(No Model.)

T. A. EDISON.

ELECTRIC LIGHTING SYSTEM.

No. 476,531. Patented June 7, 1892.

Fig. 1.

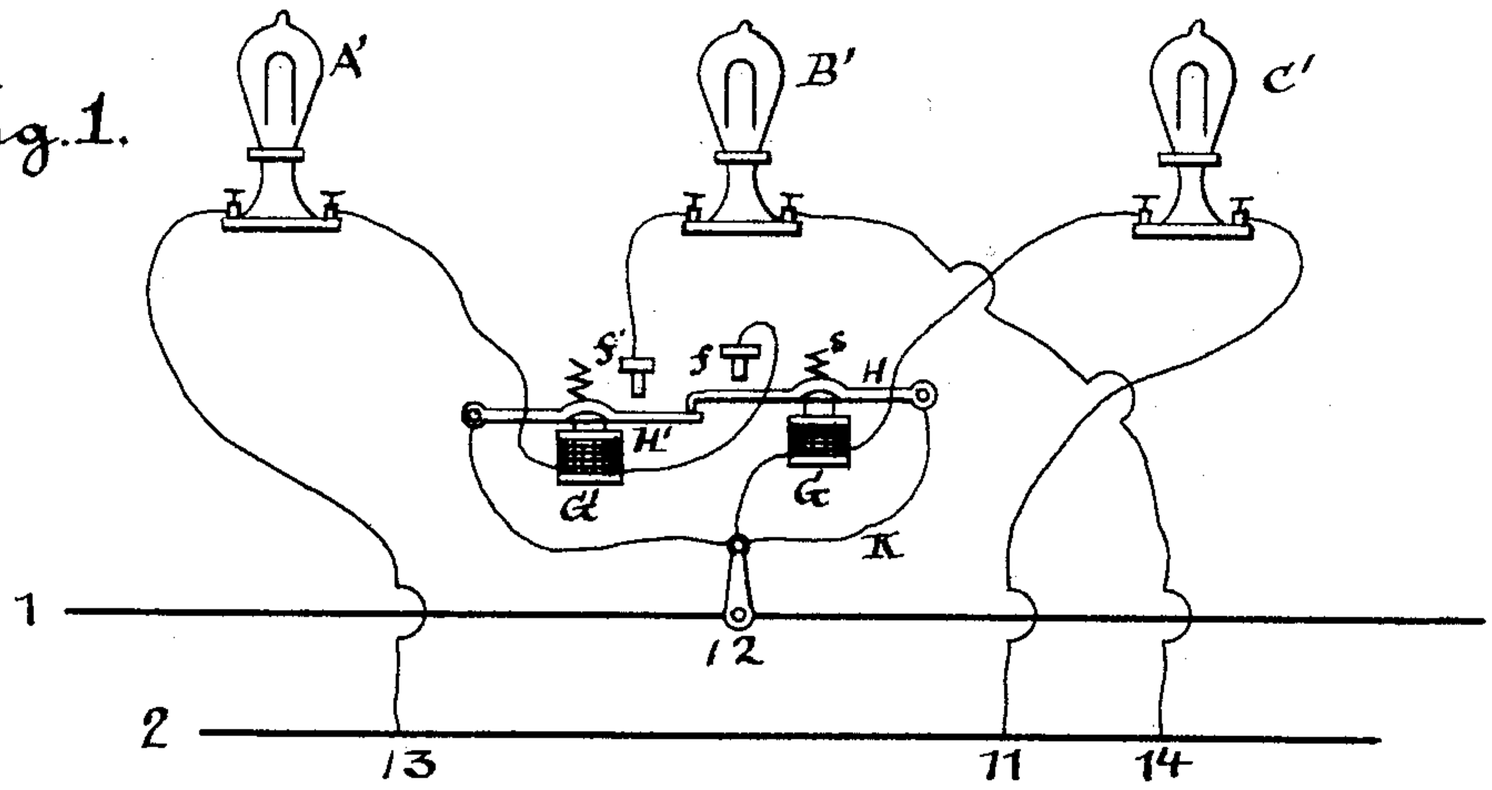
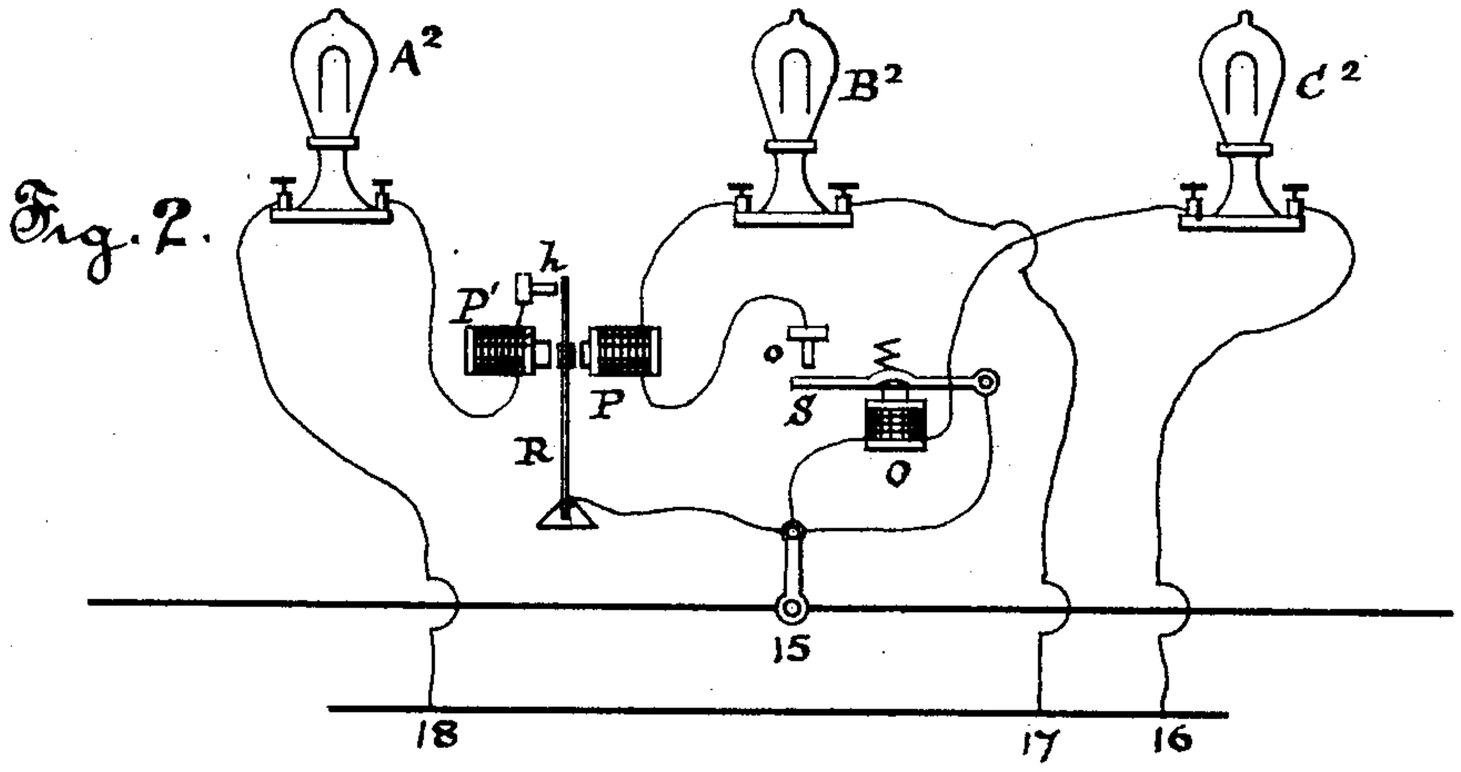


