

(No Model.)

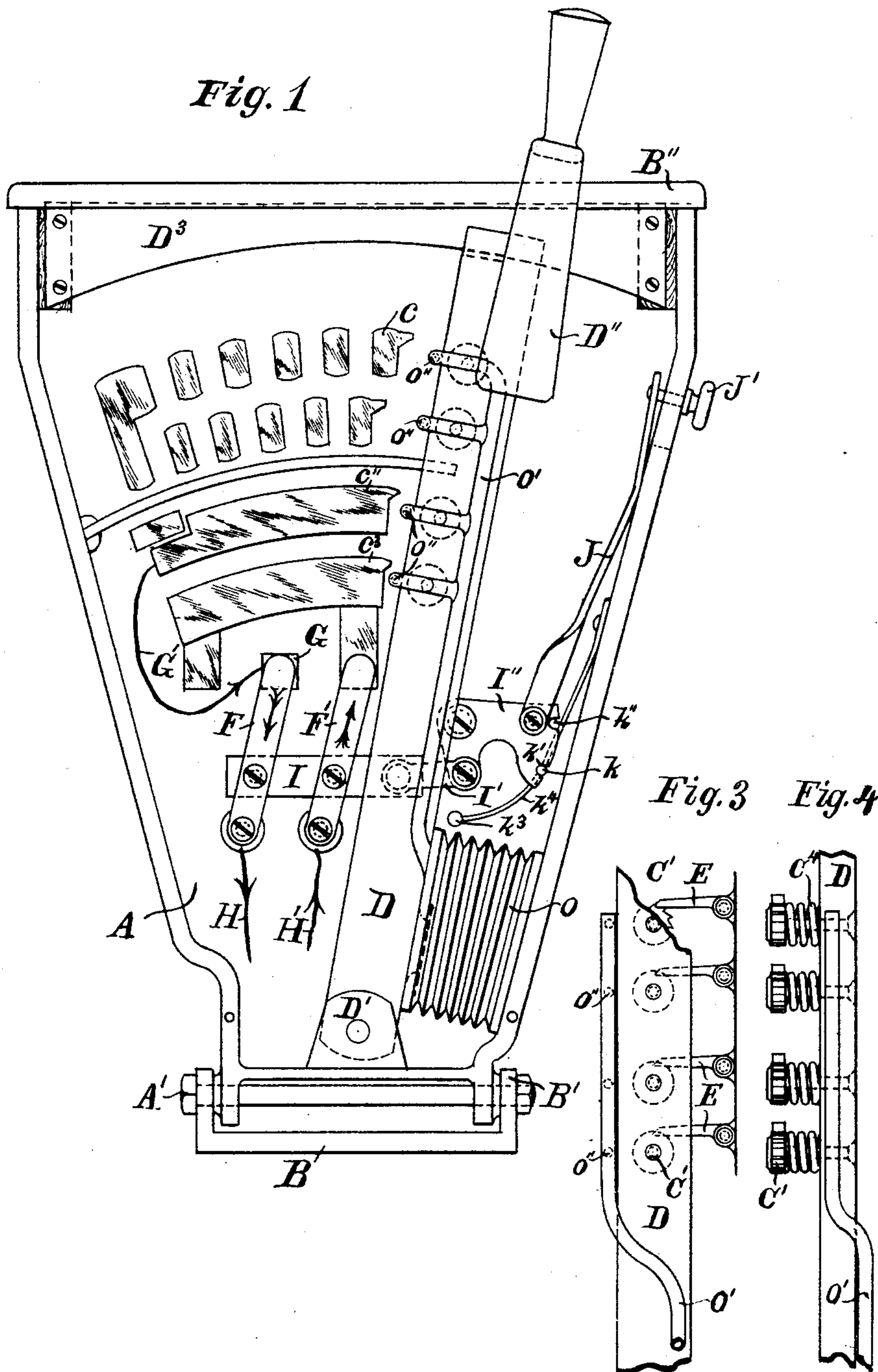
2 Sheets—Sheet 1.

E. A. SPERRY.
ELECTRICAL CONTROLLER.

No. 515,374.

