No. 662,038. Patented Nov. 20, 1900.

E. W. STULL.

CONTROLLER.

(Application filed Dec. 28, 1899.)

(No Model.)

Fig. 1.

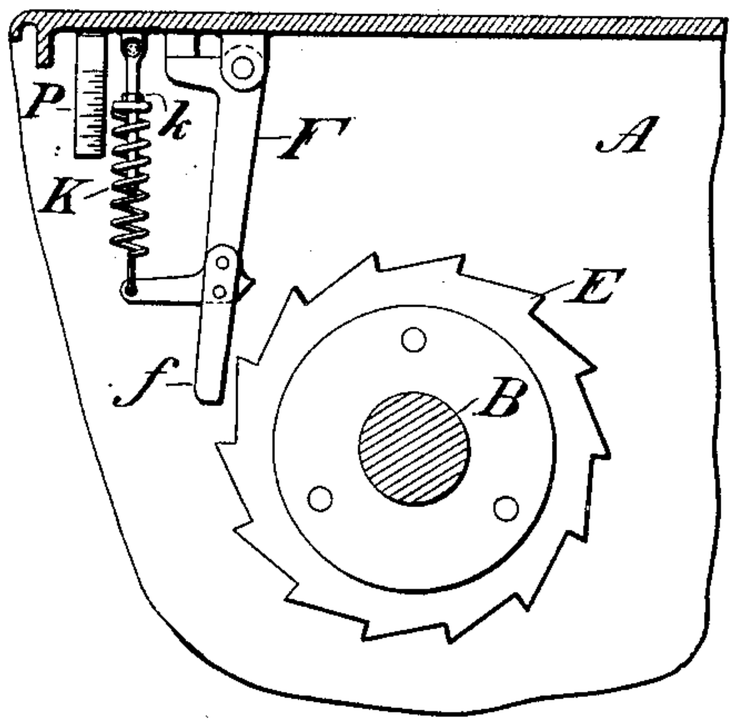
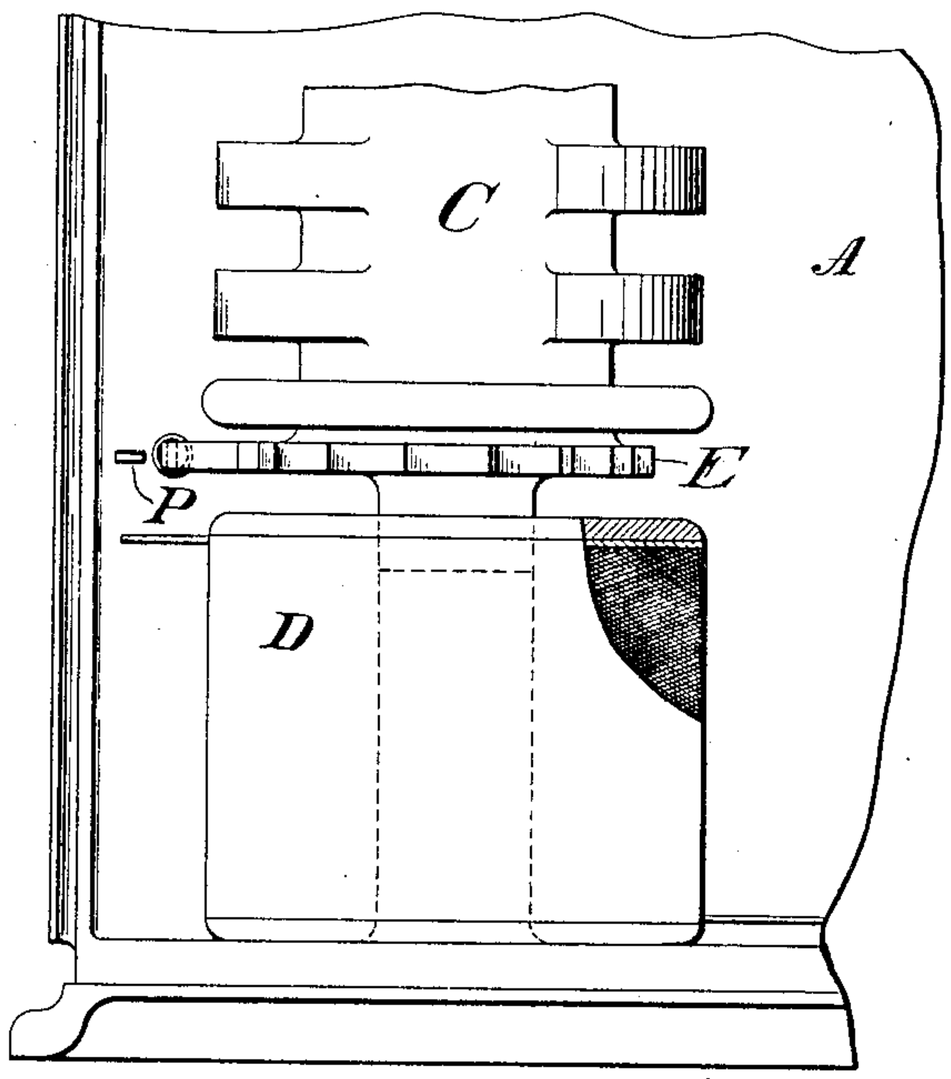


Fig. 2.



