

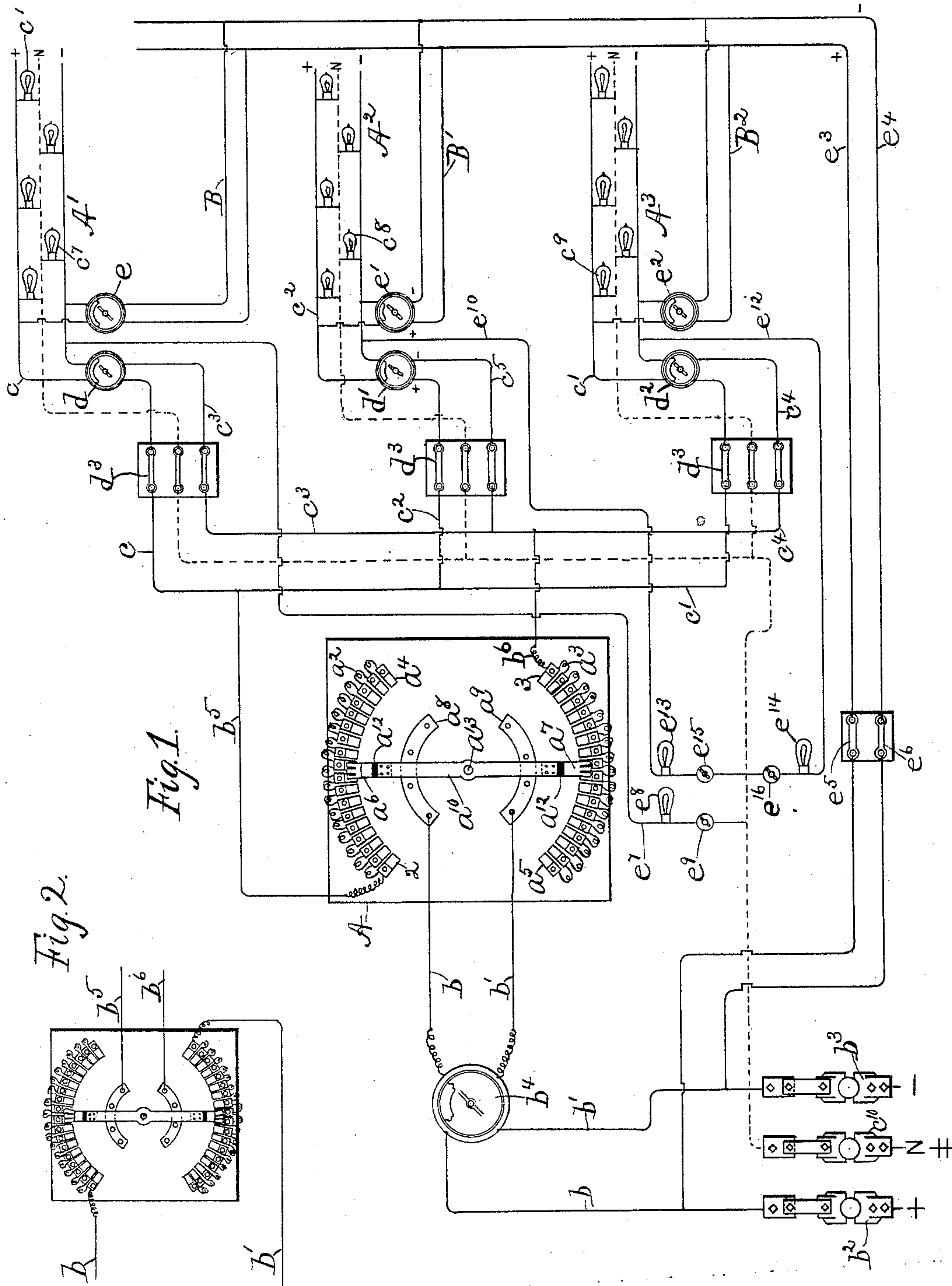
(No Model.)

W. J. KELLY.

CONTROLLING APPARATUS FOR INCANDESCENT LIGHTS.

No. 466,245.

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Witnesses:
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UNITED STATES PATENT OFFICE,

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CONTROLLING APPARATUS FOR INCANDESCENT LIGHTS.

SPECIFICATION forming part of Letters Patent No. 466,245, dated December 29, 1891.

Application filed August 7, 1891. Serial No. 401,951. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. KELLY, residing in Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Controlling Apparatus for Incandescent Lights, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to a novel apparatus for operating a plurality of independent translating devices with a single resistance, and is especially adapted for controlling independent incandescent electric lights, whereby
15 different light effects may be obtained.

My improved apparatus is especially adapted to be used in theaters, halls, and like places where it may be desired to obtain different light effects—as, for instance, daylight,
20 sunset, and moonlight.

