

Jan. 13, 1959

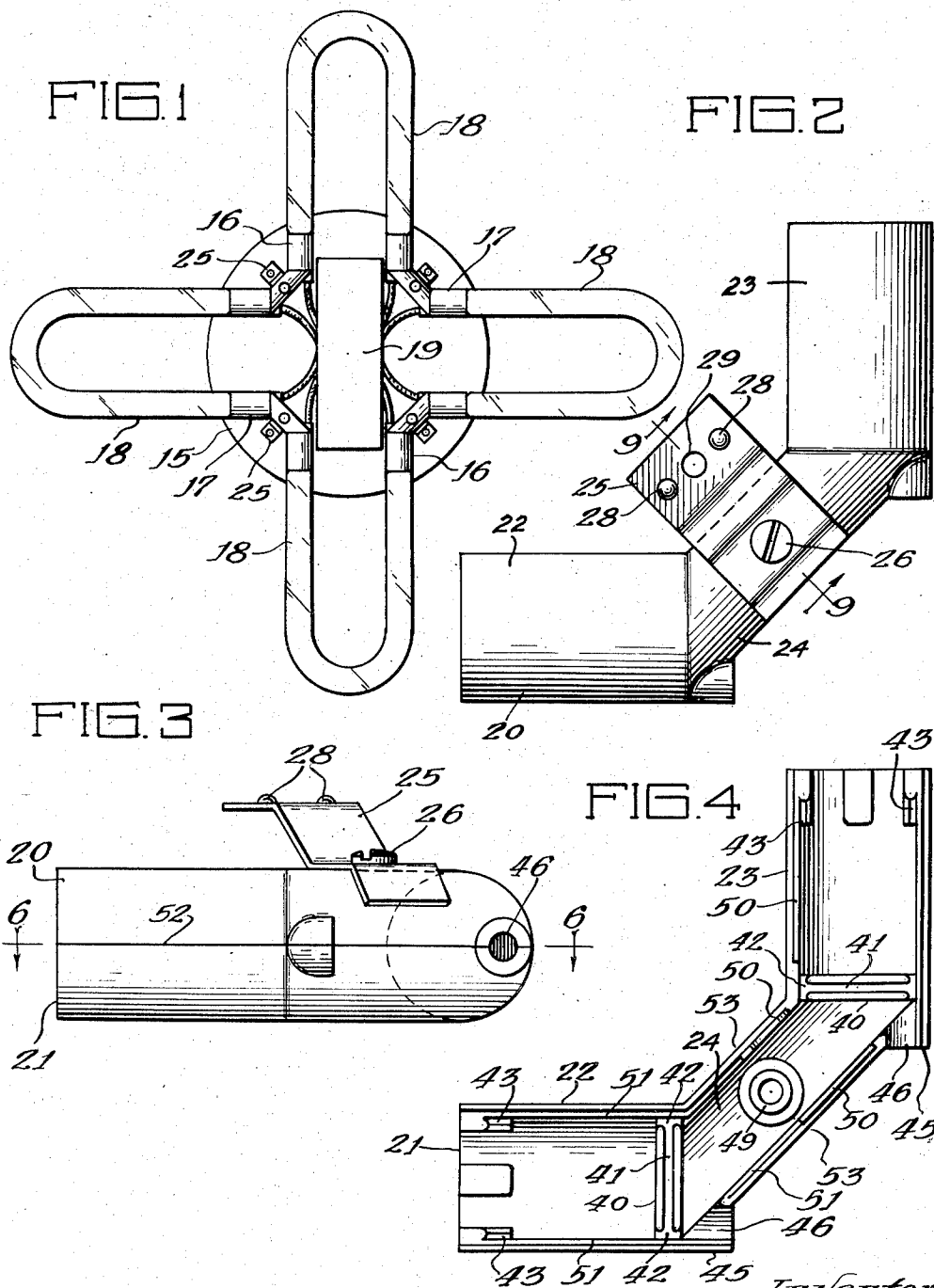
E. G. GODDARD

2,869,092

LAMP HOLDER

Filed Nov. 4, 1954

2 Sheets-Sheet 1



Inventor:
Edwin G. Goddard
By: Zabel, Baker, York,
Jones & Eckman
Attorneys

Jan. 13, 1959

E. G. GODDARD

2,869,092

LAMP HOLDER

Filed Nov. 4, 1954

2 Sheets-Sheet 2

FIG. 5

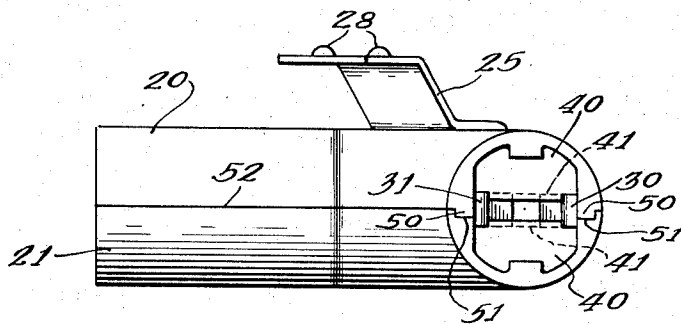


FIG. 7

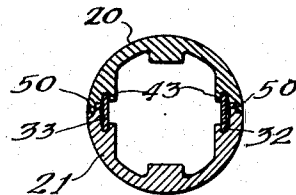


FIG. 8

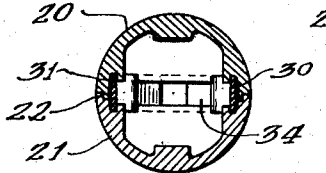


FIG. 9

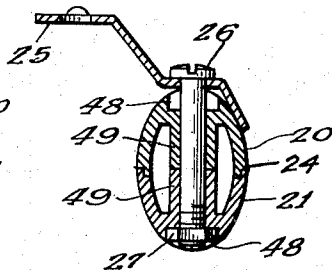


FIG. 6

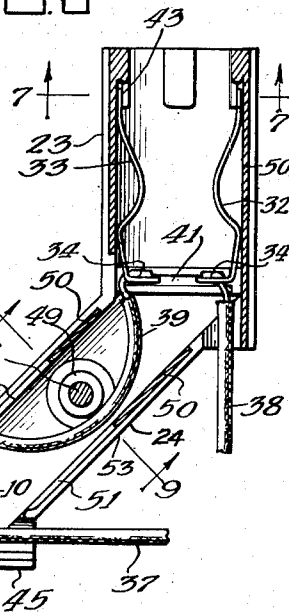


FIG. 10

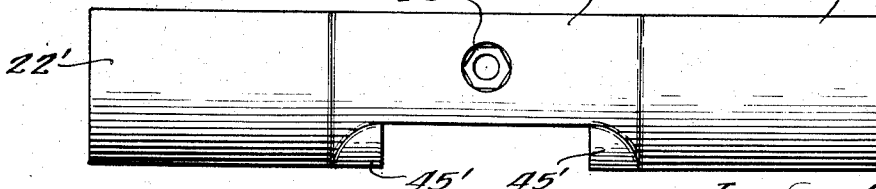
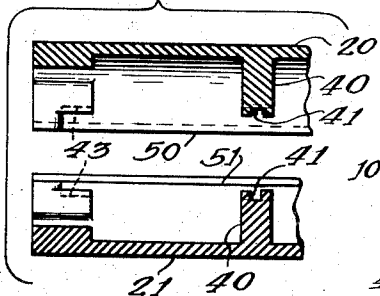


FIG. 11

Inventor:
Edwin G. Goddard
By: Zaphel, Baker, York,
Jones & Pithman
Attorneys

1

2,869,092

LAMP HOLDER

Edwin G. Goddard, Lombard, Ill.

Application November 4, 1954, Serial No. 466,910

1 Claim. (Cl. 339—57)

This invention relates to improvement in lamp holders of the type adapted for engaging the terminals of gaseous conduction tubes, such as fluorescent lamps and the like.

It is an object of the present invention to provide an improved lamp holder of simplified design which comprises, in addition to the contact members and leads, only two mating parts, a mounting bracket, a screw and a nut, the latter two elements serving to secure all of the other parts to each other.

A further object is to provide an improved lamp holder, the arrangement of the parts being such that the mounting bracket does not interfere or project into the space immediately behind the contacts or the lead openings. Particularly, the mounting bracket, which is of metal, is entirely exterior of the shell which is of insulating material, and the other parts are so arranged so that the danger of short circuit is completely eliminated.

