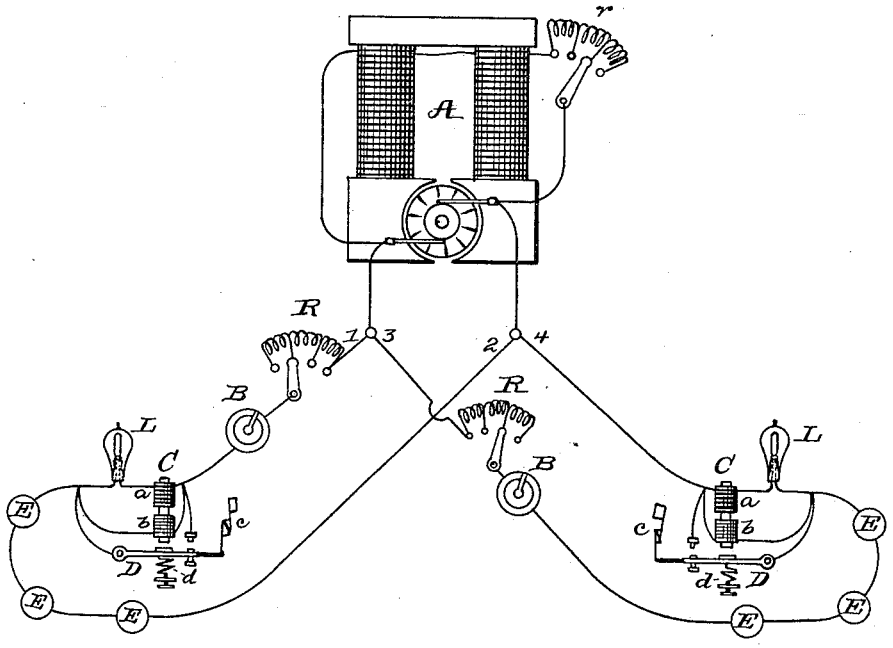
(No Model.)

T. A. EDISON.

SYSTEM OF ELECTRIC LIGHTING.

No. 328,574. Patented Oct. 20, 1885.



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THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

SYSTEM OF ELECTRIC LIGHTING.

SPECIFICATION forming part of Letters Patent No. 328,574, dated October 20, 1335.

Application filed October 2, 1884. Serial No. 144,545. (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 certain new and useful Improvement in Systems of Electric Lighting, (Case No. 631,) of which the following is a specification.

The object I have in view is to utilize incandescing electric lamps upon high-tension circuits for street-lighting, or for other purposes where great economy in conductors is desirable and a high-tension current is not objectionable.

My present invention relates to a simple and efficient arrangement for accomplishing that end.

In carrying out my invention I take from a common source of electrical supply two or more circuits, each containing a number of incandescing electric lamps arranged in series. Each lamp is provided with an automatic cut-out mechanism which closes a shunt of practically no resistance around the lamp when the incandescing conductor of the lamp breaks. The cut-out mechanism is not affected by changes in resistance of the incandescing conductor, due to changes in temperature, and if a differential cut-out, it has a mechanical or electrical lock for holding the shunt closed. The two or more lamp-circuits must have their relative resistances maintained constant, in order that the lamps may all have the same incandescence. This I accomplish by throwing resistance into the separate circuits in the station. Each circuit at the source of supply is provided with an ampère indicator and a manually-operated adjustable resistance; or these parts may be supplanted by an automatic apparatus throwing resistance into the circuit to maintain a constant flow of current. This automatic apparatus may be such as is shown in my Patent No. 287,524, the pressure-magnet B of that patent being wound of low resistance and located directly in the line, while the adjustable resistance will be arranged to be thrown into and out of the line. The source of supply is composed of one or more dynamo-electric machines, the machines (if more than one) being connected together to common or omnibus conductors in the station. The machine (or each machine, if more than one is employed) has its field-magnet located in a circuit derived from its armature, and in this circuit is located a manually or automatically operated adjustable resistance for controlling the generative capacity of the supply common to the two or more lamp-circuits.

The circuits, instead of being simple circuits, may be compensating circuits, such as are described in an application of even date herewith, Serial No. 144,546.

In the accompanying drawing, forming a part hereof, the figure is an illustration, principally in diagram, of a system embodying my invention.

A is a dynamo-electric machine, having its field-magnet in a circuit derived from its armature, and including an adjustable resistance, *r*. From this machine are taken circuits 1 2 and 3 4, each including within the station an adjustable resistance, R, which may be in the form of lamps, or be a wire resistance, and an ampère indicator, B. Each circuit has incandescing electric lamps L E arranged in series therein. Each lamp has a cut-out, which may be composed of a differentially-wound magnet, C, having coils *a* in series with the lamp and coils *b* in a shunt around the lamp. The armature-lever D closes a shunt of practically no resistance around the lamp, and this shunt, when closed, is locked by a spring-lock, *c*.

The retracting-spring *d* is given such a construction and adjustment that the armature is not moved until there is a total cessation of current in the coils *a*, and hence the cut-out is not affected by changes in the resistance of the incandescing lamp conductor, due to changes of temperature in such conductor; or the cut-out may be a simple magnet in the line, and a constantly-closed shunt of high resistance around the lamp and magnet for localizing the cut-out, as described in my application No. 630, Serial No. 144,544, of even date herewith. With this form of cut-out the cut-out shunt would have a small resistance, sufficient to enable the magnet to open the cut-out shunt in starting up; but its resistance would still be low.

The circles E are intended to represent lamps and cut-outs, one set of these parts being developed in each circuit.

What I claim is—

1. The combination, with a common source

of supply, of two or more circuits therefrom, incandescing electric lamps in series in each circuit, automatic cut-out mechanisms closing shunt-circuits of low or practically no resistance around the lamps as they break, and an adjustable resistance in each circuit at or near the source of supply for maintaining constant the relative resistances of the two or more lamp-circuits, substantially as set forth.

2. The combination, with a common source of supply, of two or more circuits therefrom, incandescing electric lamps in series in each circuit, automatic cut-out mechanisms closing shunt-circuits of low or practically no resistance around the lamps as they break, an adjustable resistance in each circuit at or near the source of supply, and an ampère indicator in each circuit at that point, substantially as set forth.

3. The combination, with one or more dynamo-electric machines forming a common source of supply, of adjustable resistances for regulating the generative capacity of the machine or machines, two or more circuits from such source of supply, incandescing electric lamps in series in each circuit, automatic cut-out mechanisms closing shunt-circuits of low or practically no resistance around the lamps as they break, and an adjustable resistance in each circuit at or near the source of supply, substantially as set forth.

4. The combination, with one or more dynamo-electric machines forming a common source of supply, of the field-magnet coils of the machine (or of each machine) located in a circuit derived from its armature, adjustable resistances for regulating the generative capacity of the machine or machines, two or more circuits from such source of supply, incandescing electric lamps in series in each circuit, automatic cut-out mechanisms closing shunt-circuits of low or practically no resistance around the lamps as they break, and an adjustable resistance in each circuit at or near the source of supply, substantially as set forth.

This specification signed and witnessed this 12th day of September, 1884.

THOS. A. EDISON.

Witnesses:
WM. H. MEADOWCROFT,
PAUL D. DYER.