In order to produce varying lights, some of the incandescent lamps are of one color and some of another color, which is accomplished by means of suitably-colored bulbs or coverings for the lamps. The lamps of different
25 colors are connected in separate metallic loops. In accordance with my invention a plurality of loops containing the different-colored lamps are connected to a single resistance-head or adjustable current-regulator, and each loop is provided with a switch by which the loop may be disconnected from the
30 resistance-head or regulator. Each loop beyond the switch referred to is connected by an auxiliary loop or branch with the main-line wires, and each auxiliary loop is provided with a switch by which the current from the main lines may be cut off, for a purpose as
35 will be described.

40 My invention therefore consists in the combination, with a main or supply circuit and an adjustable current-regulator included therein, of a plurality of loops connected to said regulator and provided with one or more
45 translating devices, a switch in each loop to connect and disconnect the said loops from the regulator, an auxiliary loop for each of said loops connected directly to the main-supply circuit, and a switch in each of said
50 auxiliary loops, substantially as will be described.

Figure 1 is a diagrammatic view of an apparatus embodying my invention, and Fig. 2 a modification to be referred to.

In accordance with my invention, a single
55 resistance-head A has electrically connected to it, as will be described, a plurality of loops containing translating devices, represented as incandescent electric lamps a , there being
60 three loops herein shown and marked A' A^2 A^3 . The resistance-head or adjustable current-regulator A may be of any usual or well-known construction, but preferably of the construction herein shown, it being provided
65 with two sets of resistances a^2 a^3 , connected to two sets of contacts a^4 a^5 , brushes a^6 a^7 , co-operating with said contacts, conducting-plates or segments a^8 a^9 , with which the
70 brushes a^6 a^7 are electrically connected by suitable spring-strips, (not shown,) and a connecting-bar a^{10} , to which the brushes are secured, but separated therefrom, as herein
75 represented, by insulation a^{12} . The bar a^{10} in practice is mounted on a shaft or arbor a^{13} , supported by the head A and provided with a suitable handle, (not shown,) by which the
said bar and its attached brushes a^6 a^7 may be moved.

As represented in Fig. 1, the conducting-segments a^8 a^9 have connected to them the
80 positive and negative line-wires b b' , joined to the usual feed-plug switches b^2 b^3 , the said line-wires being provided, as shown, with a switch b^4 , which may be of any desired or usual construction, and by which the circuit
85 to the resistance-head may be controlled. The resistance-contacts a^2 a^3 are arranged, preferably, in the arcs of a circle with the shaft a^{13} as a center, and, as shown in Fig. 1, two end segments diametrically opposite have
90 connected to them the positive and negative wires b^5 b^6 of a branch circuit, to which are connected the positive and negative wires of the loops A' A^2 A^3 .

As represented in Fig. 1, the positive wire
95 c of the loop A' and the positive wire c' of the loop A^3 are joined directly to the positive wire b^5 , and the positive wire c^2 of the loop A^2 is joined to the positive wire c' . The negative wires c^3 c^4 of the loops A' A^3 are joined
100 to the negative wire b^6 , and the negative wire c^5 of the loop A^2 is joined to the negative wire

c^3 . It will thus be seen that all the loops are connected with a single resistance-head A.

Each loop, as herein shown, is provided with a third or neutral wire N, after the manner of the well-known three-wire system of electric lighting, and the lamps $c^7 c^8 c^9$ in the loops $A' A^2 A^3$ are connected to the neutral wire and to either the positive or negative wire. The neutral wire N (represented by dotted lines) is not connected to the resistance-head, but runs directly to the neutral feeder-plug switch c^{10} .

The loops $A' A^2 A^3$ are provided with switches $d d' d^2$, by which the said loops may be connected with and disconnected from the resistance-head, and the said loops are preferably provided with safety-fuses d^3 .

The lamps in the loop A' may be supposed to give a white light, those in the loop A^2 a red light, and those in the loop A^3 a blue light. In order to produce the different light effects without making the change scarcely perceptible, as will be described, the loops $A' A^2 A^3$ have connected to them beyond the switches $d d' d^2$ auxiliary loops $B B' B^2$, provided with switches $e e' e^2$, the said auxiliary loops being represented as connected to a branch circuit composed of the positive and negative wires $e^3 e^4$, joined to the positive and negative supply or line wires $b b'$ between the feeder-plug switches $b^2 b^3$ and the switch b^4 , so that the loops $A' A^2 A^3$ may be supplied with current when the switches $d d' d^2$ are opened, the branch lines $e^3 e^4$ being provided, as shown, with fuses $e^5 e^6$.

The loop A' , as herein shown, has connected to its negative wire a branch wire e^7 , joined to the neutral wire N, and in which is located a test or pilot lamp e^8 and a switch e^9 , and the loops $A^2 A^3$ have connected to them like wires $e^{10} e^{12}$, connected to the neutral wire and provided with pilot-lamps $e^{13} e^{14}$ and switches $e^{15} e^{16}$.

