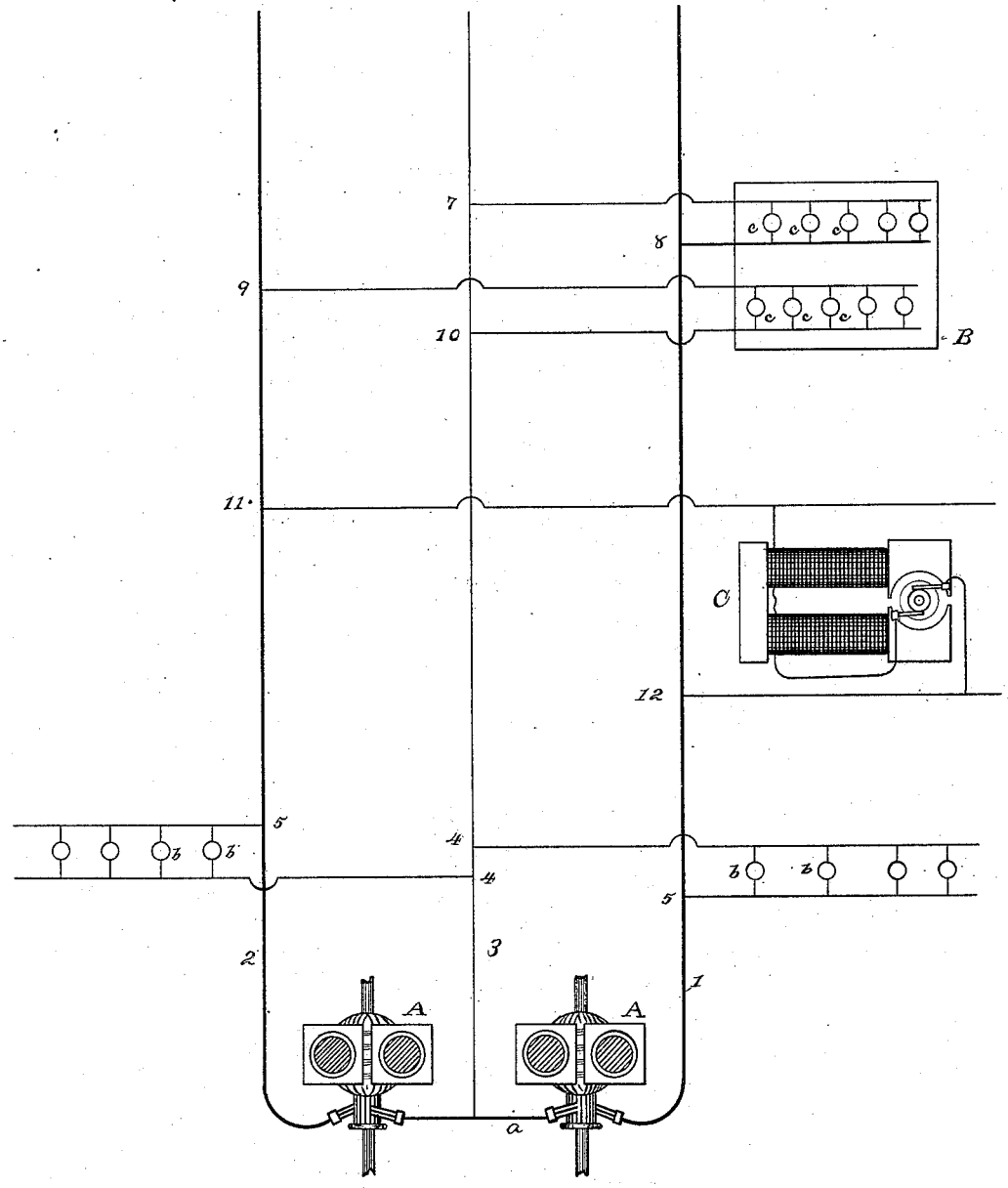
(No Model.)

T. A. EDISON.

SYSTEM OF ELECTRICAL DISTRIBUTION.

No. 283,986. Patented Aug. 28, 1883.



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SYSTEM OF ELECTRICAL DISTRIBUTION.

SPECIFICATION forming part of Letters Patent No. 283,986, dated August 28, 1883.

Application filed January 22, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Systems of Electrical Distribution, (Case No. 538,) of which the following is a specification.

My invention relates to such systems of distribution of electric energy for illumination, motive power, &c., as are set forth in my application No. 520, (Serial No. 77,776)—that is, to a system in which a divided source of energy is employed supplying translating devices arranged in multiple series, one or more compensating-conductors being provided whereby said translating devices are made independently controllable, and the system is divided into two or more parts. Such a system I term a "compensating" system of electrical distribution. In such a system, as explained in the application referred to, when one or more translating devices are thrown out of circuit in one part of the system, so that the numbers in the different parts become unequal, the current which would otherwise be supplied to said translating devices traverses said compensating-conductor in one direction or the other. It is, however, desirable that as little current as possible should ever traverse a compensating-conductor, so that such conductors may be made as small as possible, and it is therefore desirable to preserve the balance of the system—that is, to keep equal numbers of translating devices in circuit between the compensating-conductor and each main conductor, and also between two compensating-conductors, if more than one of such conductors are used. To accomplish this is the object of my invention.

