

(No Model.)

2 Sheets—Sheet 1.

D. J. McLANE & G. W. McCLINTOCK.
CONTROLLER FOR ELECTRIC MOTORS.

No. 548,448.

Patented Oct. 22, 1895.

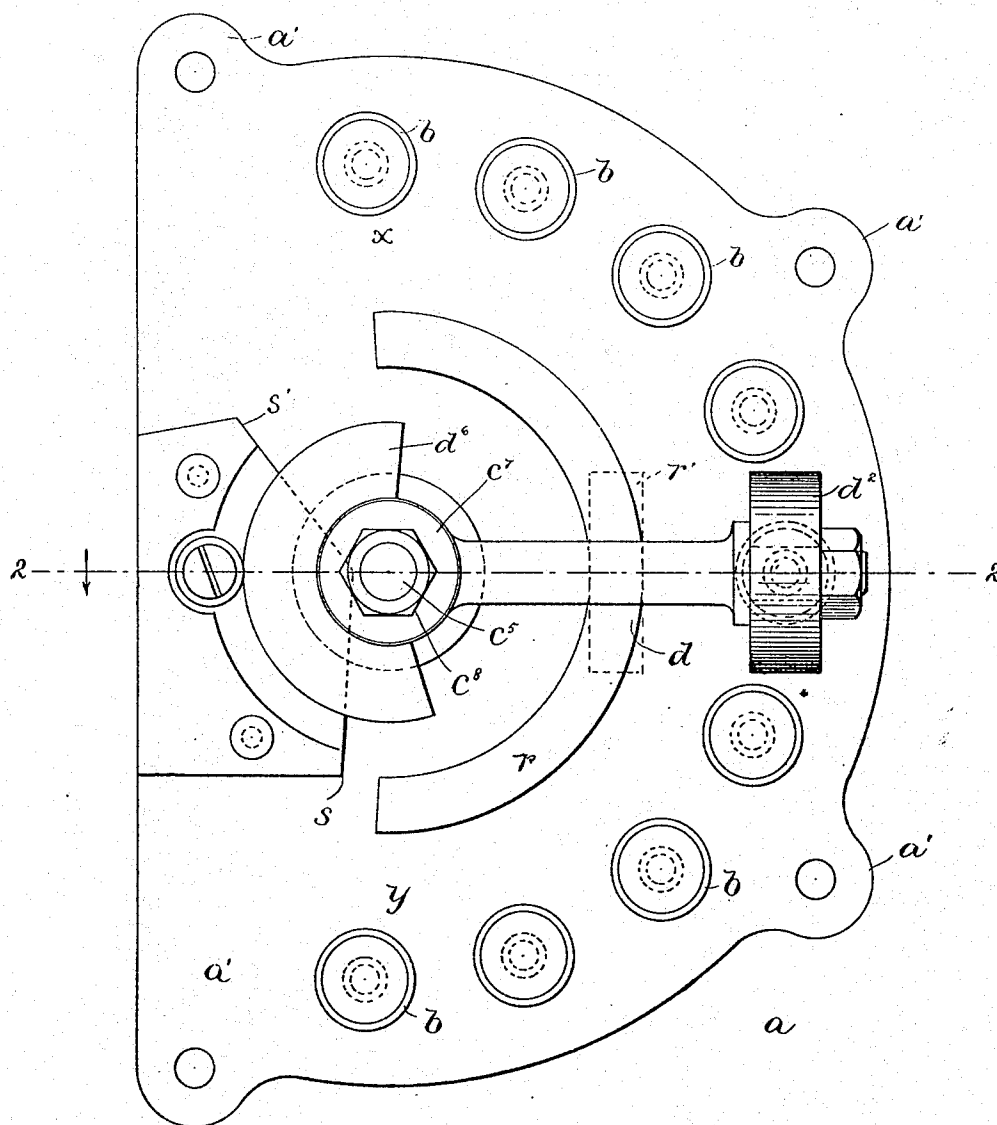


FIG. 1.

WITNESSES:

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INVENTORS

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2 Sheets—Sheet 2.

Patented Oct. 22, 1895.

FIG. 2.

