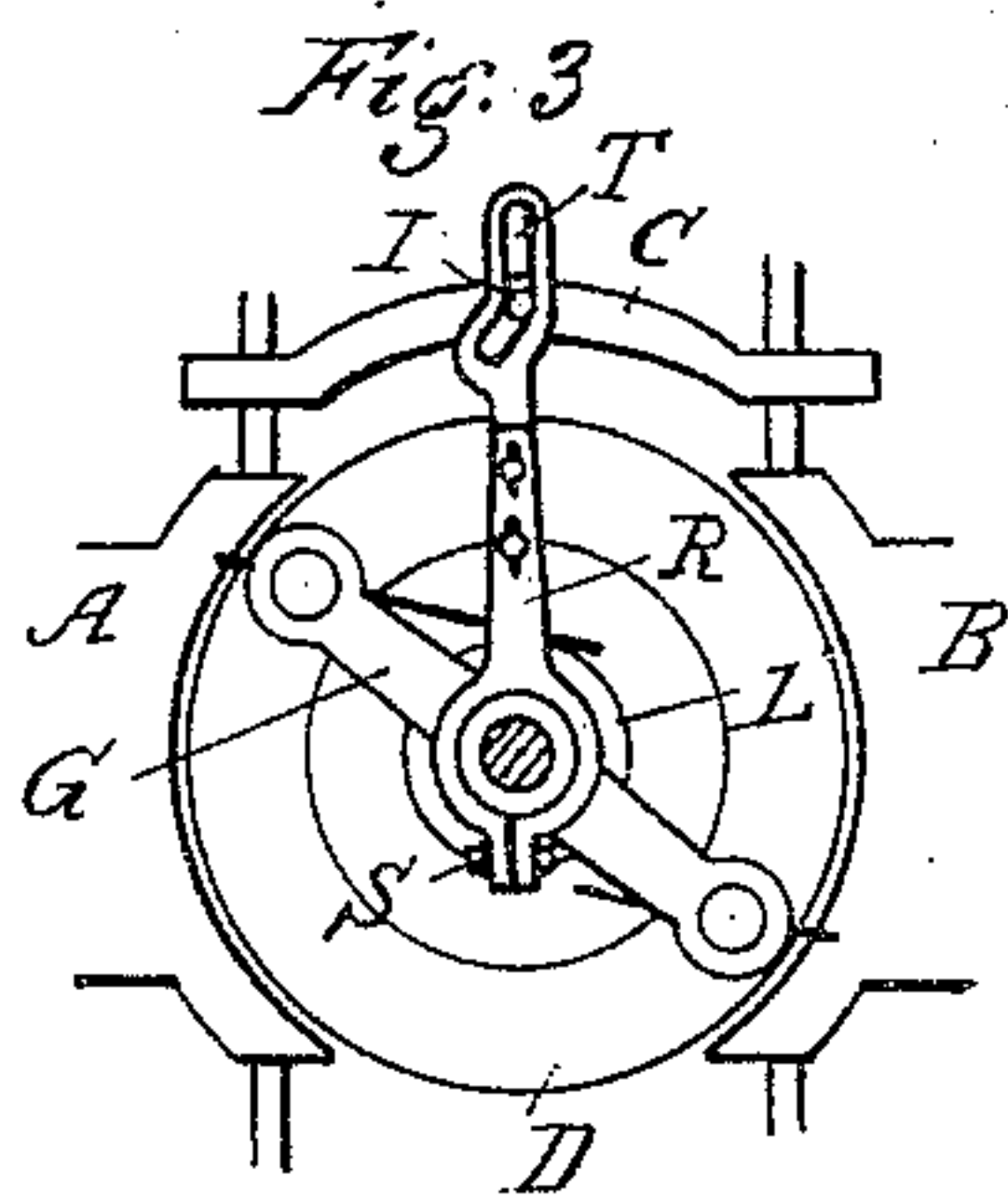