Another object is to provide an improved design of resilient contact member, together with means for supporting the same within the shell by means of an interlocking relationship which avoids rivets, screws, and the like.

Still another object is to provide an improved lamp holder which is constructed in such a manner that the leads from the contact members may be brought straight out of the shell.

A still further object is to provide an improved lamp holder wherein the shell is comprised of two mating parts which are of identical construction, and which are maintained in alignment with each other by means of a tongue and groove arrangement.

Still another object is to provide an improved angle holder which is constructed in such a manner that the leads may be brought out from the rear of each socket portion thereof in a straight line so as to avoid kinks, or bends of short radius.

Other objects, features and advantages will become apparent as the description proceeds.

With reference now to the drawings in which like reference numerals refer to like parts:

Fig. 1 is a view of a lighting fixture, of the hair pin tube type, for example, illustrating the application of a preferred embodiment of my invention;

Fig. 2 is a plan view of a lamp holder embodying my invention;

Fig. 3 is an elevation of Fig. 2;

Fig. 4 is a plan view of one of the mating shell parts;

Fig. 5 is a left end view of Fig. 2;

Fig. 6 is a section taken substantially along line 6—6 of Fig. 3, the top mating part having been removed;

Fig. 7 is a vertical transverse section taken along line 7—7 of Fig. 6;

Fig. 8 is a vertical transverse section taken along line 8—8 of Fig. 6;

Fig. 9 is a vertical transverse section taken along line 9—9 of Fig. 6;

Fig. 10 is a longitudinal section taken along line 10—10 of Fig. 6, and

2

Fig. 11 is a plan view of a modified form of my invention, the bracket and screw being removed.

Fig. 1 shows a complete fixture which embodies the lamp holders comprising my invention; the fixture comprises a base plate 15 on which are mounted two low tension lamp holders 16 and two high tension lamp holders 17. The arrangement is such as to provide means for mounting four hair pin tubes 18. Thus, one terminal of each tube will be received within a low tension holder, and one terminal will be received within a high tension holder. Also mounted on the base plate 15 is a suitable four lamp ballast 19.

Figs. 2—10 show the construction of one of the low tension lamp holders 16, the high tension lamp holder being substantially identical thereto in structure as will be pointed out hereinafter.

It will be observed from Figs. 3 and 5 that the holder 16 includes two mating parts, a top part 20 and a bottom part 21. These parts are identical to each other, and cooperate with each other to form a shell having end portions 22 and 23, and a central portion 24. The lamp holder also includes a bracket 25 which is secured to the central portion 24 by means of a screw 26 and a nut 27. As shown in Fig. 9, the central portion 24 of each of the parts 20 and 21 is formed with a hollow boss 49 which provides a protected passageway for the screw 26. The external surface of each part is provided with a hexagonal pocket 48 which accommodates the nut 27, and since both parts 20 and 21 are identical, it makes no difference as to whether the bracket 25 is adjacent part 20 or 21, or whether the nut 27 is received in the hexagonal pocket 48 of part 21 or 20.

The upper end of the bracket 25 is provided with protrusions 28 which engage suitable apertures in the base plate 15 in the manner of locating pins. The bracket is secured to the base plate by a suitable screw which passes through the aperture 29 formed in the upper end of the bracket 25.

With reference now to Fig. 6, it will be apparent that the holder 16 is provided with four tube terminal engaging contacts, 30, 31, 32 and 33. One end of each contact is bent over to provide a terminal end 34 to which the bared or stripped end of an insulated wire or conductor, may be secured. The outer end of each contact is designated by the reference numeral 35, and the intermediate portion 36 of the contact is bowed inwardly and provides a resilient terminal engaging portion.

Fig. 6 also shows the various conductors that are attached to the contact members in the case of low tension lamp holders. Conductors 37 and 38 are secured to exterior contacts 30 and 32, respectively, and the interior contacts 31 and 33 are connected by a conductor 39. One of the conductors 37 and 38 comprises the primary lead to the ballast, and the other conductor is the lead to line. This arrangement provides for what is known as a "primary disconnect," whereby the removal of a tube from the low tension holder 16 breaks the primary circuit of the transformer or ballast, and hence deenergizes the high tension holder 17.