Fig. 2.



Attest:

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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY, ASSIGNOR TO THE EDISON ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

ELECTRIC-LIGHTING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 476,531, dated June 7, 1892.

Application filed April 26, 1881. Serial No. 31,794. (No model.) Patented in England June 8, 1881, No. 2,492; in Germany July 16, 1881, No. 19,922; in France July 20, 1881, No. 144,039; in Belgium July 28, 1881, No. 55,301; in Italy July 30, 1881, No. 13,197; in Portugal August 24, 1881; in Victoria September 6, 1881, No. 3,077; in India October 11, 1881, No. 801; in Spain November 2, 1881, No. 1,766; in New South Wales November 5, 1881; in Austria-Hungary November 9, 1881, No. 1,819; in Queensland December 30, 1881, and in New Zealand January 5, 1882, No. 581.

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 Electric Lighting, (for which I have obtained Letters Patent in Austria-Hungary, No. 1,819, granted November 9, 1881; in Belgium, No. 55,301, dated July 28, 1881; in France, No. 144,039, dated July 20, 1881; in Germany, No. 19,922, dated July 16, 1881; in Great Britain, No. 2,492, dated June 8, 1881; in India, No. 801, granted October 11, 1881; in Italy, No. 13,197, granted July 30, 1881; in Portugal, filed August 24, 1881; in Spain, No. 1,766, granted November 2, 1881; in New South Wales, registered November 5, 1881; in New Zealand, No. 581, registered January 5, 1882; in Queensland, registered December 30, 1881, and in Victoria, No. 3,077, granted September 6, 1881;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and to the letters and figures of reference marked thereon.