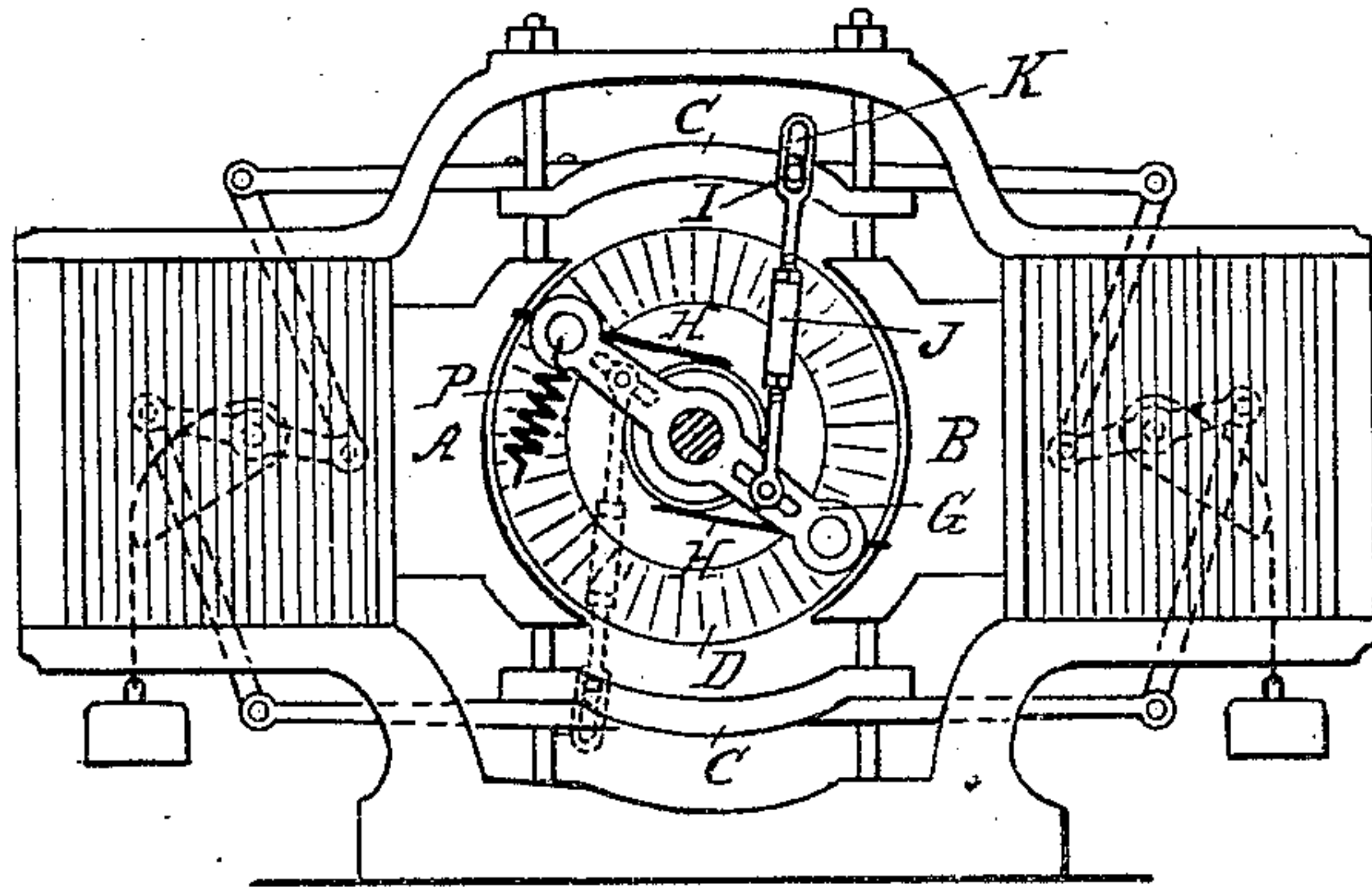
