

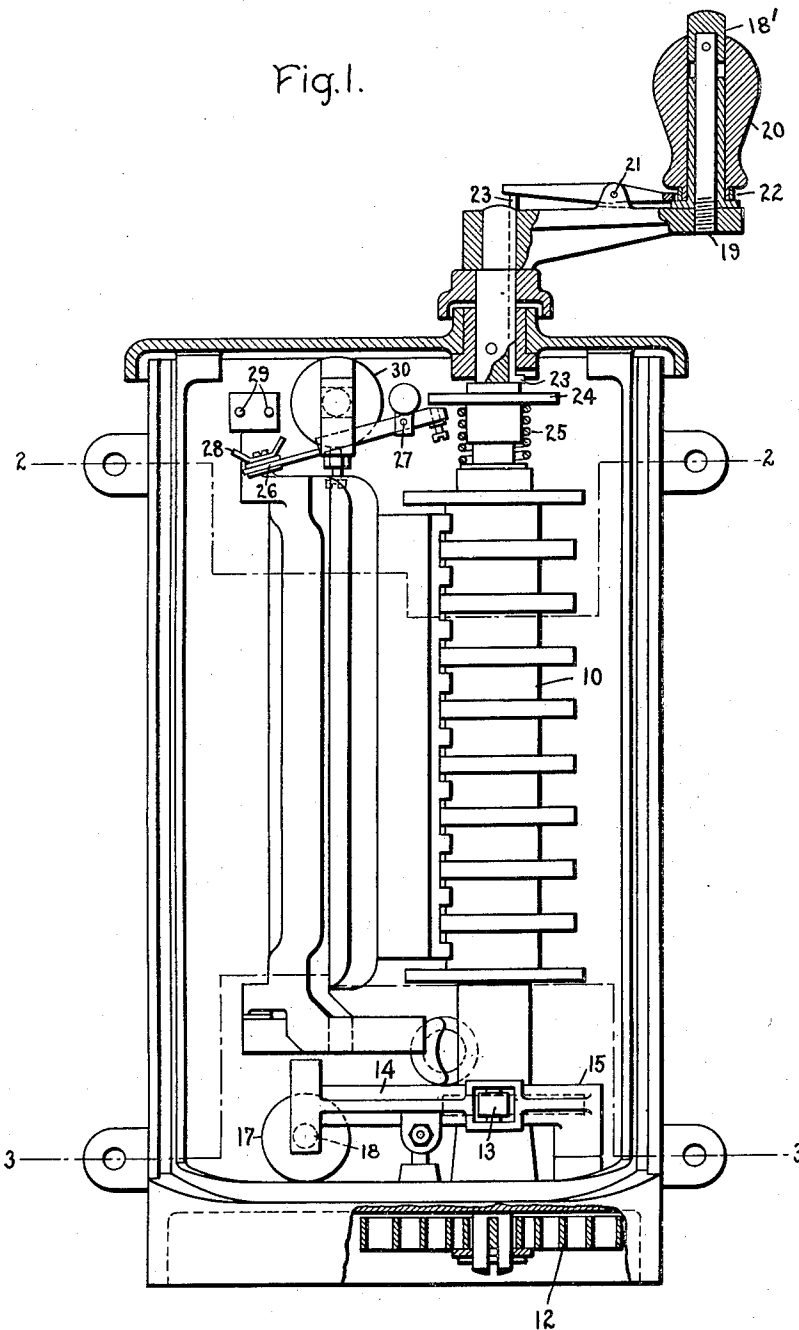
H. C. HASTINGS & W. L. WISE.
 CONTROLLER FOR ELECTRIC CIRCUITS.
 APPLICATION FILED MAR. 15, 1909.

1,019,467.

Patented Mar. 5, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig.2.

