Nov. 23, 1954 J. M. PISTEY 2,695,388

LAMP HOLDER

Filed May 29, 1951

Fig. 1.

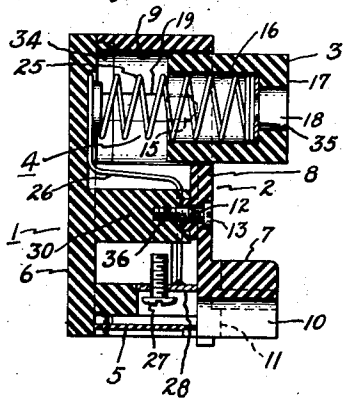


Fig. 2.

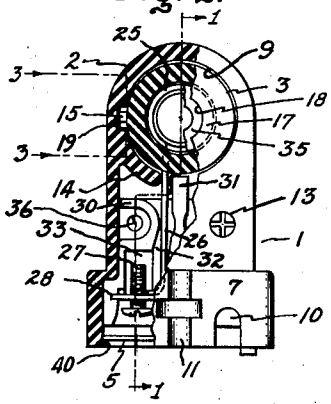


Fig. 3.

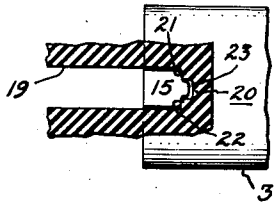


Fig. 4.

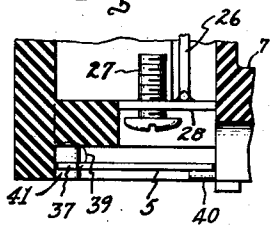


Fig. 5.

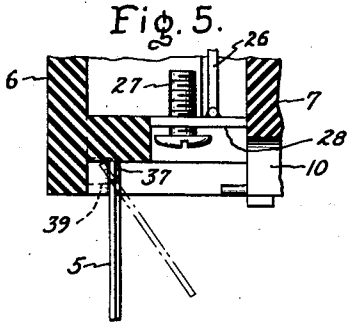
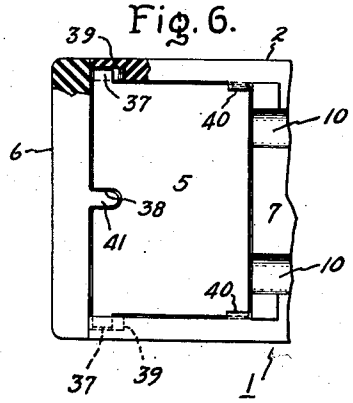


Fig. 6.



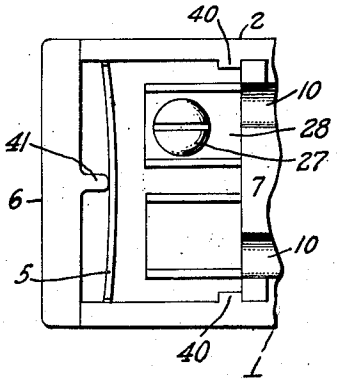


Fig. 7.

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United States Patent Office

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LAMP HOLDER

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4 Claims. (Cl. 339—55)

This invention relates to lampholders and, in particular, to a new and improved lampholder for a single pin discharge lamp.

Single pin discharge lamps and circuits used for energizing them are explained more completely in U. S. Patent 2,427,225, Mueller, assigned to the same assignee as that of the present invention, but briefly a conventional circuit is one wherein one end of a lamp is inserted into a lampholder which has a spring-biased contact. The spring-biased contact is compressed until the other end of the lamp can engage a lampholder at the opposite end of the lamp. The lampholder having the spring-biased contact generally is the high voltage lampholder.

In the manufacture of lampholders of this type, particularly when the number produced runs into the millions, any cost reduction, no matter how small, when multiplied by the number of units produced, amounts to a sizable saving. A cost reduction, for example, can be brought about by reducing the number of parts required for assembly.

It is an object of this invention then to provide an improved lampholder having a minimum number of parts to be put together during assembly of the lampholder.

