

No. 750,972.

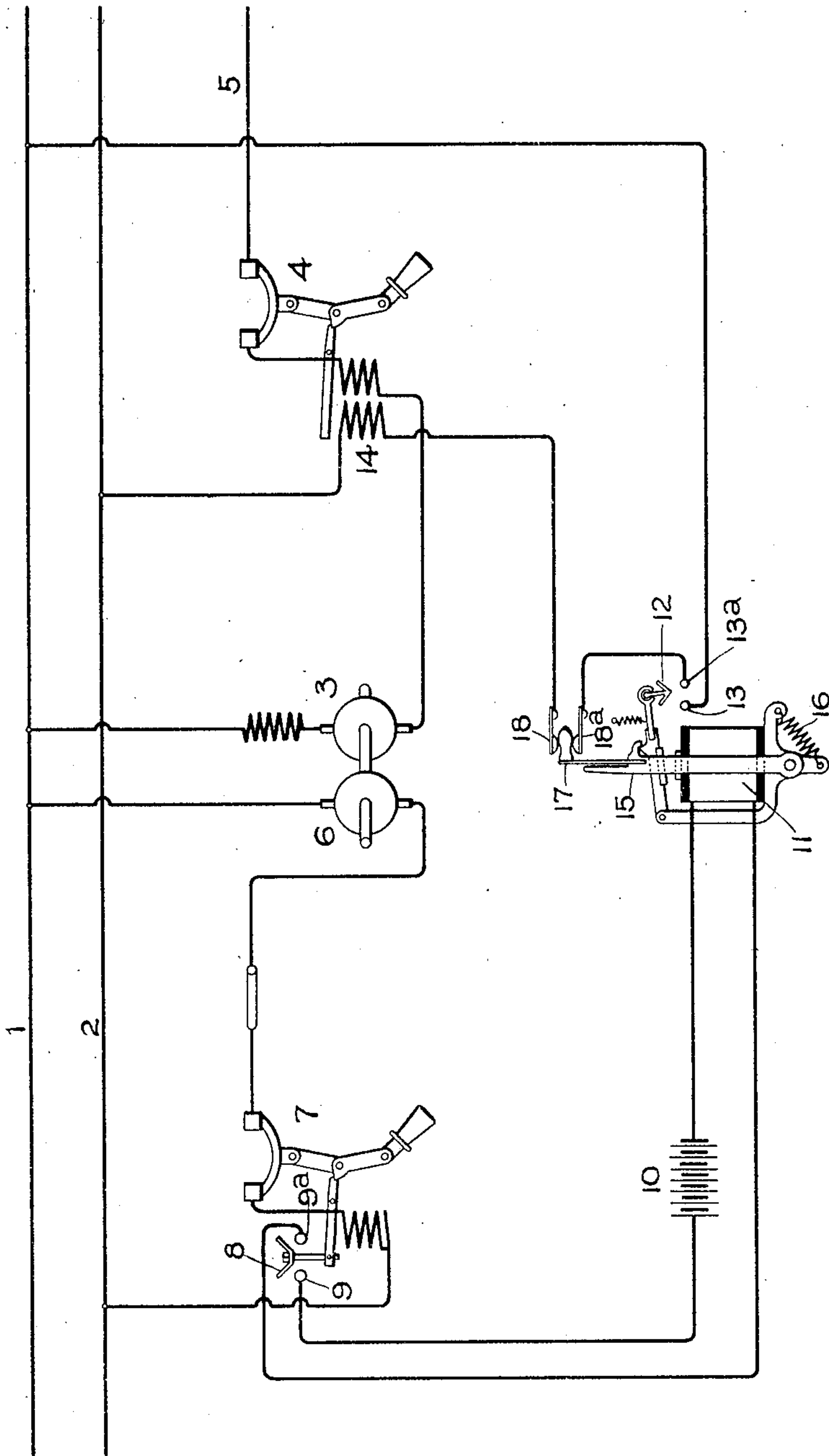
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MEANS FOR CONTROLLING ELECTRIC BOOSTERS.

