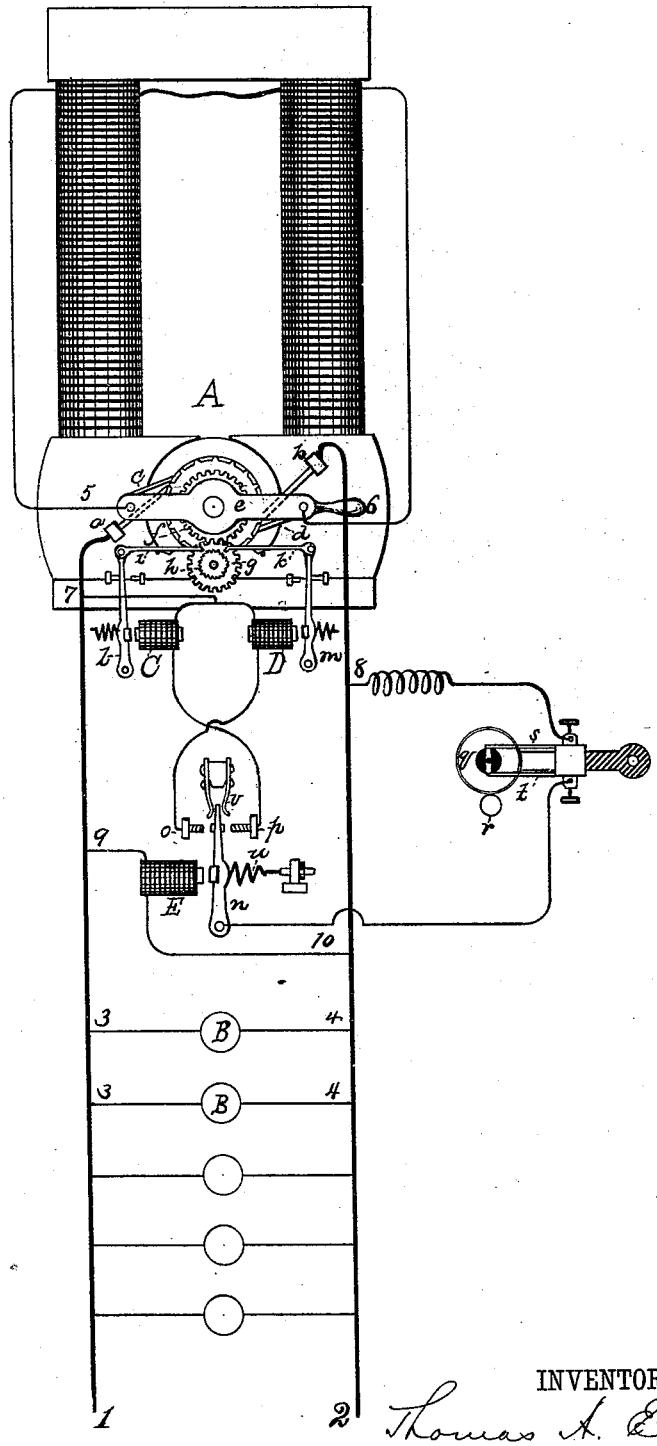
(No Model.)

T. A. EDISON.

REGULATOR FOR DYNAMO ELECTRIC MACHINES.

No. 273,487. Patented Mar. 6, 1883.



WITNESSES:

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THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

REGULATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 273,487, dated March 6, 1883.

Application filed September 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Means for Regulating Electric Generators, (Case No. 443;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The object I have in view is to produce simple and efficient means for automatically regulating the generative capacity of a dynamo or magneto electric machine which will regulate both for changes in the number of translating devices and in the speed of the engine. This I accomplish by taking from the commutator-cylinder of the machine a separate current for the field-of-force circuit by means of one or more extra commutator-brushes adjusted by mechanism operated or controlled by an electro-magnet placed in a multiple-arc circuit from the main conductors, so as to be affected exactly as are the lamps.

The arrangement for obtaining the separate current at the commutator-cylinder may be any one of those described in a previous application for patent filed by me, (Serial No. 68,626,) the extra brush or brushes being adjusted by a double pawl-and-ratchet vibrating mechanism controlled by the electro-magnet in multiple arc.

The foregoing will be better understood from the drawing, which is a view, partly diagrammatic, of apparatus embodying the invention.

