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METHOD OF BASING AND SOLDERING

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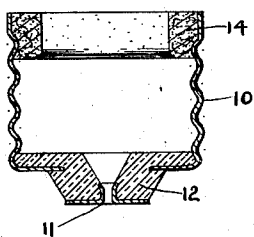


Fig. 1.

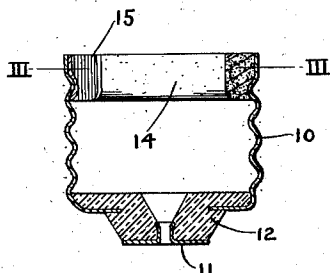


Fig. 2.

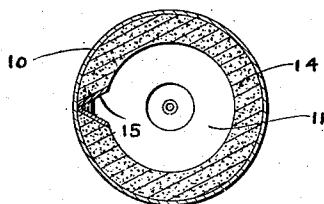


Fig. 3.

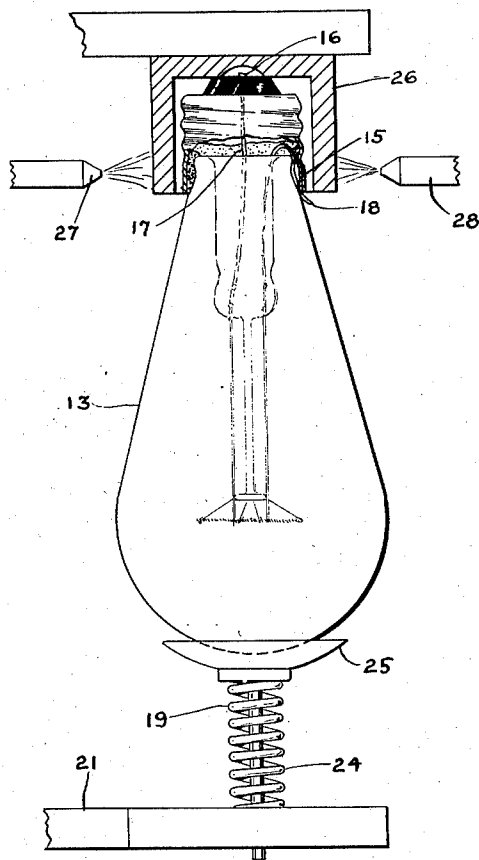


Fig. 4.

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UNITED STATES PATENT OFFICE.

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METHOD OF BASING AND SOLDERING.

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This invention relates to the manufacture of incandescent electric lamps and the like and relates more particularly to the method of uniting lead-wires to the bases of such devices.

In the manufacture of incandescent electric lamps, it is necessary to provide electrical contacts at the terminals of the lead-wires or conductors which extend from the bulb portion of the lamp. These terminals usually consist in a union of one of the lead-in wires to a metallic insulated contact centrally disposed upon the bottom of the base and to a union of the other lead-in wire by soldering to the outside cylindrical surface of the base.

The development of the electric lamp industry has made it desirable to eliminate as far as possible all external projections or protuberances upon the outer surface of the lamp and it has been found advantageous to eliminate the so-called surface solder contact.

To accomplish the above, the present invention provides for the union of one of the leading-in wires to the interior surface of the base to provide what may be termed the side contact. It will be understood that the metallic shell of the base actually provides the conductive medium for the flow of energy through the lead-in wire connected thereto, while the centrally disposed contact is insulated from the metallic shell or base.

In further carrying out the present invention, it has been found advantageous to combine the operation of soldering the side lead to the shell at the time the shell or base is secured to the bulb of the lamp. This latter operation of securing the bulb to the base is termed "basing" and consists in depositing a quantity of cementitious material in the base, introducing the neck of the bulb into the base so as to firmly press the said material in contact with the wall thereof and with the neck of the bulb. The base is then subjected to a baking operation to set the cement and cause the same to securely bond the base and bulb together.

In the operation of basing, it is the practice to first deposit a quantity of cement, usually in the form of a ring, which surrounds the upper inside edge of the base, this cement is of such character as to remain in a plastic state for a relatively long period of time prior to baking. It has been found that this ring of cement may be utilized to

hold a clip or tab of solder which may be of relatively low fusing point, the solder may be pressed into the cement until it displaces a portion thereof and makes contact with the inside surface of the base.

A lamp may then be positioned with the neck thereof in the base and one of the leading-in wires may be threaded through the bottom central contact and the other leading-in wire disposed in contact with the solder at the side of the base. The base may be then passed firmly into position and subjected to the baking operation at which time the solder will be fused to unite the leading-in wire adjacent thereto to the inside wall of the base.

If desirable, the leading-in wire constituting the side contact may be of sufficient length so as to project from the upper edge of the base and after the fusing operation, may be cut off flush with the edge thereof, or the leading-in wire may be of such length as not to project from the edge of the base in which case no further operations will be necessary.

The cement employed for securing a lamp bulb to a base is of such character as to require a relatively high temperature for the baking operation and by employing a solder of a low fusing point the soldering and baking operations may be performed simultaneously. It is obvious, however, that the baking operation may be performed at a lower temperature and the soldering accomplished by the application of a hot iron or flame to the outside of the base adjacent to the solder deposit either before or after the baking operation.

