

Claim.—2st. The combination, with a three-wire system of translating devices, of electric converters consisting of stationary bodies of inductive material, and stationary primary and secondary coils of insulated wire, such converters having their secondary coils connected in series with each other, their free terminals being respectively connected with the positive and negative wires of the system, and their remaining terminals with the neutral wire, and a source of alternating or intermittent currents of electricity with which the primary coils are connected in multiple arc. 2nd. The combination of a three-wire system of electrical distribution, two converters, each consisting of a stationary body of inductive material and stationary primary and secondary conductors applied thereto, such converters having their secondary coils connected in series with each other, and with the positive and negative conductors, a connection from the neutral conductor with the terminals of the secondary coils, and means for transmitting alternate or intermittent electric currents through the primary coils. 3rd. In a system of electrical distribution, in combination, with a source of alternating or intermittent currents of supply, conductors connected therewith in multiple arc, and one or more groups of electric converters having their primary coils connected in multiple arc with said supply conductors, and their secondary coils, connected in series with each other and with the main conductors of the system, a third or neutral conductor connected with a neutral point in the group or groups of converters, and translating devices connected between the neutral conductor and each supply conductor, substantially as described. 4th. In a system of electrical distribution, the combination with a source of alternating or intermittent electric currents, of two or more groups of electrical converters located at different points, and supply conductors leading from said source to each of said groups and connecting the primary coils of the converters in multiple arc with the source, regulating devices for each of said conductors, and a translating system connected with the secondary coils of the converters, substantially as described. 5th. The combination, with three conductors, of the translating devices included in multiple arc between one of the conductors and the other two conductors, a converter consisting of a stationary mass of soft-iron, and stationary primary and secondary coils applied thereto, electrical connections between the terminals of the secondary coil, and said two conductors respectively, a connection between the remaining conductor, and an intermediate point in the secondary coil, and a source of alternating or intermittent electric currents supplying the primary coil of the converters.

No. 27,975. System of Electric Circuit and Automatic Controlling Apparatus therefor. (*Mode de circuit électrique et appareil automatique pour le régler.*)

The Westinghouse Electric Company, Pittsburgh. (assignee of George Westinghouse, Jr., Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. The combination, with a source of electricity, of multiple conductors extending from the respective poles, a series of converters having their primary coils respectively connected with different pairs of said conductors, and a single pair of distributing conductors with which the secondary coils are connected in multiple arc. 2nd. The combination, with an alternate current electric generator, of two or more main lines extending from each pole, translating devices, distributing conductors with which said devices are connected, and means for supplying currents to said distributing conductors from the different pairs of main lines. 3rd. The combination of a source of alternate electric currents, a series of main lines extending from each pole thereof, a series of converters, conductors including the respective primary coils of the same, switches applied to one terminal of each of said conductors, and contact-points applied to each switch connected with the respective main lines leading from one pole of the source. 4th. The combination of a source of alternate electric currents, a series of main lines extending from one pole thereof, a series of converters, conductors leading from said main lines and including the respective primary coils of the same, switches applied to one terminal of each of said conductors, and contact-points applied to each switch connected with the respective main lines, and connections from the remaining terminals of said conductors with the remaining pole of said source. 5th. The combination, with a source of electricity and multiple mains leading therefrom, of a series of converters normally connected between pairs of said mains, and an automatic circuit-controlling device for interchanging the connections of said converters. 6th. The combination, with a source of electricity and multiple mains leading therefrom, of automatic circuit-controlling devices set in operation by the interruption of one of the mains connected therewith, substantially as described. 7th. The combination, with a source of electricity, and multiple mains leading from the respective poles thereof, of a series of converters respectively connected between different pairs of said mains, and a circuit-controlling device through which the connections of each converter are normally completed, and a retaining device for each controller operated by currents through the converter, substantially as described. 8th. The combination of an electric converter, a pair of supply conductors for delivering currents thereto, and an automatic circuit-controlling device successively placing the different lines of said pairs in circuit with the primary coil of the converter. 9th. The combination, with an electric converter and a pair of supply conductors for delivering currents thereto, of an automatic circuit-controlling device successively placing the different lines of said pairs in circuit with the primary coil of the converter, and a retaining and releasing device causing such controllers to operate upon the interruption of the circuit.

No. 27,976. System of Electrical Distribution. (*Mode de distribution électrique.*)

The Westinghouse Electric Company, Pittsburgh (assignee of George Westinghouse, Jr., Rochester), Penn., U.S., 10th November, 1887; 5 years.