By the processes employed by me in the manufacture of carbon conductors for the incandescent electric lamps used in my system and in the production and retention of vacua in the inclosing globes thereof I am enabled to make both the carbons and vacua so nearly perfect that the carbons will withstand the heat of incandescence without being consumed thereby for a very long period. In the present state of the art, however, it is impossible to manufacture a carbon which will not eventually be destroyed. When a carbon is destroyed, the substitution of a new lamp is an exceedingly simple and easy matter where the lamp is used in an accessible position. Sometimes, however, they may be used in comparatively inaccessible positions or in position where it would be difficult or inconvenient to substitute a new lamp for one burned out when the latter event happens. Therefore some means seems desirable by which when a lamp gives out and the current ceases to pass through it the circuit will be instantly and automatically completed through another lamp, so that the extinguishment of the light will be only momentary.

To accomplish this is the object of the present invention.

My invention consists in the novel devices and combination of devices employed by me in accomplishing this object, as hereinafter set forth and claimed.

In the accompanying drawings, Figures 1 and 2 show different methods of placing three lamps in circuit.

In Fig. 1 the lamp C′ is in the derived circuit 11 12, in which is included the electromagnet G, which is provided with the armature H, having the spring *s*. When current ceases to pass to C′, the armature H is withdrawn from the magnet G, touching the contact *f* and causing current to pass through the wire K, armature H, and contact-point *f* to the magnet G′ and lamp A′, the armature H′, which has previously been held down by the end of the armature H, now being attracted by the magnet G′, thence by wire 13 to the main conductor 2, so that the lamp C′ will be replaced by A′. Should this in turn give out, the lamp B′ is thrown into circuit by the withdrawal of the armature H′ from the magnet G′ and its consequent contact with *f*′, so that a circuit 12 14 is completed through the lamp B.

Another form of my invention may be seen in Fig. 2. Here a derived circuit 15 16 passes through the magnet O and lamp C^2, and if the current through this should cease the circuit 15 17, including the magnet P and lamp B^2, is formed by the contact of the armature S with *o*. R is a metal strip rigidly secured at one end and normally passing halfway between the magnets P P′, but when the magnet P is in circuit it is drawn toward P and held against it; but should the current cease to pass through the circuit 15 17 and the magnet P lose its attractive force the spring R will fly back, making contact at *h*, completing the circuit 15 18 through the lamp A^2, and energizing the magnet P′, so that R will be held against the magnet, and therefore against the contact *h*.

At the points 12, Fig. 1, and 15, Fig, 2, is

placed an ordinary hand-switch, as shown. This switch simultaneously connects or disconnects all of the branches with or from the main circuit.

It is to be noted that the change-magnets or magnets transferring the circuit are in the multiple-arc or derived circuits, and that but one is in circuit at a time, so that any number of lamps may be arranged, as hereinbefore described, so that as one is extinguished the next in the series shall be automatically lighted without adding materially to the resistance of the circuit.

What I claim is—

1. In a multiple-arc system, the combination of three or more derived circuits or branches, each containing an independent translating device, a magnet in the first branch, an armature therefor, normally holding the second branch open, but closing the same when demagnetized, a magnet in the second branch, an armature therefor, which when attracted holds the third branch open, a contact for the armature, connected to the third branch, and a device for holding the armature against said contact when retracted, substantially as described.

2. In an electrical cut-out, the combination, with two electro-magnets, of a spring-armature passing between them and connected to the circuit and a co-operating contact adjacent to the spring and connected to the circuit passing through the second magnet, so that upon the demagnetization of one magnet the armature will fly back and complete a circuit through the other magnet and be held thereby, substantially as set forth.

3. The combination, in a multiple-arc system, of three or more derived circuits or branches, the first branch passing from the main circuit through a lamp or other translating device, a magnet, and a switch to the other side of the main circuit, the second branch passing from the main circuit through a lamp and the same switch to the other side of the main circuit and the third branch passing through a lamp to said switch and back to the main circuit, substantially as described.

This specification signed and witnessed this 22d day of April, 1881.

THOS. A. EDISON.

Witnesses:
WM. H. ALDEN, Jr.,
H. W. SEELY.