The high tension holder 17 is identical in construction to the low tension holder 16, except that the conductor 39 is eliminated, and both of the conductors 37 and 38 are connected to the same terminal of the secondary winding of the transformer or ballast 19. In this case, also, the conductors 37 and 38 are usually provided with substantially higher insulation than in the case of a low tension holder.

Means are provided to mount the contact members 30—33 in the lamp holders in such a manner that the intermediate spring portion 36 is freely disposed in the path of the tube terminal (as the terminal is inserted into the socket) so that said spring portion may give slightly

to provide resilient engagement. In other words, the contact members are engaged at both ends 34, 35, but the intermediate portion 36 is free. Since the mounting for each one of the contacts 30-33 is identical, a detailed description will be given of only one.

Means, such as a transverse barrier 40, are disposed in the end portions of each mating part in order to provide a transverse groove 41. The grooves 41 of the two parts 20 and 21 cooperate with each other to receive the bent terminal end 34 of the contact 30, the grooves engaging the side marginal portions of said terminal end 34. Groove 41 is bounded by ribs which terminate short of the side walls so as to provide a cross groove 42 so that the adjacent portion of the contact member 30 may be accommodated. See Figs. 4 and 6.

Adjacent the open end of the holder is a boss providing a groove 43, closed at one end and open at the other. The two oppositely disposed grooves 43 of mating parts 20 and 21 cooperate with each other to provide a pocket which receives the outer end 35 of the contact member 30. The groove 43 is of somewhat greater dimensions than the outer end of the contact member 30 so as to facilitate assembly and also to permit longitudinal movement of the outer end 35 incident to the compression of the intermediate spring portion 36, the space 44 being provided for this purpose.

Thus, as shown in Figs. 8 to 10, the outer end of the terminal is supported in the pocket provided by the grooves 43 and the terminal end is engaged by the co-operating transverse grooves 41.

Not only do the parts 20 and 21 cooperate to provide a totally enclosed shell, but a tongue and groove arrangement is provided which serves to make a tight joint between them and to maintain the parts in proper transverse alignment. This tongue and groove arrangement is such that the two parts are identical, and hence interchangeable.

As shown in Figs. 7 and 6, the end portion 23 of the bottom mating part 21 is provided with tongues 50. Tongues 50 are also provided along one-half of the central portion 24. The end portion 22 and the adjacent half of the central portion 24 are provided with shoulders 51 which are depressed downwardly below the meeting edges 52 of the part 21. Thus, when the top part 20 is placed over the bottom part 21, the tongues 50 of the top part extend into the recess provided by the shoulders 51 of the bottom part, as shown in Fig. 8, and at the other end the tongues 50 of the bottom part extend into the recess provided by the shoulders 51 of the top part. The reversal, or inversion, of one of the two identical mating parts, which inversion is incident to placing that one on top of the other, renders the tongue and shoulder arrangement of one complementary to the tongue and shoulder arrangement of the other, thus providing the desired cooperation of the parts. The changeover from tongue to shoulder occurs at about the mid point 53 of the central portion 24, as shown in Fig. 4.

It will be observed that bosses 45 are provided on the exterior side of the central portion 24 of the shell at a point immediately behind the exterior contact members 30 and 32. Openings 46 extend through these bosses in substantial alignment with said exterior contact members. This permits the conductors 37 and 38 to be brought out directly, that is, in a straight line, from the end portions of the shell. Thus, there is no substantial length of insulated conductor disposed within the shell and which is required to assume kinks, or bends of relatively short radius.

The terms "interior" and "exterior" are used herein to designate the disposition of the elements referred to with respect to the angularly related longitudinal axes. The contacts 31 and 33 are on the interior side of the axes, and contacts 30 and 32 are on the exterior side, as are the bosses 45.

The arrangement shown provides a triangular space

between the exteriorly located bosses 45, and which is bounded by the exterior side of the central portion 24 and by the projection of the walls of the end portions 22 and 23, this space being sufficient to accommodate any bends necessary in the conductors occasioned by the spatial relationship of the ballast 19 and the four lamp holders 16, 17, without resorting to the formation of bends of relatively short radius.

Although this aspect of my invention renders the same particularly well suited for embodiment in angle lamp holders, the invention is equally applicable to a straight double lamp holder as shown in Fig. 11 and also to angle lamp holders of other than 90°.

