A fused, four pin base, projection lamp having a combined stabilizing support wire and fuse for providing both alignment maintenance and electrical safety to an elaborate, multi-filament and reflector mount structure carried between a pair of laterally disposed upright rigid lead-in conductors.
COMBINATION FUSE-MOUNT SUPPORT FOR PROJECTION LAMPS

BACKGROUND OF THE INVENTION

This invention relates generally to projection lamps and more particularly to a fused projection lamp having a longitudinal support element to maintain alignment and stability of the filament mount.

Lamp manufacturing is a highly competitive, efficient and substantially automated industry. To remain competitive manufacturers must find methods and mechanisms by which materials can be reduced and/or manufacturing steps eliminated in order to attain increased productivity and/or reduced costs without any reduction in product quality. The elimination of a single lead wire from a lamp type can result in thousands of dollars in savings over a period of a single year's production. Also, the elimination of required welding steps from the manufacturing process may result in the additional savings of many dollars in the production of a particular type lamp over a one year production run.

A projection lamp characteristically features a plurality of compact filaments accurately positioned with respect to the lamp base and many times with respect to an internally mounted reflector for the purpose of controlling light in a projection system. The filament arrangement of a projection lamp may be biplanar or monoplanar and the filaments are generally situated in a planar array. Because of the requirement that the filament be accurately positioned and retained in that position within the lamp during manufacturing and handling, it is necessary that a longitudinal support member be employed in addition to the lateral supports upon which the filament and reflector normally are hung.

It is also common practice to mount a fuse wire between one of the lead-in conductor pins and the lead-in conductor support for the filament mount within the base of the lamp. A fuse is required in the projection type lamp because of the intense heat generated at a break in the filament due to the arc which starts at the break and progressively shorts out greater portions of the filament. This short may grow in intensity and eventually cause the lamp bulb to shatter unless a fuse or other current limiting device is incorporated in the lamp's circuit.

In the four pin projection lamp it is conventional to mount the major upstanding rigid lead-in conductors and mount supports to two laterally disposed pins at the base of the lamp with one of those pins being in electrical circuit with the socket while the other is connected only to a locator or dummy pin. A fuse, horizontally disposed within the envelope beneath the upper level of the base, generally connects the third pin which is in electrical connection to the socket circuit and the dummy pin to which the other upstanding rigid support member is connected to place the entire filament mount in electrical circuit with the socket. It is also common practice to connect a longitudinal support member between the fourth or other dead pin and one of the upstanding rigid support members in order to provide longitudinal stability to the entire filament mount. The combination of the two lateral supports and the third angular longitudinal support will then maintain the filament mount structure aligned within the lamp envelope.

SUMMARY OF THE INVENTION

In summary this invention improves upon the prior art devices by providing, in a fused projection lamp having a base portion, a bulb portion sealed thereto, a plurality of support pins extending through said base portion and an elaborate filament array and support bridge thereof mounted within the bulb portion between a pair of upright lead-in conductor support members mounted on a pair of laterally disposed support pins, the improvement comprising: a combination fuse wire and support member connected between a third support pin and one of said upright lead-in conductor support members whereby electrical safety and longitudinal support are provided by a single element.

BRIEF DESCRIPTION OF THE DRAWING

Many of the attendant advantages of the present invention will become more readily apparent and better understood as the following detailed description of an exemplary embodiment is considered in connection with the accompanying drawing in which:

FIG. 1 is a rear elevation view of a projection lamp constructed in accordance with the present invention with a portion of the outer envelope broken away;

FIG. 2 is a sectional view taken along the line II—II of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in detail to the drawing wherein like reference characters represent like parts throughout the several views there is illustrated in FIG. 1 a projection lamp generally designated 10 which consists externally of a base portion 12 and an elongated bulb portion or outer envelope 14 hermetically sealed together by a suitable sealing composition 16. The base 12 carries a central projection 18 having an orienting key 20 for the purpose of orienting the projection lamp to the projection system in which it is intended to be used. In addition to the central projection 18 there are also four radially disposed locating pins or terminals 21, 22, 23, 24 and 25 which extend through glass seals 26 in the base of the bulb portion 14.

