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E. M. HEWLETT.

CONTROLLING ELECTRIC BOOSTERS.

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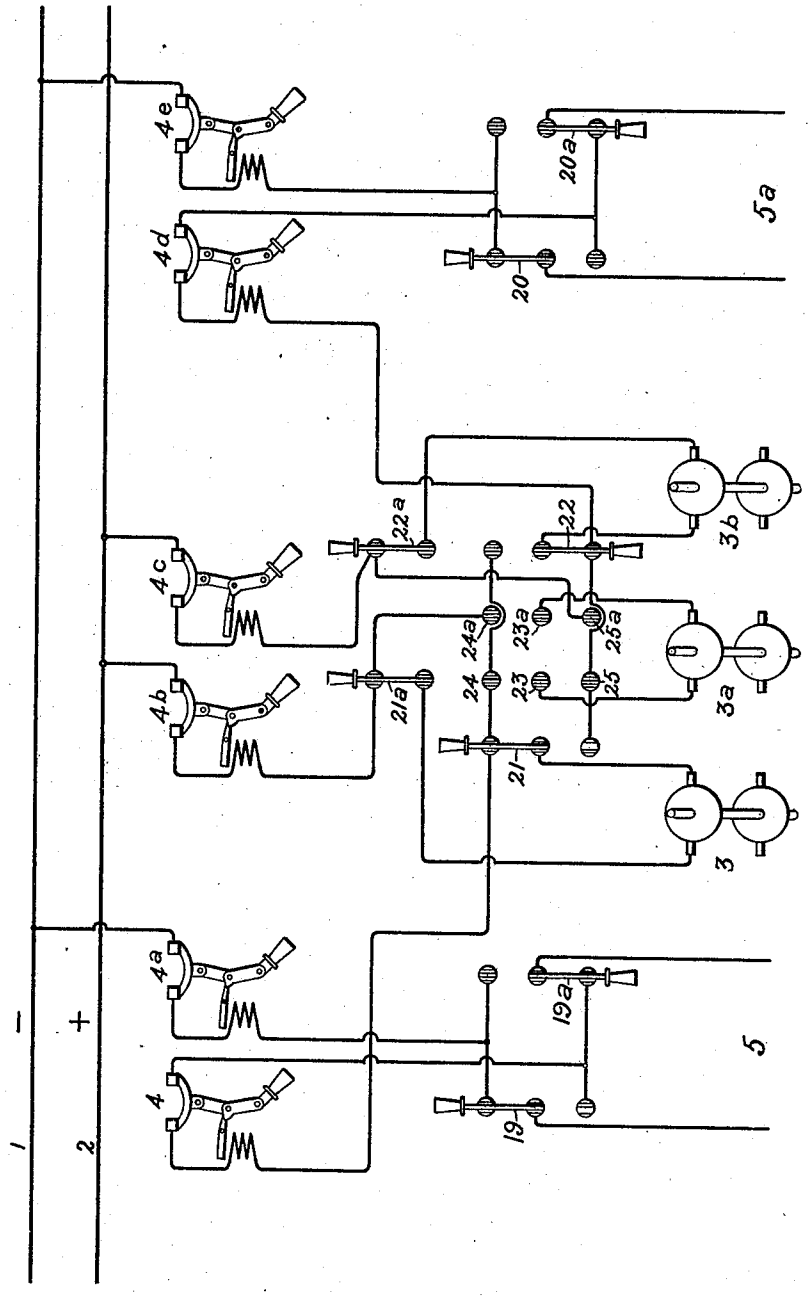
NO MODEL.



Witnesses.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 756,167. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

EDWARD M. HEWLETT, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

CONTROLLING ELECTRIC BOOSTERS.

SPECIFICATION forming part of Letters Patent No. 756,167, dated March 29, 1904.

Original application filed August 31, 1900, Serial No. 28,652. Divided and this application filed October 20, 1902. Serial No. 127,934. (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, 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.

This application is a division of my pending application, Serial No. 28,652, filed August 31, 1900.

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.

It is desirable in such a system as above outlined to provide means for connecting any one of a plurality of boosters with different feeders, to the end that if a booster be damaged so as to necessitate repairs an auxiliary booster may be instantly connected with the feeder-circuit controlled by the damaged booster and the latter disconnected to permit the necessary repairs. My invention comprises an organization for accomplishing this result.

The novel features will be more particularly hereinafter described and will be specifically included in the claims appended to this specification.

