March 6, 1934. D. S. GUSTIN 1,950,028

BASE CUT-OUT

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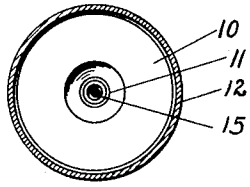


Fig. 2.

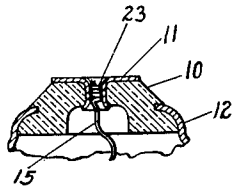


Fig. 3.

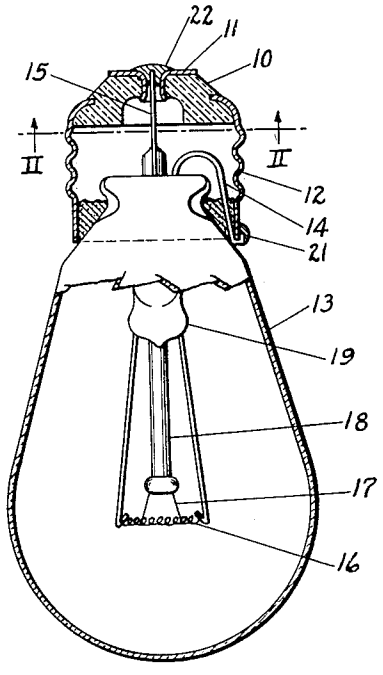


Fig. 1.

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BASE CUT-OUT

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4 Claims. (Cl. 176—24)

This invention relates to the manufacture of incandescent electric lamps which are burned when connected in series and relates more particularly to the incorporation of a medium in one of said lamps which medium is capable of by-passing electrical energy at a given voltage, as for example, when a filament of a lamp is broken.

In certain types of incandescent lamps such for example as lamps employed for car lighting, street series or for Christmas tree lighting, a given number of lamps are connected so that the combined voltage of the lamps is equal to the voltage of current supply.

It has been found that when using a plurality of lamps connected in series considerable inconvenience occurs upon the failure of one of the lamps if a filament breaks or the lamp structure otherwise fails to operate, since such failure terminates the continuity of the circuit and the rest of the lamps are extinguished. It is difficult to determine by inspection which lamp has failed and it becomes necessary, in order to select the lamp which is defective, to test by trial until the defective lamp has been discovered, which procedure is obviously time consuming and inconvenient.

The present invention provides a lamp of the series type in which a means is provided as an integral part of a base to permit a flow of current upon the failure of the filament or other defect which might prevent the normal flow of current through the lamp. By the provision of the said means the lamp which fails may be immediately detected inasmuch as the remaining lamps will continue in operation.

In the manufacture of incandescent electric lamps it has become the universal practice to employ a base such as shown in Patent No. 774,404. This base consists of a cylindrical metallic threaded shell having one end closed by a ring or web of insulative material such as glass. Centrally positioned in the disk is embedded a so-called bottom metallic contact member of tubular form through which one end of a lead wire or conductor extends. The lead wire is then soldered to the bottom contact member. The remaining lead wire of the lamp being secured by solder to the metallic shell.

In accordance with the present invention a web or ring of cut-out material is employed instead of the usual glass ring. In this manner the expense of an additional element is avoided since the cut-out material serves a double function i. e., to secure the bottom contact in insulative relation to the base and at the same time serving when a filament breaks or excess current is otherwise impressed across the normally insulative ring of cut-out material to pass current and prevent the remaining lamps in the series from becoming inoperative.

Mediums capable of serving as cut-outs have been used and copending application Serial No. 562,038 filed September 10, 1931 which is assigned to the same assignee as is the present invention, shows a cut-out unit in the form of a pellet. This pellet is composed of compressed powdered copper and sodium silicate. Satisfactory results have been obtained by the use of a pellet as a removable unit but the present invention utilizes a cut-out medium as an integral part of a lamp base.

