

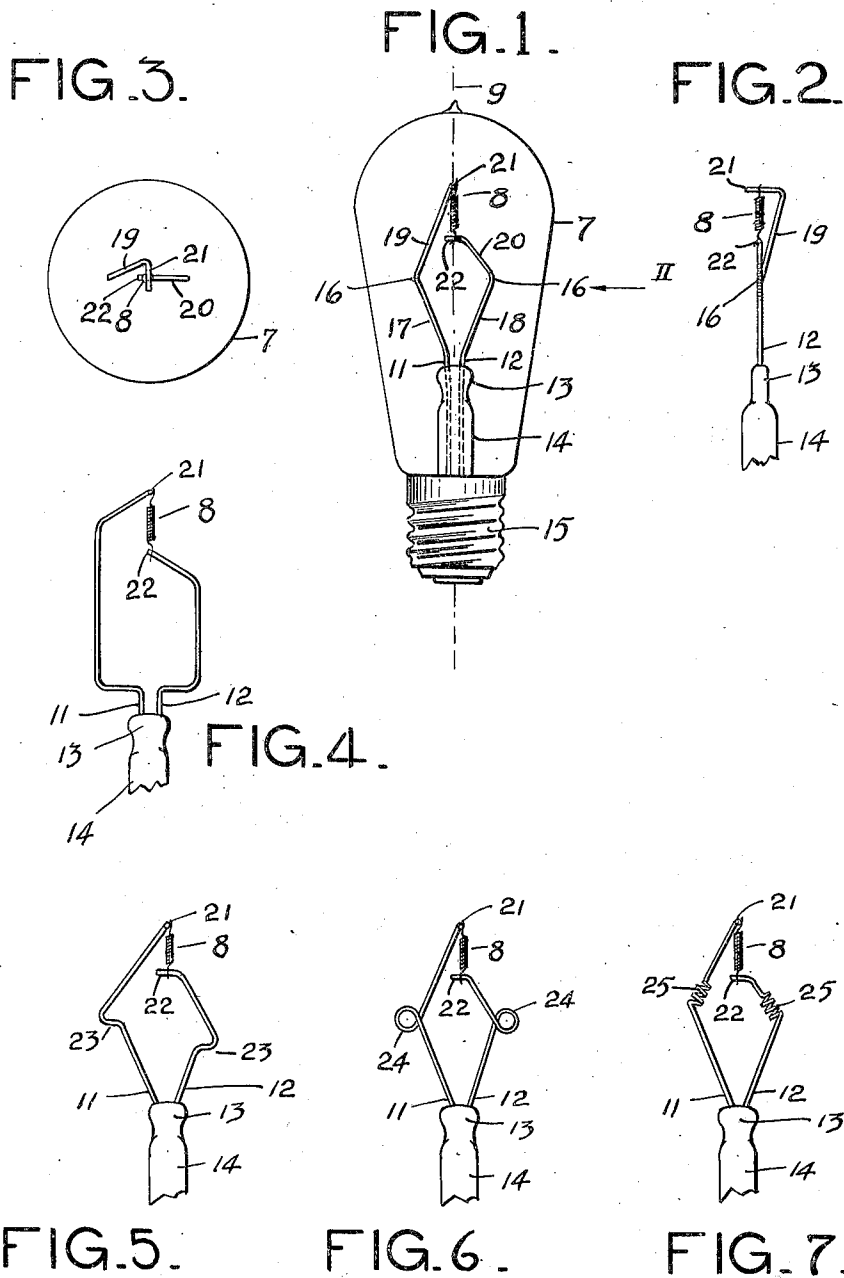
March 8, 1927.

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1,620,487

FILAMENT SUPPORT FOR SERIES LAMPS

Filed Dec. 19, 1921



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FILAMENT SUPPORT FOR SERIES LAMPS.

Application filed December 19, 1921. Serial No. 523,262.

This invention relates to improvements in electric incandescent lamps and relates more particularly to lamps employed in series systems.

5 An object of the invention is to provide a resilient support for the filament of a lamp by shaping the leading-in wires thereof so they will readily yield with the expansion and construction of the filament.

10 Although my invention may be generally practiced in connection with lamps of a variety of types, it has been found exceedingly advantageous when associated with a lamp in which a coil filament, having its axial line coincident with the axial line of the bulb, is employed. Lamps of this type are commonly used in series systems and are known as street series lamps.

15 In lamps of the character described above, i. e., where the filament is disposed in a vertical position, considerable breakage of the filament has heretofore occurred. This breakage is mainly attributable to the rigidity of the supports employed in such lamps. Those supports, being unyielding, opposed the vertical movement of the filament during its alteration in length from temperature changes.

20 The temperature under which a lamp operates necessitates the provision of means for permitting the free expansion and contraction of the filament. Since the rate of cooling is proportional to the difference in temperature between the cooling body and its environment, it will readily be seen that the filament which operates at a much higher temperature than the leads will cool with greater rapidity than the leads, thus exerting a tensional and compressive force in the filament, when leads of the usual rigidity are employed.

25 Obviously, when the filament is secured to supports of the usual immobility, its movement is opposed and the compressive and tensional forces are confined within the filament, with detrimental results generally causing a break in the filament wire at a point adjacent the leading-in wires.

