

G. G. THOMPSON.  
ELECTRIC CURRENT CONTROLLER.  
APPLICATION FILED JAN. 5, 1911.

993,475.

Patented May 30, 1911.

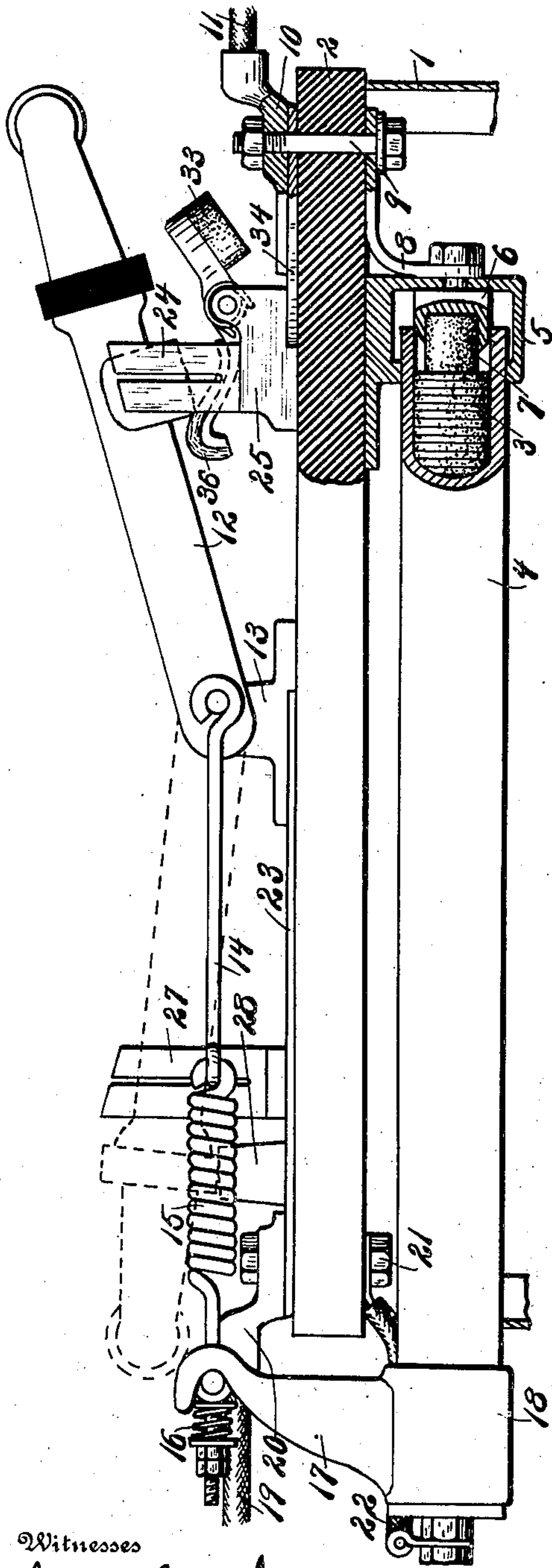


Fig. I.

