Oct. 15, 1940. G. B. DAVIS, JR 2,217,794

MULTIPLE FILAMENT INCANDESCENT ELECTRIC LAMP

Filed June 13, 1938

Fig. 2.

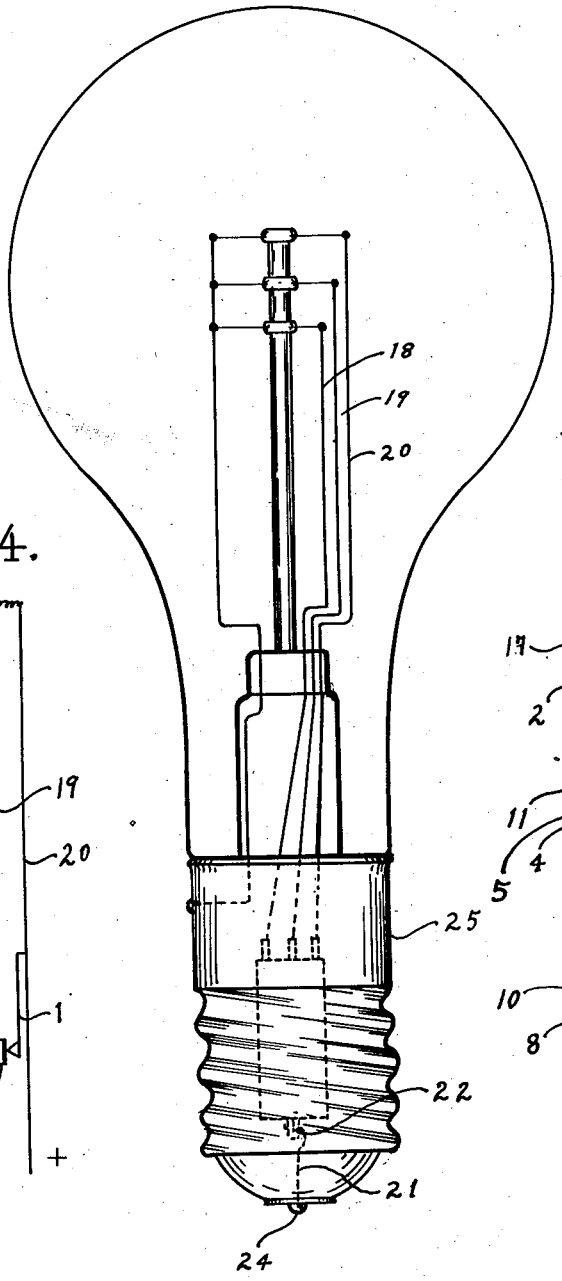

Fig. 4.

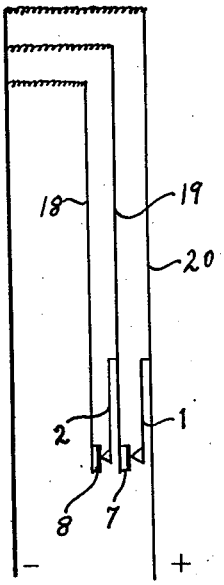

Fig. 3.

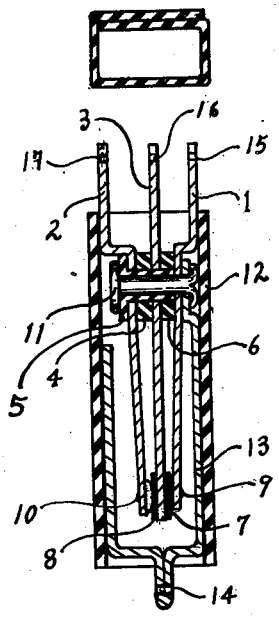

Fig. 1.

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MULTIPLE FILAMENT INCANDESCENT ELECTRIC LAMP

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12 Claims. (Cl. 176—27)

This invention relates to an incandescent electric lamp having a plurality of filaments arranged so that upon the destruction of the active filament the lamp is not rendered useless, but, by the destruction of such active filament, another filament is automatically brought into circuit, thus continuing the lighting service of the globe.

The primary object of this invention is to provide a multiple filament incandescent lamp with an automatic shunt circuit control mechanism of such rugged construction as to make it particularly adaptable to high-voltage series lighting, such as street lighting, where such a mechanism must serve to carry current sufficient to maintain not only the active filament lighting an individual globe but also the other lights in the series.

Another object of the present invention is to provide an incandescent lamp which will have a plurality of filaments, one or more being held in reserve, so that upon the destruction of the active filament a rugged, but inexpensive, shunt mechanism located in the shell-cap of said lamp will automatically bring a reserve filament into circuit.

Another object is to provide a novel, practical, and efficient means for automatically bringing into use a reserve filament in an incandescent lamp globe, having two or more filaments, upon the breaking down or destruction of the preceding active filament.

In this incandescent lamp one terminal of each of the multiple filaments is connected to a common conductor which extends down through the globe, and which makes direct connection with the screw-shell. The other ends of the filaments are individually connected with a spring contact mechanism located in the shell-cap, the points of said spring contacts being held apart by an insulating fuse of any suitable material, such as oxidized copper or aluminum, which, upon the breaking down of the active filament, fuses through and establishes circuit to the next succeeding reserve filament.

In order that this invention may be more fully understood reference is here made to the accompanying drawing, in which:

Fig. 1 is a sectional view of the circuit control mechanism;

Fig. 2 is a sectional view of the globe and shell-cap, showing the location of the control mechanism in relation thereto;

Fig. 3 shows the plane view of the insulating cover for such mechanism, and

Fig. 4 is a circuit diagram of the invention.