APPLICATION FILED AUG. 31, 1900.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

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MEANS FOR CONTROLLING ELECTRIC BOOSTERS.

SPECIFICATION forming part of Letters Patent No. 750,972, dated February 2, 1904.

Application filed August 31, 1900. Serial No. 28,652. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. HEWLETT, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Controlling Electric Boosters, of which the following is a specification.

In operating constant-potential systems it is frequently desirable to raise the potential on particular feeders either to compensate for an excessive drop due to the length of the feeder or for greater than normal drop due to temporary or periodical increase of load. For this purpose devices commonly known as "boosters," by which the electromotive force may be raised on the desired feeder, are employed, by the employment of which the potential of the main generator need not be raised above a point which is sufficient for the main bus-bars which supply the system. My invention relates to a system of this kind in which the boosters are driven by electric motors supplied from the distributing bus-bars. In such an organization if by reason of an overload or any other cause the fuse or automatic circuit-breaker controlling the motor-circuit be blown the booster, being connected with the bus-bars through the feeder, will operate as a series motor, rapidly accelerating in speed until it is torn apart by centrifugal force. It is the design of my invention to prevent such a consequence. I provide for automatically disconnecting the booster from circuit when the motor is cut out.

The invention may be carried out in a variety of ways. One which I have employed successfully in practice consists in including in the booster-circuit an automatic circuit-breaker provided with an auxiliary tripping-coil energized or controlled by a local battery-circuit closed when the motor-circuit breaker is tripped.

The novel features will be more particularly hereinafter described and will be specifically

included in the claims appended to this specification.

The accompanying drawing, illustrating my invention, is a diagrammatic illustration of a central-station organization, showing the preferred means I employ to automatically disconnect the booster from its circuit when the motor-circuit is opened.

In the drawing, 1 and 2 represent the bus-bars at the central station or other distributing-point for electrical currents.

3 represents an electrically-driven series-wound booster connecting through an automatic circuit-breaker 4 with a feeder 5.

6 represents an electric motor direct connected with the booster and supplied from the bus-bars 1 2 through an automatic circuit-breaker 7. The trip of the circuit-breaker is provided with a bridging-contact 8 in normally open relation to two contacts 9 9^a, forming the terminals of a local circuit, including a battery 10 or other local source of energy and a relay 11. The armature of the relay carries a bridging-contact 12, cooperating with two contacts 13 13^a, forming the terminals of a branch circuit from the bus-bars 1 2, including an auxiliary trip-coil 14 for the circuit-breaker 4 in the booster-circuit. The frame of the relay supports a pivoted arm 15, controlled by a retracting-spring 16 and carrying an elastic metallic contact 17, normally bridging two contacts 18 18^a in the same branch circuit from the bus-bars, which includes the auxiliary trip-coil 14. These contacts are normally bridged, and the arm 15 is latched with the spring under tension by a detent carried by the armature of the relay. With this organization it will be evident that when from any cause the motor 6 becomes overloaded the same effort of the coil which trips its circuit-breaker 7 bridges the contacts 9 9^a and energizes the coil 11, thereby closing the contacts 13 13^a and actuating the circuit-breaker 4 through the instrumentality of the auxiliary trip-coil 14. The bridging-contact 90

17 is so arranged as to hold the circuit it closes closed for a determinate interval after it is unlatched by the armature of relay 11. This gives sufficient time to permit the auxiliary tripping-coil 14 to act upon the circuit of the booster 3, after which the branch circuit from the bus-bars is opened by the withdrawal of the contact 17. It will also be noted that when the motor-circuit is opened the trip-coil of circuit-breaker 7 releases its armature and opens the battery-circuit, thereby preventing a waste of battery energy.

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

1. The combination of an electric circuit, an automatic circuit-breaker therein, an independently-operated cut-out in another circuit, each responsive to a definite load, and means for tripping in sequence the circuit-breaker after the cut-out operates.

