Aug. 8, 1961 S. C. SHAPPELL ET AL 2,995,723

LAMP BASE

Filed Jan. 30, 1957

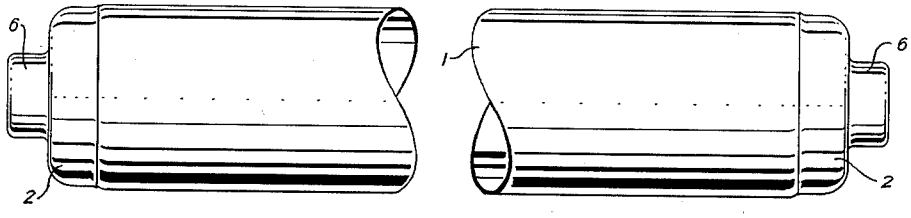

Fig. 1

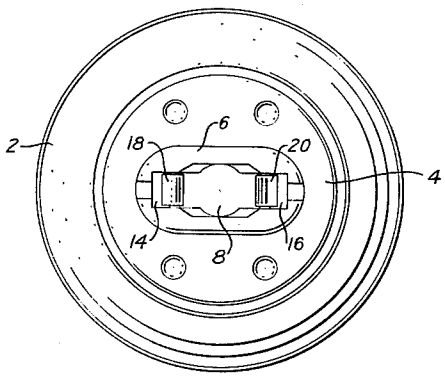

Fig. 2

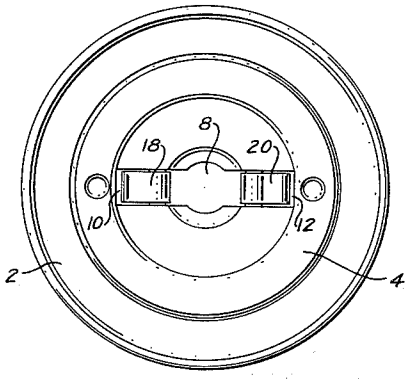

Fig. 3

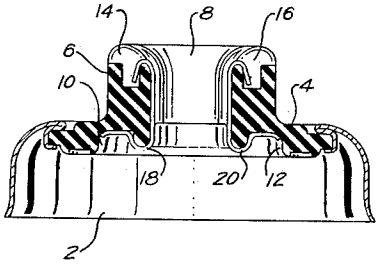

Fig. 4

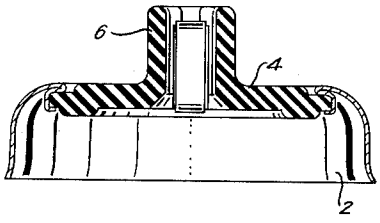

Fig. 5

INVENTORS
STANLEY C. SHAPPELL
RALPH B. THOMAS

BY Joseph C. Ryan
ATTORNEY

United States Patent Office 2,995,723 Patented Aug. 8, 1961

2,995,723

LAMP BASE

Stanley C. Shappell, West Boxford, and Ralph B. Thomas, Salem, Mass., assignors, by mesne assignments, to Sylvania Electric Products Inc., Wilmington, Del., a corporation of Delaware

Filed Jan. 30, 1957, Ser. No. 637,196
3 Claims. (Cl. 339—145)

This invention relates to bases for electric lamps and more particularly to bases for elongated tubular lamps.

In the manufacture of electric gaseous discharge devices, such as fluorescent lamps for example, the lamp envelope is usually provided with a base at each end thereof. The base, which serves as the supporting element of the lamp, also constitutes a means through which electrical energy may be transmitted from a holder in which the lamp is supported to an electrode within the lamp envelope.

In one form of fluorescent lamp construction, the base, with which each end of the lamp envelope is provided, has a pair of metal pins projecting therefrom. Lead-in wires, to which a lamp electrode is connected, project from the end of the lamp envelope and terminate in the base pins. The lead-in wires are secured to the base pins by suitable means, such as welding or soldering for example. When a lamp of this type of construction is installed, the base pins of the lamp engage electrical contact members in a lampholder, thereby establishing the means through which electrical energy may be transmitted to a lamp electrode.

In another form of fluorescent lamp construction, the base, with which each end of the lamp envelope is provided, has no base pins. In this form of construction, the lamp lead-in wires extend into and are anchored in the base. When this lamp is installed, the electrical contact members in a lampholder engage the lead-in wires directly to establish the necessary electrical connection.