Claim.—1st. The combination, with a source of alternating intermittent or pulsatory currents, of two conductors derived therefrom,

a group of translating devices, each having one terminal connected with one of said conductors, and their other terminals connected with each other, a second group, each having one terminal connected with the other conductor, and their remaining terminals connected with the united terminals of the first group, and an electric converter, having one coil included in the circuit between the connected terminals, and one of said conductors, and the other coil included in circuit between the connected terminals and the other conductor. 2nd. The combination of two conductors, respectively designed to convey alternating intermittent or pulsatory currents, a group of translating devices, each having one terminal connected with one of said conductors, and the other terminal connected with each other, a second group of translating devices, each having one terminal connected with the other of said conductors, and their remaining terminals connected with the united terminals of the first group, and an electric converter having one coil included in parallel circuit with the first group, and the other coil in parallel circuit with the second group. 3rd. The combination of two conductors, respectively designed to convey alternating intermittent or pulsatory currents, a group of translating devices, each having one terminal connected with one of said conductors, and the other terminals connected with each other, a second group of translating devices, each having one terminal connected with the other of said conductors, and their remaining terminals connected with the united terminals of the first group, and an electric converter having one coil included in parallel circuit with the first group, and the other coil in parallel circuit with the second group, the coils of said converter having a relative inductive value proportionate to the difference of potential required at the terminals of the groups. 4th. The combination, with two main lines, of an electric converter having a primary and secondary coil connected in series between said lines, translating devices connected in multiple arc with one of said coils, and other translating devices connected in multiple arc with the other of said coils.

No. 27,977. System of Electrical Distribution. (*Mode de distribution électrique.*)

The Westinghouse Electric Company, Pittsburgh (assignee of George Westinghouse, Rochester), Penn., U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination of a source of alternating currents, a translating system operated thereby, a commutating device for rectifying a portion of the alternating current, and a storage battery charged by such rectified current. 2nd. The combination, with a source of alternating currents, of a storage battery, a motor driven by the alternating currents, a commutator driven by the motor, and conductors connecting said source with said storage battery, through said commutator. 3rd. The combination, with a main line, and means for supplying the same with alternating electric currents, of a converter, having its primary coil in circuit therewith, an alternate current electric motor connected in circuit with the secondary coil of the converter, a rectifying commutator driven thereby, conductors leading from the secondary coil to said commutator, and a storage battery connected with said commutator. 4th. The combination, with a source of alternating currents, and a commutator for rectifying such currents, of a storage battery, a switch for connecting the battery with said commutator, and a switch for connecting said battery with conductors, normally leading from said source. 5th. The combination, with a source of alternating electric currents, and a system of incandescent lights operated thereby, of a commutating device driven thereby, a storage battery supplied with a continuous current through said commutating device, a switch for connecting said storage battery with the translating devices, and a switch for disconnecting the same from the commutating device. 6th. The combination, substantially as described, of an alternate current electric generator, a converter, having its primary coil connected in circuit therewith, an electric motor driven by the alternate currents derived from said generator, a rectifying commutator driven by said motor, and an electric railway supplied with currents from said commutator. 7th. The combination, substantially as described, of an electric generator delivering alternating electric currents, an alternate current motor driven thereby, a rectifying commutator rendering continuous the current delivered from said generator or a portion of the same, and an electric railway supplied by such continuous current. 8th. The combination of an alternate current electric generator, a converter reducing the potential of the currents delivered thereby, a rectifying commutator rendering continuous such reduced currents, and an electric railway supplied by such continuous currents. 9th. The combination, substantially as hereinbefore set forth, of an alternate current electric generator, a converter supplied with currents therefrom, a rectifying commutator straightening the currents from said converter, an electric railway supplied with such rectifying currents, and a storage battery charged by currents from said rectifying commutator. 10th. The combination of an electric locomotor, a current rectifier upon said locomotor, a source of alternating electric currents, and means for connecting said source with said rectifier. 11th. The combination, with an electric locomotor, of a current rectifier, and a storage battery carried thereby.

No. 27,978. Circuit Controlling Apparatus for Electric Circuits. (*Appareil à régler les circuits électriques.*)

The Westinghouse Electric Company, Pittsburgh (assignee of Oliver B. Shallenberger, Rochester), Penn., U. S., 10th November, 1887; 5 years.

Claim.—1st. The combination, with two or more generators, of two or more pairs of lines, a switch-plate for each of said lines, individual switch-points respectively applied thereto, and connected with the respective generators, and means, substantially as described, for placing each pair of lines in connection with the respective pairs of switch-plates at will, substantially as described. 2nd. The combination, with a group of generators, of independent pairs of main lines terminating in individual switch-plates, contact-plates for connecting the individual switch plates with the respective poles of one of the said generators, and independent switches for connecting the