Oct. 1, 1940. J. BERGMANS ET AL 2,216,223

ELECTRIC INCANDESCENT LAMP

Filed Feb. 20, 1939

Fig. 1.

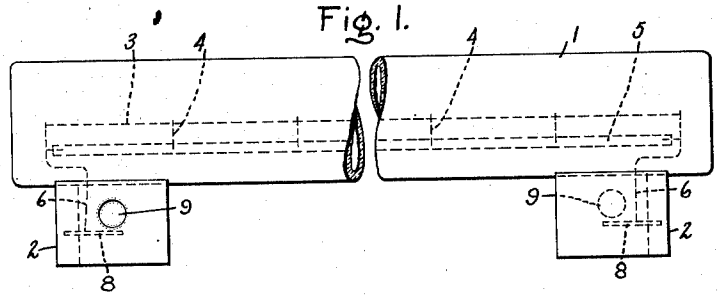


Fig. 2.

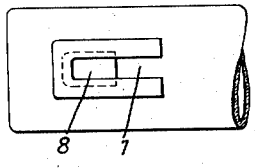


Fig. 4.

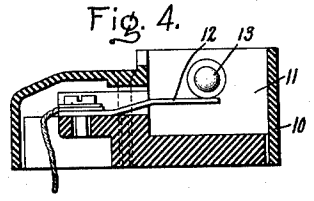


Fig. 3.

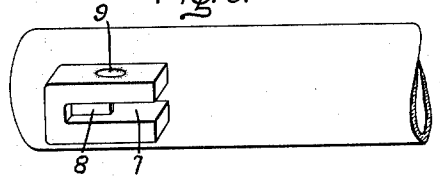


Fig. 5.

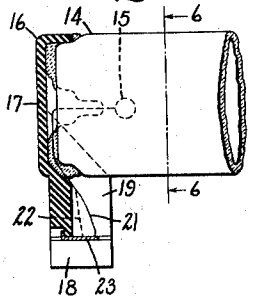
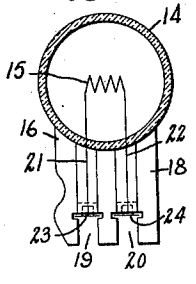


Fig. 6.



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ELECTRIC INCANDESCENT LAMP

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In the Netherlands February 23, 1938

3 Claims. (Cl. 176—29)

Our invention relates in general to electric incandescent lamps and discharge devices of the double-ended tubular type having a base at each end. More particularly, our invention relates to bases for such tubular lamps and discharge devices.

In the use of electric incandescent lamps and discharge devices of the double-ended tubular type having a base at each end, there always exists the danger that the two bases will not be inserted in or removed from their corresponding sockets or holders simultaneously, thus creating an opportunity for the person inserting or removing the device to accidentally contact the current-carrying elements of that base which is not in its socket and which may be energized at the time, and to accordingly suffer an injurious shock or burn therefrom. In order to prevent such an occurrence, a large number of base constructions have been heretofore proposed. In most of these, an attempt has been made to solve the problem by providing a special connection of the holders or sockets to the current source whereby the two holders, and consequently that base which is not mounted within its respective socket, will not become energized until both of the bases have been inserted in their holders. Such constructions, however, are rather complicated and expensive.

One object of our invention is to provide a simple and inexpensive shock-proof base construction for double-ended electric incandescent lamps and discharge devices.

Another object of our invention is to provide a base construction for electric incandescent lamps and discharge devices in which the outer lead wires and the base contacts are entirely concealed within grooves formed in the bases whereby accidental contact with said wires or base contacts, during insertion of the device in its holders, or removal therefrom, is effectively prevented.

Further objects and advantages of our invention will appear from the following description of species thereof and from the accompanying drawing, in which:

Fig. 1 is an elevation of a double-ended electric incandescent lamp provided at each end with a base comprising our invention; Fig. 2 is a bottom view of one end of the lamp shown in Fig. 1; Fig. 3 is a bottom perspective view of one end of the lamp shown in Fig. 1; Fig. 4 is a sectional view of a socket for cooperation with the base shown in Fig. 1; Fig. 5 is an elevation of one end of a double-ended electric discharge device provided with a modified form of base comprising our invention, the base being shown in section; and Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5.

Referring to Fig. 1, the lamp there shown comprises a tubular elongated glass bulb or envelope 1 provided at each end with a base 2. Within the envelope 1 is mounted an elongated filament 3 supported substantially axially of said envelope by a plurality of support wires 4 extending from an elongated support bar 5. The opposite ends of the filament are connected to current-supply or lead wires 6, 6 which also support the support bar 5.

The bases 2, 2 are, according to the invention, preferably made of a pressed body or block of insulating material such as that commercially known as Bakelite, and are secured, preferably by cementing, to the cylindrical wall of the envelope adjacent the opposite ends thereof. As shown in the drawing, each base is formed with a relatively deep groove 7 extending substantially transversely or radially of the lamp envelope 1 with the bottom of the groove disposed substantially opposite the point at which the corresponding lead wire 6 extends out through the cylindrical wall of the envelope. The lead wires 6, 6 are disposed within, and adjacent the bottom of the grooves 7, 7 in their respective bases. The said grooves are made of sufficient depth to entirely conceal the lead wires 6, 6 therein so that the latter are appreciably removed from the outer surfaces or walls of the bases and cannot be accidentally touched by a person during the insertion of the lamp in its sockets, or during its removal therefrom. A base contact 8 is mounted within the groove 7 in each base, for instance by pressing, in such a manner that it, too, is entirely concealed therein and is appreciably removed from the outer walls of the base and cannot be accidentally touched. The lead wires 6, 6 are fastened, preferably by soldering, to their respective base contacts 8, 8. This connection, however, may be effected by a clamping arrangement or in any other desired manner. As shown in Figs. 1 and 3, each base is provided in one of its faces, with an indentation 9 in which fits a spherical piston in the corresponding socket or fitting.