In either form of construction it is essential that a positive, low resistance contact between the electrical contact member of the base and the electrical contact members of the lampholder be continuously maintained, not only during lamp starting but during normal operation as well. In the base of the first-mentioned construction, i.e., the base with base pins, this requirement is usually met with no substantial difficulty. However, in the case of the second-mentioned construction, i.e., the base in which the lamp lead-in wires serve as the electrical contact members of the base, considerable difficulty has been experienced in meeting this requirement. Since the lead-in wires normally used are thin, some being .018"–.020" in diameter, the available electrical contact area is quite small. Thus great care must be exercised in positioning a lamp in its lampholders in order to make sure that the lampholder contacts engage the base contacts. Experience has indicated that even when a high degree of care is exercised, excessive malfunctioning occurs and serious damage to lamp quality results. Experience has also shown that even when proper seating of the lamp base in its lampholder has been effected, the required positive, low-resistance contact is not obtained in many cases due to contamination of the surface of the lamp lead-in wires. Oxidation of the lamp lead-in wires during lamp manufacturing operations which precede the basing operation and accumulation of dirt have been found to be two sources of contamination which adversely affect attainment of the desired low-resistance contact.

In view of the foregoing, an object of this invention is to provide a lamp base with electrical contact members which will insure easily established, continuously

maintained, positive, low-resistance contacts, not only during lamp starting but during normal operation as well.

Further objects, advantages and features are attained, in accordance with the principles of our invention, by providing a lamp base with a pair of flat, relatively wide, metal strips which serve as electrical contact members. Each lamp lead-in wire is attached to one of these metal strips at or near one end thereof and the lampholder contacts, when the based lamp is installed, positively engage a relatively large surface area of these metal strips at a location relatively distant from the point at which the lead-in wires are attached thereto. Thus the electrical contact surfaces of the base comprise continuous, flat, wide surfaces, undamaged and uncontaminated by lamp processing operations, providing thereby the optimum possible contact conditions at all times.

In the accompanying drawing, in which a specific embodiment of the invention is illustrated,

FIGURE 1 is a side-elevational view of a fluorescent lamp provided with bases embodying the invention.

FIGURE 2 is a plan view of the outside face of the base.

FIGURE 3 is a plan view of the inside face of the base.

FIGURE 4 is a transverse sectional view of the base.

FIGURE 5 is a transverse sectional view of the base taken along a line 90° from the line on which the section of FIGURE 4 is taken.

Referring now to the drawings, particularly FIGURES 4 and 5 thereof, the specific embodiment of the base of this invention illustrated therein comprises an annular metal shell **2** and a disk **4** of insulating material secured thereto. The disk **4** is provided with a boss **6** of insulating material, preferably formed integral therewith, and being somewhat elliptical in shape. The disk **4** and the boss **6** are provided with aligned openings defining an aperture **8** extending through the disk-boss member. The inner face of the disk 4 is provided with cavities **10** and **12**. The boss **6** is provided with a pair of pockets **14** and **16** recessed in the top thereof. The base is provided with a pair of metal, electrical contact strips **18** and **20**, which may be silver plated if desired. The major portion of the strips **18** and **20** lie within the aperture **8**, and the ends of the strips are bent to effect a seating of the strips within the disk-boss member. One end of strip **18** seats in cavity **10** and the other end thereof terminates in pocket **14**. Similarly, one end of strip **20** seats in cavity **12** and the other end thereof terminates in pocket **16**.

The fluorescent lamp **1** shown in FIGURE 1 is of the conventional commercial type, i.e., one which is provided with a filamentary electrode disposed at each end thereof supported by lead-in wires sealed in and extending through stems at each end of the lamp envelope. In assembling the pair of bases and the lamp envelope, each base is advanced into proximity to an end of the lamp envelope and the lead-in wires projecting from the lamp envelope are guided so that the ends thereof engage the ends of the metal strips **18** and **20** seated in cavities **10** and **12** respectively. The ends of the lead-in wires are then secured to the strips **18** and **20** by suitable means, such as soldering or welding for example. After this connection has been made, the bases are advanced further to effect a seating thereof on the ends of the lamp envelope. The bases may be secured to the lamp envelope by basing cement, with which the base shells **2** are usually provided. In advancing the bases to seating position on the ends of the lamp envelope, after the ends of the lamp lead-in wires have been attached to metal strips **18** and **20**, the lead-in wires will buckle somewhat. In view thereof, care should be exercised to prevent shorting of the lead-in wires with each other and grounding

to the metal shell **2**. The danger of shorting or grounding may be eliminated by pre-forming the lead-in wires in a manner which will insure buckling in a pre-determined direction.

