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REFLECTING INCANDESCENT LAMP

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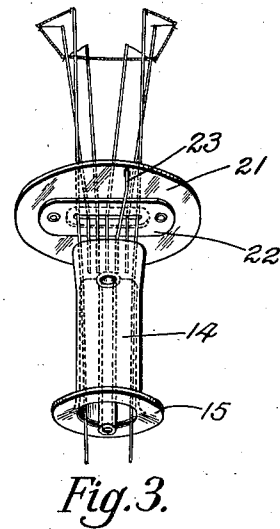
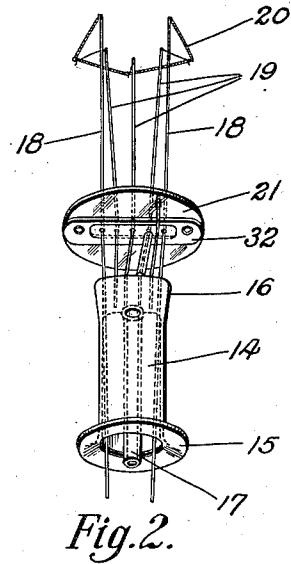
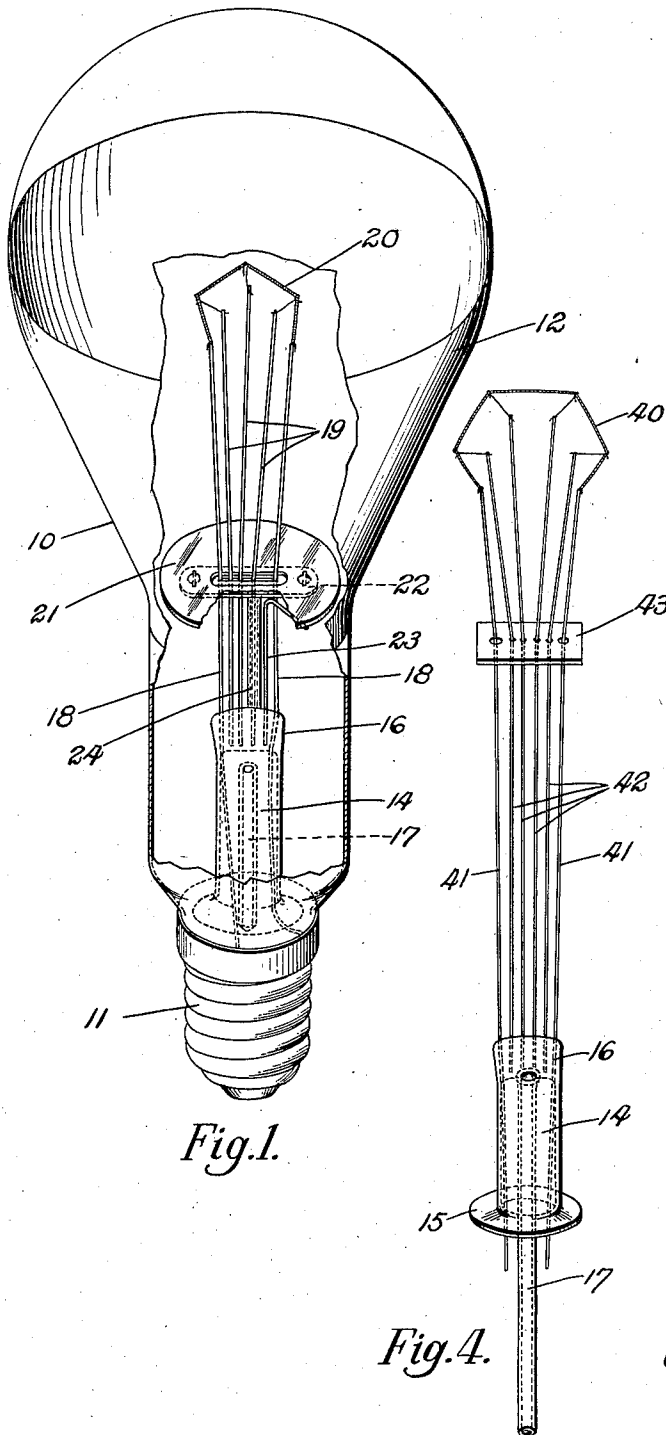


Fig. 4.

