July 21, 1936. P. O. CARTUN 2,048,491

ELECTRIC LAMP

Filed Jan. 18, 1935

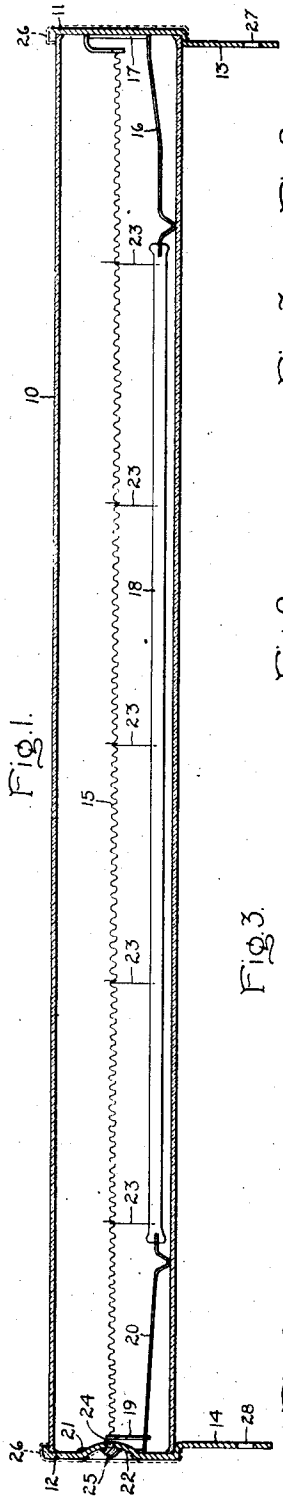

Fig. 1.

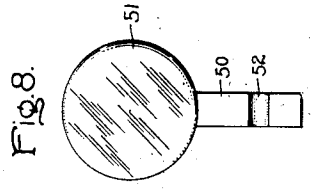

Fig. 8.

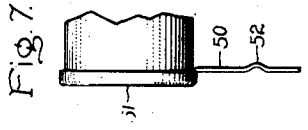

Fig. 7.

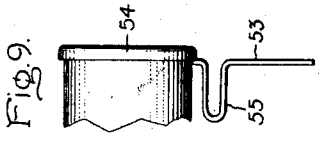

Fig. 9.

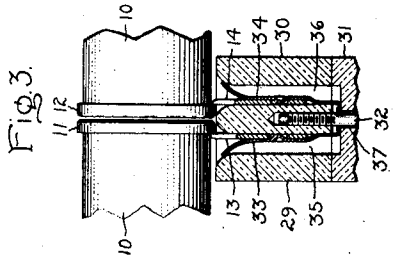

Fig. 3.

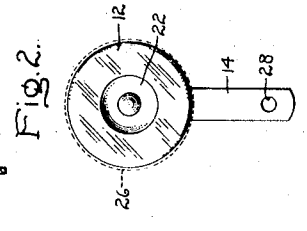

Fig. 2.

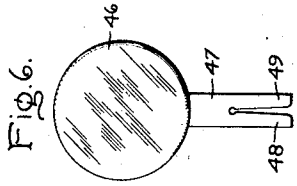

Fig. 6.

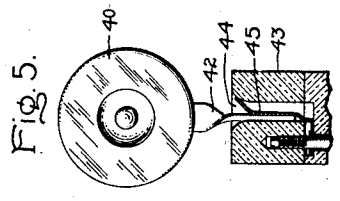

Fig. 5.

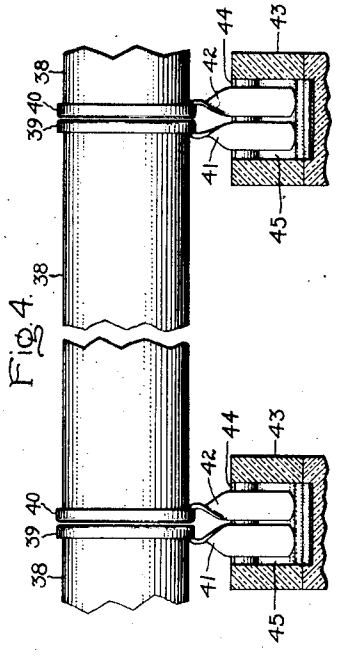

Fig. 4.

Inventor:
Paul O. Cartun,
by Harry E. Dunham
His Attorney.

Patented July 21, 1936 2,048,491

UNITED STATES PATENT OFFICE

2,048,491

ELECTRIC LAMP

Paul O. Cartun, Cleveland Heights, Ohio, assignor to General Electric Company, a corporation of New York

Application January 18, 1935, Serial No. 2,397

5 Claims. (Cl. 176—39)

My invention relates to electric lamps and more particularly to incandescent lamps of the double-ended tubular type such as those disclosed in my United States Patent application Serial No. 667,011, filed April 20, 1933, now Patent 2,032,791.

One of the objects of my invention is to provide in a lamp of the type referred to, terminal elements for conveniently mounting the lamp which are of simple design and allow the arrangement of a series of lamps end to end without intervening structures that would interrupt the line of light.

Advantages of my invention are simplicity of lamp design, ruggedness of construction and economy of manufacture. Further features and advantages will appear from the following description of species thereof and from the drawing.

In the drawing, Fig. 1 is a longitudinal section through a lamp comprising my invention; Fig. 2 is an end view thereof; Fig. 3 is a partial elevation and section of a pair of lamps mounted end to end in a socket; Fig. 4 is a partial elevation and section of three lamps having a modified form of terminal elements and mounted end to end in sockets; Fig. 5 is a section taken between a pair of the lamps in Fig. 4; Fig. 6 is an elevation of a modified terminal element; Figs. 7 and 8 are side and end views of a lamp with another modified terminal element; and Fig. 9 is a side view of a lamp with still another modified terminal element.