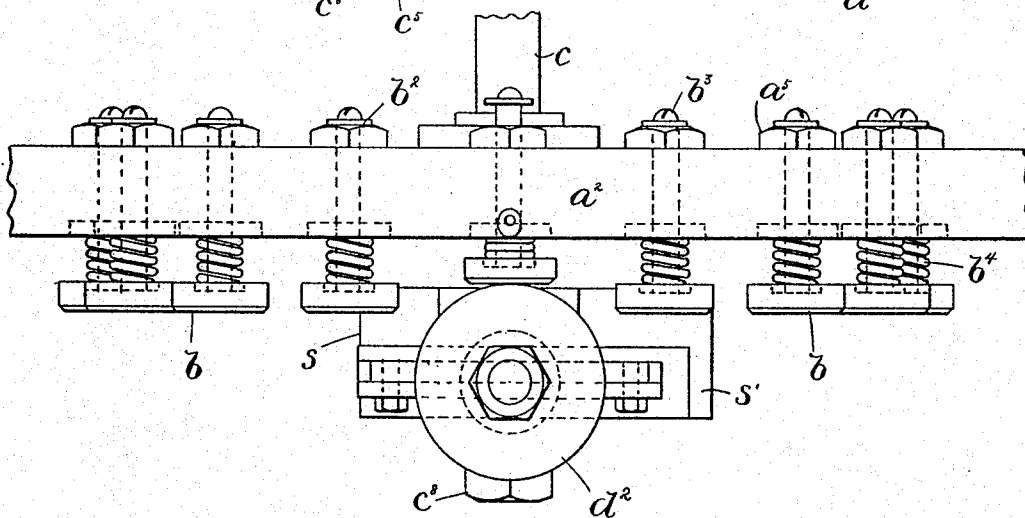


FIG. 3.

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UNITED STATES PATENT OFFICE,

DANIEL J. McLANE AND GEORGE W. MCCLINTOCK, OF QUINCY, MASSACHUSETTS.

CONTROLLER FOR ELECTRIC MOTORS.

SPECIFICATION forming part of Letters Patent No. 548,448, dated October 22, 1895.

Application filed May 25, 1895. Serial No. 550,679. (No model.)

To all whom it may concern:

Be it known that we, DANIEL J. McLANE and GEORGE W. MCCLINTOCK, of Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Controllers for Electric Motors, of which the following is a specification.

This invention relates to a new and improved controller for electric motors; and it consists in the novel features of construction and relative arrangement of parts hereinafter fully described in the specification, clearly illustrated in the drawings, and particularly pointed out in the claims.

Reference is to be had to the accompanying two sheets of drawings, forming a part of this specification, in which like characters are used to indicate like parts wherever they occur.

Figure 1 represents an inverted plan view of a controller constructed in accordance with our invention, the casing being removed. Fig. 2 represents a vertical sectional view on the line 2 2 of Fig. 1, looking in the direction of the arrow. Fig. 3 represents a front elevation of our improved controller.

While our invention may be carried out in several ways, we prefer the construction and arrangement shown in the drawings.

The controller *a* is designed to be attached to the platform of a car and to be protected by any suitable casing. (Not shown.) Perforated lugs *a'* in the framework of the controller serve as a contact means for connecting the controller with the casing and with the platform of the car.

*a*² represents a suitable framework, preferably of wood, and is of a semicircular shape.

*a*³ represents a series of apertures in said framework, also arranged in the path of the circle. In these apertures are mounted metal bushings *a*⁴, secured on the outside by nuts *a*⁵. These bushings are individually connected by suitable wiring *a*⁶ to a rheostat. (Not shown.)

b represents contact parts or members provided with stems *b'*, arranged or mounted in the bushings *a*⁴. The tops of these stems are provided with a cap *b*², secured to said stems *b'* by screws *b*³. This cap prevents the contact members falling out of the framework or bushing. A helical spring *b*⁴ is mounted upon

one of the stems *b'* between the contact portion of the members and the framework, the springs resting in a depression *b*⁵ in said contact member and in a similar depression *a*⁷ in the framework. These springs hold the contact members yieldingly in their lowest position.

c represents a shaft designed to be operated by the motorman by a suitable crank, (not shown,) the shaft extending up through the platform of the car, (not shown,) as is usual.

c' represents a cast-iron bushing in the framework *a*². In this bushing is arranged a hub or enlarged portion *c*² of the shaft *c*. A nut *c*³ serves to retain the bushing in place.

