

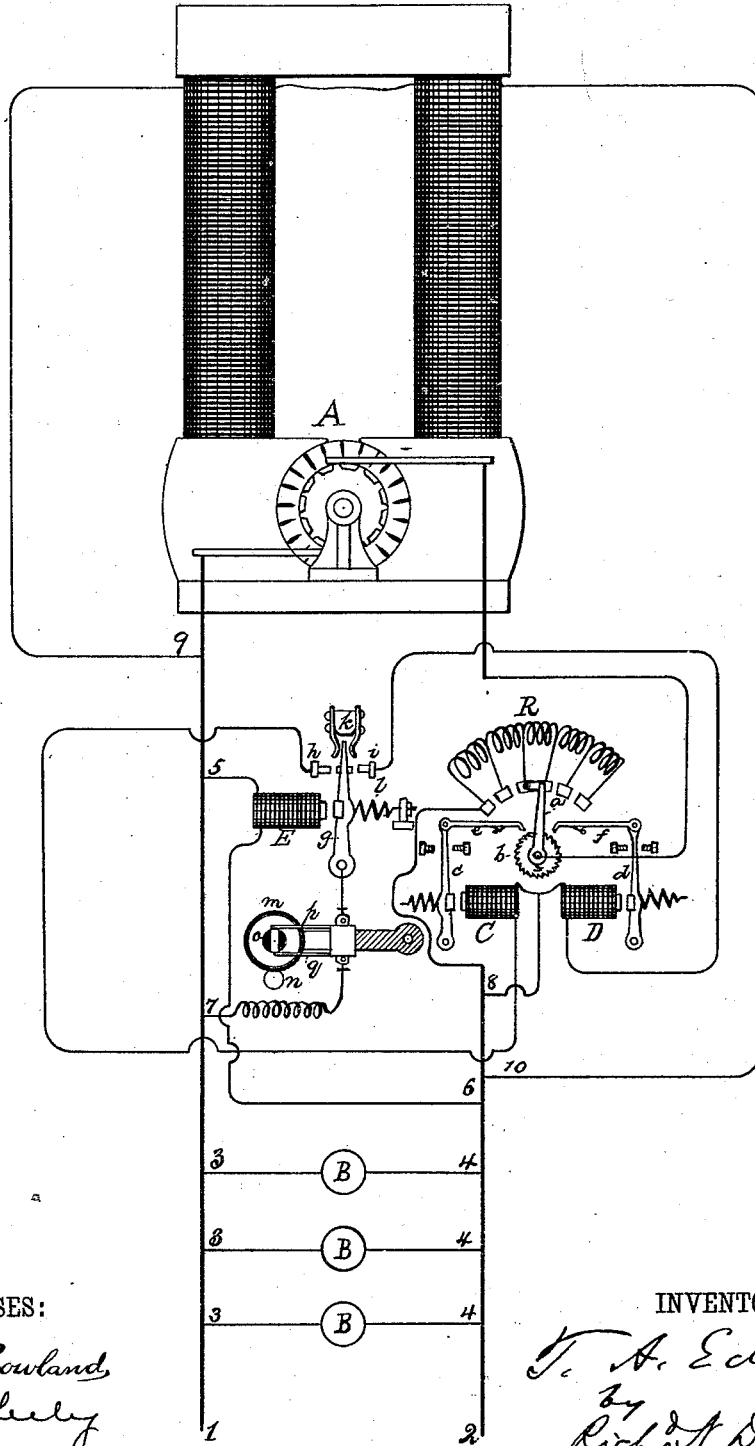
(No Model.)

T. A. EDISON.

REGULATOR FOR DYNAMO ELECTRIC MACHINES.

No. 264,670.

Patented Sept. 19, 1882.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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REGULATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 264,670, dated September 19, 1882.

Application filed August 7, 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 Electrical Generators, (Case No. 442;) 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 dynamo or magneto electric machines supplying lamps or motors arranged in multiple arc, which means will regulate both for changes in the speed of the engine, as well as in the number of translating devices, and will keep the candle-power of the lamps constant and prevent flicker. This I accomplish by providing a mechanism operated by the current generated and throwing resistance into and out of one of the main conductors. This mechanism is controlled by an electro-magnet located in a multiple-arc circuit beyond the resistance, and affected exactly as are the lamps themselves by changes in the speed of the engine and in the number of lamps or motors in circuit, and also by the throwing in and out of the resistance. When the lever of this magnet makes its forward contact a circuit is completed through the resistance-adjusting mechanism and resistance is thrown into the main line or conductor, and when this lever makes its back contact another circuit through the resistance-adjusting mechanism is completed and resistance is cut out of the main line. When the candle-power is normal the lever of the controlling electro-magnet is held in a central position by spring-fingers or equivalent means. The resistance-adjusting mechanism is composed of two electro-magnets, whose armature-levers carry pawls engaging with two ratchet-wheels, the forward movement of which throws the contact-arm in opposite directions. The divided circuit running through these electro-magnets may be a multiple-arc circuit, a shunt-circuit, or other circuit having always, when closed, sufficient energy to work the mechanism. This circuit passes through a circuit-breaker common to both magnets, which is preferably a mechanical circuit-breaker operated by some