In the accompanying drawing, illustrating my invention, is shown a diagram of a system employing a number of boosters and connections for throwing the boosters on different feeders, so that one or more may be cut out for repairs without disabling the service.

Referring to the drawing, 3 3^a 3^b represent three boosters, any one of which may be connected with feeder-circuits 5 5^a.

4 4^a 4^b 4^c 4^d 4^e represent automatic circuit-breakers, one of which is interposed on each side of the feeder-circuit, shown as an all-metallic circuit.

19 19^a represent a pair of double-throw switches for reversing the current on the feeder-circuit 5, and 20 20^a represent a pair of similar switches for the feeder-circuit 5^a.

As shown in the diagram, the boosters 3 and 3^b are connected in service with the feeder-circuits 5 and 5^a, respectively, and 3^a represents an auxilary booster which may replace either of the others if disabled. This may be accomplished by means of the transfer switch-blades 21 21^a 22 22^a, 21 and 22 being double-throw switches by which the booster it controls may be thrown upon either of the feeder-circuits 5 or 5^a. The switch-blades 21 21^a 22 22^a may be withdrawn bodily from their contacts, the latter being, in fact, mere clips to receive the blade, which when in place bridges the clips. The terminals of the auxiliary booster are connected to a pair of normally idle clips or sockets 23 23^a, which form the pivotal points of a double-throw system when the blades 21 21^a or 22 22^a are transferred to them. To illustrate, as before stated, the booster 3 is, in the position shown in the drawing, feeding circuit 5, current passing from the positive bus-bar 2, by way of circuit-breaker 4^b, switch-blade 21^a, through the booster, by switch-blade 21, to the circuit-breaker 4, thence by a fixed connection to switch 19^a, through the feeder-circuit 5, back by way of switch 19, and through the circuit-breaker 4^a to the negative bus-bar. Thus there is a circuit-breaker on each side of the feeder and one close to the booster to protect all parts of the circuit in case of improper connections of the switches. By rendering the switch-blades 21 21^a and 22 22^a bodily transferable liability of short-circuits, due to confusion of the operator, is greatly reduced. Similarly the booster 3^b is connected in series with the bus-bars and the feeder-circuit 5^a. In case either of the normally operating boosters—say 3, for example—should become damaged so that it is desirable to remove it

from the circuit for repairs the switch-blades 21 and 21^a are withdrawn bodily from their sockets and transferred so as to swing in the sockets 23 23^a, and by closing on the upper pair of contacts 24 24^a the booster 3^a will replace the booster 3 on the feeder 5, current passing from the positive bus-bar by way of circuit-breaker 4^b to contact 24^a, thence across the switch-blade to 23^a, thence through the booster to 23, thence across the switch-blade to 24, to circuit-breaker 4, to switch 19^a, feeder-circuit, switch 19, circuit-breaker 4^a to the negative bus-bar. In case the booster 3^b should become damaged its controlling switch-blades 22 22^a may be transferred, so as to cross-connect the contacts 23 25 and 23^a 25^a, in which case the booster 3^a will raise the voltage on feeder-circuit 5^a. By the system of connections shown boosters 3 and 3^b may also be placed on either of the feeder-circuits 5 5^a. For example, booster 3 may be put upon feeder-circuit 5^a by throwing the switch 21 through one hundred and eighty degrees, which puts it in series with circuit-breaker 4^d. Similarly booster 3^b may be transferred to feeder-circuit 5 by throwing the switch 22 through an angle of one hundred and eighty degrees, thereby putting the booster on circuit-breaker 4, all of which is clearly evident from the drawings. Thus I provide means by which a disconnected booster may be replaced by an auxiliary booster, the system being sufficiently flexible to permit any booster to be placed upon any feeder.

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

1. In a system of electrical distribution, the combination of a main source of current, a plurality of boosters, a plurality of feeders with which the boosters may be connected, an auxiliary booster, and transfer-switches for connecting the auxiliary booster on any feeder when its booster becomes damaged.

2. In a system of electrical distribution, the combination of a main source of current, a plurality of boosters, a plurality of feeders with which the boosters may be connected, and switch connections for transferring any booster to any feeder.

3. In a system of electrical distribution, the combination of a main source of current, a plurality of boosters, a plurality of feeders with which the boosters may be connected, an auxiliary booster, and removable switches and corresponding sockets for transferring the connections from the auxiliary booster to any feeder when the latter's booster is damaged.

In witness whereof I have hereunto set my hand this 17th day of October, 1902.

EDWARD M. HEWLETT.

Witnesses:
BENJAMIN B. HULL,
HELEN ORFORD.