*c*⁴ is a collar on the shaft *c* and prevents the latter from dropping through the bushing. Upon the reduced lower end *c*⁵ of the shaft that extends through the bushing *c'* is mounted a sleeve *c*⁶, of insulating material. Upon this sleeve is mounted an apertured hub *d'* of the lever *d*. The hub *d'* is retained upon the insulating-sleeve *c*⁶ by means of a washer *c*⁷, of insulating material, held against said sleeve by a nut *c*⁸, mounted upon the lower end of the shaft *c*. The construction is such that by the movement of the shaft *c* the lever *d* is turned, the lever being insulated from the shaft. The lever *d* is made of conducting material, preferably of brass, and is provided at one end with a roller *d*², also preferably of brass, and secured between a shoulder *d*³ upon the arm of the lever and a nut *d*⁴, mounted upon a reduced screw-threaded end *d*⁵ of the lever. The shaft *c* occupies the center of the circle upon which the contact parts are arranged, and the roller *d*² is adapted to engage these contact members and press the same upward as it is moved from one position to another, the contact members lying in the path of movement of the roller. The opposite end of the lever *d* is constructed as a segment *d*⁶ and arranged to engage a truck *f*, preferably of copper, that forms the terminal of the feed-wire *f'*. This truck is mounted upon a rod *f*², that is secured in the framework and suitably insulated therefrom, the truck *f* being mounted upon one end of said rod and the feed-wire being connected to the other end of said rod.

s s' are stops against which the lever *d*

strikes in order to limit the movement of the latter.

The parts being constructed and arranged as described, the operation of the controller is as follows: The current from the feed-wire passes by way of the roller f , segment d^6 , lever d , roller d^2 , and one of the contact members b , to a return-wire a^6 , leading to the rheostat. The contact members b are arranged to correspond to the plugs of the rheostat, so that the position of the roller d^2 upon the particular contact member b shall control the particular plug through which the current passes into and out of the rheostat. In Fig. 1 the member indicated by the symbol x is the one where the least current is to pass, and the member indicated by the letter y is the one through which the maximum of the current is to be introduced by the way of the rheostat to the motor, the intermediate members being connected to intermediate plugs of the rheostat that are graduated from one another, as is common. The segment d^6 takes the current from the truck f , the contact members b taking current from the roller d^2 . The roller d^2 and the contact members b are so constructed and spaced that the roller does not leave one member before it has made contact with a succeeding member, in order to prevent sparking. When the roller is pushed so that it connects the last member y of the members b , the arm of the roller strikes the stop s to prevent the segment from leaving the truck and the roller from leaving a contact member. When, however, the roller is pushed toward and beyond the particular member b that is designated by the symbol x , it does not encounter the stop s' until the roller has left the contact member b and the segment d^6 has broken contact with the truck f . By this means the circuit is broken in two places simultaneously. Instead of the feed-wire of lever d taking the current from the truck by means of the segment b^6 and the truck f , we may connect the feed-wire, as shown in dotted lines in Fig. 1, with a segment r , secured to the framework, and make contact between the lever d and this segment by means of a roll r' , that may be connected

with the roller d^2 in any desired way, or we may make use of both devices for connecting the roller d^2 with the feed-wire.

Having thus explained the nature of our invention and described a way of constructing and using the same, though without attempting to set forth all the forms in which it may be made or all the modes of its use, what we claim, and desire to secure by Letters Patent, is—

1. In an electric controller, in combination, a feed wire terminal, spring pressed contact members, a pivoted lever, having at one end a part arranged to engage said terminal, and a roller upon the opposite end of said lever arranged to engage said contact members, substantially as and for the purpose set forth.

2. In an electric controller, in combination, a truck arranged as a feed wire terminal, a series of spring pressed contact members, a pivoted lever having a segment at one end arranged to engage said truck, a roller carried by the opposite end of said lever and arranged to engage said contact members, substantially as and for the purpose described.

3. In an electric controller, in combination, a truck arranged as a feed wire terminal, a series of spring pressed contact members, a pivoted lever having a segment at one end arranged to engage said truck, a roller carried by the opposite end of said lever and arranged to engage said contact members, stops s, s' , one of said stops being so arranged with respect to the length of said segment and the location of said terminals that it is not engaged by said lever until the circuit has been broken between the roller and terminals and between the segment and truck, substantially as and for the purpose set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 18th day of May, A. D. 1895.

DANIEL J. McLANE.
GEORGE W. McCLINTOCK.

Witnesses:

A. D. HARRISON,
A. H. ABELL.