A high voltage end lampholder in one embodiment includes a plunger which is movable axially within the housing. The plunger is biased by an axial force of a coiled spring so that, in its free position, the plunger protrudes outwardly from the housing. In connecting a lamp into the lampholder a lamp pin is inserted into an aperture in the plunger and axial pressure on the lamp pushes the plunger back into the housing to a position where the free end of the lamp can be inserted in the opposite lampholder. The spring-biased plunger requires stops of some sort to prevent it from being dislocated from the housing. Frequently, to effect a cost reduction, the housing is made with such a marginal amount of material that the housing is shattered occasionally by flicking the plunger and letting the spring drive the plunger against the stops.

It is a further object of this invention, therefore, to provide an improved stop arrangement for controlling the limit of the plunger extending from the housing while maintaining the marginal amount of material.

In providing an electric contact in the high voltage end of a lampholder, current is usually conducted into a coil spring which, in turn, is electrically connected to a screw terminal by a contact strip. It is possible for dirt or corrosion to deposit on either the contact strip or the coil spring thereby preventing good electrical contact between them. This connection of the two parts generally is in a part of the lampholder that is not easily accessible for cleaning without disassembling the lampholder.

It is a further object of this invention, therefore, to provide an improved coil spring, contact strip, and terminal screw assembly wherein, by making one connection to the terminal screw, power is supplied directly to the spring-biased contact.

In connecting lampholders of the subject type into an electrical circuit, the Underwriters Laboratories Inc. requires the positioning of an insulating strip between the terminal screw and a metal mounting surface. This insulating strip must be displaceable from the terminal screw in order to connect the lampholder into the electrical circuit and then the strip must be replaceable after the connection has been made.

It is a further object of this invention, therefore, to provide an improved insulating strip positioning means for use with a lampholder.

Further objects and advantages of this invention will become apparent and the invention will be more clearly understood from the following description, referring to the accompanying drawing, and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

Briefly, this invention relates to an improved lampholder for the high voltage end of a discharge tube. The lampholder comprises a housing, a plunger, a new stop structure which increases the area of contact between the plunger and housing **1**, an integral spring-biased contact, contact strip, and terminal screw, an insulating plate for protecting a terminal screw, and a new structure for locking the insulating plate in either a closed or open position.

In the drawing:

Figure 1 is a cross-sectional view taken along the lines **1—1** of Figure 2.

Figure 2 is an end view partially cut away of the lampholder shown in Figure 1.

Figure 3 is a view taken along the lines **3—3** of Figure 2 of the housing showing the cooperation between an ear of the plunger and a stop on the housing.

Figure 4 is a side elevational view of the lower portion of the lampholder of Figure 1 with the side wall removed to show the electrical connection between the terminal screw and the spring contact with the insulating strip shown in the closed position.

Figure 5 is a view similar to Figure 4 but showing the improved insulating strip in an open position.

Figure 6 is a bottom view of the lampholder of Figure 4.

Figure 7 is a bottom plan view similar to Figure 6 but showing the insulating strip in an open position.

In the drawing the lampholder **1** is shown as comprising a housing **2**, a plunger **3**, a combined spring-biased terminal and contact strip **4**, an insulating strip **5**, and a back cover **6**.

Housing 2 is molded integrally from one of the phenol resins to provide a base **7**, a body **8**, and a plunger receiving cylindrical aperture **9**. Base **7** is formed to have a conductor receiving notch **10** for connecting the lampholder in electrical circuit and a screw receiving channel **11** for mounting the lampholder on a base.

Body 8 has apertures **12** for receiving connecting screws **13**, while the plunger receiving cylindrical aperture **9** is formed to include a pair of arcuate-shaped extensions **14** which assist in providing a cylindrical wall for the smooth axial guiding of plunger **3**.

Plunger **3**, which has a pair of ears **15** disposed 180° apart, is a hollow cylinder having a central axial bore **16** and an end closure **17** which, in turn, defines a smaller axial opening **18** in alignment with bore **16** for admitting a pin of the discharge lamp. Plunger **3** also is molded from one of the phenolic resins.

Body **8** is further provided with a pair of channels **19** which cooperate with ears **15** on plunger **3** to effect a purely axial movement for plunger **3** into and out of housing **2**. Channels or slots **19** are provided at one end with a stop **20** so formed that a pair of shoulders **21** and **22** are produced one on either side of an extension **23**. The purpose of this structure is to insure other than a line contact between the ears **15** on plunger **3** and the stop **20**. If purely line contact existed, then there would be danger of breaking the housing at the point **23** of marginal thickness when plunger **3** is flicked.