Patented Feb. 27, 1894.

Fig. 1



WITNESSES.

Frank. Miller.

M. Nielson.

INVENTOR.

Elmer A. Sperry.
by Buckingham & Edwards
Attys.

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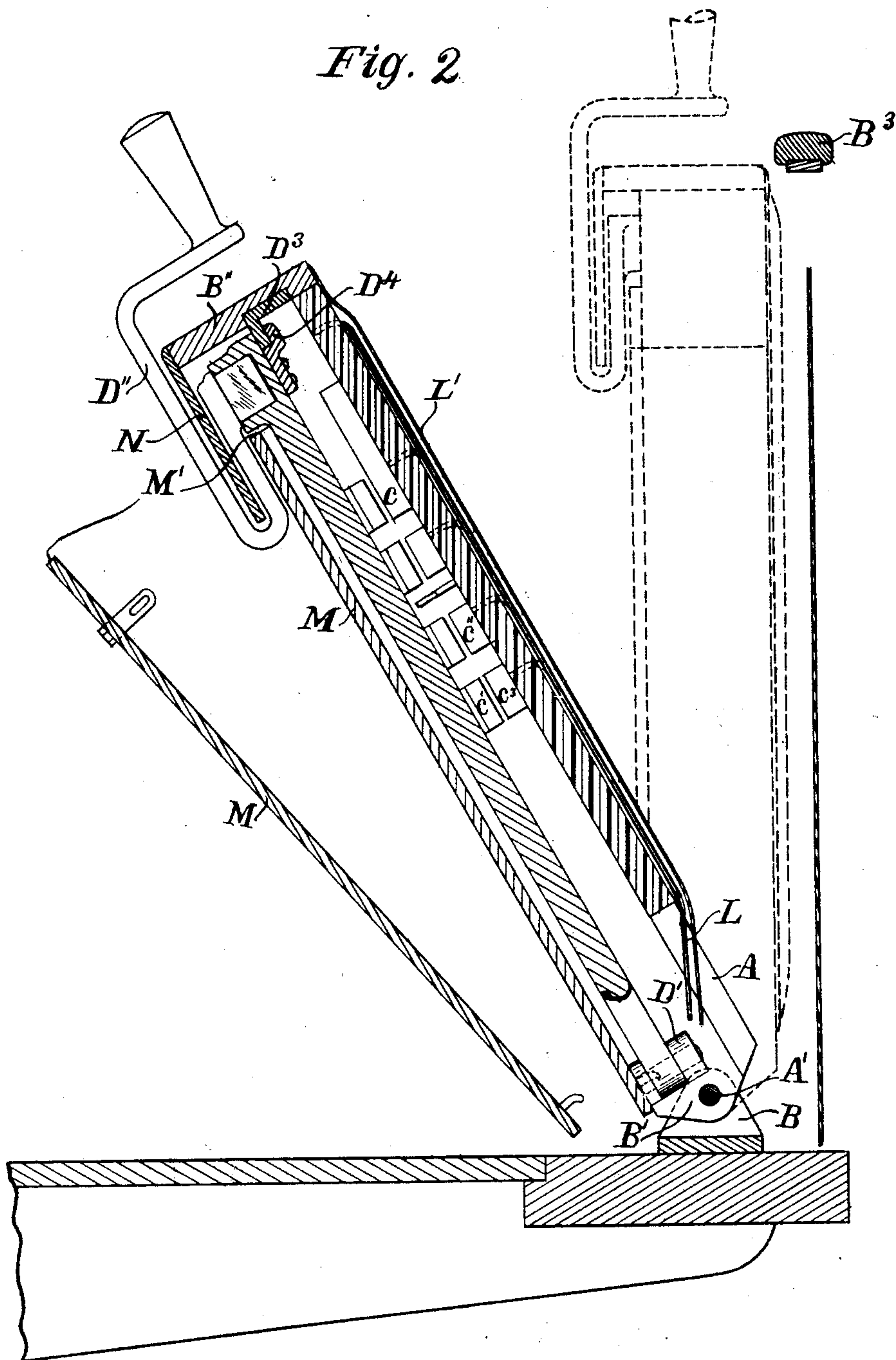
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Fig. 2



WITNESSES.

