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L. R. PETERS

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ELECTRIC LAMP OR SIMILAR DEVICE

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FIG. 1

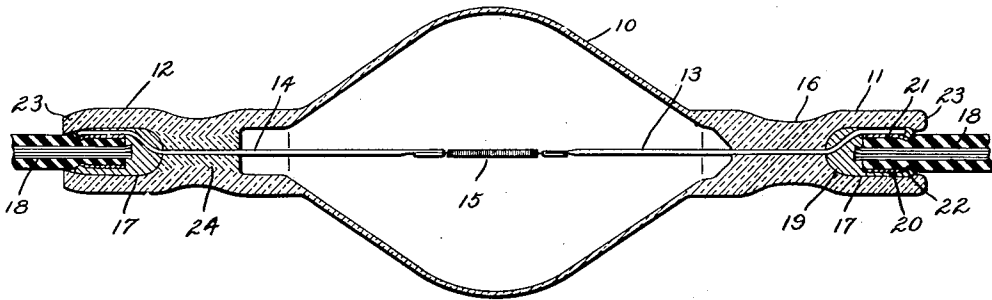


FIG. 4

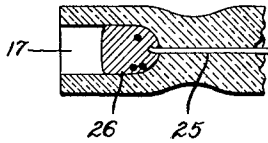


FIG. 3

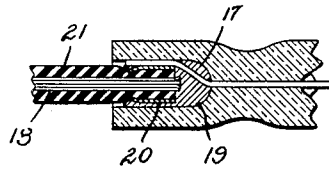
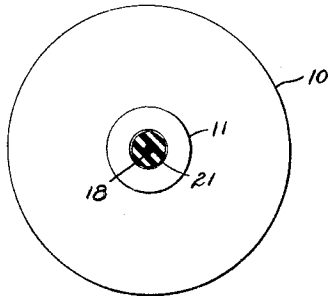


FIG. 2



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# UNITED STATES PATENT OFFICE

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## ELECTRIC LAMP OR SIMILAR DEVICE

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New York

Application December 24, 1932, Serial No. 648,782

6 Claims. (Cl. 176-29)

My invention relates to electric lamps or similar devices comprising one or more electric energy translation elements sealed in a bulb and more particularly to the portions of such devices comprising the connections between the leads of the device and the external electrical circuit. Although not limited thereto, my invention is particularly adapted to devices in which the leads emerge at different portions thereof, an example of which is the double-ended lamp, the leads of which emerge at opposite ends. My invention is particularly adapted for application to lamps used in strings for various decorative purposes such as Christmas tree ornamentation. According to my invention, the lamp bulb carries an extension in which the lead wire is sealed and the outer end portion thereof is hollow and receives the end of an external conductor. The said hollow end portion constitutes a pocket which contains a body of comparatively easily fusible metal in which is embedded the end of the lead wire and of the external conductor. Preferably the hollow end portion has its outer orifice of smaller cross-section than that of the rest of the said end portion. Such a construction adds to the resistance of the device against pulling out of the connected parts as the strain is transmitted to the bulb rather than to the connection with the lead wire. The principal objects of my invention are to provide a construction which may be easily and economically manufactured and assembled and one which will be rugged and still present an attractive appearance. Various other features and advantages of my invention will appear from the description which follows of a species thereof and from the accompanying drawing.

In the drawing Fig. 1 is a longitudinal section through an electric lamp of my invention; Fig. 2 is an end view thereof; and Figs. 3 and 4 are longitudinal sections of modified end portions thereof.

The specific lamp shown in Figs. 1 and 2 comprises the glass bulb 10 with the substantially cylindrical neck or end portions 11 and 12 in which are sealed leading-in wires 13 and 14 respectively. The inner ends of the leading-in wires are clamped about opposite ends of the filament 15. Bulb end 11 is sealed to leading-in wire 13 at 16 and forms an open-ended pocket 17 in which the outer end of the leading-in wire and the end of an external conductor wire 18 are connected. The ends of each of these wires are embedded in a mass 19 of solder or other easily fusible material which preferably expands on cooling and completely fills the pocket. Any of

the ordinary low melting point solders may be used. One which has given good results is composed of 40% bismuth, 40% lead and 20% tin. The mass of metal 19 also preferably encloses a metal collar 20 which is securely clamped to the insulation 21 on wire 18. The collar is smallest in diameter at 22 so as not to be easily pulled from the solder mass 19 if not perfectly united thereto. The rim 23 of the pocket 17 is fused down making the outer orifice of the pocket smaller in cross-section than the other portions of the pocket so that the solder mass may not be pulled out, the pulling strain being transferred to the bulb 10. This construction prevents damage to the seal through a pull on leading-in wire 13 and gives a strong connection even though the soldering or welding is not perfect.