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REFLECTING INCANDESCENT LAMP

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6 Claims. (Cl. 176—34)

The present invention relates to electric incandescent lamps and consists more particularly in an improved mount for use in lamps which include a reflecting coating or surface for concentrating and directing light rays from the light source into a defined field or beam and in which high temperature working conditions are usually encountered. In lamps of this type one serious cause of deterioration has been found to be due to relative movement or vibration of the lead or supporting wires of the filament. Where this is free to occur the filament is likely to be placed under stress at its points of connection with the lead or supporting wires, with resulting liability of breakdown. With a view to improving this condition it is proposed in accordance with the present invention to bind the lead and supporting wires into a group, thus eliminating to a large extent relative motion which would stress the filament and causing all the supporting points of the filament to move together if at all. Incidentally the act of binding the wires in a group tends to stiffen them and make them less subject to vibration or swaying movement in the lamp than heretofore.

My invention has a particularly useful application in lamps wherein it is desired to employ a reflecting disk in the neck of the bulb, since such a disk may be utilized to support a binding or snubbing device for the lead and supporting wires and the binding device may be utilized to insulate the lead wires from each other and from the reflecting disk. The functions of binding the lead and supporting wires and reflecting light rays toward the bowl of the bulb may thus be combined in a single structure.

These and other features of the invention will be best understood and appreciated from the following description of several desirable embodiments thereof selected for purposes of illustration and shown in the accompanying drawing in which,—

Fig. 1 is a view in perspective, partly in section, showing a lamp equipped with a mount of my invention,

Fig. 2 is a view in perspective of a mount of somewhat different construction,

Fig. 3 is a view in perspective of a mount like that shown in Fig. 1 but employed in an assembly having a greater number of supporting wires, and

Fig. 4 is a similar view of a mount adapted for use in a lamp for indirect lighting.

The bulb 10 shown in Fig. 1 may be of any commercial size and type and is equipped with the usual metal base 11 threaded to fit a lamp

socket. The bulb herein shown is provided with a reflecting coating 12 of silver or the like which extends from its line of maximum diameter to a line in the neck of the bulb and has the effect of concentrating and directing the light of the lamp in a well defined, outwardly directed beam.

The bulb is provided internally with a glass stem 14 having an outwardly extending flare 15 which is sealed into the neck of the bulb. The upper end of the stem comprises a solid press 16, in which the lead wires and supporting wires are sealed. An exhaust tube 17 is sealed into one wall of the stem and is utilized for exhausting the bulb in the manufacture of the lamp. The lead wires 18 extend upwardly from the press 16 and are connected with the ends of the filament 20, herein shown as being of the coiled type. The lead wires 18 may be of nickel or other suitable metal and are connected directly to the filament 20. Three supporting wires 19 are sealed in spaced relation between the lead wires in the upper end of the press 16. These are connected to intermediate points of the filament 20 through the medium of tungsten or molybdenum hooks and support the filament 20 in a four-sided configuration or design. The two lead wires 18 and the three supporting wires 19 are herein shown as arranged in a straight row and as leaving the press in parallel relation.

Located at the upper end of the neck of the bulb is a reflecting disk 21 which may be of silver or may have a silver coating or may be of other reflecting material. The purpose of the disk 21 is to reflect outwardly into the bowl of the bulb those rays which would otherwise be lost in its neck. The disk 21 is provided with a transverse slot of sufficient size to clear the lead wires 18 and supporting wires 19 which pass up through it aligned in a group. An insulating panel 22 of mica, lava or the like is secured to one face of the disk 21, the lower face as herein shown, by means of rivets located adjacent to its ends, and is provided with a slot for the passage of lead and supporting wires. The slot in the insulating panel may be of such size that it engages at each end of the lead wires 18, while the supporting wires 19 may extend through the slot in spaced relation and be confined against lateral deflection by being engaged by the side edges of the slot.

The reflecting disk 21 with its insulating panel 22 is supported in the desired position in the lamp by means of a supporting wire 23 imbedded at its lower end in the press 16 of the stem and having its upper end bent at an angle and

soldered to the under side of the disk. For better insulating protection a glass tube 24 may be placed upon one or more of the supporting wires 19, as shown in Fig. 1.

From the foregoing description it will be apparent that the lead and supporting wires are confined or snubbed as a group at a point substantially above their points of emergence from the press and are thereby prevented to a large extent from independently vibrating or swaying and so subjecting parts of the filament to a stretching stress. The insulation of the wires from each other is also improved and the reflecting disk 21 is securely located in the desired position within the lamp.