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UNITED STATES PATENT OFFICE.

ELMER A. SPERRY, OF CLEVELAND, OHIO.

ELECTRICAL CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 515,374, dated February 27, 1894.

Application filed August 23, 1893. Serial No. 483,820. (No model.)

To all whom it may concern:

Be it known that I, ELMER A. SPERRY, a citizen of the United States, residing at Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Electrical Controllers, of which the following is a specification.

My invention relates to electrical controllers, more especially to those adapted to operate upon cars, and may extend to the use of any controller when placed in proximity to a stationary object, as, for instance, the dasher of a car.

It consists in devices and improvements which are hereinafter specified, and more fully pointed out in the claims.

In the drawings, Figure 1 represents a front view with cover removed. Fig. 2 represents a side elevation showing the controller in two positions. Figs. 3 and 4 are details of the contacts.

Similar letters of reference indicate like parts throughout the several views.

The main frame of the controller A is illustrated as resting on a hinge A' at the lower extremity existing between it and the base plate B, and consisting of bolt B'. A cover B'' consists preferably of wood, and when the controller is not in use may be used as a seat, it being flat and low as compared with the dash rail B³, as shown in Fig. 2. The stationary contacts may be indicated at c, the movable contacts at C' which are held in place by spring C⁴, and other stationary contacts indicated at c'' c³. The movable contacts are mounted upon a moving arm D which constitutes the main moving element of the controller, being pivoted at D' and supplied with a removable handle D''. The upper end of this arm is guided by a crown piece D³, clip D⁴ serving to hold same against the compressing springs C⁴, the crown piece D³ being secured to, but insulated from, the main case A, as is shown in Figs. 1 and 2. Co-operating with the movable contacts are the pawls E by means of which they are slightly rotated in arriving at their extreme "off" position. These pawls are omitted in Fig. 1 for the sake of clearness. It will readily be understood from Fig. 3 that the pawls are secured to the right side of the main

frame A of the controller. The pawls naturally protruding to the left will intercept the ratchet teeth of the movable contacts as the arm is thrown to its extreme position to the right as clearly shown in the last named figure. The leading contacts c c'' and c³ are also shown as provided with an angular face for aiding in such rotation, the point of rupture of the arc being thus at one side of (above) the rotating contacts instead of directly to the left of the center. A reversing switch is shown by switch arms F F' co-operating with the lower projections of contact c³ and also contact button G connected by wire G' to contact c''. Wires H H' are shown as connected to the base or pivots of said switch arms. These arms are mechanically coupled by an insulating medium I and link I' to a bell-crank lever I'' and thence by spring J to knob or actuating device J', the spring J serving a second purpose, to constantly hold the reversing lever outward or away from a centralizing position toward one or the other of its extreme positions. A lock for this lever consists in a pin k co-operating with notches k' k'' within such lever, the pin being operated by contact with the main moving element D through the medium of the knob k³ shown on the end of lever k⁴. It will readily be understood that it will not be possible to move the reversing switch until the contact arm has assumed its farthestmost position to the right, whereupon the circuits of the said reversing switch will be open-circuited as c'' c³.

The connecting wires L to the controller are at the back of same, and are secured at various places to their contacts, a protecting apron being indicated at L', serving to shield these wires from the weather.

The front of the controller M is removable as indicated, being bounded on the top by line M' affording between it and the cover a slot through which the projection of the handle D'' is allowed to swing. An apron or shield N covers the slot to a point some little distance below the top of the cover M, thus shutting off from the weather and also not permitting the light of the arc to be seen by an observer stationed in front. As an arc-rupturing device an air forcing mechanism may be employed of any nature, for instance the

bellows O fastened to the case A, the moving element of which is secured to the arm D and a tube or conduit O' from which extends along the arm D with an outlet O'' immediately in front of each of the contacts C'. This is shown in Figs. 1, 2 and 3. In the movement of the arm to the left the bellows inhales air which is ejected in moving to the right, at which time the arc is interrupted. Should an excessive resistance occur between the successive contacts in the two top rows, an arc would tend to be produced between them, and the arc-rupturing air-jet being carried along with the contact, is ever present to rupture the arc wherever same may occur at any position along the stroke of said arm.