As was mentioned above, when installed, the lamp is supported by its bases in a pair of lampholders. When seated, the boss **6** of each base lies in a cavity provided therefor in the lampholder, and electrical contact members in the lampholder engage the metal strips **18** and **20** in the boss **6**. The width of the metal strips **18** and **20** on the one hand, and their disposition within the boss **6** on the other hand, provide electrical contact areas many times greater than the electrical contact area provided by a lamp lead-in wire. Thus the unstable contact conditions and the no contact conditions, which have characterized installations in which lead-in wires themselves served as the base electrical contacts, are eliminated in the base of this invention. The use of the metal strips as the base contact members insures the attainment of the necessary low resistance contact between the base and the lampholder electrical contact members because the metal strips do not constitute a part of the lamp structure, as do the lamp lead-in wires, and thus they cannot be contaminated or damaged during lamp processing operations which precede basing. Furthermore, contamination of or damage to the electrical contact areas of the metal strips during basing cannot occur because the lamp lead-in wires are connected to the strips at points far removed therefrom.

What we claim is:

1. A base for an electric lamp having a pair of lead-in wires projecting from an end thereof, said base comprising: a body member of insulating material provided with a central aperture extending therethrough, a pair of cavities formed on the inside face thereof, and a pair of pockets recessed in the top thereof, said pockets being disposed in cooperative relationship with respect to said cavities; and a pair of flat metal strips extending through said aperture and spaced from one another along opposite faces of the wall of said body member which defines said aperture, each of said strips being bent near each end thereof to effect disposition of the corresponding ends in said cavities and said pockets respectively, the ends of the strips lying in said cavities defining electrical contact areas for said lead-in wires, and the portions of said strips lying within said aperture defining large electrical contact areas for sidewise engagement with electrical contact members of a lampholder.

2. A base for an electric lamp having a pair of lead-in wires projecting from an end thereof, said base comprising: a disk of insulating material provided with a central opening extending therethrough and a pair of cavities formed on the inside face thereof; a boss, for insertion in a lampholder, on the outside face of said disk, said boss being provided with a central opening extending therethrough said opening being aligned with said opening in said disk and defining therewith an aperture extending through said boss and said disk, and said boss being provided with a pair of pockets recessed in the top thereof, said pockets being disposed in cooperative relationship with respect to said cavities in said disk; and a pair of flat metal strips extending through said aperture and spaced from one another along opposite faces of the wall of said disk-boss member which defines said aperture, each of said strips being bent near each end thereof to effect disposition of the corresponding ends in said cavities and said pockets respectively, the ends of the strips lying in said cavities defining electrical contact areas for said lead-in wires, and the portions of said strips lying within said aperture defining large electrical contact areas for sidewise engagement with electrical contact members of a lampholder.

3. A base for an electric lamp having a pair of lead-in wires projecting from an end thereof, said base comprising: a body member of insulating material including a disc and a boss extending from one face of the disc and having a central aperture extending therethrough; and a pair of metal strips secured to said body member, said strips extending through said aperture and being in spaced relationship with respect to one another, the portions of said strips lying within said aperture defining large electrical contact areas for sidewise engagement with electrical contact members of a lampholder, the outer ends of said strips terminating in said boss and the inner ends of said strips being bent in substantially opposite directions across the other face of said disc with the ends of the strips lying within cavities in said other face of the disc to define electrical contact areas for said lead-in wires.

References Cited in the file of this patent

UNITED STATES PATENTS

870,341	Boehm	Nov. 5, 1907
2,195,343	Sayre	Mar. 26, 1940
2,206,217	Barry et al.	July 2, 1940
2,699,534	Klostermann	Jan. 11, 1955
2,716,739	Lemmers	Aug. 30, 1955
2,733,420	Marz	Jan. 31, 1956

FOREIGN PATENTS

3,809 1896	Great Britain	Jan. 23, 1897