Dec. 20, 1955 H. L. O'DONNELL ET AL 2,728,057

LAMP HOLDER FOR DOUBLE ENDED TUBULAR LAMPS

Filed Feb. 5, 1951

2 Sheets-Sheet 1

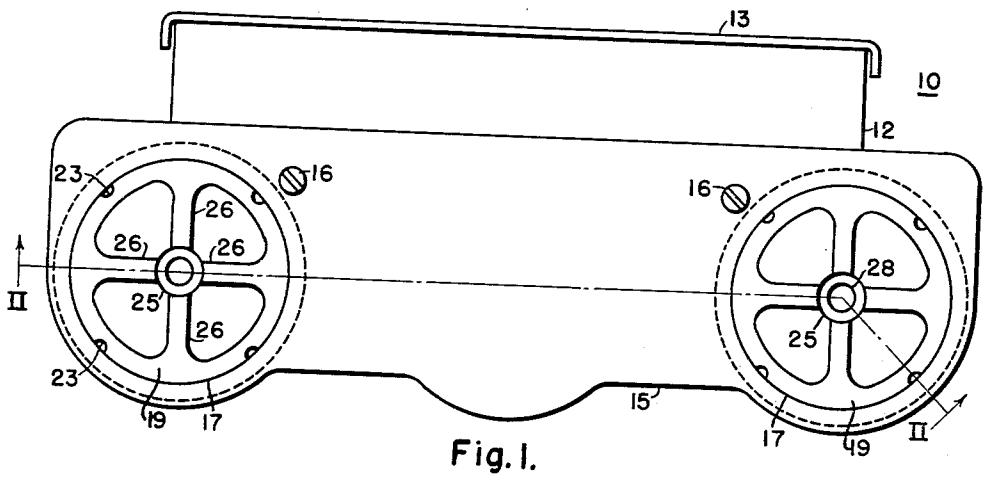


Fig. 1.

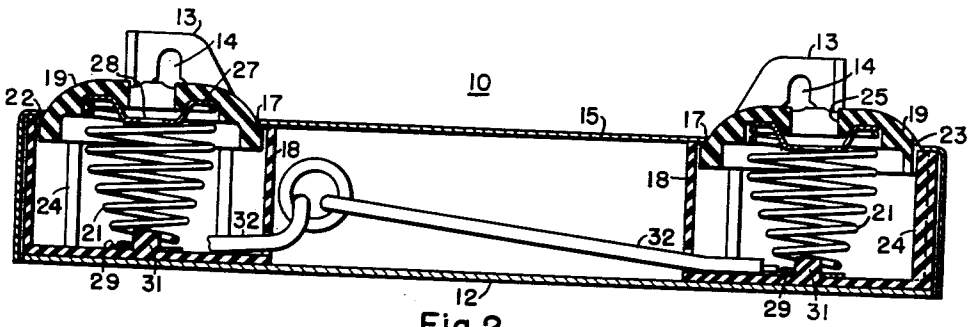


Fig. 2.

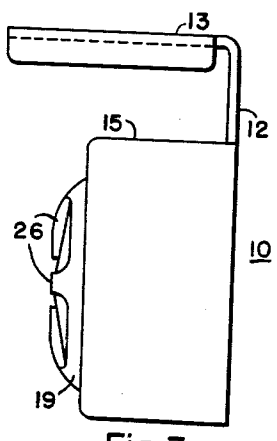


Fig. 3.

WITNESSES:

Leon M. Garman

Wm. C. Gronce

INVENTORS
Henry Lee O'Donnell,
Edward E. Forstrom and
James E. Meehan.

BY R. E. Whitcroft
ATTORNEY

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2 Sheets-Sheet 2

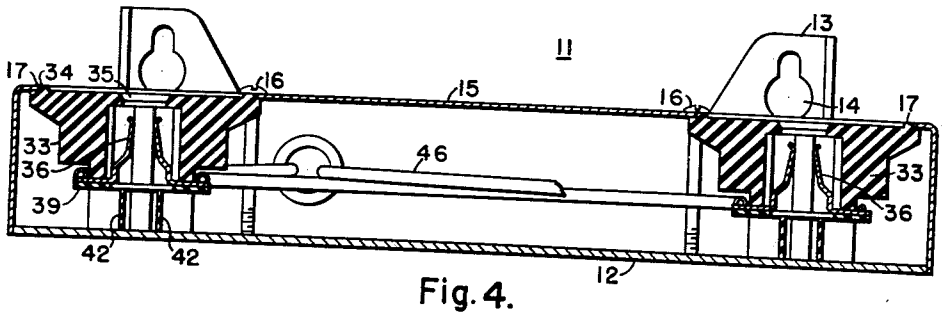


Fig. 4.

