(No Model.)

T. A. EDISON.

REGULATOR FOR MAGNETO OR DYNAMO ELECTRIC MACHINES.

No. 251,556. Patented Dec. 27, 1881.

Fig. 1.

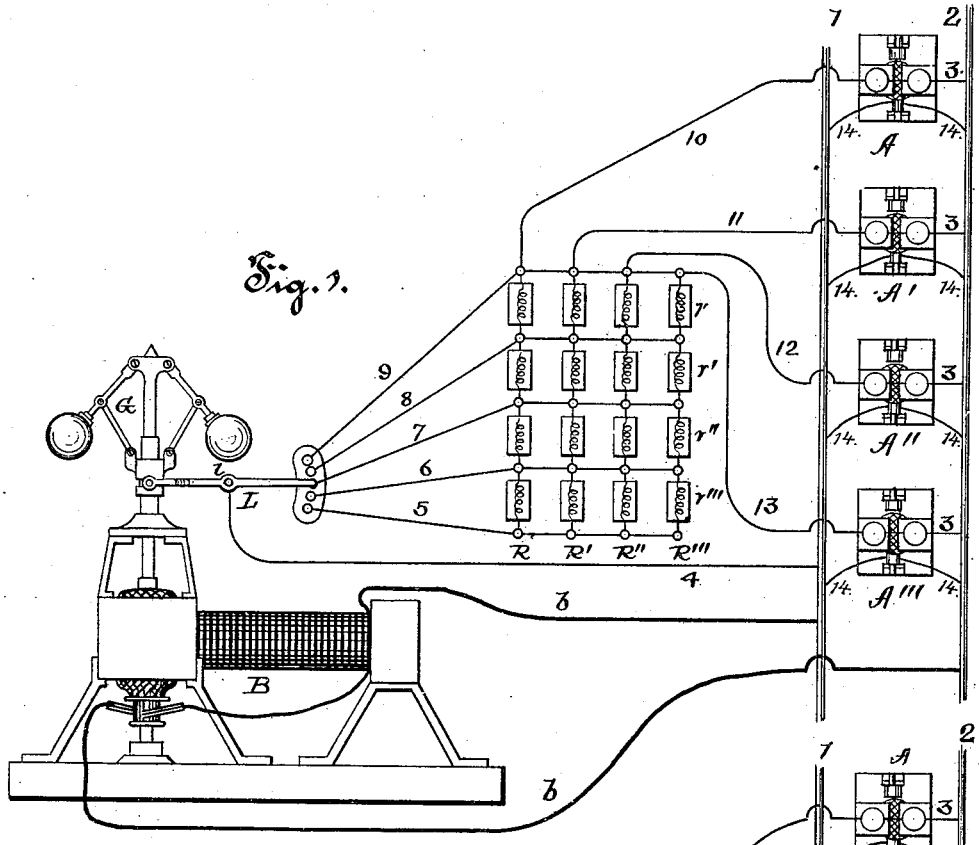
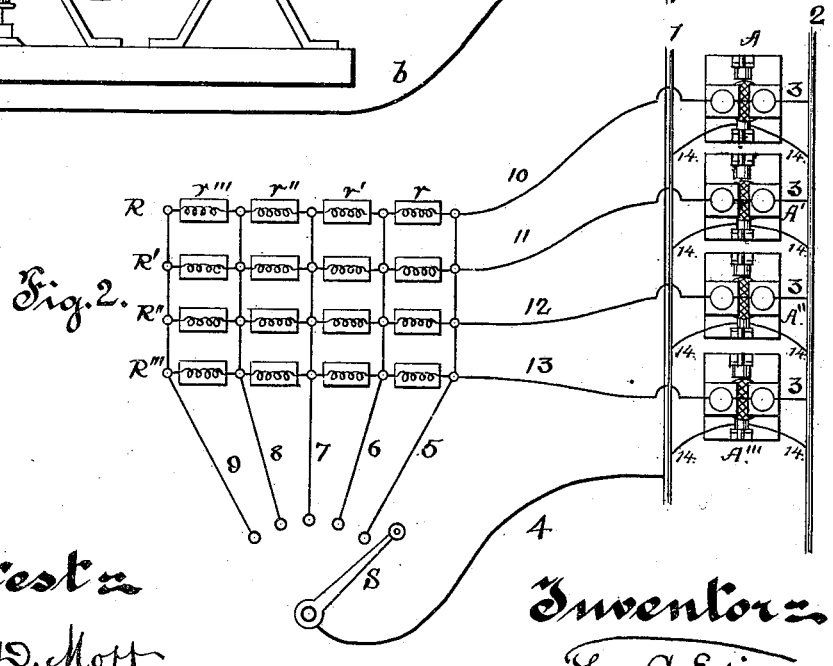


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

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REGULATOR FOR MAGNETO OR DYNAMO ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 251,556, dated December 27, 1881.