An object of the present invention is, therefore, to facilitate the manufacture of an incandescent lamp by combining the operation of baking and soldering so that the same may be performed automatically and simultaneously.

Another object of the invention is to provide a lamp having a base of a more neat appearance, free from external irregularities.

Other objects and advantages of the invention will be more fully understood by reference to the following description together with the accompanying drawing.

Fig. 1 is a sectional view of a base having a deposit of cement therein;

Fig. 2 is a sectional view similar to that

shown in Fig. 1 and illustrates the cement as supporting a solder clip;

Fig. 3 is a view taken on line III—III in Fig. 2; and

Fig. 4 shows a bulb and base in position to be moved through a heat zone, the base being partly broken away.

Although the present invention may have other applications, it is illustrated in connection with a metallic base or shell 10 of an incandescent electric lamp. This base is generally provided with a contact 11, insulated from the shell by a non-conductive insert 12. For the purpose of securing the base to a lamp bulb 13, the base is first provided with a ring 14 of cement which is deposited adjacent to the upper edge and upon the interior surface of the base. This cement usually consists of a plastic mixture of shellac combined with a filler such as kaolin and a suitable solvent such as alcohol. When an exceptionally high temperature cement is used, bakelite is added to or substituted for the shellac.

In practicing the present invention, the bases are first supplied with the cement in the usual manner and then a clip or deposit of solder 15 is disposed in the cement and pressed against the metallic surface of the shell 10. When the bulb 13 is applied to the base, a leading-in wire 16 (see Fig. 4) is threaded through the contact 11 in the usual manner for the subsequent soldering operation. A lead wire 17, however, is guided upwardly and so disposed as to lie in contact with the fusible material or solder 15; an end 18 of the lead-in wire may extend from the shell and subsequently be cut off at the edge thereof.

When the bulb and base are properly disposed and supported in the usual clamp 19 on a conveyor 21, the clamp is provided with a spring member 24 and a cup 25 so that the bulb 13 is forced into the base and the lead-in wire 17 is pressed firmly against the solder 15. Usually the base is surrounded and held by a cap 26 through which heat is transmitted to the base by burners 27 and 28 or by other suitable means as by the provision of an electric heating element in which case the cap 26 may be dispensed with. The conveyor may be moved to cause a travel of the base through a heat zone provided at which time the cement will be properly seasoned or set to bond the base and bulb together and the fusible material will be melted to connect the leading-in wire 17 to the shell or base 10.

It will be understood that a suitable flux may be combined with the solder or that a flux may be applied at the time the leading-in wire is disposed in contact with the solder.

From the above, it will be evident that the side contact of the lamp may be made

in a convenient and expeditious manner and the appearance of the lamp greatly improved.

The soldering operations in lamp manufacture are more or less of a complicated nature, particularly by reason of the side contact which requires either a laterally disposed soldering device or the necessity of rotating the lamp bodily for the successive operations of soldering the bottom center contact and the side contact. Ordinarily the bottom contact is performed in a relatively simple manner since the leading-in wire 16 projects from the contact in a uniform manner and lends itself to an automatic soldering operation. The side contact, however, as when the leading-in wire projects from the upper edge of the base, it is more difficult, since it is necessary to properly direct the leading-in wire into suitable relation with the lamp base and to maintain the lead in such position while a drop of solder is deposited thereon. It is also often necessary to remove the end of the leading-in wire which may project from the solder.

By reason of the present invention, therefore, the said soldering operation is automatically accomplished during the basing, thus greatly simplifying the lamp manufacture in that the one remaining soldering operation is a simple one and the cost of production consequently materially reduced. 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. The method of manufacturing an incandescent electric lamp which comprises providing a lamp-base with an amount of solder and a quantity of basing cement within the base, positioning the bulb in the base with a leading-in wire thereof adjacent to said solder and in applying heat to the base to simultaneously fuse the solder and connect the leading-in wire to the base and bake the cement to unite the bulb and base.

2. The method of manufacturing an incandescent electric lamp which comprises providing the base thereof with a leading-in wire disposed adjacent to the interior surface of the base, depositing a quantity of solder material adjacent to the wire, depositing cement in the base, positioning a bulb for union to the base, subjecting the base to heat to fuse the solder to connect the leading-in wire to the base and to bake the cement to unite the base and bulb.

3. A step in the manufacture of an incandescent electric lamp which comprises disposing a lamp bulb within a base so as to dispose a leading-in wire adjacent to a solder deposit within the base and in subjecting

the solder to heat to fuse the leading-in wire to the base.

4. A step in the manufacture of an incandescent electric lamp which comprises supporting a quantity of fusible material upon the inner wall of a lamp base, positioning a lamp bulb with a lead-wire thereof adjacent to said fusible material and heating said material to fuse the same and connect the lead-wire to the base.

5. The method of soldering a wire to the inner surface of a lamp base which comprises attaching a quantity of fusible material to said inner surface, disposing a wire adjacent to said material and applying heat

to fuse the material and secure the wire to the base.

6. The method of securing a wire to the inner surface of a lamp base which comprises depositing a plastic substance upon the inner wall of the base, applying a fusible material to said substance for attachment to the wall of said base, disposing a wire adjacent to said fusible material and in heating the same to secure the wire to the base.

In testimony whereof, I have hereunto subscribed my name this 20th day of December, 1926.

DANIEL SNYDER GUSTIN.