

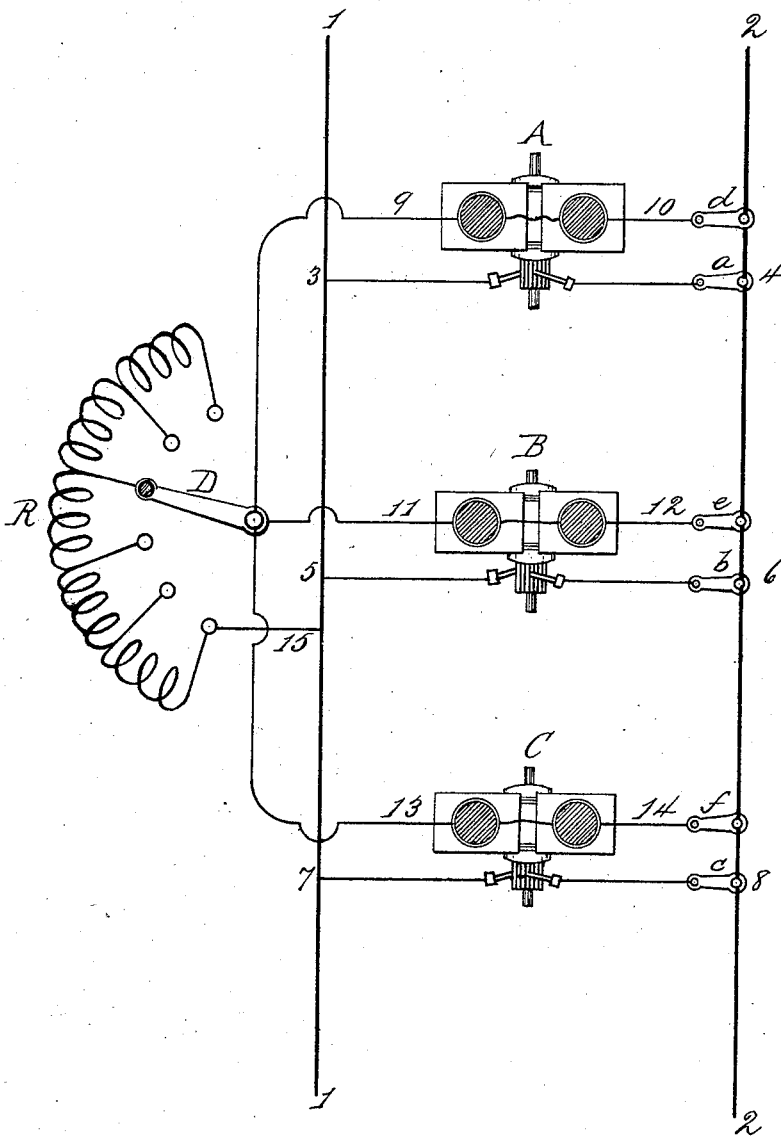
(No Model.)

T. A. EDISON.

REGULATOR FOR DYNAMO ELECTRIC MACHINES.

No. 265,784.

Patented Oct. 10, 1882.



WITNESSES:  
*E. C. Rowlands*  
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*Att'y.*

# UNITED STATES PATENT OFFICE

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

## REGULATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 265,784, dated October 10, 1882.

Application filed August 14, 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 Operating and Regulating Electrical Generators, (Case No. 465;) 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 of the present invention is to produce a simple and efficient method of disconnecting and connecting the separate machines of a number of dynamo or magneto electric machines having their armature and field-coils in independent circuits, such machines running together and feeding into the same conductors, or into the same connected system of conductors, so that the armatures of the machines will not be destroyed by an excessive flow of current; and a further object is to produce simple and efficient means for regulating simultaneously a number of dynamo or magneto electric machines having the coils of their field-magnets in separate multiple-arc circuits.

The first object is accomplished by breaking the armature-circuit before the field-circuit is broken in disconnecting each machine, the reverse order being observed in completing the connections of each machine, the field-circuit being completed first. The armature-coils of the machines are arranged in independent cross-circuits connected with the same conductors or system of conductors, and the field-circuits are also independent cross or multiple-arc circuits supplied from the conductors with which the armatures of the machines are connected, or from a separate source of electrical energy, all of such independent circuits being provided with separate circuit-controllers. When a number of dynamo or magneto electric machines have their armature-coils connected with the same conductors and have their field-magnet and armature-coils in separate circuits, the breaking of the field-circuit before the armature-circuit of a machine or the completing of the armature-circuit before the field-circuit would cause the armature-coils to be burned out, since they would form a short circuit, or one of such low resistance that an excessive current from the other ma-

chines would flow through the circuit and heat the wire so as to fuse it at some point; but by always having the field-coils in circuit while the circuit of the armature-coils is closed the field-magnet will be energized and the armature will have an electro-motive force equal to that of the other machines.

The second object is accomplished by running all the multiple-arc field circuits through a common resistance and regulating all the machines simultaneously by throwing more or less of the resistance into and out of circuit, as required, by means of a hand-operated or an automatic device. The field-circuits are, however, independent of each other, and can be made and broken separately.

The foregoing will be better understood from the drawing, which is a view, partly diagrammatic, of three machines and connections, a top view of the machine being shown with the field-magnets in horizontal section.

A B C represent dynamo or magneto electric machines the armature-coils of which are in separate multiple-arc circuits from main conductors 1 2, such separate multiple-arc circuits being shown at 3 4 and 5 6 and 7 8, and being controlled by separate circuit-controllers *a b c*.

The field-circuits of the machines are independent multiple-arc circuits 9 10 and 11 12 and 13 14, extending from 2 through the coils of the field-magnets to the contact-arm D of an adjustable resistance, R, from which runs a conductor, 15, to the main conductor 1, common to all the field-circuits. The multiple-arc field-circuits are controlled by separate circuit-controllers *d e f*. The field-circuits may be supplied from an external source of electrical energy, if desired.

The machines are driven from one or more steam-engines or other motors, and are always running when the connections are made or broken.

In disconnecting any one machine the armature-circuit is broken by the circuit-controller *a, b, or c* before the field-circuit is broken by its circuit-controller *d, e, or f*, and in connecting any machine the field-circuit is completed before the armature-circuit.

The machines are regulated simultaneously by adjusting the arm D; but the field-circuits are independently controllable at *d, e, and f*.

What I claim is—

1. The combination of two or more dynamo or magneto electric machines having their field-coils in independent circuits and their armature-coils in independent circuits connected with the same conductors or system of conductors, with separate circuit-controllers for all of such independent circuits, whereby the connections can be made and broken in the order stated, substantially as set forth.
2. The combination, with two or more dynamo or magneto electric machines having

their armatures in separate multiple-arc circuits, of a multiple-arc circuit having an adjustable resistance and branches from the resistance through the field-magnets of the machine, such resistance being common to all of said branches, substantially as set forth.

This specification signed and witnessed this 7th day of July, 1882.

THOMAS A. EDISON.

Witnesses:

RICHD. N. DYER,  
EDWARD H. PYATT.