

No. 677,027.

Patented June 25, 1901.

F. W. GARRETT.
OPERATING MEANS FOR ELECTRIC CONTROLLERS.

(Application filed Nov. 27, 1900.)

(No Model.)

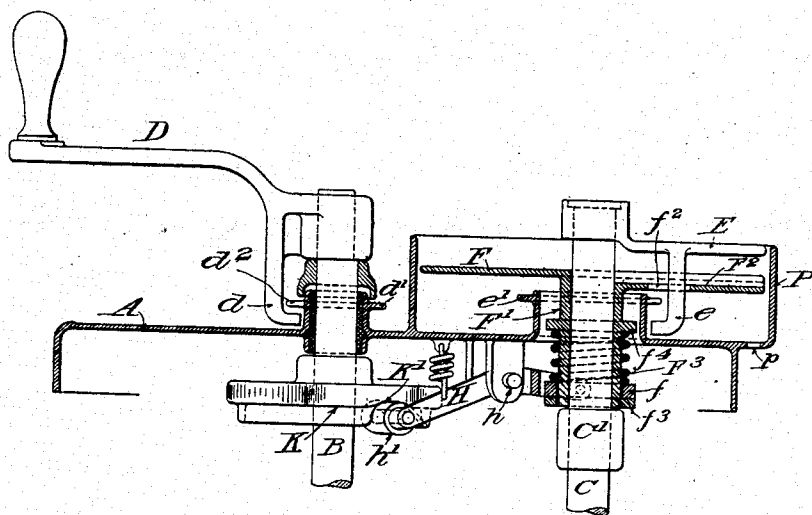


Fig. 1.

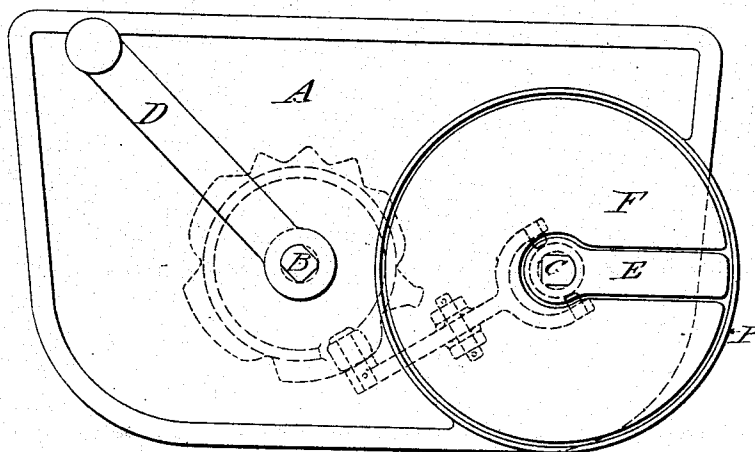


Fig. 2.



Fig. 3.

WITNESSES:

W. C. Pringle
Geo. H. Orr

INVENTOR

F. W. Garrett.

BY
Geo. H. Parmelee,
Attorney.

UNITED STATES PATENT OFFICE.

FRANK W. GARRETT, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNOR TO THE
LORAIN STEEL COMPANY, OF PENNSYLVANIA.

OPERATING MEANS FOR ELECTRIC CONTROLLERS.

SPECIFICATION forming part of Letters Patent No. 677,027, dated June 25, 1901.

Application filed November 27, 1900. Serial No. 37,942. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. GARRETT, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented a new and useful Improvement in Operating Means for Electric 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 for governing the operation of electric-motor controllers.

In my pending application for patent, Serial No. 31,068, filed September 25, 1900, I have described and broadly claimed means for preventing the improper operation of the reverse-switches of electric-motor controllers, consisting in the combination, with the reverse-switch handle, of a guard-plate adjacent thereto and means for bringing together and separating the handle and plate, said handle and plate being so constructed and arranged that when brought together the handle cannot be grasped for practical operation. In the said application I have also described and broadly and specifically claimed a construction and arrangement wherein the separation of the handle and plate is effected by causing the handle to be moved toward and away from the guard-plate by the operation of the regulating-switch, the guard-plate being fixed to the controller frame or casing.

The present invention relates to and consists in the provision of means wherein the reverse-switch handle and the guard-plate are arranged to effect the same result as in the invention of the said application, but wherein the separation and bringing together of the handle and plate are effected by a movement of the plate, the handle remaining in fixed position.

My invention 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 longitudinal vertical section through the upper portion of a controller, and Fig. 2 is a plan view of the same. Fig. 3 is a detail view showing a slight modification.

The letter A in the figures indicates the top of the controller-casing, B the shaft of the regulating-switch, and C the shaft of the reverse-switch.

C' is the upper bearing for the shaft C.

D is the handle of the regulating-switch, and E the reverse-switch handle. The handles D and E are both removably fitted to their respective shafts, removal of the handle D being prevented except when said handle, and consequently the regulating-switch, is at off position by means of the lug *d*, which engages a guard-flange *d'* on the controller-casing. Said flange has a slot *d*² at the off position of the handle D to pass the lug *d* and permit the handle to be applied to or removed from its shaft. This is a well-known expedient in the art. The handle E has a similar lug *e*, which engages a guard-flange *e'* on the controller-top.