moving part, and may be a wheel riding on the armature-shaft and carrying a circuit-breaking cylinder, or there may be two circuit-breakers operated in this way—one for each electro-magnet. The field-circuit of the generator is also a multiple-arc circuit from the main conductors, and is connected with such main conductors beyond the resistance, so that it will be affected by such resistance, like the lamps, and will receive more current when resistance is cut out of the main line and less current when resistance is thrown into the main line.

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 which run the main conductors, 1 2, in multiple-arc circuits 3 4 from which are arranged the lamps or motors B.

R is the resistance, located in either 1 or 2, between the lamps and the generator. This resistance is thrown into and out of circuit by the arm *a*, which is moved in one or the other direction by two ratchet-wheels, one of which is shown at *b*.

C D are electro-magnets, the armature-levers *c d* of which carry pawls *e f*, working the ratchet-wheels.

E is an electro-magnet in a multiple-arc circuit, 5 6, connected with 1 2 beyond the resistance R. Its armature-lever *g* is in another multiple-arc circuit, 7 8, which is divided at the front and back contacts, *h i*, of this lever. The divisions of this circuit pass through the coils of the two electro-magnets C D and are again joined. The lever *g* is held in a central position by spring-fingers *k*. The retracting spring *l* of the lever *g* is made adjustable, so that the candle-power of the lamps may be adjusted at this point. The circuit 7 8 has a mechanical circuit-breaker arranged in its line. This may be a wheel, *m*, riding upon the armature-shaft *n*, a detached portion of which is shown for clearness of illustration. The wheel *m* carries a breaking-cylinder, *o*, composed of metal and insulation, upon which cylinder rest spring-fingers *p q*. The circuit-wires run to these spring-fingers, the revolution of the cylinder alternately making and breaking the electrical connection between such fingers.

The field-of-force circuit of the machine is a

multiple-arc circuit, 9 10, from 1 2, the connection being made beyond the resistance R, as shown, for the purpose already explained.

What I claim is—

5 1. The combination, with a dynamo or magneto electric machine, of translating devices located in multiple-arc circuits from its main conductors, an adjustable resistance in one of
10 such main conductors, an electro-magnet located in a multiple-arc circuit, and mechanism operated or controlled by said electro-magnet for throwing such resistance into and out of the main line, substantially as set forth.

15 2. The combination, with a dynamo or magneto electric machine and translating devices in multiple arc-circuits, of an adjustable resistance in the main line, an electro-magnet in a multiple-arc circuit, circuits closed at the front and back contacts of the armature-lever of
20 said electro-magnet, and mechanism included in said circuits for throwing such resistance into and out of the main line, substantially as set forth.

25 3. The combination, with a dynamo or magneto electric machine and translating devices in multiple-arc circuits, of an adjustable resistance in the main line, two electro-magnets, pawl-and-ratchet mechanism worked by such electro-magnets, a contact-arm moved thereby
30 in opposite directions, an electro-magnet in multiple arc, the armature of which closes at its front and back contact a circuit through one or the other of such two electro-magnets, and a circuit breaker or breakers in circuit
35 with said two electro-magnets, substantially as set forth.

4. The combination, with a dynamo or magneto electric machine and translating devices in multiple arc, of an adjustable resistance in the main line, an electro-magnet, and mechanism operated or controlled by said electro-magnet for throwing such resistance into and out of the main line, said electro-magnet being located in a multiple-arc circuit connected with the main conductors beyond such resistance,
45 substantially as set forth.

5. The combination, with a dynamo or magneto electric machine and translating devices in multiple arc, of an adjustable resistance in the main line and the field-of-force circuit of the machine connected with the main conductors beyond such adjustable resistance, substantially as set forth. 50

6. The combination, with a dynamo or magneto electric machine and translating devices in multiple arc, of an adjustable resistance in the main line, an electro-magnet located in a multiple-arc circuit beyond the resistance, mechanism operated or controlled by said electro-magnet for throwing such resistance into and out of the main line, and the field-of-force circuit of the machine connected with the main conductors beyond such resistance, substantially as set forth. 55 60

This specification signed and witnessed this 65 9th day of June, 1882.

THOS. A. EDISON.

Witnesses:

RICHD. N. DYER,
EDWARD H. PYATT.