METHOD OF MANUFACTURING ELECTRIC FILAMENT LAMPS, MORE PARTICULARLY FOR MOTOR-CAR LIGHTING

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METHOD OF MANUFACTURING ELECTRIC FILAMENT LAMPS, MORE PARTICULARLY FOR MOTOR-CAR LIGHTING

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In a co-pending patent specification an electric lamp has been proposed in which the means of alignment form part of a member made of insulating material for supporting the terminal wires, the rim of the lamp bulb being secured to this member in a gas-tight manner.

The present invention relates to a method of manufacturing such an electric filament lamp which is particularly suited to motor-car lighting and can further be used for other projection systems.

In the co-pending specification it has been proposed to effect the gas-tight attachment by the interposition of enamelled between the bulb rim and the supporting member, which enamel is already provided on the supporting member in the form of a ring. The bulb rim is secured to this ring by the enamel being liquefied again. The evacuation of such a lamp is effected through the annular gap between the bulb rim and the supporting member.

In order to render the means of alignment provided on the supporting member sufficiently sturdy, the supporting member must be made comparatively heavy. If now the supporting member is made of glass, a comparatively large amount of heat must be supplied.

It is an object of the present invention to provide a method of manufacturing filament lamps in which this disadvantage is overcome. The invention is characterized in that after a preparatory heating of the enamel which serves to effect the attachment, this enamel is heated further by the heat which is generated by switching into circuit one of the filaments mounted on the supporting member.

The emission of this filament, which is evenly distributed over the zone of attachment owing to the axial position of the filament, ensures uniform heating and consequently even melting of the enamel ring between the bulb and the supporting member. Preferably, the filament having the greater power is switched on. Thus, for example, the supporting member is previously heated to a temperature of 550° C. after which it proves to be sufficient for the said filament to be operated at the rated voltage for 3 minutes in order to ensure satisfactory attachment.

The method substantially consists of the following stages:

1. The supporting member provided with the enamel ring and the filament system is arranged on a support, after which the bulb is disposed on the supporting member so that its rim bears concentrically upon the enamel ring. Preferably the bulb rim is previously provided with a ring of the same enamel, which ring has already hardened. This facilitates and improves the gas-tight sealing, since thus two similar substances are fused to one another. In addition, the irregularities which such a ring invariably possesses enable sufficient amounts of gas to flow between the bulb and the supporting member both in the process of evacuation and in that of filling the bulb.

2. The assembly is arranged in an enclosed space which is connected to the vacuum pipe and is provided with pipes for supplying the filling gases.

3. By means of an oven this enclosed space is heated to the working temperature which depends upon the nature of the glass used.

4. The operating voltage is applied to the major filament for a period of time which is determined experimentally.

All these steps can be performed in sequence in a single device.

Alternatively, bell jars may be provided on a conveyor belt which each contain a certain number of supporting members and bulbs, the bulb passing underneath a heating arc which supplies the required temperature cycle.

The drawing is an axial cross-sectional view illustrating a method of effecting an attachment in accordance with the invention with reference to the supporting member, the terminal wires with the filament and the bulb. The left-hand half A shows the combination supporting member-bulb in the initial condition, that is to say, before the heat treatment, a rim 2 of a bulb 1, which may be provided with a ring 3 of enamel, bearing on a ring of enamel 4 provided in a recess 5 of a supporting member 6.

The right-hand half B shows the combination supporting member-bulb in its final condition, the bulb 1a having dropped to the bottom of the recess 5 of the supporting member 6 during the melting of the enamel.

What is claimed is:

1. A method of manufacturing a gas-tight electric incandescent lamp comprising providing a member constituted of insulating material for supporting the filament system and terminal wires of the lamp and having an annular groove therein, inserting a soft ring of enamel in said annular groove, placing a glass bulb in the groove of said member with the ring thereof in engagement with said ring of enamel, arranging the assembly in an enclosed chamber, heating said enamel by an oven to a temperature of approximately 550° C., and applying the operating voltage to the major filament of said lamp for about 3 minutes whereby said enamel is further uniformly heated by the heat generated by said filament.

2. A method of manufacturing a gas-tight electric incandescent lamp comprising providing a member constituted of insulating material for supporting the filament system and terminal wires of the lamp and provided with an annular groove therein, inserting a soft ring of enamel in said annular groove, providing a glass bulb with a hardened enamelled ring on the rim thereof, placing said glass bulb in the groove of said member with the ring thereof in engagement upon said soft ring of enamel in said annular groove, heating said enamel by an outside heating source, and applying the operating voltage to the major filament of said lamp whereby said enamel is further uniformly heated by the heat generated by said filament.

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