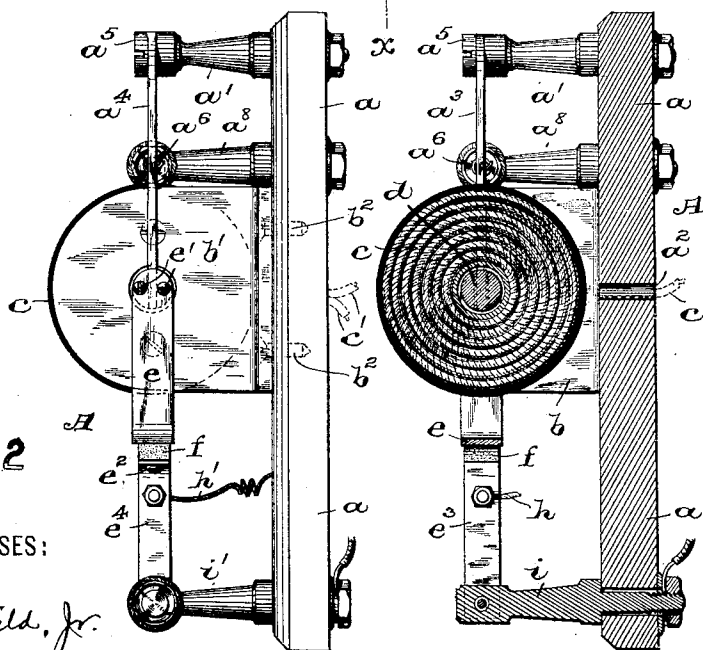
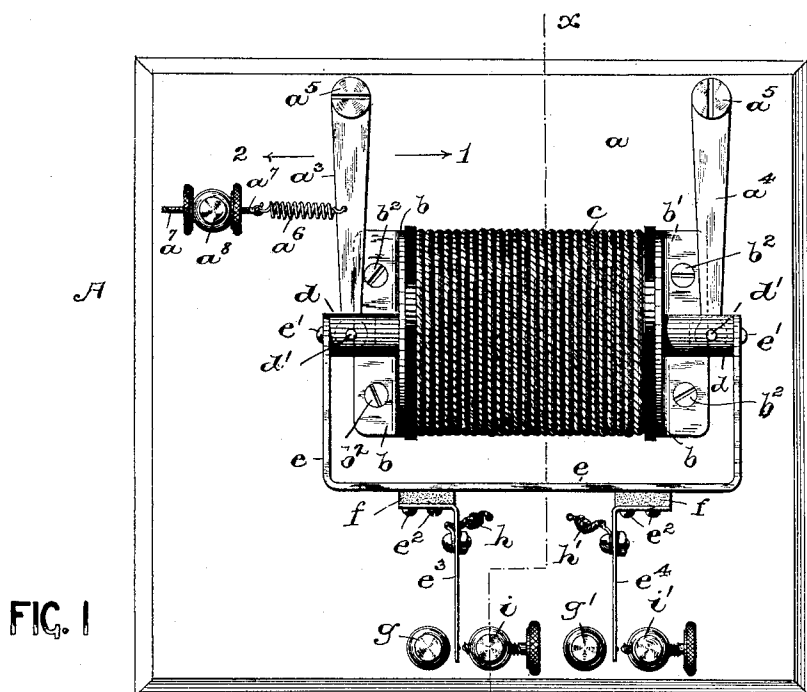


(No Model.)

M. MOSKOWITZ.
ELECTRIC REGULATOR.

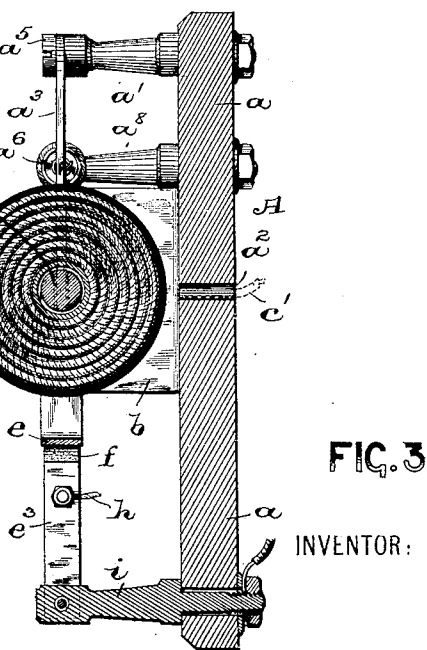
No. 595,330.