The use and operation of the device will be readily understood from the foregoing, and many other alterations and modifications may be made in the apparatus without departing from the principle of my invention, and while it is designed to use all of the above features in connection with one another, yet it is obvious that some may be used without the others, and the invention extends to such use.

The swinging forward of the controller as illustrated in Fig. 2 is for the purpose of rendering the connections on the rear of the box perfectly accessible and avoiding entirely the removal of the controller as a whole from the platform, or removal of the dasher, which is immediately in front of the controller, for the purpose named. The non-centralizing spring J performs the function of preventing the bell-crank I'' from tending to stop during its excursions in a central position, giving a constant tendency to non-centralization and toward either one or the other of its extreme positions. It will be observed that in causing the contacts, preferably those mounted on the moving arm, to rotate, the relation of the contacts is constantly changed, which aids them to wear equally on all sides and especially it improves their life in preventing them from arcing constantly upon one portion.

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

1. In an electric controller, a series of contacts, an element of the controller moving to and fro over said series of contacts, a co-operating contact borne upon such element, an air-discharge nozzle upon one side of said co-operating contact, a source of fluid pressure as bellows O, means connected with said moving element whereby said source shall inhale during one, and discharge during the other of the to and fro movements of said moving element, and a duct from the said source to the discharge nozzle, substantially as and for the purpose specified.

2. In an electric controller, a stationary electric contact, an element of the controller moving to and fro operating a co-operating contact adapted to make and break the elec-

tric circuit with said stationary electric contact, an air-discharge nozzle upon one side of said co-operating contact, a source of fluid pressure as bellows O, means connected with said moving element whereby said source shall inhale during one, and discharge during the other of the to and fro movements of said moving element, and a duct from the said source to the discharge nozzle, substantially as and for the purpose specified.

3. In an electric controller, stationary electrical contacts, co-operating electric contacts which are moved to and fro on and off such contacts during the normal operation of the controller, the contacts being organized to have individual movements of their own, in combination with means adapted to impart such individual movement after breaking and before re-establishing said contacts.

4. In an electric controller, stationary electrical contacts, co-operating electric contacts which are moved to and fro on and off such contacts during the normal operation of the controller, the contacts being organized to have individual movements of their own, in combination with means actuated by the said to and fro movement to impart such individual movement after breaking and before re-establishing said contact.

5. In an electrical controller, a switch, a handle for the manual operation of said switch, a main moving element for the controller provided with a separate handle, two sets of stationary and moving contacts, one controlled by each handle, those of one set being in series circuit relation with those of the other, a lock for the switch, and means connected with the main moving element for actuating such lock.

6. In an electrical controller, a main moving element pivoted below, electric contacts operated thereby, a metallic guide for the upper portion of the said element, and an insulated top for the controller to which the guide is attached.

7. An electrical controller for a car situated on the dasher of said car, in combination with a hinge at or near the base of said controller by means of which the controller may be tipped forward.

8. An electrical controller for a car situated on the dasher of said car, a hinge at or near the base of said controller by means of which the controller may be tipped forward, in combination with electrical connections upon the back of said controller.

9. An electrical controller for a car situated on the dasher of said car, a hinge at or near the base of said controller by means of which the controller may be tipped forward, in combination with electrical connections upon the back of said controller, and a removable cover or shield upon the back of the controller protecting said electrical conductors.

10. In an electrical controller, a cover pro-

viding a slot for the operating handle, and an apron overhanging said slot, substantially for the purpose specified.

5 11. In an electrical controller, a cover providing a slot for the operating handle, an apron overhanging said slot, and a handle protruding upward within such slot.

10 12. In an electrical controller, a circuit breaker consisting of moving electrical contacts and stationary electrical contacts, the moving electrical contacts mounted so as to

turn upon an axis in combination with means for rotating such contacts.

13. An electric car provided with a controller for controlling the electric mechanism 15 of said car, the controller being provided with a flat top for purposes of a seat.

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Witnesses:

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