Mounted on the inner ends of a pair of laterally disposed support or locating pins as for example pins 22 and 24 is the multi-filament array of the incandescent projection lamp. This filament mounting arrangement is substantially identical to that disclosed in U.S. Pat. No. 2,721,291 issued Oct. 18, 1955 to N. J. Rainone for an Incandescent Electric Lamp. The details of this mount arrangement are described in detail in the aforesaid patent but will be briefly described herein for purposes of clarity. The filament array extends axially of said elongated outer envelope or bulb and is mounted between a pair of upstanding rigid lead-in and support conductors 28 and 30 secured respectively to the inner ends of locating pins 22 and 24. From the upper ends of lead-in and support conductors 28 and 30 is mounted an upper bridge member of quartz or Vycor by means of a pair of resilient support wires 34. A lower transverse bridge member also of quartz or Vycor is suspended from the lead-in support conductors 28 and 30 by a pair of resilient support wires 38. The filament array 40, which may be monoplanar (a single plane of plural filaments) or biplanar (two substantially parallel planes of a plurality of filaments) are mounted between
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1. In a fused projection lamp having a base portion, a bulb portion sealed thereto, a plurality of support pins extending through said base portion and an elaborate filament array and support bridge therefor mounted within said bulb portion between a pair of upright lead-in conductor support members mounted on a pair of said support pins laterally disposed one from the other, the improvement comprising:

a combination fuse wire and support member connected at one end to a third support pin and extending upwardly away from said base portion at an angle with respect to the axis of said bulb portion and connected at its other end to one of said upright lead-in conductor support members whereby electrical safety and longitudinal support are provided by a single element.

2. An improved projection lamp according to claim 1 wherein said combination fuse wire and support member comprises:

a first relatively heavy wire portion secured to said upright lead-in conductor support member and a second relatively heavy wire portion secured to said third support pin and an intermediate fuse wire portion connecting said first and said second relatively heavy wire portions.

3. The projection lamp according to claim 2 wherein a glass sleeve is positioned about said intermediate fuse wire.

4. A fused projection lamp comprising: a base portion, a bulb portion sealed thereto and a plurality of support pins extending through said base portion into said bulb portion;

a pair of upright lead-in conductor support members mounted on a pair of said support pins laterally disposed one from the other;

a filament array and support bridge therefor mounted between said pair of upright lead-in conductor support members; and

a combination fuse wire and support member connected at one end to a third support pin and extending away from said base portion at an angle with respect to the vertical axis of said bulb portion and connected at its other end approximately one third of the distance up the length of one of said upright lead-in conductor support members whereby electrical safety and longitudinal support are provided by a single element.

5. An improved projection lamp according to claim 4 wherein said combination fuse wire and support member comprises a first relatively heavy wire portion secured to said upright lead-in conductor support member and a second relatively heavy wire portion secured to said third support pin and an intermediate fuse wire portion connecting said first and said second relatively heavy wire portions.

6. The projection lamp according to claim 5 wherein a glass sleeve is positioned about said intermediate fuse wire.

7. A fused projection lamp comprising:

a base, an elongated bulb sealed to said base, and a plurality of rigid radially disposed locating pins extending through said base and into said bulb;

a pair of rigid lead-in conductor and support members each mounted on and rigidly affixed to a different one of said locating pins to affix said lead-in conductors in an axial orientation within said bulb and a filament array and support means therefor.
mounted between said rigid lead-in conductors to form a rigid composite lead-in conductor and filament mount structure;
one of said locating pins to which one of said lead-in conductors is affixed being adapted to be connected to one terminal of an energizing potential source, and the other of said locating pins to which said other lead-in conductor is affixed constituting a dummy pin to which no terminal of an energizing potential source is adapted to be connected, and a third of said locating pins spaced from said support pins to which said rigid lead-in conductors are affixed, and said third support pin adapted to be connected to the other terminal of an energizing potential source;
a rigid fuse and support assembly comprising two rigid elongated and relatively heavy electrically conducting members connected to each other in spaced relationship at one end thereof by a rigid elongated fuse member to form an elongated assembly, and an elongated electrically insulating member overfitting said fuse member and a portion of said elongated relatively heavy members;
said fuse and support assembly rigidly affixed proximate one of its ends to said third support pins, and said fuse and support assembly extending within said bulb generally away from said base and at an angle with respect to the axis of said bulb and rigidly affixed proximate its other end to said other lead-in conductor to complete electrical continuity between said lead-in conductors and said support pins which are adapted to be connected to the terminals of an energizing potential source as well as rigidly affix the positioning of said composite lead-in conductor and filament mount structure; whereby said composite lead-in conductor and filament mount structure is firmly secured within said bulb.

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