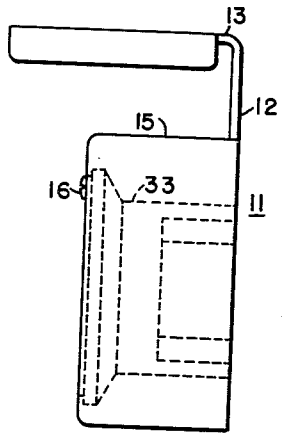


Fig. 5.

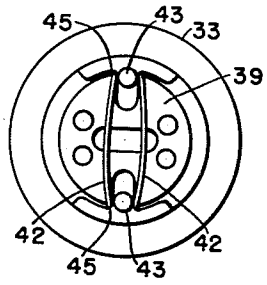


Fig. 6.

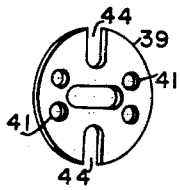


Fig. 8.

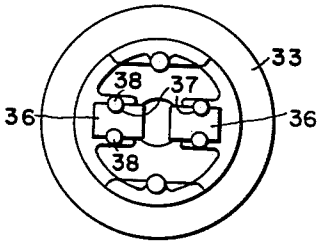


Fig. 7.

WITNESSES:

Leon M. Garman

Wm. L. Groome

INVENTORS

Henry Lee O'Donnell, Edward E. Forstrom and James E. Meehan.

BY R. Whitcomb

ATTORNEY

United States Patent Office

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LAMP HOLDER FOR DOUBLE ENDED TUBULAR LAMPS

Henry Lee O'Donnell and James E. Meehan, Bridgeport, and Edward E. Forstrom, Stratford, Conn., assignors to The Bryant Electric Company, Bridgeport, Conn., a corporation of Connecticut

Application February 5, 1951, Serial No. 209,506

4 Claims. (Cl. 339—57)

Our invention relates, generally, to lamp holders and, more particularly, to holders for tubular lamps of the fluorescent type.

An object of our invention, generally stated, is to provide a lamp holder which shall be simple and efficient in operation and which may be economically manufactured and installed.

A more specific object of our invention is to facilitate the installation of a lamp tube in the lamp holder.

Another object of our invention is to provide a lamp holder having a contact member movable longitudinally of the lamp tube.

A further object of our invention is to provide for guiding the contact pin of a lamp tube into the contact-receiving opening of the lamp holder.

Still another object of our invention is to provide a simplified means for mounting contact fingers in a lamp holder.

A still further object of our invention is to provide a simplified and improved base plate and cover assembly for a lamp holder.

Other objects of our invention will be explained fully hereinafter or will be apparent to those skilled in the art.

In accordance with our invention, a holder is provided for the high voltage terminals of a plurality of lamp tubes and another holder is provided for the low voltage terminals. A spring-biased insulating plunger having an opening therein for receiving the contact pin of a lamp tube has ridges on its outer surface for guiding the lamp pin into the opening. A cup-shaped contact member is disposed underneath the plunger and is retained in position by the spring which biases the plunger outwardly in the high voltage lamp holder. This spring conducts current from a high voltage terminal to the cup-shaped contact member in the high voltage holder. Contact fingers in the low voltage holder are retained on an insulating member by spacing members disposed between the contact fingers and the base plate of the holder to which a cover is attached by screws or rivets.

For a better understanding of the nature and objects of the invention, reference may be had to the following detailed description, taken in conjunction with the accompanying drawings, in which:

Figure 1 is a view, in front elevation, of a high voltage terminal lamp holder embodying features of our invention;

Fig. 2 is a view in section, taken along the line II—II of Fig. 1;

Fig. 3 is a view, in end elevation, of the holder shown in Fig. 1;

Fig. 4 is a view, in section, similar to Fig. 2, of the low voltage terminal holder;

Fig. 5 is a view, in end elevation, of the holder shown in Fig. 4;

Fig. 6 is a bottom plan view of one of the terminal assemblies of Fig. 4;

Fig. 7 is a view similar to Fig. 6, portions of the structure being removed, and

Fig. 8 is a view, in perspective of an insulating member utilized to retain contact fingers in position in the holder shown in Fig. 4.

Referring to the drawings, the structure shown therein comprises a lamp holder **10**, shown in Figs. 1, 2 and 3, and a somewhat similar holder **11** shown in Figs. 4 to 8, inclusive. The lamp holders are suitable for mounting tubular lamps of the fluorescent type, particularly those designed for operation at relatively high voltages and having only a single contact pin at each end of the lamp tube. It will be understood that the holders **10** and **11** may be mounted in spaced relation on a suitable support (not shown), the distance between the holders depending upon the length of the lamp tubes.