Patented Dec. 14, 1897.



WITNESSES:

Am. H. Campfield, Jr.
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INVENTOR:

MORRIS MOSKOWITZ,
by *Fred C. Fraentzel*, ATTORNEY.

UNITED STATES PATENT OFFICE.

MORRIS MOSKOWITZ, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE NATIONAL ELECTRIC CAR LIGHTING COMPANY, OF WEST VIRGINIA.

ELECTRIC REGULATOR.

SPECIFICATION forming part of Letters Patent No. 595,330, dated December 14, 1897.

Application filed May 26, 1897. Serial No. 638,185. (No model.)

To all whom it may concern:

Be it known that I, MORRIS MOSKOWITZ, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

In an application for Letters Patent of the United States filed May 17, 1897, Serial No. 636,878, I have illustrated and described, in connection with a system of generating electricity from a dynamo subject to variable armature speed, an electric regulating device, through the coils of which the whole external load of the dynamo passes, the action of said device being such as to cause a constant maintenance of the electromotive force of the dynamo irrespective of the variable armature speed of the dynamo.

The object of this invention is to provide a novel construction of electric regulator to be used more especially in systems for lighting railway-cars by means of electricity generated from a dynamo the armature of which is subject to variable speed, the armature of said regulating device being made to act against the predetermined tension of a spring to produce a mechanical movement of certain contact-arms in one direction, which, however, is overcome when a current passes through the coils of the device and draws the contact-arms in the opposite direction to make a different contact, as clearly set forth in my application for Letters Patent hereinabove referred to.

The invention therefore consists in the novel construction of electric regulator herein set forth, and also in the minor arrangements and combinations of the several parts thereof, all of which are to be described in the accompanying specification, and finally embodied in the clauses of the claim.

The invention is clearly illustrated in the accompanying drawings, in which—

Figure 1 is a face or front view of my novel

form of electric regulator. Fig. 2 is a side view of the same, and Fig. 3 is a vertical cross-section taken on line x in Fig. 1.

In said drawings, A indicates the complete regulator, comprising therein a suitable base a and a pair of posts a' thereon. Secured to said base a , by means of screws b^2 or in any other well-known manner, are the two frame-pieces b and b' , between which is suitably arranged a wire coil c , the circuit-wires c' of which are passed through a suitable opening or openings a^2 in said board a where said wires of the coil c are connected with the main circuit and complete the dynamo-circuit, as will be clearly evident.

Movably arranged in the coil c is a soft-iron plunger d , which is slotted at its ends and has pivotally arranged in said slotted ends and upon the pins or pivots d' the perforated ends of a pair of arms a^3 and a^4 . Said arms are pivotally secured upon the posts a' by means of the screws a^5 , and when a current passes through the coil c the plunger d and said arms are drawn away in the direction of arrow 1 against the normal action of a tension-spring a^6 , which is connected with said arm a^3 , and a screw a^7 , adjustably arranged in a post a^8 on the base a , the normal action of said spring being in the direction of arrow 2. Secured to the opposite ends of the plunger d , by means of screws or pins e' or in any other suitable manner, is a frame e , to which is secured, by means of the screws or pins e^2 , a pair of contact-arms e^3 and e^4 , said arms having a piece of non-conducting material, as f , at the points where they are secured to the frame e to insulate said arms from said frame, as will be clearly evident. When there is no current of electricity passing through the coil c , then said spring a^6 forces all the movable parts of the device in the direction of arrow 2, (see Fig. 1,) whereby said contact-arms e^3 and e^4 are mechanically forced to make contact with a pair of contact-posts g and g' , and a complete electrical circuit is established from the circuit-wires that may be connected with said posts g and g' , through said posts, said contact-arms e^3 and e^4 , and the circuit-wires h and h' connected with said arms, as will be clearly understood. When, however, a weak current is passed through the coil c of the device, the tension of the

