(No Model.)

T. A. EDISON.

SYSTEM OF ELECTRIC DISTRIBUTION.

No. 287,516. Patented Oct. 30, 1883.

Fig. 1.

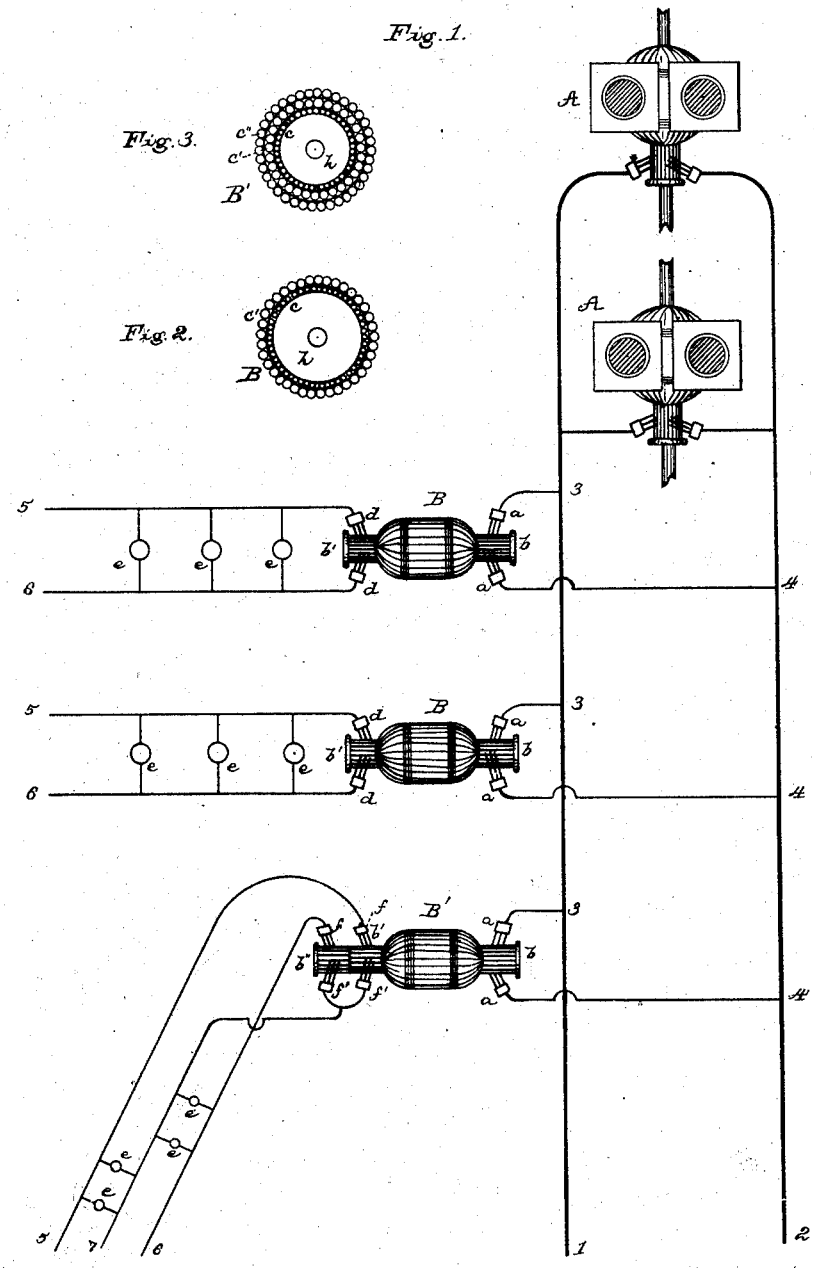

Fig. 3.

Fig. 2.

ATTEST:

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UNITED STATES PATENT OFFICE.

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SYSTEM OF ELECTRIC DISTRIBUTION.

SPECIFICATION forming part of Letters Patent No. 287,516, dated October 30, 1883.

Application filed May 14, 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. 564,) of which the following is a specification.

The object of this invention is to provide a system of electrical distribution wherein currents can be economically transmitted from a distant source of energy—such as a water-power—to the town, village, or other locality which is to be supplied, and there distributed from different independent central stations, situated at convenient points, to the various parts of such locality.

Generally speaking, such system consists of a sufficient number of electrical generators of high electro-motive force situated at the source of power, main conductors of small area extending from such generators to the locality to be supplied, devices connected with such conductors in multiple arc for reducing the tension of the current, each device or set of devices being placed at a distributing-station, a circuit or circuits extending from each of such distributing-stations for conveying the low-tension currents, and translating devices—such as electric lamps or electromotors—connected with such low-tension circuits.