30 The present invention provides supports which will readily yield with the expansion and contraction of the filament, and thereby materially decrease the detrimental effects of the unequal expansion and contraction.

35 The increased resiliency of the support wires is also advantageous when shipping

lamps, inasmuch as the greater part of the shocks will be absorbed or dissipated and thus prevented from being imparted to the filament.

Other objects and advantages of the invention will be apparent from the following specification, reference being had to the accompanying drawings in which,

Fig. 1 is a side elevational view of a lamp of the street series type;

Fig. 2 is a fragmentary view of Fig. 1 viewed in the direction of the arrow II;

Fig. 3 is a plan view of Fig. 1;

Fig. 4 illustrates a modification in which the resiliency of the supporting wires is increased by a formation different than that shown in Fig. 1;

Fig. 5 is a view showing the support wires having a double bend;

Fig. 6 is a view showing the resiliency obtained by a looped formation of the leading-in wires; and,

Fig. 7 shows a portion of the leading-in wires in the form of a helical spring.

In the present embodiment of the invention, a simple and efficient means of attaining the desirable increase in resiliency of the supports of leading-in wires is attained by providing the supports with a bend intermediate their ends and the press of the lamp. This formation of the supports increases their resiliency as a holder for a filament. The supporting wires may be made to conform to a variety of shapes which will serve to accomplish the desired ends.

Referring now to the drawing and particularly to Fig. 1, it will be readily seen that, in its structural details, the lamp illustrated conforms to the well-known type of street series incandescent lamp. Such a lamp may consist of a bulb 7 in which a concentrated metallic filament 8, which is preferably of helical shape, is positioned substantially on the vertical axis 9 of the lamp. The filament may be supported by having its upper and lower ends welded or otherwise secured to a pair of leading-in wires 11 and 12, respectively. The leading-in wires extend through a press 13 of a tubular stem 14 which is sealed to the bulb 7 within a terminal cap 15.

In the preferred form of the invention (Figs. 1, 2, and 3,) the resiliency of the leading-in or filament support wires is increased by providing an elbow or bend 16 at

a point intermediate the press and the exposed ends of the wires. The lower portions 17 and 18 of the wires, below the bend, diverge from the axial line of the bulb, and the upper portions 19 and 20 converge toward the said axial line. The portions 17, 18, and 20 of the leading-in wires lie substantially in the same vertical plane. It has, however, been found desirable to offset the upper portion 19 of the leading-in wire 11 with respect to the said plane in order to minimize the amount of wire positioned in front of the light source, thus greatly reducing the shadow. The upper ends 21 and 22 of the leading-in wires 11 and 12, respectively, are bent substantially at right angles to each other and to the axial line 9 of the bulb, and the ends of the filament 8 are welded or otherwise attached thereto.

It is evident that, by supporting the filament as illustrated, a more elastic and otherwise resilient mount is obtained for the filament, inasmuch as the upper and lower portions, on opposite sides of the respective bends of the support wires, provide members or lever arms fulcrumed at the bends 16. Because of this leverage, a resilient support for the filament is provided and thus the filament is permitted to expand or contract without detrimental opposition.

Although the present invention provides the desirable resiliency of the supports to accommodate the vertical movement of the filament, it also maintains the necessary resiliency for the lateral movement of the supports to prevent rupture thereof by reason of shocks or jars during transportation or other vibration of the lamp.

It will also be appreciated that the support wires have a substantially equal degree of resiliency and when the filament expands or contracts, the support wires yield an equal amount, thus the filament maintains its relative position with respect to the globe.

It will be readily understood that the support or leading-in wires may be shaped in a variety of ways to afford the resiliency produced by the construction illustrated in Fig. 1. In Fig. 4, a triple bend is provided to render the supports resilient, while, in

Fig. 5, the desired resiliency is obtained by means of a reverse bend 23. In Fig. 6, a loop 24 of nodal shape is provided and in Fig. 7, the wire is made to conform to a helical spring 35. These various constructions tend to increase the resiliency of the support and thus decrease the breakage of the filament.

It is obvious that many modifications and structural variations may be resorted to utilizing this invention and it is understood that the invention contemplates all such modifications as come within the scope of the appended claims.

What is claimed is:

1. An incandescent electric lamp having leading-in wires, a coiled filament, said leading-in wires being bent to angular form to provide relatively long lever members, portions at the free ends of said members being positioned at right angles to each other and in spaced relation and having said filament secured to said ends.

2. An incandescent electric lamp having leading-in wires, a coiled filament, leading-in conductors associated with said lamp and having their free ends secured to the opposite ends of said filament to support the same with its axis coincident to the longitudinal axis of the lamp, said leading-in wires being provided with bends to increase their resiliency as supports, portions of the ends of said wires being positioned transverse to the axial line of said lamp and at right angles to each other.

3. An incandescent electric lamp having leading-in wires supporting a coiled filament substantially coincident with the longitudinal axis of said lamp, said leading-in wires being bent to angular form to provide relatively long lever members, portions at the free ends of said members being positioned at right angles to each other and in spaced relation and having said filament secured to said ends.

In testimony whereof, I have hereunto subscribed my name this 17th day of December, 1921.

ARTHUR LESTER POWELL.