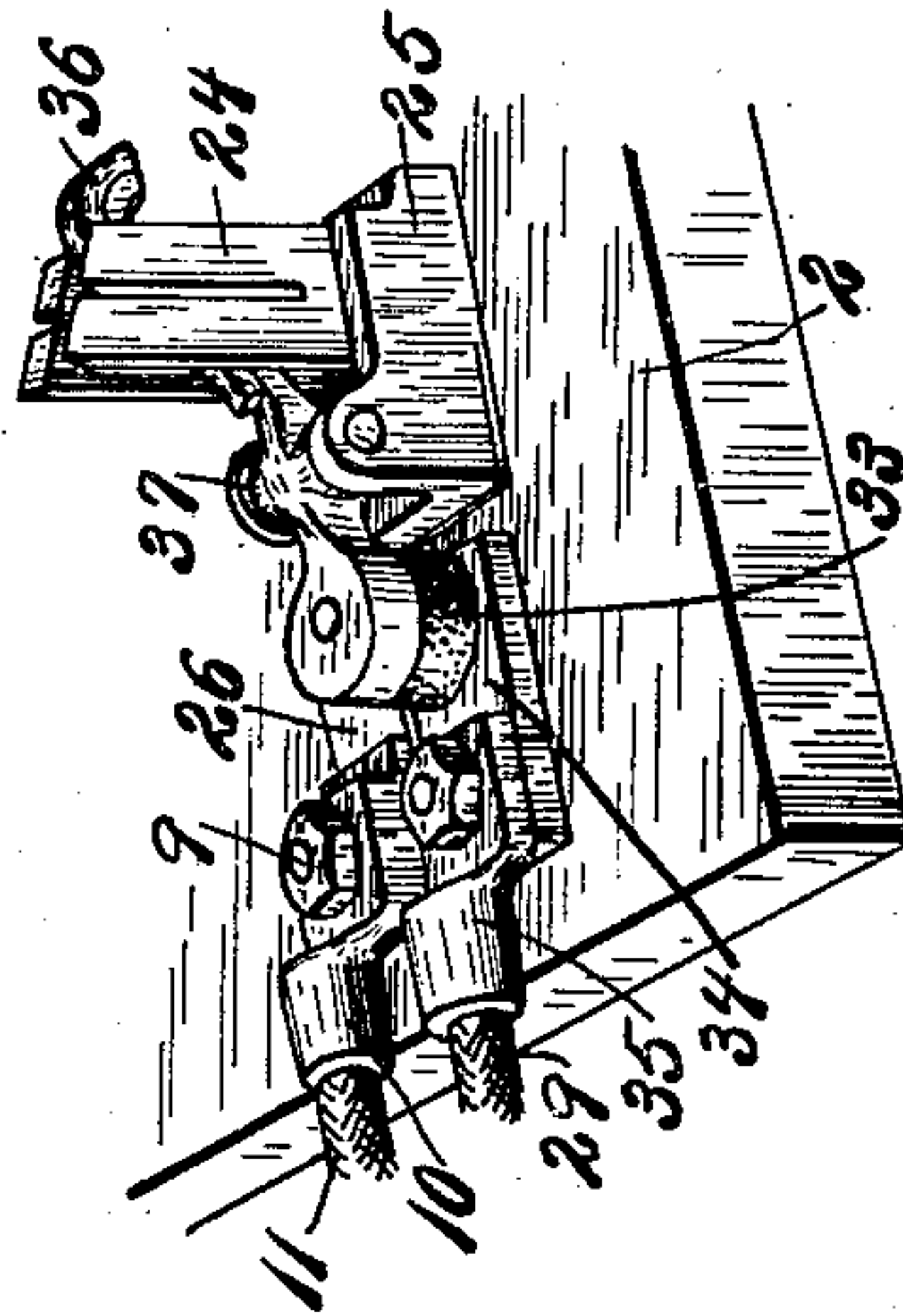


Fig. II.