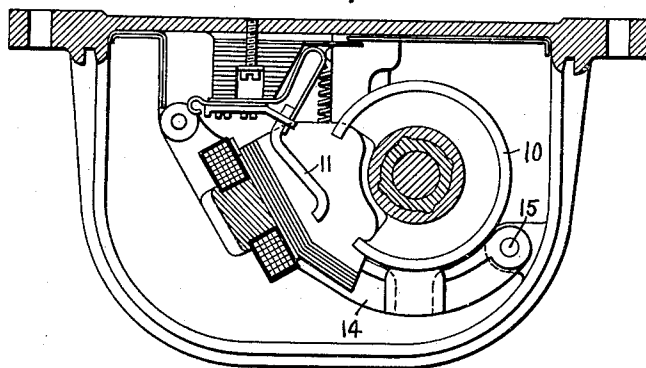


Fig.3.

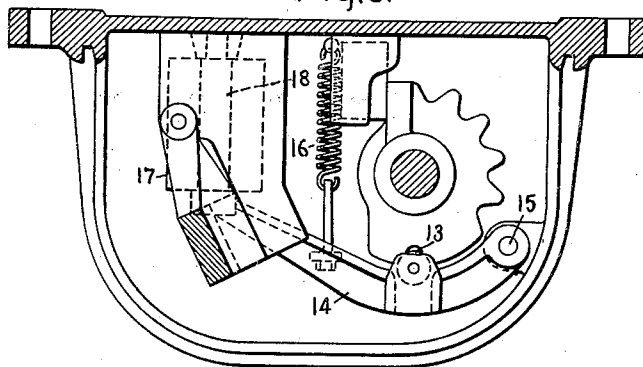
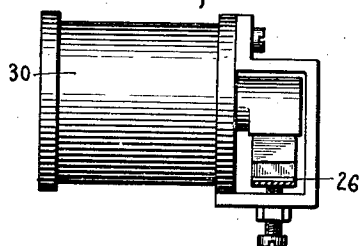


Fig.4.



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UNITED STATES PATENT OFFICE.

HAMMOND C. HASTINGS AND WILLIAM L. WISE, OF RUGBY, ENGLAND, ASSIGNORS TO
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

CONTROLLER FOR ELECTRIC CIRCUITS.

1,019,467.

Specification of Letters Patent.

Patented Mar. 5, 1912.

Application filed March 15, 1909. Serial No. 483,363.

To all whom it may concern:

Be it known that we, HAMMOND C. HASTINGS and WILLIAM L. WISE, subjects of the King of Great Britain, residing at Rugby, England, have invented certain new and useful Improvements in Controllers for Electric Circuits, of which the following is a specification.

This invention relates to devices for controlling electric circuits and has for its object the provision of a device of this character which will always return to protective position upon the occurrence of abnormal circuit conditions and which at the same time is durable in construction and simple in operation.

Our invention relates more specifically to devices for regulating the speed of electric motors, one of the objects of our invention being to produce a speed regulator which can be left in any desired position, and on the failure of voltage or the occurrence of overload in the system will return to the "off" or protective position.

In carrying out our invention, we provide in connection with the controlling member, which is biased to the "off" or starting position, a locking device which normally locks the member in various positions. This locking device is controlled by a no-voltage magnet which, during normal running locks the controlling member, but upon failure of voltage allows the arm to return to the "off" position. In order that the operator shall be able to turn the handle from one position to another, we arrange a switch in the handle which controls the no-voltage magnet, so that when it is desired to move the controlling member, by operating the switch the no-voltage magnet is de-energized and the controlling member unlocked. Upon releasing the switch, the controlling member will be again locked in position.

Other objects of our invention will appear in the course of the following specification, wherein we have disclosed our invention embodied in concrete mechanism for the purpose of illustration.

In the drawings illustrating our invention, Figure 1 represents an elevation, partly in section, of our complete controlling device; Fig. 2 represents a section on the line 2—2 of Fig. 1; Fig. 3 represents a

section on line 3—3 of Fig. 1; and Fig. 4 a detail of the overload device.