Although various powdered substances such as iron powder and a binder such as sodium silicate or aluminium powder and sodium silicate may be used it has been found that satisfactory results are obtained when forming the insulative ring or spacer member which holds the bottom contact, from copper powder and sodium silicate.

The powder and sodium silicate employed may vary in their proportions in accordance with the voltage of the lamp for which the base is to be provided.

It has been found that the following procedure will give a practical application of the invention as for example when used for Christmas tree lamps operating eight lamps in series at 110 volts. 100 grams of metallic copper powder of No. 150 mesh are mixed with 15 grams 1.55 specific gravity sodium silicate containing approximately 14% alkali and dehydrated at about 130° centigrade and stirred for 16 hours, after which the mixture is screened through a 60 mesh screen. The sodium silicate and copper mixture is then mixed with sodium silicate, 100 grams of the powder to 12 grams of sodium silicate give a plastic substance which is then fed to a mold in which the base shell and bottom contact are supported. When the proper quantity of cut-out material is in the mold pressure may be applied to compress the mobile mass to a definite form. The break down voltage of the ring or web will depend upon the pressure applied. It has been found that good results are obtained by applying a pressure of 3200 pounds to the square inch and baking at a temperature of about 180° centigrade for about two hours.

A base made in accordance with the present invention is illustrated in the accompanying drawing, in which

Fig. 1 shows a standard lamp with the base partly broken away.

Fig. 2 is a view taken on line II—II in Fig. 1 and

Fig. 3 shows a lead wire secured to the bottom contact without the usual soldering operation.

As shown the present cut-out material may be in the form of a web or ring 10 which serves as an insulative separator and a bottom contact member 11 may be embedded in the disk. The web engages the edges of a screw shell 12 which may be secured in the usual manner by cement to a bulb 13. Lead wires or conductors 14 and 15 extend from the neck of the bulb and connect with a filament 16 mounted on support wires 17 extending from an arbor 18 constituting part of a stem 19.

The lead wire 14 may be secured to the metallic shell at 21 while the lead wire 15 may extend through the bottom contact 11 and may be electrically connected thereto by solder 22 or may be mechanically secured by forming the free end of the lead wire 15 into a spiral 23 and forcing the spiral into the interior of the tubular contact member 11 as shown in Fig. 3.

The above mentioned method of securing the bottom contact without the use of solder is shown in Patent Number 1,865,468 issued July 5, 1932 for Lamp base.

By providing a solderless connection between the bottom contact and the lead wire any detrimental effect the flux used in the soldering operation may have on the cut out material is avoided. The flux may tend to corrode the silicated copper but a coating of paraffin may be disposed around the bottom portion of the base to prevent the flux from contacting with the cut-out material.

The incorporation of a cut-out medium as an integral part of a lamp base makes it possible to provide such bases at the same or at slightly greater cost than the ordinary base. This is important since it is extremely desirable to construct the cheaper type of lamps such as those used for Christmas tree lighting, with a cut-out material. Heretofore the cost of the cut-out prohibited its use, particularly in the cheaper type of lamp.

Furthermore the bases used for miniature lamps are obviously of small size and did not provide space for an additional element. In the present construction the cut-out is provided at relatively low cost and without requiring greater space than heretofore necessary in producing a base without the desirable cut-out feature.

Although a preferred embodiment of the invention is shown and described herein it is to be understood that modifications may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. A lamp base comprising a metallic cylindrical shell, a contact member spaced from said shell and a ring of compressed metallic powder and sodium silicate for holding said member and shell in spaced relation.

2. A lamp base comprising a metallic cylindrical shell, a wall of compressed copper powder and sodium silicate closing one end of said shell, and a contact member supported by said wall and disposed in spaced relation to said shell.

3. A lamp base comprising a metallic cylindrical shell, a tubular contact member spaced from said shell and a wall of compressed metallic powder and sodium silicate for holding said member in spaced relation to said shell.

4. A lamp base comprising a metallic cylindrical shell, a wall of compressed metallic powder and sodium silicate closing one end of said shell and a tubular contact member embedded in said wall.

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