2. The combination of an electric circuit, an automatic magnetically - tripped circuit-breaker in the same, an independent automatic circuit-breaker, each circuit-breaker being responsive to a definite load, and means controlled by one circuit-breaker to operate in sequence the tripping mechanism of the other after it is tripped.

3. The combination of a plurality of automatic circuit-breakers, each responsive to a determinate load, and separate circuits controlled thereby, with means for operating one circuit-breaker by the opening of the other when tripped.

4. The combination with an electric circuit, of a dynamic source of regulating electromotive force in series therewith, a motor for actuating said source, and means for protecting said source when the motor ceases to operate.

5. The combination with an electric circuit, of a regulable dynamic source of regulating electromotive force in series therewith, a motor for actuating said source, and means for protecting said source when the motor ceases to operate.

6. The combination with a booster, of an electric motor for driving the same, a cut-out in the booster-circuit, and means for automatically actuating the cut-out when the motor ceases to operate.

7. The combination with a booster, of means for driving the same, a cut-out in the booster-circuit, and means for actuating the cut-out when the driving power for the booster is withdrawn.

8. The combination with a booster, of a source of power for driving the same, a cut-out in the booster-circuit, a controlling-circuit for the cut-out, and a current-controller in said circuit governed by the source of power.

9. The combination with a booster, an electric motor propelling the same, a cut-out in the booster-circuit, a controlling-circuit for

the cut-out, a circuit-controller in said circuit, and an overload-coil in the motor-circuit governing said circuit-controller.

10. The combination of a motor - driven booster, an automatic circuit-breaker in the booster-circuit, and means for tripping the circuit-breaker when an overload exists in the motor-circuit.

11. The combination with a booster, of a propelling electric motor, automatic circuit-breakers in the booster and motor circuits respectively, and auxiliary tripping devices for the booster-circuit breaker controlled by the opening of the motor-circuit breaker.

12. The combination with a booster having its field-magnet and armature-windings in series relation, a propelling electric motor, automatic circuit-breakers in the motor and booster circuits, and means for tripping the booster-circuit breaker when the motor-circuit breaker opens.

13. The combination of a motor - driven booster having a series field and its motor and booster circuits and automatic circuit-breakers, with means interposed between the circuit-breakers and constructed to trip the circuit-breaker of the booster in response to the actuation or blowing of the circuit-breaker of the motor, substantially as described.

14. In a system of electrical distribution, the combination with a main source of current, a booster to increase the potential of said source, a propelling electric motor for the booster, means for including the motor in circuit with a source of current, an electromagnetic circuit-breaker provided with a switch for opening and closing the distribution-circuit, a coil of the circuit-breaker in a normally open circuit, and electromagnetic means in the motor-circuit for energizing said coil to release the switch.

15. In a system of electrical distribution, the combination with a source of current, of a main transmission-line receiving current therefrom, a booster for furnishing additional pressure to the main transmission line, a motor for operating the booster, an electromagnetic circuit-breaker for opening the circuit through the booster, and electromagnetic means in the motor-circuit for closing the circuit through the electromagnetic circuit-breaker.

16. In a system of electrical distribution, the combination with a source of current, of a main transmission-line receiving current therefrom, a booster for furnishing additional pressure to the main transmission-line, a motor for operating the booster, an electromagnetic circuit-breaker for opening the booster-circuit having a winding included in the main transmission-line, and electromagnetic means in the motor-circuit for closing a circuit through a winding of the circuit-breaker.

17. In a system of electrical distribution, the

combination with a source of current, of a
main transmission-line receiving current there-
from, a booster for furnishing additional
pressure to the main transmission-line, a motor
5 for operating the booster, an electromagnetic
circuit-breaker having two windings, one in-
cluded in the main transmission-line, and
electromagnetic means in the motor-circuit

for including the second winding in circuit
with a source of current.

In witness whereof I have hereunto set my
hand this 29th day of August, 1900.

EDWARD M. HEWLETT.

Witnesses:

BENJAMIN B. HULL,
FRED RUSS.

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