A is a dynamo or magneto electric machine, from the main commutator-brushes *a b* of which run the main conductors 1 2. These main brushes are supported in any usual or suitable way, the drawing showing them diagrammatically for clearness of illustration.

The lamps or other translating devices B are located in multiple-arc circuits 3 4 from 1 2.

Two extra brushes, *c d*, bearing on the commutator-cylinder, are mounted upon a yoke, *e*, pivoted on the armature-shaft. The field-of-force circuit 5 6 of the machine is taken from these brushes *c d*. The yoke *e* has secured to it a cog-wheel, *f*, with which meshes a cog-wheel, *g*, keyed to the same spindle, with two oppositely-turned ratchet-wheels, one of which is shown at *h*. With these ratchet-wheels engage two pawls, *i k*, carried by the armature-levers *l m* of electro-magnets C D, the levers being retracted by springs. The circuit of these electro-magnets may be a circuit derived in any suitable way from the conductors supplied by the machine. It is shown as a multiple-arc circuit, 7 8, from the main conductors 1 2. This circuit passes through the armature-lever *n* of an electro-magnet, E, the circuit being divided at the front and back contacts, *o p*, of this lever, and the magnets C D being located in the separate divisions of the circuit. The circuit 7 8 also passes through a circuit-breaker, which may be a circuit-breaking wheel, *q*, driven by the armature-shaft *r*, or any other moving part. The spring-fingers *s t* rest on the breaking-hub of this wheel, and the circuit-connections are made with these spring-fingers. The electro-magnet E is located in a multiple-arc circuit, 9 10, from 1 2. Its armature-lever *n* is retracted by an adjustable spring, *u*, and is held at a central point intermediate between its contact-points by spring-fingers *v*. When the current increases to a definite extent the lever of E will make its front contact, completing circuit through D, and causing its lever to vibrate with the assistance of the circuit-breaker. This movement will turn the yoke *e* and throw the brushes *c d* on the commutator-cylinder away from the line of greatest generation. When the candle-power of the lamps becomes normal the lever *n* will resume a central position, breaking the circuit 7 8. Upon a definite decrease of current the lever *n* will make its back contact, energizing C and throwing the brushes *c d* toward the line of greatest generation. The brushes *c d* may work upon a different portion of the commutator-cylinder from the main brushes, so that they will not interfere with each other. The extra brushes may therefore be adjusted to the points of greatest generation, or away from it, and the field-circuit may have the same electro-motive force as the main circuit, or a lower electro-motive force.

Instead of using two extra brushes to which the ends of the field-wire run, one extra brush may be used, connected with one end of the

field-wire, while the other end of the field-wire will be connected with a main brush; or two extra brushes forming one pole may be used, a main brush forming the other pole, as described in my application Serial No. 68,626. The adjustment of the extra brush or brushes by the mechanism before described will effect the regulation of the machine.

What I claim is—

1. The combination, with a dynamo or magneto electric machine having the current for its field-circuit taken from its commutator-cylinder by means of an extra brush or brushes, of means for automatically adjusting said extra brush or brushes to effect the regulation of the machine, substantially as set forth.

2. The combination, with a dynamo or magneto electric machine supplying translating devices in multiple arc, and having the current for its field-of-force circuit taken from the commutator-cylinder by means of an extra brush or brushes, of mechanism for adjusting such extra brush or brushes, and an electro-magnet located in a multiple-arc circuit and operating or controlling the operation of said adjusting mechanism, substantially as set forth.

3. The combination, with a dynamo or magneto electric machine supplying translating devices in multiple arc, and having the current for its field-circuit taken from its commutator-cylinder by an extra brush or brushes, of mechanism for adjusting such extra brush or brushes, and an electro-magnet located in a multiple-arc circuit, the armature-lever of which completes at its front and back contacts separate circuits through the adjusting mechanism, causing it to move in opposite directions, substantially as set forth.

4. The combination, with a dynamo or magneto electric machine supplying translating devices in multiple arc, and having the current for its field-circuit taken from its commutator-cylinder by an extra brush or brushes, of two electro-magnets working oppositely, moving pawls and ratchets, a circuit-breaker in the circuit of said magnets, and an electro-magnet in multiple arc completing the circuits of said first magnets at its contacts, substantially as set forth.

This specification signed and witnessed this 12th day of September, 1882.

THOS. A. EDISON.

Witnesses:
WM. A. STERN,
H. W. SEELY.