The device which I prefer to use for accomplishing the reduction of tension consists of a field-magnet and an armature-core, on which are wound two sets of coils—one of fine wire, connected with a commutator whose brushes are placed in the multiple-arc circuit from the main conductors, the other of coarser wire, connected with a commutator from whose brushes the circuit or circuits extend, on which the translating devices are arranged, preferably, in multiple arc. The field-magnets may be energized by a constant current in any suitable manner.

Where it is desired to employ the compensating system set forth in my Patent No. 274,290, I wind the core with three sets of coils, one acting as a motor-coil and the other two as generator-coils. Preferably two commutators are provided for these generator-coils, one set of coils being connected to each commutator. The main conductors of the distributing-circuit are each connected to a brush on one of the commutator-cylinders, while the compensating-conductor is connected with two brushes—one on each cylinder—and the translating devices are connected each between a main conductor and the compensating-conductor, as usual.

My invention is illustrated in the annexed drawings, in which—

Figure 1 is a diagram of the system, the field-magnets being omitted from the combined generators and motors; Fig. 2, a sectional view of the armature with two windings, and Fig. 3 a section of the armature with three windings.

A A represent generators of high electro-motive force, connected in multiple arc to main conductors 1 2; or two or more generators may be connected in series to produce the electro-motive force required. At a point where it is desired to place stations or centers of distribution a multiple-arc circuit, 3 4, is connected with the main conductors 1 2. The conductors of such multiple-arc circuits extend to brushes *a a*, bearing on a commutator-cylinder, *b*, of an armature, B or B′.

The armatures B each consist of a core, *h*, on which are wound two sets of coils—one coil, *c*, of fine wire, connected with commutator *b*, the other, *c′*, of coarser wire, connected with commutator *b′*. The coils *c* are of such high resistance that the main conductors are not short-circuited through them. A common field-magnet is employed for both sets of coils, as will be readily understood, and, as explained in my Patent No. 265,786, the transmission of current through the coils *c* and through the field-magnet causes the revolution of the armature, and the coils *c′* thus cut the lines of force and cause the generation of a continuous current of such tension as is provided for by the winding of the coils.

Commutator-brushes *d d* rest upon the cylinder *b′*, and conductors 5 6 extend from such commutator-brushes, translating devices *e e* being placed in multiple-arc circuits across such conductors, and being thus supplied with currents of the proper tension.

The armature B′ has three sets of coils, one, *c*, forming the motor-coils, the others, *c′ c″*, being the generating-coils. The coils *c′* are connected to the commutator-cylinder *b′*, and the coils *c″* to the cylinder *b″*. The conductors

5 6 extend from the brushes *f f*, which bear one on each of these cylinders, and the compensating-conductor 7 is connected with the two opposite brushes, *f' f'*. The translating devices *e e* are connected between the compensating-conductor and the main conductors, as shown.

It is evident that a single commutator-cylinder could be employed, instead of the two commutators *b' b''*, with the conductors 5 6 connected to main brushes, bearing on said commutator, and the compensating-conductor 7 connected to an extra brush placed between them.

It is evident that the coils *c' c''* in the triple-wound machine could be of the same size wire as the coils *c*, for the use of two sets of such coils will accomplish a certain reduction of tension, and in a compensating system the currents used are of higher tension than in the ordinary system.

In the system described in my Patent No. 265,786, above referred to, several combined generators and motors are shown, the motor-coils being placed in series in one of the main conductors and translation-circuits leading from the generating-coils. In this case the devices are not independent, and therefore the arrangement is inapplicable to my present purpose of providing independent distributing-stations, at which apparatus is placed for reducing the tension of the current.

It will be seen that by my present arrangement the tension-reducing devices, being placed in multiple arc, are entirely independent of each other, and either can be thrown out of use without affecting the others.

What I claim is—

1. In a system of electrical distribution, the combination of a source of electricity, main conductors extending therefrom, two or more combined generators and motors having their motor-coils connected in multiple arc with said main conductors, distributing-circuits extending from their generating-coils, and translating devices connected with such distributing-circuits, substantially as set forth.

2. The combination, with main conductors, of a tension-reducing device connected therewith, a distributing-circuit and a compensating-conductor extending from said tension-reducing device, and translating devices connected between the main conductors of said distributing-circuit and said compensating-conductor, substantially as set forth.

3. The combination, with a core, of a motor-coil connected with main conductors, two generator-coils, each connected with a commutator-cylinder, main distributing-conductors connected each with a brush bearing on one commutator, and a compensating-conductor connected with both the opposite brushes, substantially as set forth.

This specification signed and witnessed this 8th day of May, 1883.

THOS. A. EDISON.

Witnesses:
WM. H. MEADOWCROFT,
H. W. SEELY.