In the normal condition of the apparatus the switches $e e' e^2$ in the auxiliary loops $B B' B^2$ and the switches $d d' d^2$ in the loops $A' A^2 A^3$ are open, and the resistances $a^2 a^3$ are cut out of circuit, the brushes $a^6 a^7$ being at such time in contact with the end contact-segments $a^4 a^5$. (Marked 2 3.) The lamps in all the loops $A' A^2 A^3$ may now be lighted by closing the switches $d d' d^2$, or the lamps in any one loop may be lighted by closing its switch only—as, for instance, the lamps in the loop A' may be lighted by closing the switch d . The lamps in the loop A having plain or colorless bulbs give a white light, which in theaters and like places is supposed to represent daylight.

In producing scenic effects it is very desirable that the change from one light—as, for instance, daylight—to another light—as, for instance, sunset—should be effected as quickly as possible and in such manner as to effect a blending or gradual change, which shall be substantially imperceptible to the audience in the theater or like place. To effect this

change of light effect with a single resistance-head or regulator is the primary object of my invention, and in order that my invention may be readily comprehended, let it be supposed that the white lights in the loop A' are full on—that is, at their full-light capacity. Let it be supposed that it is desired to change this light, and that the red lights in the loop A^2 , when properly manipulated, as will be described, will produce the desired effect. The operator first closes the switch e in the auxiliary loop B, and turns off or opens the switch d , thereby electrically disconnecting the resistance-head A from the loop A' . The white lights are still full-on or of their full-light capacity, they being fed directly from the main-supply wires $b b'$ by the branch wires $e^3 e^4$ and auxiliary loop B. The operator then moves the brushes $a^6 a^7$ into contact with the extreme opposite contact-segments to include the resistances $a^2 a^3$ in circuit when the circuit of the loop A^2 is completed, which is effected by closing the switch d' . The resistance being thus interposed in the loop A^2 , the red lights are very dim. The light then is composed of a full white light and a dim red light, which latter is scarcely perceptible. The operator moves the switch-arm a^{10} in the proper direction to gradually cut out the resistances $a^2 a^3$ from the loop A^2 , and thus gradually bring the red lights to their full capacity. The light produced is composed of a full white and a full red; but as the white light is not wanted to produce the desired effect it is removed, as follows: The operator closes the switch e' to connect the loop A^2 directly to the main lines $b b'$, and then opens or turns off the switch d' , thereby disconnecting the loop A^2 from the resistance-head and leaving the said head free to be electrically connected to any other loop. The white and red lights are now both supplied with current directly from the main wires through the auxiliary loops $B B'$. The operator next turns the switch-arm a^{10} to bring the brushes $a^6 a^7$ in contact with the segments 2 3, and then closes the switch d and opens the switch e , after which the switch-arm a^{10} is moved to gradually interpose the resistances in the loop A' and thereby gradually lower the white lights until they are substantially dimmed, and when the white lights have been thus lowered the switch d is turned off or opened, leaving the red lights still full-on. If now it should be desired to produce a blue light, the loop A^3 will be brought into circuit in the same manner as already described in connection with the loop A^2 . It will thus be seen that any desired number of loops containing lamps may be manipulated from a single resistance-head or adjustable current-regulator by providing each loop with an auxiliary loop connected directly to the main-line or supply wires and providing each auxiliary loop with a switch for controlling it.

As shown in Fig. 1, the line-wires $b b'$ are

connected to the contact-plates $a^8 a^9$, and the branch wires $b^5 b^6$ to the resistances; but I do not desire to limit myself in this respect, as the line-wires $b b'$ may be connected to the resistances and the branch wires $b^5 b^6$ to the contact-plates, as shown in Fig. 2. So, also, I have shown two sets of resistances $a^2 a^3$, connected to opposite sides of the line, which are especially adapted for use with the three-wire system of electric lighting; but I do not desire to limit myself in this respect, as but a single resistance may be used with the ordinary two-wire system.

I claim—

1. The combination, with a main-supply circuit and an adjustable current-regulator included therein, of a plurality of loops connected to said regulator and provided with one or more translating devices, a switch in each loop to connect and disconnect the said loops from the current-regulator, and an auxiliary loop for each of said loops connected

directly to the main-supply circuit, and a switch in each of said auxiliary loops, substantially as described.

2. The combination, with a main or supply circuit and an adjustable current-regulator included therein and provided with two sets of resistances, of a plurality of loops connected to said regulator and provided with one or more incandescent lamps, a switch in each loop to connect and disconnect said loop from the regulator, and an auxiliary loop for each of said loops connected to the main-current supply, and a switch in each of said auxiliary loops, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM J. KELLY.

Witnesses:

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