Referring to the drawings, 10 represents a controlling member, which, for the purpose of illustration, we have shown in the form of a drum, although it is evident that our invention is not limited to this form of construction. This drum is arranged to control the circuit in a well known manner by means of contact fingers 11. The drum 10 is biased to the "off" or starting position by means of a spring 12 secured to the drum shaft. Above this drum is a notched wheel or star wheel, secured to the shaft of the drum and arranged to rotate therewith. The notches of this star wheel are adapted to be engaged by a roller 13 mounted in a lever 14, pivoted at 15. A spring 16 holds the lever in contact with the star wheel. A no-voltage magnet 17 is arranged to control the action of the lever 14 so that when the magnet is energized, it will draw up the lever and the roller 13 will be tightly locked in the various notches in which it happens to be placed. The magnet 17 is provided with a core 18 which is pivoted to the lever 14.

By this arrangement during normal running the drum 10 will be locked. Upon failure of voltage it will be released and return to the "off" position. In order, however, that the operator may turn the drum so as to change the speed of the motor, we provide means for de-energizing the no-voltage magnet and thereby releasing the lever 14 from the star wheel. This we accomplish by means of a spindle 18' on the handle 19 attached to the controlling member. The grip portion 20 of the operating handle is arranged to be moved longitudinally by pressing on the spindle 18' and a lever pivoted at 21 has one end engaging the groove 22 in the grip 20, while its free end engages a rod 23, moving longitudinally of the drum shaft. This rod 23 engages a flange collar 24, which slides on the drum shaft so as to move against the tension of the spring 25. A switch arm 26 is pivoted at 27 so that one end engages the flange 24, while the free end, which is provided with bridging contact 28, is arranged to bridge contacts 29 to short circuit the no-voltage magnet 17. By lifting the grip portion 20 of the handle, the switch arm 26 is moved on

its pivot and the no-voltage magnet short circuited. This releases the lever 14 from the star wheel and enables the operator to turn the operating handle and thereby the controlling member to any desired position. If he wishes to leave it in this position he may do so, since as soon as the handle is released the no-voltage magnet again locks the member in position. In order to afford protection against the occurrence of overload conditions, we provide an overload magnet 30, which coöperates with the switch arm 26, so that upon the occurrence of overload the arm will be raised and the no-voltage magnet short circuited, just as in the case when the operator engages the handle. By this arrangement, the controlling member will be returned to protective position upon the occurrence of underload or overload conditions and may also be moved from one position to another as desired. The arrangement is, moreover, an extremely rugged and simple one.

While we have described our invention as embodied in concrete mechanism for the purpose of illustration, it should be understood that we do not limit our invention thereto, since various modifications thereof will suggest themselves to those skilled in the art without departing from the spirit of our invention, the scope of which is set forth in the annexed claims.

What we claim as new and desire to secure by Letters Patent of the United States, is,—

1. A controlling device for electric circuits comprising a controlling member biased to an initial position, a no-voltage magnet, means controlled by said magnet for holding the member in operative position, a switch normally independent of the controlling member for deenergizing the magnet, and a device movable with the

controlling member for operating the switch in any position of said member. 45

2. A controlling device for electric circuits comprising a controlling member biased to an initial position and provided with an operating handle, a no-voltage magnet, means controlled by said magnet for holding the member in various operative positions, a switch normally independent of the handle for deenergizing the magnet, and an actuating device mounted upon the handle for closing the switch in any position of the handle. 50 55

3. A controlling device for electric circuits comprising a controlling member biased to an initial position, a no-voltage magnet, means controlled by said magnet for holding the member in operative position, a switch normally independent of the controlling member for deenergizing the magnet, a device movable with the controlling member for operating the switch in any position of said member, and an overload magnet for controlling the said switch. 60 65

4. A controlling device for electric circuits comprising a controlling member biased to an initial position provided with an operating handle, a no-voltage magnet, means controlled by said magnet for holding the member in various operative positions, a switch normally independent of the handle for deenergizing the magnet, an actuating device mounted upon the handle for closing the switch in any position of the handle, and an overload magnet for controlling the switch. 70 75

In witness whereof, we have hereunto set our hands this second day of March, 1909. 80

HAMMOND C. HASTINGS.

WILLIAM L. WISE.

Witnesses:

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