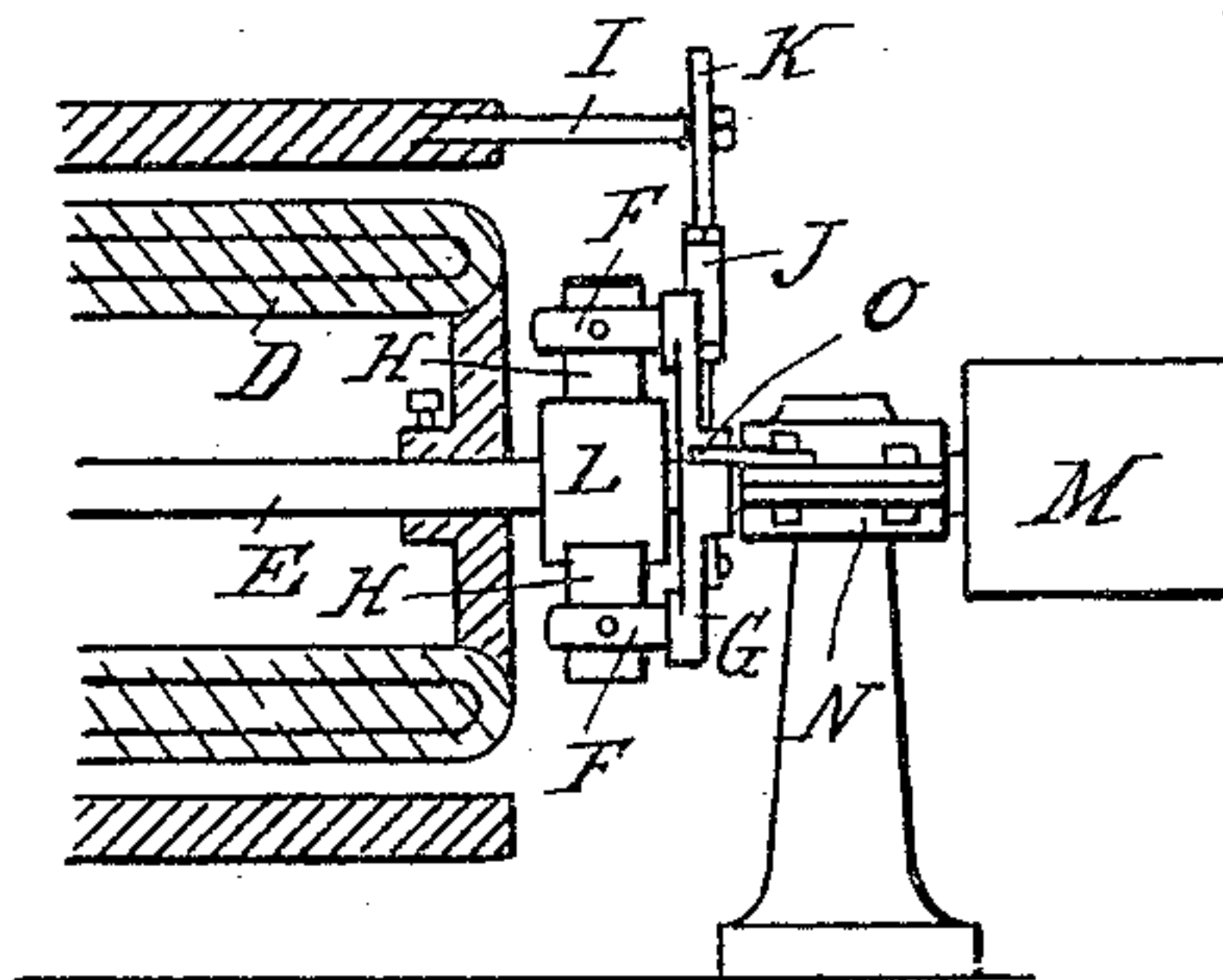