The mount shown in Fig. 2 is similar to that shown in Figs. 1 and 3 except that the insulating panel 32 is shown as being provided with individual holes for the lead and supporting wires in place of the slot shown in Figs. 1 and 3. The mount of Fig. 2 therefore goes somewhat further in supporting, insulating and spacing the lead and supporting wires from each other than the modification first described.

In Fig. 4 is illustrated a mount of a type useful in a lamp designed for indirect lighting, that is to say, a lamp having its bowl portion silvered so as to throw a beam upwardly. In such a lamp the filament 40 is supported at a greater distance from the press 16 than in a lamp of the type shown in Fig. 1. Accordingly the lead wires 41 and the supporting wires 42 are of considerably greater length than the wires shown in Figs. 1 and 3. To maintain them in a group and prevent relative vibration which would stress the filament 40 a block 43 of insulating material such as lava and having individual holes for the wires, is threaded upon them and slipped into the vicinity of the filament 40, slightly contracting the wires and being held in place thereon by a binding connection. The wires 41 and 42 extend in substantially parallel relation from the press 16 to the perforated block 43 and then diverge to form the points for supporting the filament 40 in a five-sided figure.

In the mount shown in Fig. 3 the filament is arranged in a five-sided figure and consequently one more supporting wire is employed than in the mount of Fig. 1. Otherwise the constructions are similar, except that no insulating tube is shown in Fig. 3.

While the illustrated mounts are shown as including flat reflecting disks these may be concaved or otherwise shaped to meet the requirements of the particular lamp in which they are to be used. The insulating tube 24 may or may not be fused to the press 16. In addition to its insulating function it acts to some extent as a support for the disk and is useful in assembling the mount as a gauge determining the spacing of the disk from the press.

The filament 20 has been referred to as a coiled filament and may comprise the coiled coil filament disclosed in the pending application of Charles Spaeth, Ser. No. 15,605, filed April 10, 1935, or any other desired type of filament, although the invention is particularly useful in its application to a reflecting lamp having a concentrated type of filament designed to operate

with high intrinsic brilliancy and at high temperature substantially at the focus of the reflecting surface of the bulb or a portion thereof.

The details and mechanical features illustrated comprise good practical forms of the invention but it is to be understood that these may be varied in form, disposition and arrangement and still be within the scope of the invention as pointed out in the appended claims, defining what I claim as new and desire to secure by Letters Patent:—

1. A filament support for an incandescent electric lamp, comprising a stem, lead filament supporting wires projecting therefrom, a filament connected at spaced intervals to said wires, and a snubbing device spaced from the stem having a slot holding all said wires in a row and limiting their range of possible independent movement, and separate means for supporting the snubbing device from the stem.

2. A filament support for an incandescent electric lamp, comprising a stem, lead wires and filament supporting wires projecting therefrom, a filament connected at spaced intervals to said wires, an insulating panel supported above the stem and having a slot for the passage of all said wires acting at its ends to prevent separating movement of the wires and confining them also against movement transversely of the length of the slot, and a reflector carried by said panel.

3. A filament mount for an incandescent electric lamp, comprising a stem, lead wires projecting therefrom, a filament connected at spaced intervals to said wires, a reflecting disk supported above the stem and apertured for the passage of said wires with clearance, and an insulating panel registering with the aperture of the disk and having a restricted wire passage therein.

4. An incandescent electric lamp having a bulb with a reflecting coating upon a portion of its surface, a filament within the bulb supported entirely by metal wires, a reflecting disk surrounding said supporting wires, and an insulated panel secured to the disk and perforated to fit said wires and space them from each other and from the disk.

5. An incandescent electric lamp having a bulb provided with a reflecting coating upon its surface, a stem within the neck of the bulb, lead and supporting wires extending from the stem, a filament carried by the ends of said wires, a reflecting disk in the neck of the bulb supported above the end of the stem and having an aperture therein, and an insulating panel secured to the disk and having a restricted passage for the wires and acting to maintain them spaced from the disk and from each other.

6. An incandescent electric lamp having a bulb provided with a reflecting coating upon its inner surface, filament supporting means including a stem having a press at its inner end, lead and supporting wires projecting in substantially parallel relation from the press, a coiled filament carried at the ends of said wires, a disk apertured for the passage of said wires and having its upper face formed as a reflector, and a plate of insulating material secured to the lower face of said disk and perforated to receive said wires and hold them positively from contact with the disk.

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