It will be seen from an inspection of Figs. 2 and 3 that the body of base 2 is of U-shaped cross-section in a plane parallel to the axis of envelope 1.

Referring to Fig. 4, the socket there shown for cooperation with the base 2 comprises a hol-

low body 10 of insulating material having an opening 11 therein to receive the base 2. A spring contact member 12 is arranged within the hollow body 10 so as to enter the groove 7 in the base 2, when the latter is inserted in the socket, and engage the base contact 8 in said groove. To lock the base in position within the socket, the latter is provided with a resiliently supported spherical piston or plunger 13 which snaps into the corresponding indentation 9 provided in the lamp base.

While the lamp bases shown in Figs. 1 to 3 are fastened to the cylindrical wall of the lamp envelope, the modified form of base shown in Figs. 5 and 6 is secured instead to the end wall of the envelope. Referring to Figs. 5 and 6, the modified form of base there illustrated is shown applied to an electric discharge device comprising an elongated tubular glass envelope 14 having a cathode 15 therein at each end. The envelope 14 is provided at each end with a base 16 formed as a pressed body of insulating material and consisting of a cap or cup-shaped portion 17 and a radially extending socket engaging portion 18. The cap portion 17 fits over the end of the envelope 14 and is secured thereto by a suitable cement. Each base 16 is provided with two relatively deep grooves 19, 20 extending substantially transversely of the envelope 14 with the bottom of the grooves disposed closely adjacent the end of the said envelope. The two lead wires 21, 22 for each cathode 15 are bent over the end wall of the envelope 14 and are arranged within, and adjacent the bottom of the two grooves 19, 20 in their respective bases, each lead wire being disposed in its own groove. As before, the grooves 19, 20 are made of sufficient depth to entirely conceal the lead wires 21, 22 therein so that the latter cannot be accidentally touched by a person during the installation of the discharge device in its sockets, or during its removal therefrom. Each groove 19, 20 is provided with a base contact, as indicated at 23 and 24 respectively, to which the corresponding lead wires 21 and 22 are fastened, preferably by soldering. Like the said lead wires, the base contacts 23, 24 are also mounted within the grooves in such a way that they are entirely concealed therein and cannot be accidentally touched. As is evident from the drawing, the shape of the base 16 is such that the lead wires 21, 22 can be fastened to the base contacts 23, 24 without having to be inserted through any openings or holes in the bases.

Although the electric incandescent lamp and the electric discharge device shown in the drawing are provided with bases which extend radially from the enclosing envelope or bulb, it will be evident that the base construction according to the invention can be applied equally as well to lamps and discharge devices in which the bases are to extend longitudinally or axially of the enclosing envelope.

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

1. An electrical device comprising an elongated tubular envelope, lead-in wires extending outward from said envelope adjacent its ends, and a base fixedly secured to each end of said envelope comprising a body of insulating material extending laterally outward from said envelope and having at least one relatively deep groove in a face thereof extending the length thereof laterally of said envelope, and a contact plate member disposed wholly within said body, and extending transversely across a portion of said groove at a substantial distance from the outer end of said body, said lead-in wires each extending longitudinally through an associated groove well within the interior thereof and being electrically connected to the contact plate member in said groove.

2. An electrical device comprising an elongated tubular envelope, electric energy translation elements sealed in said envelope, a pair of lead-in wires electrically connected to said translation elements and extending outwardly from each end of said envelope, and a base at each end of said envelope comprising a body of insulating material having a cap portion fitting over the end of said envelope and secured thereto and a laterally projecting socket-engaging portion, said socket-engaging portion having a pair of relatively deep parallel grooves in a face thereof extending the length thereof laterally of said envelope, and a pair of contact plate members disposed wholly within said socket-engaging portion and each extending transversely across a portion of one of said grooves at a substantial distance from the outer end of said socket-engaging portion, the said lead-in wires at each end of said envelope extending longitudinally through respective grooves well within the interior thereof and being electrically connected to corresponding contact plate members.

3. An electrical device comprising an elongated tubular envelope containing an electric energy translation element and having lead-in wires electrically connected to said translation element and extending outward through the wall of said envelope adjacent its ends, and a base adjacent each end of said envelope at the point of emergence of a lead-in wire comprising a body of insulating material extending laterally of said envelope, said body being of substantially U-shaped cross-section throughout in a plane parallel to the axis of said envelope, and a contact plate member located wholly within said body and extending transversely across a portion of the space between the legs of said U-shaped body at a substantial distance from the outer end of said body, the lead-in wire at each end of the envelope being disposed well within the said space between the legs of the corresponding U-shaped body and being electrically connected to the contact plate therein.

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