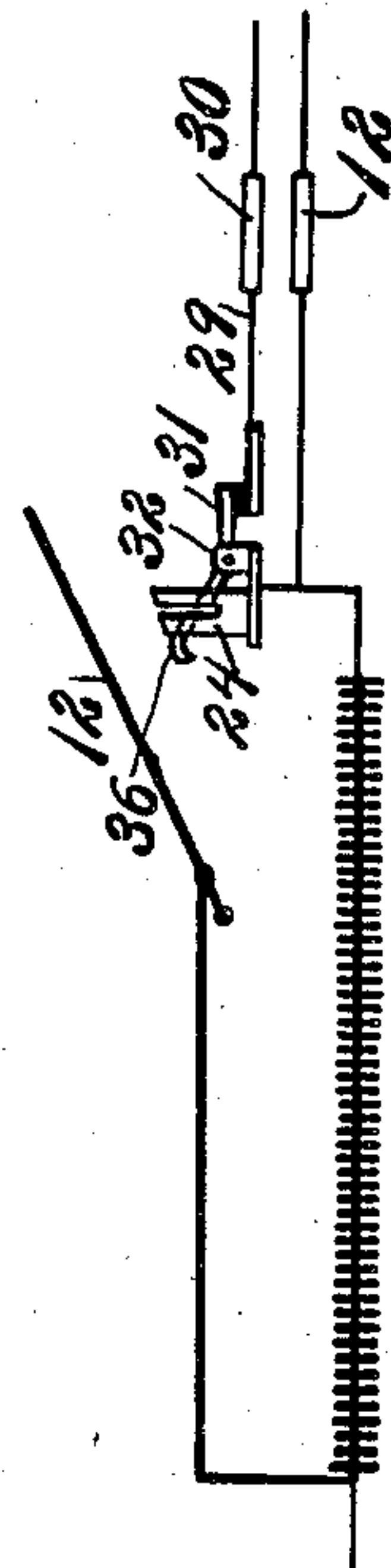


Fig. III.

Witnesses  
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# UNITED STATES PATENT OFFICE.

GEORGE G. THOMPSON, OF MUSKEGON, MICHIGAN, ASSIGNOR TO AMERICAN ELECTRIC FUSE CO., OF MUSKEGON, MICHIGAN.

## ELECTRIC-CURRENT CONTROLLER.

993,475.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed January 5, 1911. Serial No. 600,861.

*To all whom it may concern:*

Be it known that I, GEORGE G. THOMPSON, a citizen of the United States, residing at Muskegon, Michigan, have invented certain new and useful Improvements in Electric-Current Controllers, of which the following is a specification.

This invention relates to improvements in electric current controllers.

10 The main object of this invention is to provide an improved electric current controller or motor starter, having starting and running fuses in which the starting fuse is automatically cut in and out by the actuation of the resistance element control lever.

15 Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

20 I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

25 A structure, which is a preferred embodiment of my invention, is clearly illustrated in the accompanying drawing, forming a part of this specification, in which: Figure 1 is a side elevation of a structure embodying the features of my invention, a portion 30 of the frame top and resistance element being broken away to show structural details, the control lever being shown in its closed or on position by full lines and in its open or off position by dotted lines. Fig. 2 is a detail perspective view, showing the arrangement of the starting fuse switch, the switch being shown in its closed position. Fig. 3 35 is a diagrammatic view showing the electrical connections for the resistance element, the control lever, the starting fuse switch and the starting and running fuses.

40 In the drawing, similar reference numerals refer to similar parts throughout the several views.

45 Referring to the drawing, I provide a frame 1 having a top plate 2. A portion only of the frame is here illustrated, as its structural details form no part of my invention. The top plate 2 is preferably of suitable insulating material to avoid the necessity of otherwise insulating the parts mounted thereon.

50 In the accompanying drawing, I show only a single resistance element, as that is sufficient to illustrate my improvements. It

will be understood that these resistance elements can be arranged in multiples, as desired.

The resistance element consists of resistance medium in the form of disks 3, preferably of a carbon composition. These disks are arranged in the tubular container 4. This container 4 is supported by means of a bracket 5 mounted on the inner side of the top plate 2. Supported on the bracket 65 in a suitable socket 6 is a contact block 7, against which the inner resistance medium disk 3 rests. This block 7 is connected by the strap 8 with the binding post 9, on which is mounted a terminal coupling 10 70 for the running line wire 11. This running line wire is provided with a fuse 12, shown in conventional form in Fig. 3. Pressure is applied to the resistance disks 3 to reduce or cut out the resistance by means of the control lever 12, which is pivotally mounted 75 on the bracket 13 mounted on the top plate 2. This lever is connected by the link 14, and the spring 15 and 16 to the arm 17 on the pressure member 18. The line wire 19 80 is connected to the terminal or coupling 20, which is mounted on the binding post 21, which is, in turn, connected by the wire 22 to suitable contact members, not shown, carried by the pressure member 18. The control lever 12 is shown by full lines in its closed position in Fig. 1, and by dotted lines in its open position.