WITNESSES:

E. W. Miller.
G. M. Powell.

INVENTOR
E. W. Stull,
BY
Geo. H. Parmelee,
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UNITED STATES PATENT OFFICE.

EMMETT W. STULL, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO THE LORAIN STEEL COMPANY, OF PENNSYLVANIA.

CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 662,038, dated November 20, 1900.

Application filed December 28, 1899. Serial No. 741,821. (No model.)

To all whom it may concern:

Be it known that I, EMMETT W. STULL, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Controllers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has relation to means of novel and useful character for the protection of electric motors from currents of sufficiently large volume to endanger their insulation, and more particularly to means for this purpose for use in connection with the rotary drum-controllers commonly used in the control of electric railway-motors.

My invention may, however, be used in connection with any form of rotary switch used to regulate an electric motor or motors.

It may frequently happen in the operation of motor-controllers that through ignorance or carelessness on the part of the operator the controller may be moved so quickly through its several positions or from one position to another as to cause a current of sufficient volume to pass through the motor-circuit to endanger or destroy the insulation of the motor-windings, or, in other words and in common parlance, the motorman may "feed up" too rapidly.

It is the object of my invention to provide means of simple and efficient character for use in connection with a motor-controller, whereby it is impossible for the operator at any time to so actuate the controller as to cause a current in excess of a predetermined amperage to pass to the motor or motors; and with this object in view my invention consists in the provision of a device which is automatically actuated to lock the controller against forward movement whenever the current in the motor-circuit exceeds a certain predetermined volume.

The invention also comprises means whereby said device may be adjusted to operate under varying predetermined conditions.

It also consists in the novel construction and combination of parts, all as hereinafter described, and pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a portion of a controller having my invention applied thereto, and Fig. 2 is a side elevation of the same.

The letter A designates the frame of the controller, B the controller-shaft, and C the drum secured to said shaft.

D is a magnet-coil wound on the lower portion of said shaft and which is preferably the "blow-out" coil of the controller.

E is a ratchet-disk also secured to the said shaft B, and F is a pawl-lever pivoted to the frame A and having rigidly secured thereto a pawl *f*, which is designed to engage the teeth of said disk. This pawl-lever, which is made of iron or other magnetic material, is located in the field of force of the coil D, its pawl *f* being preferably of brass or other non-magnetic material.

K is a spring which acts upon the lever F in opposition to the magnet, and *k* is an adjusting-nut for varying the tension of the said spring. Adjacent to said nut is a scale-plate P, on which is marked a scale of amperes. The position of this nut with reference to this scale determines the tension of the spring and the number of amperes of current which can flow through the coil D without overcoming the action of the spring on the lever F. When the current flowing through said coil increases in volume beyond the predetermined amperage, the field of force of said coil becomes correspondingly stronger, and the tendency of those lines of force which pass through the lever F to shorten causes said lever to move inwardly toward the disk E, and thereby engages the pawl *f* therewith. The controller shaft and drum are thereby locked against further operation until such time as the volume of current in the controller-circuit is reduced to a point where the spring K overcomes the action of the coil. I thus provide in a very simple and effective manner a safeguard against a too-rapid operation of the controller.

I do not wish to limit myself to the precise construction, arrangement, and combination of parts which I have herein shown and described, since the details thereof may be va-

ried without departing from my invention as set forth in the appended claims.

Having thus described my invention, what I claim, and desire to protect by Letters Patent, is—

1. The combination with a motor-controller drum and its blow-out coil, of a movable locking device arranged in the field of said coil, and a spring acting upon said device in opposition to the said coil, substantially as described.

2. The combination with a motor-controller drum and its blow-out coil, of a movable locking device arranged in the field of said coil, a spring acting upon said device in opposition to said coil, and means for adjusting the tension of said spring.

3. The combination with a motor-controller drum, its blow-out coil, and a ratchet fixed to the said drum, of a pawl device pivoted in the field of force of said coil and arranged to engage the said ratchet, and a spring acting upon said device in opposition to the said coil.

4. The combination of a motor-controller drum of magnetic material, a ratchet fixed with reference to said drum, a coil on the shaft of said drum, and a movable pawl situated in the magnetic field of the coil and arranged to engage the teeth of said ratchet under the action of an increase in strength of said field.

In testimony whereof I have affixed my signature in presence of two witnesses.

EMMETT W. STULL.

Witnesses:
MYRTLE E. SHARPE,
BLANCHE V. GRUMZER.