In Fig. 11, the construction is substantially identical to that of Figs. 2-10 and for that reason the same reference numerals are employed except that they are primed. The principal difference resides in the fact that the central portion 24' of the shell is not disposed at an angle to the end portions 22', 23'; rather, all portions are disposed in a straight line. However, the central portion 24' is of reduced width, the same as in the case of the central portion 24 of Figs. 2-10, and this permits the disposition of the bosses 45' in such a manner that the leads (not shown) may be brought out in substantially a straight line, the space between the bosses 45' being somewhat more restricted than in the case of the previously described embodiment.

To summarize the operation, which has been described in detail in connection with the description of the various parts, the holder comprises, in addition to the conductors, only nine parts: these being two identical mating parts 20 and 21, four identical contact members 30-33, the bracket 25, the screw 26 and the nut 27. The screw and nut not only serve to attach the bracket to the shell but they also maintain the two parts 20 and 21 in cooperative engagement with each other, and this cooperative engagement securely locks the contacts 30-33 in proper position.

The mating parts 20 and 21 are preferably of a molded plastic material and hence may be made with a slight bow, of the order of .040 inch, which is taken up by the screw and nut, 26 and 27. Thus, both parts are stressed in a manner which will insure firm contact at all points along the meeting edge 52, even at the open ends of the shell.

Furthermore, the construction of the mating parts 20, 21 is such that they are identical to each other, thus substantially reducing manufacturing costs. Another feature is that the identical structure can be used either for the high tension holder, or the low tension holder, the only difference residing in the absence or provision of the conductor 39. In the case of a high tension lamp holder, the interior contact members 31 and 33 are dummies.

In the case of the low tension lamp holder, it will be observed that the hollow bosses 49 provide insulating means disposed between the conductor 39 and the screw 26. Thus, the conductor 39 can be disposed within the central portion where it is concealed from view, and still there will be no danger of any short circuit.

The lamp holder is easily assembled since the contact members 30-33, when placed in the grooves 41 and 43 of only one mating part, will frictionally engage the grooved walls so that they will remain in position while the upper mating part is placed in its cooperating position. In this connection, the contact members are formed so that the outer ends 35 are biased inwardly toward the axis when the bent ends 34 are anchored in the transverse grooves 41, thus causing a frictional engagement which materially facilitates assembly. The stripped ends of the conductors are spot welded to the bent ends 34 prior to the time that the contact members are assembled into the lower mating part 21.

After the upper mating part 20 has been positioned, the bracket 25 and the screw 26 and nut 27 are applied to complete the assembling operation.

Although only a preferred embodiment of my invention has been shown and described herein, it will be apparent that various modifications and changes may be made in the construction shown without departing from the spirit of my invention as pointed out in the appended claim. 5

I claim:

An angle lamp holder comprising a shell having two end portions and a central portion, the axes of said end portions being disposed at a given angle to each other, and the angle between the axis of one end portion and the axis of said central portion being substantially equal to the angle between the axis of the other of said end portions and the axis of said central portion, and an interior contact and an exterior contact disposed in each of said end portions, said interior contacts in each instance being located interiorly of the axis of said given angle, and said exterior contacts in each instance being located exteriorly of the axes of said given angle, said shell being provided with openings formed in said central portion and directly

behind each of said exterior contacts and in substantial alignment therewith whereby a lead from each of said exterior contacts may be brought directly out of said end portion and in a straight line, the arrangement providing a space disposed adjacent the exterior side of said central portion and between said openings in which space said leads may be disposed and accommodated.

References Cited in the file of this patent

UNITED STATES PATENTS

1,669,038	Brach	May 8, 1928
1,875,219	Clemence	Aug. 30, 1932
1,954,252	Maus et al.	Apr. 10, 1934
2,161,841	Adelman	June 13, 1939
2,254,375	Lotto	Sept. 2, 1941
2,597,666	Oday et al.	May 20, 1952
2,712,121	Schmier	June 28, 1955
2,723,382	Lawson	Nov. 8, 1955

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,869,092

January 13, 1959

Edwin G. Goddard

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 5, line 16, for "axis" read ~~ax~~ axes ~~ax~~.

Signed and sealed this 2nd day of June 1959.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents