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CONTROLLER APPARATUS.

APPLICATION FILED AUG. 21, 1902.

NO MODEL.

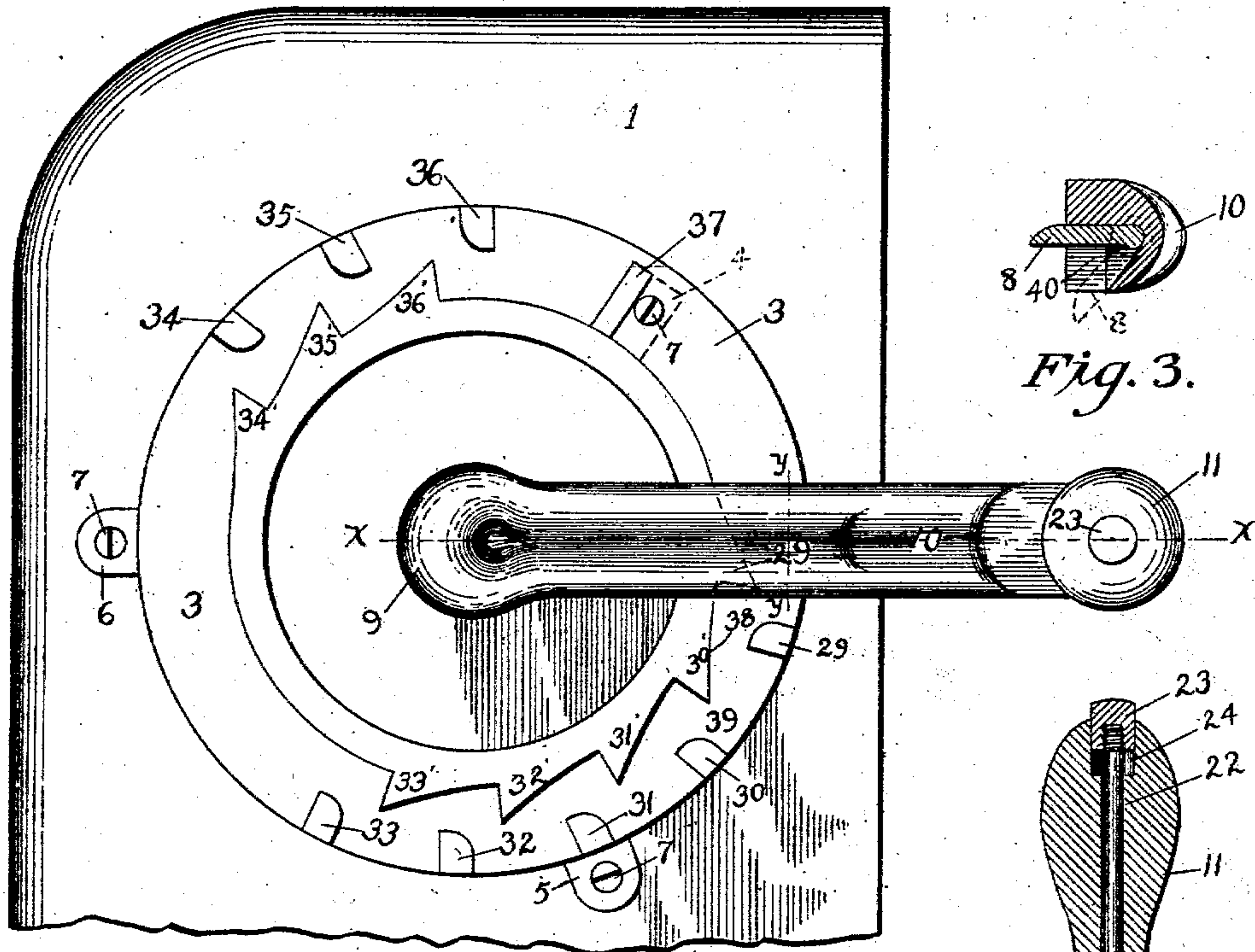


Fig. 1.

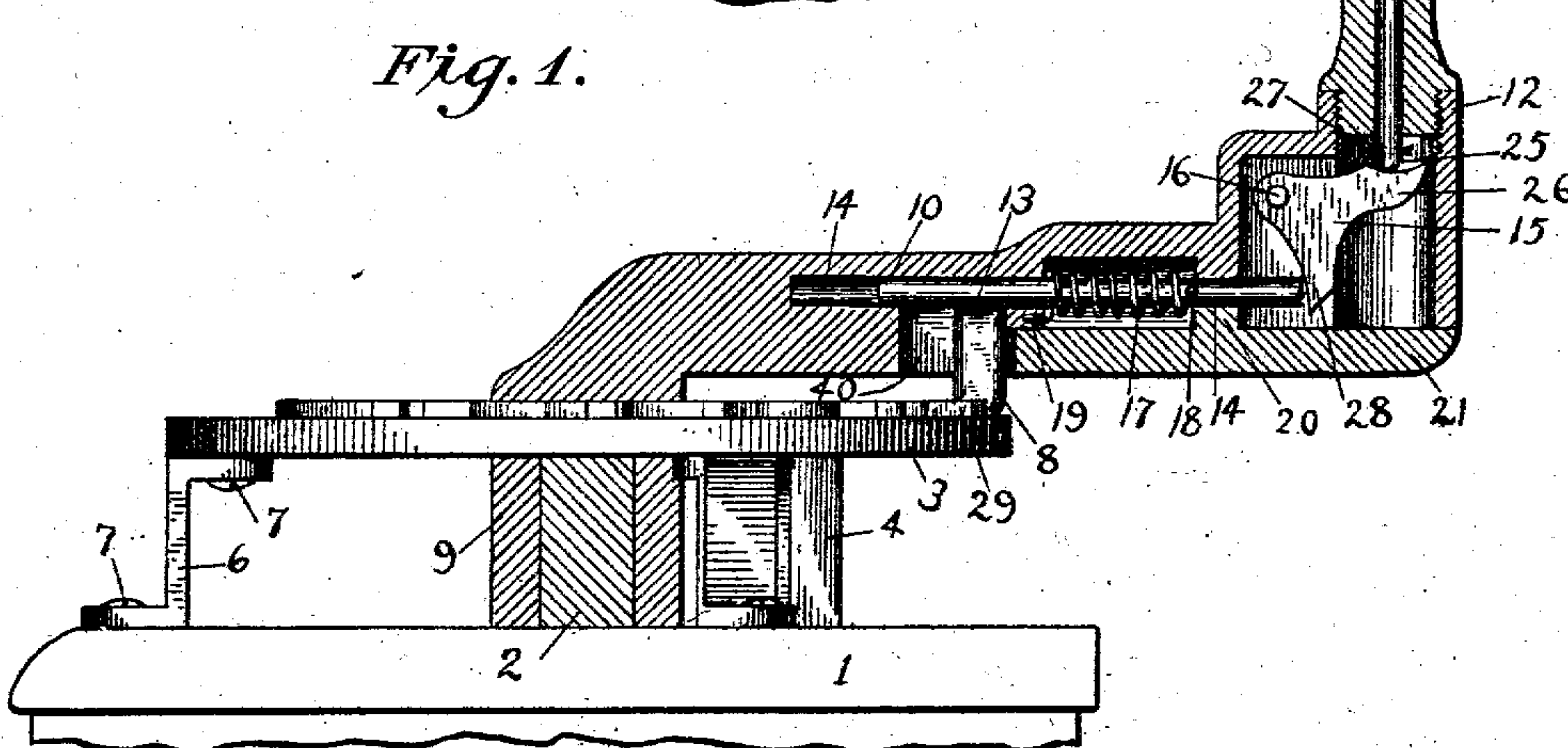


Fig. 2.

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PATRICK S. BARRETT AND JOHN P. DURKIN, OF SCRANTON, PENNSYLVANIA.

CONTROLLER APPARATUS.

SPECIFICATION forming part of Letters Patent No. 730,334, dated June 9, 1903.

Application filed August 21, 1902. Serial No. 120,505. (No model.)

To all whom it may concern:

Be it known that we, PATRICK S. BARRETT and JOHN P. DURKIN, citizens of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Controller Apparatus, of which the following is a specification.

This invention relates to the handles of motor-controllers such as are in general use in operating the motors of electric-railway cars; and the objects of the invention are to provide a simple and certain means for stopping the controller-handle in the several positions or stages which it is designed to occupy in turning on the current, to assist the operator in gradually supplying the current, to avoid the possibility of turning on the current too rapidly, to make such mechanisms freely reversible without stopping in "turning off" the current, and other objects, as are specified, and pointed out in the claims.

To these ends the invention consists of the construction, arrangement, and combination of parts, as set forth, and illustrated in the drawings, in which—

Figure 1 is a top plan view of a controller with one of our devices attached thereto. Fig. 2 is a view, partially in cross-section, taken on the line *x x* of Fig. 1. Fig. 3 is a cross-section on the line *y y* of Fig. 1, the handle illustrating one of the operations of the catch.

Similar characters of reference denote like and corresponding parts throughout the several views.

Referring to the drawings, 1 denotes a motor-controller such as is in general use on electric-railway cars.

2 is the shank of the commutator-shaft, to which our improved handle is fastened.

3 is a ring or rack supported by the stub 4 on the motor-controller and the two separate legs 5 and 6, which legs are arranged to be of the same height as the usual stub 4 on motor-controllers now in use. The ring 3 is by these means secured with several screws 7 to the motor-controller in such relation encircling the commutator-shaft so that the catch 8 on the handle will describe a circle corresponding to the said ring or rack 3 when the socket 9 of said handle is applied to the shank of

the commutator. The body portion 10 of the handle is recessed and hollowed out to accommodate the principal working mechanism of the device in the interior of said body, and a handle proper, 11, is secured to said body portion at 12 by means of a screw-threaded connection. The catch 8 is rigidly secured to or integrally made with a sliding rod 13, having one of its ends sliding in the bore 14 and the other end arranged to impinge on the bell-crank 15, pivoted at 16. The sliding rod 14 is provided with a helical spring 17, having one of its ends passed through a hole in the rod at 18 and the other end of said spring secured to a partition in the handle at 19. The rod is kept in position by a projection or saddle 20 on the plate 21, which closes the lower side of the body of the handle after the parts are inserted. The handle proper, 11, is provided with a sliding rod 22, fitted with a button or cap 23, which is slidable within the recess 24 in the upper end of the handle. The lower end 25 of the sliding rod 22 impinges on the arm 26 of the bell-crank 15, and the sliding rod 22 is arranged to be held into its position by a split pin 27, inserted through its lower end after being inserted through the bore in the handle. The arm 28 of the bell-crank 15 is arranged to impinge against the outer end of the sliding rod 14, whereby the said rod is operated by pressing on the button 23 in the handle. The spring 17 is arranged to normally pull the sliding rod to the outer limit of its course, so that the button 23 normally extends upward out of the handle. This position of the sliding rod brings the catch 8 normally in line with the stops 29, 30, 31, 32, 33, 34, 35, and 36 and away from the opposing teeth or serrations 29', 30', 31', 32', 33', 34', 35', and 36'.

The complete operation of the device is now readily explained. The handle in Fig. 1 is shown ready to make the initial step in "turning on" the current. If it is turned in the direction of the arrow without pressing on the button 23, the catch 8 will first come in contact with the stop 29, which will prevent its further progress unless it is pressed inward by a downward pressure with the thumb or hand of the operator on the button 23. In this position, of course, it may pass through

the space between the tooth 30 and stop 29. The operator, allowing the pressure on the button 23 to relax, presses the handle further in the direction of the arrow until it is again
 5 stopped by the stop 30, when with the like operation to that just described, may be pressed past that obstruction and similarly through all the other gradations of turning on the current. In case no extensive delay is de-
 10 sired to be made at the several stops the thumb of the operator may be kept continually pressing on the button 23, so that he can feel the catch being pressed up over the surface 38 of the tooth 30 and may sense the sud-
 15 den snap which occurs as the catch passes the crown 39 of the tooth. He can thus take cognizance of the exact time at which the commutator adds additional current, the commutator-shaft being of course arranged in har-
 20 mony with the ring 3 when the same is adjusted to the motor. It will thus be seen that when the thumb is not pressed on the button 23 the handle, being turned in the direction of the ar-
 25 row, will not without an operation of the thumb pass any of the stops 29 to 36 without a direct act of the operator, whereas if the operator keeps a continuous pressure on the said but-
 30 ton he may sense the exact moment at which he is turning on additional current through- out the series of stops. It is understood, of course, that the stop 37 will stop the motion of the handle whether the button is pressed inwardly or not. During the reverse motion of the handle the catch 8, which is held nor-
 35 mally to the outer edge of the recess 40, within which it operates, resting against the rear wall thereof, is turned in the position shown in dotted lines in Fig. 3, the coiled spring 17 being arranged so as to constrain the catch
 40 into the vertical position, but to permit of its turning, as shown, as well as to permit of the sliding motion inward, as just described. It can thus be readily seen that in the reverse motion of the handle in turning off the han-
 45 dle the catch 8 turns entirely out of the way and slides idly over the stops and teeth on the ring without any inconvenience, delay, or interference.

Having thus described the construction and
 50 operation of our device, we do not wish to be

confined to the exact construction shown, as many of the details may be varied without departing from the general spirit of our invention.

What we do claim, and desire to secure by 55 Letters Patent, is—

1. In a motor-controller of the kind de-
 scribed, an operating-handle, a spring-actu-
 ated sliding rod in said handle, a swinging
 catch on said rod, and means for limiting the 60
 motion of said catch, in combination with a ring on said controller, the said ring having two series of lugs on the upper edge thereof lying in a circle described by that part of the handle from which the catch extends, the 65
 lugs thereof being arranged to engage with the catch and prevent forward motion of the handle, and to swing the said catch out of engagement therewith in the reverse motion of the handle, substantially as specified. 70

2. In a controller of the kind described, an operating-handle, a sliding rod partially revo-
 luble, a downwardly-projecting catch secured to said rod, a ring on said controller lying in the plane in which the said catch is carried 75
 two series of lugs projecting upward from the face of said ring, the inner set of said lugs having forwardly-sloped serrations slightly in the rear of each of the lugs in the outer series, substantially as and for the purpose 80
 specified.

3. A controller-operating mechanism comprising a ring arranged around the shank of the controller-shaft, two series of stops projecting upwardly from said ring, a handle at- 85
 tachable to said controller-shaft, a sliding catch on said handle arranged to engage with the said projecting stops, the inner stops aforesaid having sloping faces which drive the catch outward as the crank is advanced, 90
 and a spring arranged to constrain the said catch inwardly, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

PATRICK S. BARRETT.
 JOHN P. DURKIN.

Witnesses:

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 F. J. DE LACEY.