

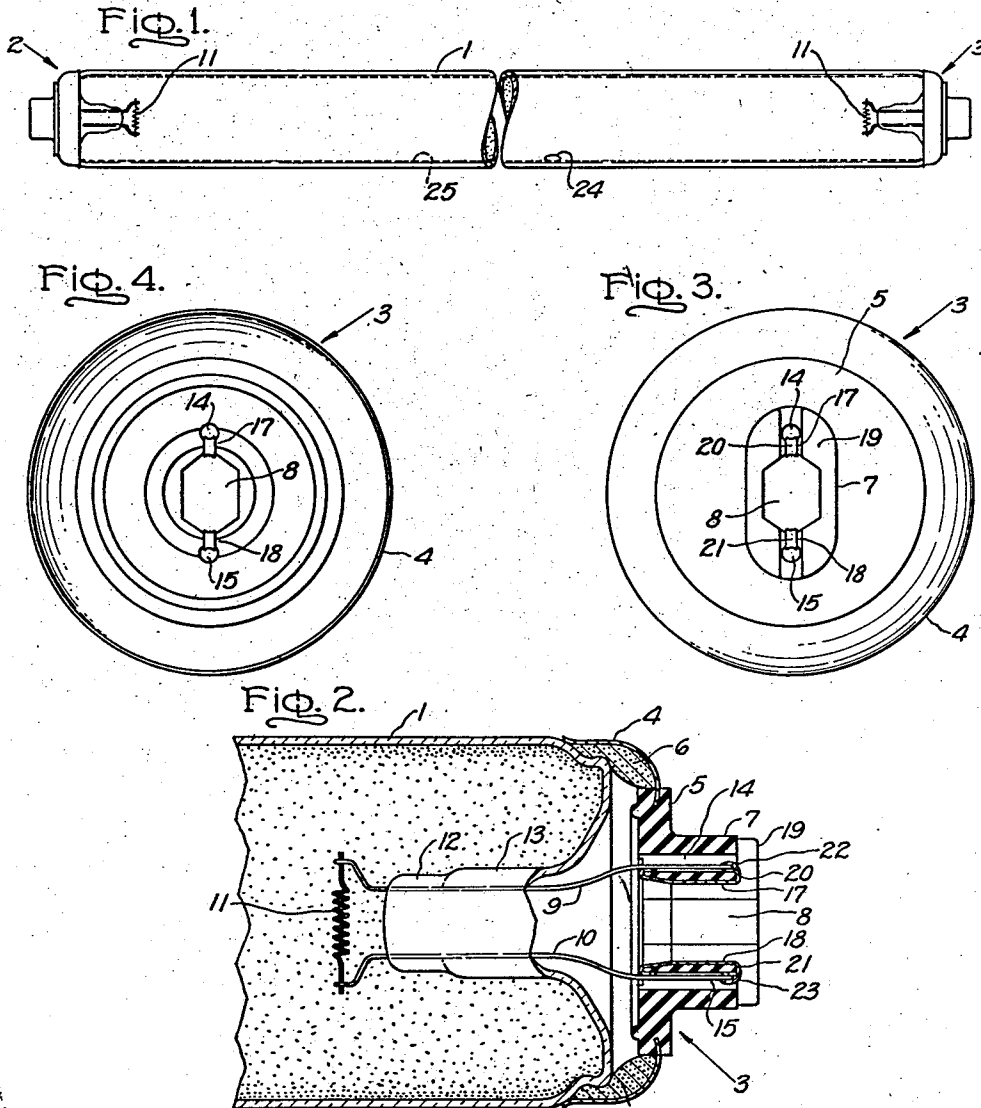
Aug. 11, 1959

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2,899,671

RECESSED DOUBLE CONTACT STRIP BASE

Filed March 1, 1957



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RECESSED DOUBLE CONTACT STRIP BASE

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Application March 1, 1957, Serial No. 643,278

1 Claim. (Cl. 339-145)

The present invention relates to bases for electric lamps and similar devices and especially for double-ended electric lamps of the type having preheatable electrodes mounted at the ends of a tubular glass envelope and a pair of spaced apart current inlead wires for each of the electrodes extending from the ends of the envelope.

In the U.S. Patents 2,716,739, Eugene Lemmers, 2,733,420, Ray E. Marz, and 2,733,421, Dale A. Grovemiller, all of which patents are assigned to the assignee of the present application, bases useful for lamps of the above type are disclosed and claimed. A feature of the patented bases is an increased safety factor obtained by recessing the current inlead wires at each end of the tubular envelope within a base body of electrically insulating material and utilizing the recessed wires as the lamp terminals or contacts. This eliminated the usual outwardly projecting exposed contact pins on the lamp bases.

While such bases have proven eminently satisfactory for safety purposes, difficulties have been encountered in making positive engagements between the wires in the base body of electrically insulating material and the lamp holder contacts due to the small contact area provided by the wire terminals of the lamp. Occasionally, due to misalignment of the bases on the lamp envelope or misalignment of the bases and the lamp holders, or both, the wire contacts or terminals would fail to engage the contacts of the lamp holders when the lamp was inserted in such holders. The lamp would not operate when this occurred.

The principal object of the present invention is to provide a base of the above type which retains all the safety features characteristic of such bases while eliminating the above difficulties. Other objects and advantages of the invention will appear from the following detailed description of species thereof, from the accompanying drawing and the appended claims.

In accordance with the invention, the above difficulties are avoided without reducing the safety factor of such bases and without perceptibly increasing the electrical resistance of the path of the low voltage heating current for the preheat electrodes of the lamp by utilizing as the lamp contacts or terminals metal strips providing comparatively large contact areas and securely fastened and recessed within the insulating body of the base, and by securely fastening, as by soldering, the ends of the current inlead wires of the lamp to the strips to make a positive low resistance electrical connection between the strip contacts and the wires.

In the drawing accompanying and forming part of this specification an embodiment of the invention is shown in which:

Fig. 1 is a side elevational view of a double-ended electric discharge lamp provided with bases embodying the invention.

Fig. 2 is a sectional view on an enlarged scale of one end of the based lamp shown in Fig. 1.

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Fig. 3 is a front plan view of the base shown in Fig. 2, and

Fig. 4 is a back plan view of the base shown in Figs. 2 and 3.

Referring to Fig. 1 of the drawing, in which like numbers denote like parts in all figures, the double-ended electric discharge lamp comprises a tubular sealed glass envelope 1 provided with bases 2 and 3 attached to its ends. The bases 2 and 3 are of identical structure and the internal parts of only the base 3 have been shown in Figs. 2, 3, and 4 for conciseness in description.

The base 3 comprises an annular metal shell 4, which is suitably made of sheet aluminum, and a hollow body member of electrically insulating material, such as an organic plastic, in the form of an embossed disk 5. The disk 5 may be made of commercial plastic molding compounds, such as those comprising phenol-furfural resins or phenolic resins. The inner rim of the shell 4 is embedded in the periphery of the insulating disk 5 to mechanically join these base members, as shown in Fig. 2. The base 3 is secured to the end of the glass envelope 1 by a body of basing cement 6.

The disk 5 has a raised elongated hollow embossment 7 extending across its center and projecting outwardly from the base for engagement with holders (not shown) for the lamp. A central opening or slot 8 extends completely through the embossed portion of the insulating disk 5. The slot 8 is hexagonal and slightly elongated in cross section. The metal wire current inleads 9 and 10 connected to the ends of the electrode 11 and extending through the press 12 of stem 13 of the glass envelope 1 also extend through wiring passages 14 and 15 extending through the embossed portion of the insulating disk 5 at the ends of the slot 8. When the base is mounted on the envelope as shown in Fig. 2, the lamp holder contacts are received in the slot 8 and the inlead wires 9 and 10 extending through the passages 14 and 15 at the ends of the slot 8 are completely insulated from each other and physically separated from the lamp holder contacts by the walls of the disk 5.

Electrical connections between the lamp holder contacts received in the slot 8 and the inlead wires 9 and 10 in the wiring passages 14 and 15 are made, in accordance with the present invention, through strip contacts 17 and 18 which extend in opposing spaced positions longitudinally along the slot 8 from the front toward the back of the base, as shown in Fig. 2. The strip contacts are bent over at their ends into the ends of the wiring passages 14 and 15 and are thus securely fastened to the disk 5. The strip contacts preferably consist of brass and being in strip form provide a larger contact area for engagement by the holder contacts than the wires 9 and 10 used heretofore as the lamp terminals.

The outer face 19 of the embossment 7 is recessed between the slot 8 and the outer ends of the passages 14 and 15 a sufficient distance with respect to the thickness of the bent over portions 20 and 21 of the strip contacts and the size of the opening in the front face of the embossment as to assure that the said bent over contact portions are protected from accidental contacts when the base is mounted on the lamp envelope. The safety features characteristic of bases of this type thus are retained in the base of the present invention. The outer bent over portions 20 and 21 of the strip contacts 17 and 18, respectively, while recessed within the base, are exposed through the opening in the front face 19 of the embossment for engagement by lamp holder contacts.

The outer ends of the inlead wires 9 and 10 are connected to the outer end portions 20 and 21 of the strip contacts 17 and 18 preferably by being soldered thereto as shown at 22 and 23 in Fig. 2 to establish a positive

low contact resistance connection between the contacts 17 and 18 and the wires 9 and 10.

In assembling the base 3 on the lamp envelope the inlead wires 9 and 10 are first threaded through the wiring passages 14 and 15, the base with the contact strips 17 and 18 fastened thereto as described above is then cemented to the end of the lamp envelope 1 in the usual manner. The excess length of the wires 9 and 10 extending beyond the outer ends of the wiring passages 14 and 15 are cut off and the cut ends of the wires 9 and 10 then soldered to the outer bent over end portions 20 and 21 of the strip contacts to complete the mounting of the base 3 on the envelopes. The base 2 is then mounted on the opposite end of the envelope to complete the manufacture of the lamp.

From the foregoing description of a species of base embodying the invention and the accompanying drawing, it is apparent that bases embodying the invention have contacts which are constituted solely by metal strips, that the inlead wires extending from the end of the lamp envelope are utilized solely for conducting current from the contact strips to the electrodes, that the contact strips provide a larger contact area than the line contact provided by the wires used heretofore and that the contact strips are firmly and immovably fastened in position in the disk 5.

The lamp shown in side elevation in Fig. 1 of the drawing may be about 8 feet in length and about 1½ inches in diameter. The electrodes 11 sealed into the ends of the envelope 1 each comprises a tungsten filament coated electron emissive material, such as alkaline earth compounds, and each is of the type requiring preheating to an electron emitting temperature before starting of an electric discharge between the said electrodes at opposite ends of the lamp envelope. The envelope contains a starting gas, such as argon, at a few millimeters pressure and a small measured quantity 24 of mercury, the vapor of which is at a pressure of about 10 microns during operation of the lamp. A coating 25 of fluorescent material is provided on the inner surface of the envelope 1 and this material is excited to luminescence by the intense emission of 2537 Å. wave length radiation of the low pressure mercury vapor discharge during operation of the lamp. Such lamps are commercially available and a species thereof is known in the trade as the rapid start fluorescent lamp. A low-voltage heater circuit is employed to furnish the heating current to the preheat electrodes of such lamps and the strip contacts 17 and 18 soldered to the inlead wires 9 and 10, respectively, in accordance with the present invention minimize the electrical resistance in the heater circuit.

While a preferred species of the invention has been

disclosed above it will be understood that such disclosure is for illustrative purposes and that it is contemplated that changes may be made in the form and details of the base without departing from the invention as defined in the appended claim, for example, the strips may be of other shapes and may be molded into the plastic insulating body with the contact areas thereof exposed or may be otherwise secured to the body. For example in the copending application Serial No. 643,430 of Anton M. Krupp et al., of even filing date herewith and assigned to the assignee of this application an improvement on the base embodying the present invention is disclosed and claimed in which the strip contacts separate the slot 8 from the wiring passages through which the lamp inleads are threaded in assembling the base and the lamp envelope and in which the outer bent over portions of the strip contacts are provided with eyelets for receiving the cut ends of the inlead wires and to which the wire ends are soldered or welded to make a low resistance connection therebetween. All such modifications of the present invention may be made within the scope of the appended claim.

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

A lamp base comprising an electrically insulating body member in the form of a disk having a raised elongated embossment extending outward from the base for engaging a lamp holder, a slot in the front face of the embossed portion of the disk for receiving lamp holder contacts, wiring passages extending through the embossed portion of the disk from the back to the front of said base and at the ends of said slot for receiving inlead wires of the lamp and metal strip contacts clamped to said disk, said strip contacts extending through said slot at the ends of said slot and having their end portions bent over into the ends of said wiring passages to secure said strip contacts to said base, the front face of the embossed portion of said disk between the ends of said slot and the outer ends of said wiring passages being recessed and exposing the ends of said strip contacts at the outer ends of said wiring passages for engagement with lamp holder contacts, the depth of said recesses being greater than the thickness of the portions of the strip contacts therein to protect said strip contact portions from accidental contacts.

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