Application filed October 30, 1880. (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 Magneto or Dynamo Electric Machines; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

As explained in a prior application for patent by me made, the current used in my system is generated at and distributed from a central station to and through the district of such station. At the central station is massed a number of generators sufficient to supply the wants of the entire district. As shown in the application referred to, these generators are connected in multiple arc, and the generative capacity of those in use is regulated and controlled by regulating and controlling the current passing through the coils of the field-of-force magnets by introducing into a circuit common to all the field-of-force coils more or less resistance. In this instance the invention consists in arranging equal resistances in the circuit of each field-of-force coil and cutting in or out equal portions of each simultaneously, by hand or automatically, the result being accomplished in the latter case by the use of a special electric engine placed in a derived circuit to the main circuit, and provided with a governor, which, on lessening or increase of speed, actuates a switch cutting in or out a portion or all of the resistances.

In the drawings, which are mainly diagrammatic, Figure 1 is a view of the automatic arrangement, and Fig. 2 a view of the arrangement wherein the resistances are controlled by hand.

1 2 represent the main-circuit conductors at and leading from a central station, where is shown a battery of four dynamo-electric machines, A A′ A″ A‴, which number may be greater or less, as desired.

14 14 are the connections from the armature of each generator to the main circuit 1 2, for throwing thereinto the current generated in the coil of the revolving armature. From each field-coil one conductor, 3, leads directly to main conductor 2. From conductor 1 a wire, 4, leads in one instance to the hand-switch S, in the other to the switch-lever L.

Sets of resistances R R′ R″ R‴ are used, one for each generator, a conductor leading from each set of resistances to its appropriate generator—for instance, 10 from R to A, 11 from R′ to A′, 12 from R″ to A″, and 13 from R‴ to A‴. Each set of resistances may consist of as many resistance-boxes as desired. For illustration, four only are shown, *r r′ r″ r‴*, conductors being arranged in connection with the hand-switch S or switch-lever L to cut more or less out of circuit. If either be turned to 9, all the resistances are cut out of circuit. At 8 *r* only is placed in circuit, at 7 *r* and *r′*, at 6 *r*, *r′*, and *r″*, while at 5 all are thrown into circuit. The path of the circuit to the field-coils, then, is from 1, *via* 4, to S or L, thence through one of the conductors 5, 6, 7, 8, or 9, when it divides and passes by 10, 11, 12, and 13, to A, A′, A″, and A‴, to 2. By this arrangement the resistance of all the exterior field-circuits is always equally increased or diminished, their relative resistances remaining unchanged, while each field is rapidly, accurately, and delicately adjusted, correspondingly affecting the generative capacity of the machine.

In Fig. 1, B is an electric engine in a derived circuit, *b b*, to the main circuit. Upon the shaft of its armature is a governor, G, to which is connected the switch-lever L, pivoted at *l*. The speed of the armature and of its attached governor depends upon the current passing through *b b*. If an insufficient amount is generated, the speed falls, the governor-balls drop, moving L so that it contacts with 8 or 9, causing an increased current through the field-coils, and a consequent increase of strength of magnetic field and of generative capacity. If an excessive amount of current is generated, the reverse takes place.

While the generators here shown are connected as dynamos, it is evident that the same arrangement is equally applicable to and efficacious with magneto-electric generators, and that the wires 3 might lead to a special generator set apart for the work of supplying current for the fields only, the wire 4, of course, being led to the same machine.

What I claim is—

1. The combination, with each generator of a battery of magneto or dynamo electric machines arranged in multiple arc, of a resistance in its field-circuit and a switch controlling equally and simultaneously all the resistances of the generators of the battery, substantially as set forth.

2. The combination of a battery of dynamo or magneto electric machines, a series of equal resistances, one series for each generator, a switch, a circuit to the switch and resistances, and special circuits, one for the field of each generator, from the resistances to the field-of-force coils of the generators, substantially as set forth.

3. The combination of a battery of magneto or dynamo generators, a series of resistances in the field-circuits, one for each generator, and means for automatically controlling equally and simultaneously the resistances of the field-circuits of all the generators, substantially as set forth.

This specification signed and witnessed this 21st day of October, 1880.

THOS. A. EDISON.

Witnesses:
CHAS. BATCHELOR,
WM. CARMAN.