spring a^3 is overcome and the plunger drawn farther into the coil in the direction of arrow 1, whereby the several parts connected with device are also moved in the same direction and the arms e^2 and e^3 caused to break their electrical contact with the posts g and g' . Said arms e^2 and e^3 will then stand in their neutral positions, (indicated in Fig. 1,) and the circuit through said arms and the wires h and h' will be completely broken. On the other hand, should a much stronger current of electricity pass through the coil c the plunger d will be drawn in still farther in the direction of the arrow 1 and said arms e^2 and e^3 caused to make contact with the contact-posts i and i' to establish a complete circuit through the circuit-wires connected with said posts i and i' , contact-arms e^2 and e^3 , and the circuit-wires h and h' connected therewith.

Thus it will be seen that according to the varying amount of current passing through the coil c , which, as will be remembered, is placed in a dynamo-circuit the armature speed of which is subject to variation, the contact-arms e^2 and e^3 will vibrate back and forth to make contact at i and i' or at g and g' or to be neutral by remaining in a position between said contact-posts, whereby the device becomes perfectly operative in cutting in or out a shunt-winding on the dynamo-field, which acts on the dynamo-field or other device to be regulated and therefore maintains a constant electromotive force or output at the source of generation.

From the above description it will be readily seen that my present invention is especially adapted to systems for lighting railway-cars by electricity generated from a dynamo operated from a car-wheel axle, in which the dynamo-armature is subject to variable speed, but the operation of the several parts of the device hereinabove set forth need not be further described herein in connection with a dynamo when used in this manner, it being my intention and purpose to use my present invention in any system of electrical wiring and appliances arranged therein to which it is applicable.

Having thus described my invention, what I claim is—

1. The herein-described electric regulator, comprising, in combination, with a coil c , a movable plunger in said coil, a frame e connected with the ends of said plunger, a pair of contact-arms e^2 and e^3 connected with said frame e , contact-posts g and i , between which said arms e^2 and e^3 are adapted to vibrate, substantially as and for the purposes set forth.

2. The herein-described electric regulator, comprising, in combination, with a coil c , a movable plunger in said coil, a frame e connected with the ends of said plunger, a pair of contact-arms e^2 and e^3 connected with said frame e , contact-posts g and i , and g' and i' , between which said arms e^2 and e^3 are adapted to vibrate, and mechanical means connected with said frame, to cause contact between said arms e^2 and e^3 and the contact-posts g and i , when there is no current of electricity passing through said coil c , substantially as and for the purposes set forth.

3. The herein-described electric regulator, comprising, in combination, with a coil c , a movable plunger in said coil, a frame e connected with the ends of said plunger, a pair of contact-arms e^2 and e^3 connected with said frame e , contact-posts g and i , and g' and i' , between which said arms e^2 and e^3 are adapted to vibrate, and mechanical means connected with said frame, to cause contact between said arms e^2 and e^3 and the contact-posts g and i , when there is no current of electricity passing through said coil c , said means consisting, essentially, of a pair of arms a^3 and a^4 pivotally connected with said plunger d , and also pivotally arranged on posts on the frame or base of the device, and a tension-spring connected with one of said arms and with a post on said base, substantially as and for the purposes set forth.

4. The herein-described electric regulator, comprising, in combination, with a coil c , a movable plunger in said coil, a frame e connected with the ends of said plunger, a pair of contact-arms e^2 and e^3 connected with said frame e , contact-posts g and i , and g' and i' , between which said arms e^2 and e^3 are adapted to vibrate, and mechanical means connected with said frame, to cause contact between the arms e^2 and e^3 and the contact-posts g and i , when there is no current of electricity passing through the coil c , said means consisting, essentially, of a pair of arms a^3 and a^4 pivotally connected with said plunger d , and also pivotally arranged on posts on the frame or base of the device, and an adjustable tension-spring connected with one of said arms and with a post on said base, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 22d day of May, 1897.

MORRIS MOSKOWITZ.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.