

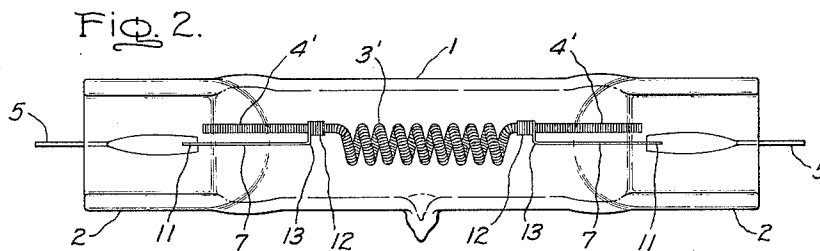
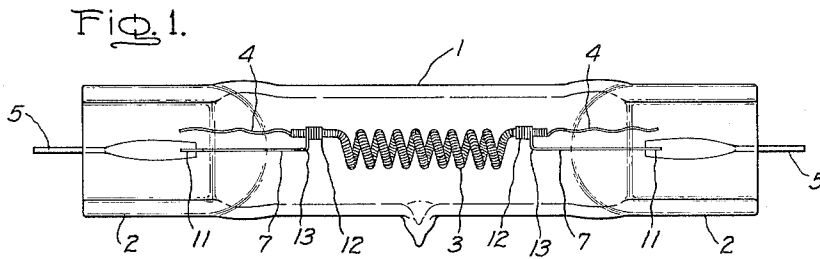
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ELECTRIC INCANDESCENT LAMP

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ELECTRIC INCANDESCENT LAMP

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This invention relates generally to electric incandescent lamps and more particularly to a lamp having a fuse as an integral part of the lamp.

In connection with electric incandescent lamps which have an elongated tubular element and a filament extending axially therethrough, it has become common to have a straight end, or leg, of the filament act as a fuse for the lamp. The fuse leg of the filament must, of necessity, be fusible during an inrush of current and therefor is of narrow cross-section wire, so as to properly serve its fusing purpose. This makes the fuse leg structurally, as well as electrically, the weakest part of the filament structure in the lamp. The fuse leg therefor is relatively easily broken during handling and shipping. While it is apparent that to obviate this problem the fuse leg of the filament must be mechanically supported or relieved of the stresses placed thereon in some manner, the type of support necessary to fulfill this function in a satisfactory manner is not as readily apparent. Since the filament is a rather delicate structure, it is not simply a matter of welding a brace or some such device thereto.

It is an object of this invention to eliminate the fuse leg on the end of the filament by providing a new and novel fusible support for the filament of a tubular incandescent lamp which fusible support is economical in design and is easily manufactured.

It is a further object of this invention to provide a fusible support for an incandescent lamp which is easily assembled to the filament and into the lamp envelope.

With a fuse leg on the end of the filament, it is also difficult to maintain that portion of the filament which produces the major part of the light from the lamp spaced axially within the envelope. Therefore, a further object of the invention is to provide a fusible support which maintains the proper location of the filament within the envelope.

Further features and advantages of the invention will appear from the following detailed description of the preferred embodiment thereof and from the drawing wherein:

FIG. 1 is a side view of a lamp provided with a fusible support member in accordance with the invention; and

FIG. 2 is a side view of the lamp provided with the fusible support member, and illustrating a modified filament construction.

Referring to FIG. 1 of the drawing, the lamp comprises an elongated tubular envelope 1 of vitreous material such as glass or quartz, having a flat pinch seal 2 at each end thereof which may be pressed to an I-shaped cross-section giving strength and rigidity. A filament 3, preferably coiled-coil of tungsten wire, extends axially of the envelope 1 and its straightened ends 4 from the primary coil extend into and are sealed into the pinch seals 2. The straightened ends 4 of the filament are sealed in the pinch seals in a position off of the longitudinal axis of the lamp envelope so that the secondary coil, i.e., central portion, of the filament which produces most of the light is located on the axis of the envelope, thus eliminating the necessity of shaping the ends of the filament so as to properly locate the filament axially within the envelope.