This invention is intended to be applied to cases where a considerable number of translating devices are thrown into or out of circuit simultaneously—as, for instance, the lights in a theater or similar place—or where a single translating device, consuming a large amount of current—such as a large electro-dynamic motor—is placed in and out of circuit, the balance of the system being thus destroyed and a large amount of current being caused to traverse the compensating-conductor; or in a store or any other place employing a greater or less number of lamps which are not turned off simultaneously, but one or more at a time in different parts of the place, my invention is equally applicable.

Said invention consists in providing in a compensating system such connections that when one or more translating devices are thrown out of circuit the balance of the parts of the system will be self-preserved, and but little current will traverse the compensating conductor or conductors in either direction.

My invention may be practically carried into effect in the manner illustrated in the annexed drawing, which is a diagram of a compensating system embodying said invention.

A A are dynamo or magneto electric machines forming the source of energy of the system and placed in series, being connected by a wire, *a*.

1 2 are main conductors extending from the source of energy, and 3 is the compensating-conductor, connected to the wire *a* and dividing said source into two parts. Multiple-arc circuits 4 5 extend from the main circuit, each multiple-arc circuit being connected to the compensating-conductor and to one of the main conductors. Each of such multiple-arc circuits contains translating devices *b b*, each translating device on one side of the system being, it is evident, in series with one on the other side. When a translating device is thrown out of circuit on one side, a certain amount of current traverses the compensating-conductor. This illustrates what has hitherto been the ordinary arrangement of a compensating system. To constantly preserve the balance or general average of the two parts of the system, I employ the connections now to be described.

B represents a building or any place in which all the lamps *c c* are under the same control. I divide all said lamps, making as nearly an equal division as possible, between the two multiple-arc circuits 7 8 and 9 10. The circuit 7 8 is connected to main conductor 1 and compensating-conductor 3, and circuit 9 10 to main conductor 2 and to said compensating-conductor. By this arrangement, if all the lamps *c* are simultaneously thrown into or re-

moved from circuit, there is practically no change in the relative number of translating devices in the two parts of the system, little or no current traverses the compensating-conductor, and a constant balance of the system is automatically preserved. The building B may, however, be one in which the lights are thrown on and off a few at a time—as, for instance, in a store where at certain hours a large number of lights are required, while at other times less numbers are required and lights are extinguished in different parts of the store. In this case the lamps *c c* are arranged on the two circuits 7 8 and 9 10 in such manner that as lamps are gradually extinguished about as many will be thrown off on one circuit as on the other, keeping the numbers nearly equal and preserving the general average in the two parts of the system; or, if in this store this should not be the case, some other store, with its circuits similarly arranged and supplied from the same main circuit, would, in extinguishing its lights, produce the desired compensation and preserve the balance.

C represents a large electro-dynamic motor, consuming a large amount of current, and of such resistance that it may be placed directly across the multiple-arc circuit 11 12. If such motor were placed across one of the ordinary circuits 4 5 of the system, its removal would cause all such current to traverse the compensating-conductor. Therefore I place it in a multiple-arc circuit, 11 12, connected to the two main conductors 1 2, but not to the compensating-conductor 3. Thus its removal from circuit still keeps the balance on the opposite sides of the system equal, and does not affect the amount of energy which traverses the compensating-conductor.

It is evident that where it is desired to place more than two translating devices in series, and the system is divided into more than two parts, two or more compensating-conductors being used, my invention is equally applicable. For, if two compensating-conductors are employed, the lamps *c* would be nearly equally divided between three separate circuits, two of which are connected each to a main conductor and a compensating-conductor, and the third to the two compensating-conductors, while the motor C would still be connected to the two main conductors, as in the drawings, and these arrangements could of course be carried out with any number of compensating-conductors.

What I claim is—

1. In a compensating system of electrical distribution, the electric lamps of a building, divided between the two or more parts of the system, substantially as and for the purpose set forth.

2. In a compensating system of electrical distribution, the combination, with the main and compensating conductors, of two or more multiple-arc circuits containing electric lamps, entering the same building, and connected to the main and compensating conductors in such manner that the lamps of the building are divided between the parts of the system and the balance of the system is constantly preserved, substantially as set forth.

3. In a compensating system of electrical distribution, the combination, with the source of energy and main conductors, of lamps arranged in multiple series, compensating-conductors extending from between the lamps to the source of energy, and translating devices arranged in separate circuits between the main conductors without connection with such compensating-conductors, substantially as set forth.

This specification signed and witnessed this 13th day of January, 1883.

THOS. A. EDISON.

Witnesses:
H. W. SEELY,
EDWARD H. PYATT.