At the opposite end 12 of the bulb, the lamp is exhausted during manufacture. After the exhaust the end must be sealed off and although this might be accomplished by fusing an intermediate portion of the tubular end 12, it is preferred to seal off by fusing a bead of glass or other material 24 having a lower melting point than the bulb glass contained within the said tubular end 12. To begin with, the said bead is smaller in diameter than the passage of the tube so as to allow exhaust of the bulb. A flame directed against that portion of the surrounding tube adjacent to said head will soften said portion and the bead and will cause them to unite and to seal off the bulb. A constriction of the tube end 12 at this point is produced corresponding to a constriction produced at the opposite end of the bulb by the formation of the seal portion 16. The pocket 17 is provided as before and the walls are drawn inward about the opening to prevent the solder mass from being pulled out. The remaining undescribed parts of this end of the lamp are duplications of parts also used in the other end and are numbered accordingly. Although the lamp ends are constructed differently I wish to include within the scope of this invention lamps having both ends constructed according to either of these designs.

In the modification shown in Fig. 3, I have eliminated the fused or drawn down rim of the pocket as it appears not to be necessary providing the collar 20 is caused to wet or weld securely to the solder mass 19. The modified lamp end shown in Fig. 4 is for use where it is desired to make electrical connecting by inserting a pin into the tubular end to contact with the solder mass. The leading-in wire 25 is in this case

forced to the bottom of the pocket and the solder mass 26 is located thereabout.

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

- 5 1. An electric lamp or similar device comprising a bulb having an extension, a leading-in conductor sealed in said extension and having its outer end extending into a pocket in said extension having an outer end orifice of smaller  
10 cross-section than the rest of said pocket and a mass of easily fusible metal located in said pocket and surrounding said outer end of said leading-in conductor and having embedded therein an end of an external conductor.
- 15 2. A double-ended electric lamp or similar device comprising a bulb having extensions at either end in each of which is sealed a leading-in wire having its outer end extending into a pocket in said extension having an outer end orifice  
20 of smaller cross-section than the rest of said pocket and a mass of easily fusible metal located in said pocket and surrounding said outer end of said leading-in conductor and having embedded therein an end of an external insulated  
25 conductor to which is crimped a collar which is united to said easily fusible metal.
3. The combination of an electric lamp or similar device and an external conductor constituting a device adapted to form part of a string  
30 of said lamps or similar devices with intervening lengths of said conductor, said lamp or similar device comprising a bulb having an extension, a leading-in conductor sealed in said extension and having its outer end extending into a pocket in  
35 said extension, the end of said external conductor extending also into said pocket, and a mass of easily fusible metal filling a portion of said pocket and securing together the ends of said leading-in conductor and said external conductor.  
40
4. The combination of a double-ended incandescent lamp or similar device and external conductors constituting a device adapted to form part of a string of said lamps or similar devices with intervening lengths of said conductors, said lamp or similar device comprising a bulb  
5 having an extension at each end, a leading-in conductor sealed in said extension and having its outer end extending into a pocket in said extension, the end of said external conductor extending also into said pocket, and a mass of easily fusible metal filling a portion of said pocket and  
10 securing together the ends of said leading-in conductor and said external conductor.
5. The combination of an electric lamp and an external conductor adapted to form part of  
15 a string of lamps with intervening lengths of said conductor, said lamp comprising a bulb of vitreous material having an integral extension the end portion of which constitutes a pocket, a leading-in conductor having a portion thereof  
20 sealed in said bulb and an end extending into said pocket and a mass of easily fusible metal confined within the walls of said pocket and having embedded therein said leading-in conductor end, an end of said external conductor being also  
25 embedded in said mass.
6. The combination of a double-ended electric lamp and external conductors one at each end thereof adapted to form part of a string of lamps  
30 with intervening lengths of said conductors, said lamp comprising a bulb of vitreous material having at each end an integral extension the end portion of which constitutes a pocket, a leading-in conductor having a portion thereof sealed in  
35 said bulb and an end extending into said pocket and a mass of easily fusible metal confined within the walls of said pocket and having embedded therein said leading-in conductor end, an end of said external conductor being also embedded  
40 in said mass.

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