Fig. 1, at 1 and 2 are spring contacts that are mounted on support bar 3 by rivet, and insulated from the same and from each other by insulating washers 4, 5 and 6. The contact point 9 of spring-arm 1 is held from contact with bar 3 by insulating member 7. The contact point 10 of spring 2 is insulated from bar 3 by insulating member 8, these insulating members may be of oxidized metal, a strip of fiber insulation, or a coating of insulating varnish. Bar 13 serves as a conductor from the base contact of the socket to spring 1 and also as a support for outer insulating sleeve cover 12. In the operation of this mechanism current entering at point 14 passes up bar 13 into the main filament which is connected with the mechanism at point 15. On the breaking down of the first filament there is an increase of voltage pressure across insulating member 7, causing it to rupture, allowing spring 1 to establish circuit to first reserve filament which is connected with the mechanism at point 16. On the breaking down of the first reserve filament fuse 8 will rupture and current will pass to the second reserve filament which is connected at point 17.

Fig. 2 shows the location of the control mechanism in the shell-cap of the globe. In wiring the globe, terminals 18, 19 and 20, leading in from the filaments, are connected with the mechanism as shown. Wire 21 is connected at point 22 and extends down through the base contact 23, and when the screw-shell 25 has been cemented in place, wire 21, before it is soldered at point 24, is used to draw the mechanism and connections thereto taut, leaving it suspended in the shell-cap thus preventing the shaking or shorting of the lead-in conductors. At 25 is shown the usual shell cap of an electric globe, and it is contemplated that the usual substance and means now used by manufacturers will be the substance and means employed to hold this in place. No claim is made to the shell cap, and it is shown in the drawing merely to indicate the position of the mechanism to which my invention relates.

Fig. 3 shows the plan view of the protecting insulating cover which slips over the mechanism.

Fig. 4 is the circuit diagram of the invention.

I claim:

1. A multiple filament incandescent lamp, comprising a main filament, a multiplicity of reserve filaments, leads to said filaments, insulation separating said leads, spring means electrically connected with said leads and pressing against said insulation.

2. A multiple filament incandescent lamp,

comprising a main filament, a multiplicity of reserve filaments, a common lead connecting one end of each of said filaments, separate leads connecting the other ends of said filaments with a multiplicity of spring cut-out devices, said devices insulating said main filament from said reserve filaments, and said reserve filaments from each other.

3. A multiple filament incandescent lamp comprising a main filament, a multiplicity of reserve filaments, a common lead connecting one end of each of said filaments, separate leads connecting the other ends of said filaments, insulation separating said leads from each other, spring circuit establishing means interposed between said leads and engaging under compression said insulation.

4. A multiple filament incandescent lamp, an operative filament, two reserve filaments, leads to said filaments, insulation separating said operative filament from said reserve filaments, insulation separating said reserve filaments, spring circuit establishing means electrically connected to said operative filament and engaging said insulation separating said operative filament from first reserve filament, spring circuit establishing means electrically connected to second reserve filament, said circuit establishing means engaging insulation separating said second reserve filament from first reserve filament.

5. An incandescent electric lamp comprising a main filament, two reserve filaments, leads to said filaments, insulation separating said leads, spring circuit establishing means connected to said first reserve filament and engaging insulation separating first reserve filament from main filament, spring circuit establishing means connected to second reserve filament and engaging insulation separating second reserve filament from first reserve filament.

6. A multiple filament incandescent lamp, an operative filament, two reserve filaments, a common lead connecting one end of each of said filaments, individual leads connecting the other end of said filaments, insulation separating said individual leads, spring circuit establishing means electrically connecting said first reserve filament and engaging the insulation separating said first reserve filament from the operative filament and also engaging the insulation separating the first reserve filament from the second reserve filament.

7. A multiple filament incandescent lamp, an operative filament, two reserve filaments, a common lead connecting one end of each of said filaments, individual leads connecting the other end of said filaments, insulation separating said operative filament from said reserve filaments, insulation separating first reserve filament from the second reserve filament, spring circuit establishing means electrically connected to the lead of said operative filament and engaging the insulation separating the operative filament from the first reserve filament, a spring circuit establishing means electrically connected to the lead of said first reserve filament and engaging the insulation separating first reserve filament from the second reserve filament.

8. A multiple filament lamp comprising an operative filament, a multiplicity of successively operative reserve filaments, a common lead connecting one end of each of said filaments, individual leads connecting the other ends of said filaments, insulation separating said operative filament leads from said reserve filaments, insulation separating the leads of said reserve filaments, spring circuit establishing means interposed between said individual leads and engaging said separating insulation.

9. An incandescent lamp comprising an operative filament, a multiplicity of successively operatable reserve filaments; each of said successively operatable reserve filaments being of higher lumens than the preceding filament; leads to said filaments, insulation separating said leads, spring circuit establishing means interposed between said leads and engaging said insulation.

10. An incandescent lamp having a main filament, a multiplicity of reserve filaments, leads to said filaments, insulation separating said leads, spring circuit establishing means interposed between said leads and engaging said insulation.

11. A multiple filament incandescent lamp comprising a main filament, a multiplicity of reserve filaments, leads to said filaments, insulation separating said leads, spring contact means connected separately to each of said leads and engaging said insulation.

12. A multiple filament incandescent lamp, comprising a main filament, a multiplicity of reserve filaments, leads to said filaments, insulation separating said main filament leads from said reserve filaments leads, insulation separating each of said reserve filaments leads, resilient means separately connected with one of the leads from each of said filaments and engaging said separating insulation.

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