As shown in Figs. 1, 2 and 3, the holder **10** comprises a metal base **12** having a mounting bracket **13** formed integrally with the base **12** and bent at substantially a right angle to the base **12**. As shown in Fig. 2, the mounting bracket **13** may be provided with key-hole openings **14** to facilitate the mounting of the bracket on the supporting member for the holders.

A metal cover **15** may be attached to the metal base **12** by means of screws or rivets **16**. The cover **15** has two round openings **17** in the face of the cover opposite the base **12**. Additional openings **17** may be provided if it is desired to provide for more than two lamps per holder.

As shown most clearly in Fig. 2, an insulating cup-shaped member **18** is disposed inside the cover **15** at each one of the openings **17**. A dome-shaped insulating member **19** is mounted in the cup member **18** and is biased outwardly against the cover **15** by a spring **21**. The dome **19** is provided with a flange **22** which engages the edge of the opening **17** to limit the outward movement of the dome **19**. As shown in Fig. 1, four semi-cylindrical notches **23** are provided in the outer circumference of the dome-shaped member **19**. These notches cooperate with vertical projections **24** on the inner wall of the cup-shaped member **18** to guide the movement of the dome-shaped member **19** in the cup-shaped member **18**.

As shown most clearly in Figs. 1 and 3, the dome-shaped member **19** has a centrally disposed opening **25** therein for receiving the contact pin of the lamp tube. In order to guide the contact pin into the opening **25**, ridges **26** are provided on the outer surface of the dome **19**. The ridges **26** converge toward the opening **25**, thereby guiding the contact pin of the lamp tube into the opening **25**.

As shown most clearly in Fig. 2, a cup-shaped contact member **27** having an opening **28** therein is disposed on the bottom-side of the dome-shaped member **19** with the opening **28** in alignment with the opening **25** in the dome-shaped member to permit the contact pin of the lamp tube to be inserted into the opening **28** when the tube is installed in place. It will be understood that the opening **28** is of such a diameter that the contact member **27** will frictionally engage the contact pin on the lamp tube, thereby establishing electrical contact with the contact pin.

As shown in Fig. 2, a contact washer **29** is disposed on the bottom of the cup-shaped member **18** around a projection **31**. An electrical conductor **32** is connected to the washer **29**. Since the spring **21** is interposed between the washer **29** and the cup-shaped member **27**, the electrical circuit is established from the conductor **32** through the washer **29**, the spring **21** and the contact member **27** to the contact pin of the lamp tube when the pin is inserted into the opening **28**. As shown, the spring **21** biases the contact member **27** outwardly against the dome-shaped member **19** and the member **19** outwardly against the cover **15** at all times except when the dome-shaped member **19** may be depressed during the installation of the lamp tube.

The holder 11 shown in Figs. 4 to 7, inclusive, comprises the base 12, the mounting bracket 13, and the cover 15 which are similar to the ones previously described. The mounting bracket 13 is provided with the key-hole openings 14 to facilitate its mounting upon the supporting member.

An insulating member 33 having a circular ridge 34 on its outer surface is disposed in each opening 17 in the holder 11. The insulating member 33 has a centrally disposed opening 35 for receiving the contact pin of the lamp tube. Oppositely disposed L-shaped contact members 36 are mounted on the inner surface of the insulating member 33 underneath the opening 35 where they will be engaged by the contact pin of the lamp tube when it is inserted into the opening 35.

As shown most clearly in Fig. 7, the lower leg of each L-shaped member 36 has oppositely disposed semi-cylindrical notches 37 therein which engage cylindrical projections 38 on the insulating member 33 to assist in retaining the contact member in position. An insulating disc 39 (Fig. 8) having four openings 41 therein for the projections 38 is disposed on the lower side of the contact members 36, and insulating spacers 42 are disposed between the disc 39 and the base 12, thereby retaining the contact members 36 and the insulating member 33 in position when the base is attached to the cover 15.

In this manner, the contact members 36 are retained in position without being directly attached to the insulating member 33 or to the base 12 or the cover 15. Likewise, the contact members 27 and 29 in the holder 10 are retained in position when the cover is attached to the base without the contact members being directly attached to the insulating members 18 or 19.

As shown in Fig. 6, the insulating member 33 has two oppositely disposed cylindrical projections 43 which extend into notches 44 in the circumference of the disc 39, thereby insuring that the openings 41 in the disc are in proper alignment with the projections 38 during the assembly of the parts. It will be noted that the insulating spacers 42 are slightly bowed and that the ends of these spacers fit into recesses 45 at the sides of the projections 43. Thus, the spacers 42 are retained in position during the assembly of the parts by the spring effect of the insulating spacers. The necessary electrical connections to the contact members 36 are made through conductors 46 which may be connected to a suitable source of power.