Lead-in conductors 5, preferably consist of molybdenum wire having an extremely thin foliated portion 6, are sealed centrally in pinch seals 2 along the axis longi-

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tudinal of the lamp and are electrically connected to the filament 3 by a pair of fusible supports 7.

The envelope preferably contains an inert gas filling and may also contain a reactive atmosphere such as iodine, as disclosed and claimed in Patent 2,883,571—Fridrich et al.

The support 7 for the filament electrically connects the filament to the lead-in conductors and acts as a fusible element, which at the end of lamp life prevents violent failure of the lamp by quenching any tendency of the lamp to arc in the pinch seal portion of the lamp.

In accordance with the invention, the fusible support 7 also serves to locate the major portion of the filament axially within the envelope. To accomplish this, a first end 11 of fusible support 7 is embedded in its adjacent pinch seal along the longitudinal axis of the envelope at the side of, and spaced away from, the ends 4 of the filament 3 and connected to foils 6. The second end 12 of the support 7 is interwound, i.e., helically wound with the same pitch as the coil and with an inside diameter slightly smaller than the outside diameter of the coil so that the support 7 is in effect screwed on the filament 3, with the coiled portion of the filament so as to be firmly anchored to the coiled portion of the filament. An intermediate offset portion 13 of the support 7 extends transversely of the axis of the envelope and is properly dimensioned to locate the secondary coil of the filament 3 along the axis of the lamp. It will be evident that the ends 4 of the filament are firmly anchored in the pinch seals 2 and thus provide, in conjunction with support 7, good support for the coiled-coil filament.

In a preferred method of assembly of the lamp, each of the fusible support members 7 is interwound with the filament while the coil is still supported by the coiling mandrel such as is ordinarily used in the coiling of tungsten filament. Thus, the coil is not directly subjected to the physical strain of the attachment of the support member thereto. After the fusible supports have been attached to the coils and located in the preferred manner, the assembly may be subjected to the required dissolving and cleaning operations. Subsequently, foliated portions and lead wires are attached to the ends of the fusible supports and the structure may be inserted into the open tube of the lamp, as is conventional. The offset 13 provided in the support has a self-centering effect so that when the pinching members for the seals come down, forming the seals, the major portion of the filament is centered along the axis of the envelope.

In the modified construction, shown in FIG. 2, the filament 3' is provided with primary coiled ends 4' which are embedded in pinch seals 2. For some purposes it is advantageous to provide this additional strengthening.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. An electric incandescent lamp comprising an elongated envelope of vitreous material having pinch seals at its ends, a lead-in conductor extending into each of said pinch seals, a filament extending longitudinally of said envelope with its ends embedded in said seals, and a pair of fusible support members for said filament having one of their ends interwound with a coiled portion of the filament and their other end connected to said lead-in conductors within the seal, respectively.

2. An electric incandescent lamp comprising an elongated envelope of vitreous material having pinch seals at its ends, a lead-in conductor extending into each said pinch seal, a filament extending longitudinally of said envelope and having one of its ends embedded in one of said pinch seals and a fusible support member for said filament having one of its ends interwound in the coiled portion of the filament and its other end connected to

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one of said lead-in conductors within the seal, respectively.

3. An electric incandescent lamp comprising an elongated envelope having pinch seals at its ends, lead-in conductors extending centrally into each of said pinch seals, a coiled-coil filament within said envelope located with its secondary coil along the longitudinal axis of the envelope and one of its ends embedded in one of said pinch seals and a fusible support member for said filament having one of its ends connected to one of said lead-in conductors within the seal, and extending along the longitudinal axis of the filament, its other end comprising an offset portion extending transversely of said

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envelope and connected to the filament, respectively, whereby the filament is electrically connected to lead-in conductors and properly located within the envelope.

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