Fig. 2



Witnesses:
James H. Collins
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UNITED STATES PATENT OFFICE.

JOHN W. LANGLEY, OF ANN ARBOR, ASSIGNOR OF ONE-HALF TO GEORGE H. LOTHROP, OF DETROIT, MICHIGAN.

REGULATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 303,866, dated August 19, 1884.

Application filed March 31, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. LANGLEY, of Ann Arbor, in the county of Washtenaw and State of Michigan, have invented a new and useful Improvement in Regulators for Dynamo-Electric Machines, of which the following is a specification.

Figure 1 is an end elevation; Fig. 2, a vertical section, and Fig. 3 an end elevation showing a modification of the device shown in Fig. 1.

My invention is an improvement upon the governor for dynamo-electric machines described in Letters Patent No. 265,519, granted to me the 3d of October, 1882; and it consists in so connecting the arm which carries the commutator-brushes with the magnetic metal governing-plates, or one of them, that the movement of said plates will automatically shift the brushes.

A B represent the poles of the magnets of a dynamo-electric machine; C C, two magnetic metal plates; D, the armature, and E the armature-shaft.

The operation of the plates C C and their effect upon the machine is fully described in the patent above mentioned, so that I do not deem further description thereof necessary here.

L represents the ordinary commutator on the armature-shaft, and G represents an arm for carrying the commutator-brushes H H, loosely pivoted on the armature-shaft, the construction and arrangement of which are well known.

I represents a pin, preferably made of brass, fastened to the edge of plate C, and projecting therefrom.

K represents a connecting-rod having a slot in one end, through which the end of pin I plays, and also having therein a turn-buckle, J, or other equivalent device for varying its length. The other end of rod K is fastened to arm G at one side of its center, and I prefer to make this attachment by means of a slot in arm G, and a set-screw, as indicated in Fig. 1, so that the relative movement of the connecting-rod and the ends of arm G may be varied by shifting the point of connection between them. This mechanism may be dupli-

cated, if desired, such duplication being shown in dotted lines in Fig. 1.

P represents a spring, one end of which is attached to one end of arm G, the other end being fastened to any suitable point of attachment, and it serves to draw the end of arm G, to which it is attached, against a stop, O, fastened to one standard, N, of the machine, which should be so placed as to hold arm G in the position at which the brushes will make contact with the commutator in the proper places when the machine is doing its maximum work.

In the modification shown in Fig. 3 the arm R, which corresponds to the connecting-rod K, has its lower end firmly clamped on the central hub of arm G by the bolt S, and has in its upper end a slot, T, in which pin I plays, the upper and lower portions of said slot being at different angles, as shown. The arm R is made adjustable as to length by being made in two pieces and secured together by bolts which pass through slots in one or both pieces, as shown.

The operation of my invention is as follows: When the work required of the dynamo is less than that for which it is adapted, the magnetic metal plates C are attracted toward the poles of the magnets and weaken the field of the magnets and the current generated by the machine, as explained in my patent above mentioned. Assuming that the brushes are in their normal positions at the zero-points of the commutator when the machine is exerting its maximum power, they will, when the field of the magnets and the current is thus weakened by the plates C, no longer be at said zero-points, for, the armature speed being practically constant, the revolution of the commutator carries these points forward. As plates C approach the poles A B, the pin I, when the arrangement shown in Fig. 1 is used, strikes the bottom of the slot in connecting-rod K, forces this rod downward, and swings arm G on its pivot (shaft E) against the resistance of spring P, thus shifting the brushes N N and bringing them in contact with the new zero-points on the commutator. When the plates C recede from the poles, arm G is swung in the opposite direction by spring P,

until the brushes reassume their normal position.

When the invention is arranged as shown in Fig. 3, the vertical motion of pin I swings arm R, and thus moves arm G in a manner that will be obvious to any mechanic. I prefer to make the connection between plate C and the arm which carries the commutator-brushes adjustable, so that the arm may be set to move faster or slower than the plate, or a greater or less distance, or may remain stationary during a portion of the travel of the plate; and all these connections should be made of some diamagnetic substance.

As a skillful mechanic can easily devise a number of modes of making connection between the plate C and arm G, I do not wish to confine myself to any particular construction of this connection.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination, with the poles of the electro-magnet of a dynamo-electric machine, of a magnetic metal piece, and mechanism sustaining the same in such relation to the poles of the electro-magnet that an excess of current will cause the poles to attract the magnetic metal piece and tend to establish magnetic communication between the poles, a pivoted arm carrying the commutator-brushes, and a connection between said magnetic metal piece and said pivoted arm, whereby the motion of said magnetic metal piece will be wholly or partially transmitted to said pivoted arm, substantially as and for the purposes set forth.

JOHN W. LANGLEY.

Witnesses:

OTTMAR EBERBACH,
ERNEST DIETERLE.