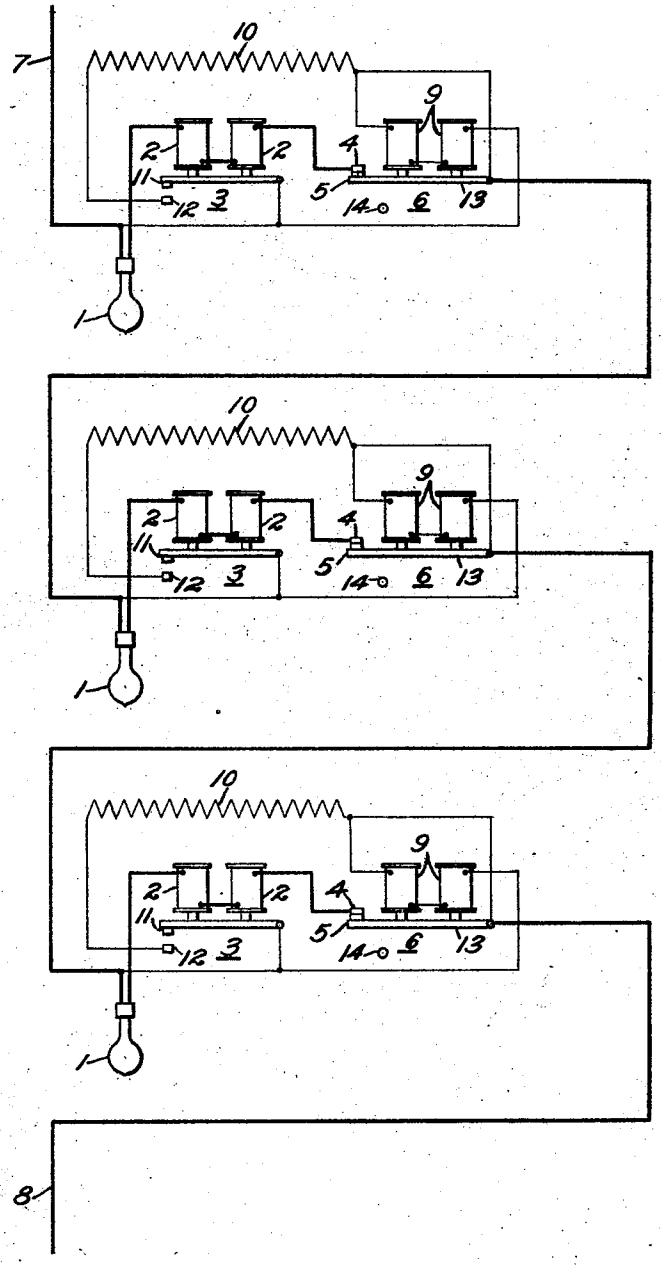
March 30, 1926. 1,578,719

A. R. DENNINGTON

LIGHTING SYSTEM

Filed Sept. 24, 1920



WITNESSES:

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Patented Mar. 30, 1926. 1,578,719

UNITED STATES PATENT OFFICE.

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LIGHTING SYSTEM.

Application filed September 24, 1920. Serial No. 412,423.

To all whom it may concern:

Be it known that I, ARTHUR R. DENNINGTON, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Lighting Systems, of which the following is a specification.

My invention relates to series lighting systems and particularly to lighting systems employing incandescent lamps, such as in electric railway power houses, cars and tunnels.

The object of my invention is to provide a system of the above indicated character that shall automatically substitute an equivalent or compensating resistor for a lamp in the event of the removal of, or damage to, the latter and that shall operate quickly to prevent damage to adjacent objects when fracture of the filament or other damage to the lamp causes a sustained arc therein.

Heretofore, it has been usual to provide series lamp systems with compensating resistors and means for substituting the same for lamps that may be eliminated from the circuit through any cause. It has been found that an arc, when formed in a lamp, not only frequently follows the leading-in wires to the base of the lamp, but frequently melts part of the socket, making it necessary to replace not only the lamp but the socket.

To the best of applicant's knowledge, none of the devices heretofore used have avoided the danger of a sustained arc.

In practicing my invention, I provide a series magnet switch for connecting the compensating resistor in circuit in the place of a damaged or removed lamp and a shunt relay or switch for so controlling the series switch as to ensure that the compensating resistor will be relatively quickly substituted for the lamp, thereby precluding damage to the socket and to other surrounding objects and providing a continuously operable effective and economical system.

The single figure of the accompanying drawing is a diagrammatic view of a series lamp system embodying my invention.

A system embodying my invention comprises, in general, a plurality of lamps 1 connected in series with each other and with actuating coils 2 of electromagnet switches 3 through contact members 4 and 5 of electromagnet switches or relays 6 between terminal conductors 7 and 8. Coils 9 of the switches 6 are normally connected in shunt relation to the respective lamps thereof and hold the contact members 4 and 5 in engagement with each other to maintain the circuit of the lamps.

Resistors 10, having substantially the same resistance as the lamps, are normally maintained in disconnected relation to the lamps for substitution therefor through contact members 11 and 12 of the switches 3.

When a lamp is removed from its socket, or upon the occurrence of an ordinary filament failure in one of the lamps, the corresponding series coils 2, being cut out of circuit, will permit the contact members 11 and 12 to engage, thereby cutting in the resistor 10 corresponding to the lamp which has failed or has been removed.

When, upon the occurrence of a failure of one of the lamps, there is a tendency to sustain an arc, the latter will cause a sufficient voltage drop across the lamp terminals and in the coils 9 of the corresponding shunt switch 6 to drop out an armature 13 of the latter (against a stop 14) and disengage the contact members 4 and 5 to cause the circuit of the series coils 2 to be interrupted. This action will cause engagement of the contact members 11 and 12 to insert the resistor 10 in circuit.

While I have shown and described a particular form of my invention, changes may be effected therein without departing from the spirit and scope of my invention, as set forth in the appended claims.

I claim as my invention:—

1. In a series lighting system, the combination with a lamp, a compensating resistor therefor, and an electromagnetic switch comprising a coil in series with the lamp and contact members for controlling the resistor circuit connections, of an electromagnetic relay comprising a coil responsive to the drop in potential across the lamp and contact members for controlling the circuit of the first named switch coil.

2. In a series lighting system, the combination with a lamp, a compensating resistor therefor, and a circuit-interrupting device comprising a coil in series with the lamp and means for connecting the resistor in shunt relation to the lamp, of a second circuit-interrupting device having an oper-

ating coil in shunt to the lamp to control the circuit of said first coil.

3. In a series lighting system, the combination with a lamp, a compensating resistor therefor, and a circuit-interrupting device comprising a coil for connection in series with the lamp and contact members for connecting the resistor in circuit when said coil is deenergized, of a second circuit-interrupting device comprising a coil in shunt to the lamp for controlling the first named coil, said shunt coil being responsive to a drop in potential in the lamp circuit to deenergize said series coil.

In testimony whereof, I have hereunto subscribed my name this 14th day of Sept. 1920.

ARTHUR R. DENNINGTON.