As explained hereinbefore, the tube holders 10 and 11 may be spaced in accordance with the length of the tubes which are to be mounted in the holders. It is apparent that a tube may be readily installed by inserting the contact pin on one end of the tube into the opening 25 in the dome-shaped member 19 in the holder 10 and compressing the spring 21 sufficiently to permit the contact pin on the other end of the tube to be inserted into the opening 35 in one of the insulating members 33 in the holder 11. When the pressure on the spring 21 is released, the spring biases the dome-shaped member 19 outwardly, thereby retaining the tube in position. As shown, the holders 10 and 11 are constructed to support two tubes. It will be understood that they may be constructed to support more tubes if it is so desired.

From the foregoing description, it is apparent that we have provided a lamp holder for tubular lamps which is simple in construction and which may be readily manufactured and quickly assembled since a minimum number of screws or rivets are required to hold the assembled pieces together. Furthermore, the lamp tubes may be readily installed in the holders as provision is made for facilitating the installation of the tubes. The lamp holders may be readily mounted on any suitable supporting members.

Since numerous changes may be made in the above described construction and different embodiments of the invention may be made without departing from the spirit and scope thereof, it is intended that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

We claim as our invention:

1. In a lamp holder, in combination, a metal base, a metal cover for the base, said cover having a round opening in its face opposite said base, a cup-shaped insulating member disposed on the base between the cover and the base and with the sides thereof extending toward the cover around said opening, a dome-shaped insulating member disposed in the cup-shaped member and projecting into said opening and having inwardly offset flange means engageable with the inner surface of said cover, said dome-shaped member having a centrally disposed opening therein, a contact member disposed underneath the central opening for engagement by a member inserted through said opening, and spring means interposed between the contact member and the bottom of the cup-shaped member to bias the contact member and the dome-shaped member outwardly.

2. A lamp holder comprising, a hollow metal housing having a circular opening in one wall thereof, an outwardly convex circular insulating plunger disposed in said housing opening and having a central contact receiving opening, radially extending guide ridges on the outer convex surface of said plunger leading to said central opening for guiding a contact to said contact receiving opening, a contact member behind the opening in said plunger, a cylindrical guide member of insulating material in said housing receiving said plunger for reciprocating movement toward and away from said opening, spring means biasing said plunger and contact member outwardly relative to said opening, stop means limiting said outward movement of the plunger to a position in the vicinity of said housing opening with at least the central portion thereof protruding from said opening due to the convexity thereof, and keying means on said plunger and guide member for preventing rotative movement of the plunger in said guide member.

3. A lampholder comprising a generally elongated cup-shaped metal housing section having an open side and a metal cover section adapted to be secured to the housing to close the open side thereof, one of said sections having spaced insulating members seated thereon adjacent the ends of said one section, respectively, each of said insulating members having an inwardly extending projection opposite and substantially centrally aligned with an opening in the other section, at least a portion of the periphery of each of said insulating members and the adjacent side wall portion of the housing being complementary in shape so as to initially locate the insulating members in said housing, an opening in said housing between said insulating members for receiving flexible conductors, a rigid conducting member secured to the inner end of each of said conductors and having an opening of a size to freely receive one of said projections to be substantially centrally located relative to said openings, respectively, a coil compression spring for each of said insulating members having one end of a size to closely but freely receive the projection on its insulating member to locate said one end of the spring substantially centrally of the adjacent opening and to hold the associated conducting member in place, insulating plungers slidably mounted in said housing for movement toward and away from each of said openings, respectively, cooperating stop means on said plungers and said other section limiting movement of said plungers toward said openings to the vicinity of said openings, a contact receiving opening centrally through each plunger, a contact disc engaging the inner side of each plunger, the other end of said springs engaging said discs, respectively, to bias them and the plungers to the aforesaid limiting position of the plungers, means for securing said housing and cover sections together with said springs compressed, to hold said

insulating members, conducting members, springs, discs and plungers in position, and said means for securing the housing and cover sections together comprising the sole means for maintaining all of the remaining parts in assembled relation.

4. A lampholder comprising, a hollow housing having an opening in one side wall thereof, an insulating plunger slidably mounted in said housing for movement toward and away from said opening and having a contact receiving opening, at least the outer surface of said plunger being convex outwardly and having radially extending guide ridges thereon leading to said contact receiving opening for guiding a contact to said contact receiving opening, a contact member behind the opening in said plunger, spring means biasing said plunger and contact

member toward said housing opening, and stop means limiting movement of the plunger by the spring to the vicinity of said housing opening with at least the central portion of the outer surface thereof protruding from said opening due to the convexity thereof.

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