Referring to Fig. 1, the lamp comprises a tubular glass bulb or envelope 10 having metal discs 11 and 12 sealed to the ends thereof as end walls for the envelope. The said discs are preferably of the type disclosed in my prior application hereinbefore referred to, and consist preferably of a metal or alloy, such as a chrome-iron alloy, which has the same coefficient of expansion as glass and will seal easily to glass by fusion. For mounting and supplying current to the lamp each of said discs has a terminal element in the form of a prong 13 and 14 secured thereto and extending laterally of the bulb 10. As shown in the drawing, the said prongs 13 and 14 may be made integral with the discs.

The internal structure or "mount" of the lamp includes a filament 15 which extends substantially the entire length of the bulb and is electrically connected at each end to one of the discs 11, 12. One end of said filament is secured to the end of a support wire 16 which has a transversely extending semi-circular portion 17 which may be welded to the inside of the disc 11. The opposite end of the support wire is embedded in one end of a glass stay rod 18. The other end of the filament 15 is secured to a short support wire 19 which is in turn secured to a support wire 20. One end of said support wire 20 is embedded in the end of the stay rod 18 and the opposite end is bent in the form of a transverse circular portion 21 surrounding an inwardly formed depression 22 at the center of the disc 12. The filament 15 is supported at intermediate points by support wires 23 each of which has an end embedded in the glass stay rod 18. The bulb 10 is exhausted through an opening 24 at the center of the depression 22 in the disc 12. The exhausting is performed by means of a glass tube (not shown) sealed to the disc 12 around the opening 24, after which a portion of the said tube is fused down to a solid mass 25 to seal the said opening, the said glass seal 25 being sheltered in the recess 22. The discs 11, 12 may be provided with a suitable insulating cover or coating (shown at 26 in dotted lines).

To mount the lamp, the prongs 13, 14 are inserted in any suitable form of socket having terminals for engaging said prongs. The prongs may be provided with holes 27, 28 which engage spherical protuberances on the socket terminals. Two lamps are shown in Fig. 3 mounted in end to end relation in a double socket 29. The socket illustrated comprises upper and lower portions 30, 31 held together by a threaded pin 32. The prongs 13, 14 on the lamp engage with resilient terminal members 33, 34 in slots 35, 36 in the socket. The said terminal members 33, 34 may be formed from a single piece of metal bent to a U-shape and secured to the lower portion 31 of the socket by a tubular rivet 37.

The adjacent ends of the lamps 10 are connected to the same side of the current supply line through the socket terminals 33, 34, alternate sockets 29 being connected to opposite sides of the line. As shown in Fig. 3, the construction described permits placing the ends of the lamps very close together or even in contact with each other, thus practically eliminating the unlighted space between adjacent lamps.

Figs. 4 and 5 illustrate a modificatian in which the lamps 38 have discs 39, 40, similar to the discs 11, 12, sealed to the ends of the bulb. Prongs 41, 42 extend laterally from the periphery of said discs similar to the prongs 13, 14 except that they are twisted at right angles so that the faces of the socket engaging portions are in a plane passing through the longitudinal axis of

the lamp bulb. This permits the use of sockets 43 each having a slot 44 widened in the direction of the lamp axis and containing a single resilient metal terminal member 45 adapted to engage both prongs 41 and 42 at the ends of adjacent lamps as shown in Fig. 4. It will be apparent from the drawing that this construction allows for small variations in the lengths of the individual lamps 38 since the slots 44 in the sockets may be made wider than the two adjacent prongs 41, 42.

In the design shown in Fig. 6, the disc 46 is similar to the disc 11 and the terminal mounting prong 47 is similar to the prong 13 on disc 11 except that it is split longitudinally so as to form two somewhat resilient finger portions 48, 49 for engagement with a suitable socket terminal member.

Figs. 7 and 8 illustrate another modification wherein the prong 50 on the disc 51 has a protuberance 52 which engages with a depression in the terminal member of a socket.

Fig. 9 illustrates still another another modification in which the prong 53 on the disc 54 is made resilient or flexible by virtue of a U-shaped loop portion 55.

The various forms of terminal prongs may, of course, be formed from separate pieces of metal secured to the discs by welding or otherwise and the said discs may in each case have a covering or coating of insulating material, such as an insulating enamel, sprayed or otherwise coated thereon, or a cap of insulating material secured thereto.

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

1. An electric lamp comprising a tubular glass bulb having a substantially flat metal disc sealed to each end thereof as an end wall closure therefor and a laterally extending mounting and terminal prong portion integral with each of said discs.

2. An electric lamp comprising a tubular glass bulb having a substantially flat metal disc sealed to each end thereof as an end wall closure therefor and a laterally extending mounting and terminal prong portion secured to each of said discs.

3. An electric lamp comprising a tubular glass bulb having a metal disc sealed to each end thereof as an end wall therefor and a flat laterally extending mounting and terminal prong portion secured to each of said discs, the faces of said prongs being located substantially in a plane passing through the longitudinal axis of said bulb.

4. An electric lamp comprising a tubular glass bulb having a metal disc sealed to each end thereof as an end wall closure therefor and a laterally extending mounting and terminal prong portion secured to each of said discs, said prongs each having a loop portion to provide a flexible mounting for said lamp.

5. An incandescent lamp comprising a tubular glass bulb having a filament sealed therein and extending longitudinally of said bulb substantialy the entire length thereof, a substantially flat metal disc secured to each end of said bulb and electrically connected to an end of said filament and a laterally extending metal mounting and terminal member secured to each of said discs.

PAUL O. CARTUN.