The terminal 20 is connected by the bar 23 to the bracket 13, on which the lever 12 90 is mounted. Coacting with the lever when in its closed position are contact blades 24, which are carried by the bracket 25, the bracket being electrically connected by the strap 26 to the terminal 10. When the lever is in its open or off position, shown by dotted lines, it is engaged by the retaining clip 27. A buffer 28 is provided for the lever when in this position. When the lever is in this open position, there is no 100 compression upon the resistance disks 3, so that they have their full resistance capacity. In fact, there is a gap between the top disk and the upper conductor, opening the circuit when the lever is in its off position. As 105 the lever moves toward its closed position, as shown by full lines, the pressure is gradually applied to the disks and the resistance gradually reduced until the lever is completely closed, when the circuit connection 110



is made through the lever and the blades 24 to the running line 11.

The starting line 29 is provided with a starting fuse 30, which, when the lever 12 is opened, is connected to the resistance through the switch 31. This switch is pivoted at 32 on the bracket 25, one arm being disposed between the blades 24 to be engaged by the control lever 12 so that the starting fuse switch is automatically opened by the closing of the lever 12, it being shown in its open position in Fig. 1, and in its closed position in Fig. 2. The switch 31 is provided with a contact member 33, preferably of graphite, which coacts with the copper contact member 34 on which the terminal coupling 35 for the starting line 29 is mounted, see Fig. 2. The switch 31 is insulated at 36 to prevent arcing between it and the lever 26.

By arranging the parts as I have here illustrated and described, the starting fuse is effectively protected, as it is automatically cut out when the control lever is completely closed, and in when the lever 12 is opened, the switch 31 being provided with a closing spring 37, details of which are not here illustrated, as they will be readily understood.

I have illustrated and described my invention in detail in the form in which I have embodied it in practice. I am aware, however, that it is capable of considerable variation in structural details without departing from my invention, but I desire to be understood as claiming the same specifically in the form illustrated, as well as broadly within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In an electric current controller, the combination of the resistance element; starting and running fuses, said running fuse being electrically connected to said resistance element; a control lever; a pair of switch blades arranged to coact with said control lever, said switch blades being electrically connected to said running fuse and to said resistance element; and a pivoted spring actuated lever-like starting fuse switch, electrically connected with said resistance element, arranged with one end disposed between said switch blades to be engaged by said control lever when closed, whereby said starting fuse is automatically opened when said control lever is in its closed position and automatically closed when the control lever is in its open position.

2. In an electric current controller, the

combination of the resistance element; starting and running fuses; a control lever; a contact member coacting therewith electrically connected with said running fuse and resistance element; and an automatically closing starting fuse switch, electrically connected with said resistance element, arranged to be opened by said control lever when said control lever is in its closed position whereby said starting fuse switch is opened when said control lever is in its closed position, and closed when said control lever is in its open position, the parts being arranged so that said starting fuse switch is opened before said control lever is completely closed.

3. In an electric current controller, the combination of the resistance element; starting and running fuses; a control lever; a contact member coacting therewith electrically connected with said running fuse and resistance element; and an automatically closing starting fuse switch, electrically connected with said resistance element, arranged to be opened by said control lever when said control lever is in its closed position whereby said starting fuse switch is opened when said control lever is in its closed position and closed when said control lever is in its open position.

4. In an electric current controller, the combination of a resistance element; starting and running fuses; a control switch for short circuiting said resistance element; a contact member coacting therewith electrically connected with said running fuse and said resistance element; and a starting fuse switch electrically connected with said resistance element and arranged to be opened by the closing of said control switch and adapted to automatically close on the opening of said control switch.

5. In an electric current controller, the combination of a resistance element; starting and running fuses; a control switch for short circuiting said resistance element; a contact member coacting therewith electrically connected with said running fuse and said resistance element; and a starting fuse switch electrically connected with said resistance element and arranged to be opened by the closing of said control switch.

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

GEORGE G. THOMPSON. [L. s.]

Witnesses:

A. B. COOK,  
R. J. ROTE.