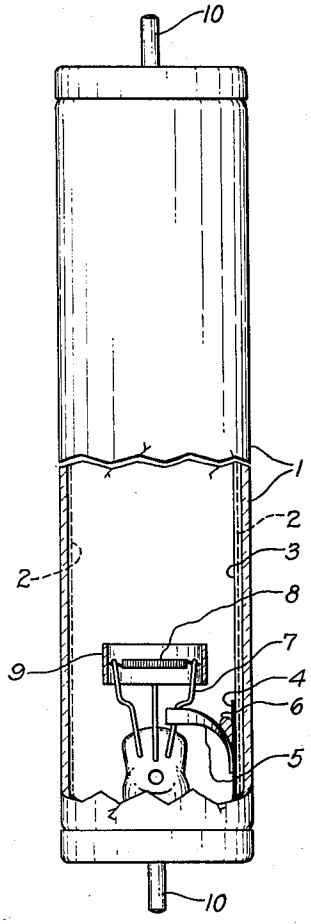
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ELECTRIC DISCHARGE LAMP WITH CONNECTED STARTING STRIP

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ELECTRIC DISCHARGE LAMP WITH CONNECTED STARTING STRIP

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1 Claim. (Cl. 313—197)

The present invention relates to an electric discharge lamp, more particularly to a low pressure discharge lamp, having on its inner wall a starting strip connected to one electrode or to a current inlead leading to one of the electrodes. It has been found that the glass of the discharge lamp at the place where a conductor connects the electrode with the starting strip is heated excessively so that cracks in the glass often occur.

It is well known to prevent over-heating of the glass envelope at the contact place between starting strip and current inlead, as occurs for instance in stempress sealing, by making the connecting lead a bimetallic strip which deforms on heating and breaks contacts with the starting strip, thereby interrupting any heat conduction to the envelope glass wall. It has also been proposed to provide an electrically insulating sheath on the connecting lead between starting strip and electrode or at least around the contact place between starting strip and conductor. This arrangement presupposes that the discharge attaches initially on the conductor, thereby causing excessive heating of the glass wall.

A simpler and more reliable arrangement for the purpose of preventing undesirable overheating of the discharge glass envelope is achieved, according to the present invention, by making the resistance per centimeter of the starting strip, at the juncture of the connecting lead between starting strip and electrode, less than over the remainder of the longitudinal extension of the strip. In order to obtain a better distribution of temperature, the lower resistance portion is continued some centimeters beyond the juncture. During operation and especially at starting, a glow current flows through the starting strip causing heating at the soldered place of the connecting lead in consequence of the transition resistance. Also this place or juncture is heated additionally by heat conducted from the incandescent electrode across the contact bridge piece. The resistance of the starting strip at the contact point should, preferably, be low enough that the temperature increase above the surrounding temperature amounts to less than 60° C. In case of a discharge lamp of 40 watts and of a length of 1.20 meters, that is, a lamp rated for a dissipation of approximately 10 watts per foot, a resistance of the starting strip at the contact point of the connecting lead less than 10 ohms per centimeter, preferably about 1 to 7 ohms per centimeter, has proved desirable. The resistance of the starting strip over the remainder of its length amounts to at least 20 ohms per centimeter, for instance 20 to 30 ohms per centimeter. The lower resistance can be achieved by changing the specific resistance of the starting strip at the contact place. The starting strip at the above-mentioned contact place is, preferably, broadened or thickened in order to decrease its resistance. Broadening or thickening the starting strip according to the present invention avoids the difficulties which may occur in the case of contact improvement by means of highly conducting coatings which may have injurious effects on the gas filling.

The single figure of the accompanying drawing shows, as an example of the present invention, a fluorescent lamp, foreshortened and partly sectioned, provided with a starting strip according to the invention.

Referring to the drawing, to the inner wall of the glass envelope **1** of a fluorescent lamp there is applied in a usual manner a fluorescent coating **2** and thereover a starting strip **3**. The starting strip may consist of a mixture of graphite and glaze extending the length of the envelope in a band about 3 millimeters wide. The starting strip **3** is, as shown at **4**, thickened in cross section for a short length, about 5 centimeters, at the end which is connected to an electrode. At this place **4** the starting strip is connected to a contact bridge piece, in the present case to a narrow sheet strip **5**, by means of a soldering paste **6**. The other end of the sheet strip **5** serving as a conductor is connected to a current inlead **7** of the electrode **8**, for instance by means of welding.

Tests of the illustrated lamp have shown that excessive heating at the soldering place between conductor **5** and the thickened inner starting strip **4** is avoided. The amount of heat produced in the starting strip is small, and the heat conducted from the incandescent electrode across the contact bridge piece to the soldering place is much better distributed. Cracking of the glass is substantially eliminated by the decrease in temperature.

In the illustrated example, the electrode is provided also with a screening cap or shield **9** which forms a shell open on both sides along the axis of the lamp. It serves also to shield the juncture or soldering place from the radiant heat produced by the discharge at the point where it attaches to the electrode. Thereby any heating of the bulb near the soldering place of the connecting sheet strip **5** on the inner starting strip **3** is likewise decreased.

The lamp is provided at each end with an electrode **8** connected to the contact pins **10** in the usual way. The envelope is filled with a suitable ionizable medium comprising an inert gas such as argon at a low pressure, for instance 3 millimeters of mercury, and a small quantity of mercury sufficient to develop a pressure of a few microns, for instance 8 to 12 microns, during normal operation.

The measures in accordance with the invention which have been taken to decrease any heating of the envelope glass wall at the soldering place are especially important in the case of lamps used in localities subject to danger of explosion.

While a certain specific embodiment of the invention has been shown and described in detail, same is intended as an illustrative example and not in order to limit the invention thereto except in so far as specified in the appended claim.

What we claim as new and desire to secure by Letters Patent of the United States is:

An electric discharge lamp comprising an elongated vitreous envelope provided with a pair of electrodes at opposite ends and containing an ionizable medium and being rated for a dissipation of approximately 10 watts per foot, a conductive starting strip in the form of a narrow band of conductive material extending along the inner wall of said envelope, and a connecting lead between said starting strip and one of the electrodes, a screening cap around said one electrode serving as a heat shield, said starting strip having a resistance in the range of 1 to 7 ohms per centimeter in the vicinity of the juncture with the connecting lead and a resistance of 20 to 30 ohms per centimeter over the remainder of its longitudinal extent whereby to limit the increase in temperature above the surrounding temperature in the vicinity of said juncture to less than 60° C.

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