F is a guard-plate of circular form sleeved upon the shaft C, its sleeving portion F' being extended down through an opening in the controller-top. Said plate has formed in its upper surface, directly underneath the handle E, a radial groove or depression F² of a depth about equal to or a little greater than the thickness of the handle, and the latter is offset downwardly somewhat from its hub, so that when the plate F is raised on the shaft C the handle will be received by and lie in said groove, so that it cannot be grasped by the hand for operation. It being desired to prevent operation of the reverse-switch at all times unless the regulating-switch is at its off position, it is necessary to keep the guard-plate in a raised position except when the regulating-switch is turned to off position and to lower said plate at that time. Various means, actuated or controlled by the movement of the regulating-switch, may be used for this purpose. A simple means is that shown in Fig. 1 and 2, consisting of a lever H, pivoted at *h* and having one of its arms provided with an antifriction-roller *h'*, which travels on a cam-plate secured on the shaft B and having a bearing-surface K, with a cam-recess K' therein. The other arm of said lever is forked, and the arms of the fork are pivotally secured to opposite sides of a collar *f*, which is loosely mounted on the sleeving

portion of the said plate between flanges f^3 f^4 thereon. F^3 is a coiled spring seated on said sleeving portion between the collar f and the upper flange f^4 . The recess K' is so placed on the shaft B that when the handle D is turned to off position (the position shown in Figs. 1 and 2) said recess will be in position to receive the antifriction-roller h' , which will permit the guard-plate to drop on the shaft C away from the handle E. At all other positions of the regulating-switch the engagement of the surface K with the roller h' will hold the guard-plate in elevated position through the lifting action on the spring F^3 . Said plate is slotted at f^2 to receive the lug e , and inasmuch as the plate is sleeved loosely on the shaft with respect to rotary as well as vertical movement the engagement of said lug with the wall of the slot f^2 causes the plate to rotate with the handle, and thus maintain the relative positions of the handle and groove F^2 in all positions of the reverse-switch.

In order to prevent the reverse-switch being operated by grasping the plate and using it as a handle, I provide the cylindric guard-flange P, which closely surrounds said plate. p designates a drain-aperture for the receptacle formed by this guard-flange.

The purpose of the spring F^3 above described is to protect the fingers of the motor-man from being seriously pinched should he retain his hold of the reverse-switch handle in turning the regulating-switch handle from its off position. This spring should be sufficiently stiff to normally raise the guard-plate without substantial compression, (the latter being more or less loose on the shaft,) while in case of obstruction by the fingers it will readily yield, and thus protect the fingers from injury. This feature is also applicable to the combination of my previous application above referred to.

The construction and arrangement shown in Fig. 3 differ from that just described in the following particulars: Instead of forming the guard-plate F with the groove or depression F^2 , I make the handle E of the form shown in my application above referred to—that is to say, with a flat oval surface meeting the bottom edges and adapted to lie sufficiently close against the surface of the guard-plate to prevent it from being effectively grasped by the hand.

Various means may, as above indicated, be used for actuating the guard-plate, and I do not wish to be limited in this or other respects to the particular mechanical details which I have shown and described.

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

1. In a controller for electric motors, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a guard-plate underneath the said handle, and means for moving said plate toward and away from the said handle.

2. In a controller for electric motors, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a guard-plate underneath said handle, and devices controlled by the regulating-switch for moving said plate toward and away from the said handle.

3. In a controller for electric motors, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a guard-plate sleeved on said shaft below the said handle, and a lever engaging the said sleeve, and actuated by the regulating-switch.

4. In a controller for electric motors, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a guard-plate below the said handle and having a groove in its upper surface to receive the same, and devices controlled by the regulating-switch for moving said plate toward and away from the handle.

5. In a controller for electric motors, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a guard-plate loosely mounted on the reverse-switch shaft below said handle and having a groove in its upper surface to receive said handle, devices controlled by the regulating-switch for moving said plate toward and away from the handle, and means whereby said handle cannot be removed except at its off position.

6. In an electric controller, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a vertically-movable guard for preventing operative grasp of said handle, unless the regulating-switch is first moved to off position, and arranged to turn with said handle, and a guard for preventing the plate from being turned except by means of the handle.

7. In an electric controller, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a vertically-movable guard-plate controlled by the regulating-switch and arranged to prevent said handle from being operatively grasped unless the regulating-switch is first moved to off position, said handle having a lug extending through said plate and engaging a slotted overhanging flange of the controller-casing, and a cylindrical vertical guard-flange on said casing surrounding the periphery of said plate.

8. In an electric controller, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a guard-plate arranged to coöperate with said handle to prevent operative grasp thereof, and means including a spring for bringing said handle and plate together.

9. In a controller for electric motors, the combination of a regulating-switch, a reverse-switch, a handle for the reverse-switch, a movable guard-plate for said handle, a lever actuated by the regulating-switch for moving said plate toward the handle, and a spring

forming the connection between the said lever and plate.

10. In an electric controller, the combination of a regulating-switch, a reverse-switch,
5 a handle for the reverse-switch, a vertically-movable guard-plate sleeved on the reverse-switch shaft below the handle, a movable collar on the sleeve portion of said plate, a spring seated between said collar and an upper fixed

bearing carried by the plate, and a lever for actuating the said collar controlled by the regulating-switch.

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

FRANK W. GARRETT.

Witnesses:

CORA G. COX,
H. W. SMITH.