The spaced shoulders **21** and **22** were designed to increase the cross-sectional shear area at the points of breakage. It is important that the clearance between the blunt end portion of the ears **15** and the point **23** at the end of the channels **19** be maintained. Otherwise, the shoulders **21** and **22** will be ineffective and breakage of either the housing or the ears of the plunger will take place when the spring slams the plunger into its outer-

most position. This slamming action may take place when an attempt is made to insert the contact pin of the lamp into the opening 18. If the contact pin does not enter the opening 18 and the plunger is depressed so that the other end of the lamp may be mounted in its cooperating lampholder, it often happens that the contact pin will slip off the plunger. This is when breakage is likely to take place. The spring drives the ears 15 of the plunger against the ends of the channels 19 in a forceful manner.

Spring contact 4 comprises a coil spring 25, a contact strip 26, a terminal screw 27, and a terminal plate 28. Spring contact 4 is formed by winding coil 25 integral with one end of the contact strip 26. The coil 25 has an external diameter which permits it to be positioned within the central axial bore 16 of plunger 3. The opposite end of contact portion 26 is welded, or otherwise secured, to the terminal plate 28 which, in turn, is provided with a threaded bore 29 for receiving terminal screw 27. Such an integral spring contact structure can be pre-assembled by machines and consequently in assembly of the lampholder, a single element 4 will perform as both a spring-biased terminal and a contact strip.

Rear cover 6 of housing 2 includes a protrusion 30 which extends into the housing to complement both the body 8 and the base 7 to provide an improved lampholder. For example, the protrusion 30 includes a central member 31 having its upper end shaped in agreement with the contour of plunger 3. Then when rear cover 61 is assembled with housing 2, central member 31 cooperates with the arcuate extensions 14 on housing 2 to further the formation of a smooth cylinder in which plunger 3 can travel.

Protrusion 30, at one side of the central member 31, has a channel 32 into which contact strip 26 of the spring contact 4 can be placed. Channel 32 cooperates with a socket 33 in protrusion 30 which engages and supports terminal plate 28 of the spring contact 4.

The contact strip 26 of the spring 4, after passing through channel 32, is bent so that it engages a portion of rear cover 6, which has a slot 34, shown in Fig. 1, for recessing the contact portion 26 whereby the interrelation of housing 2, plunger 3, and rear cover 6, is not impaired by the contact portion 26.

To insure electrical contact between spring 4 and a pin of the lamp, a metal disk 35 is positioned within the axial bore 16 of plunger 3 to engage the free end of spring contact 4. Then when the lamp pin is inserted through aperture 18 in plunger 3, the metal disk connects spring 4 to the lamp pin.

In assembling this lampholder, plunger 3 is placed into housing 2 and metal disk 35 is placed into the axial opening 16 of plunger 3. The combined spring contact 4 is then positioned in place on the rear cover 6 which, in turn, is positioned into engagement with housing 2. Under these conditions, the spring contact 4 passes into central opening 16 of plunger 3 to press against the metal disk 35 and the ears 15 on plunger 3 are in engagement with stop 20 on housing 2. The housing is then retained in assembled position by passing screws 13 through apertures 12 in body 8 to engage threaded bores 36 contained in protrusion 30.

While the lampholder as thus far described will operate and function to energize a lamp, the Underwriters Laboratories Inc. requires that an insulating strip, such as that shown at 5, be positioned between the terminal screw 27 and a metal mounting surface on which the lampholder is to be positioned.

Insulating strip 5 is substantially rectangular, except that it includes a pair of ears 37 and a notch 38. The base 7 of housing 2 is provided with notches 39 which cooperate one with each of the ears 37. The ears 37 of the insulating strip 5, when positioned into the notches, are held there for rotatable support of the strip 5 relative to the base 7 of the lampholder.

The base 7 further has a pair of protrusions 40 for engaging the end of strip 5 opposite ears 37, i. e., when strip 5 is closed into contact with base 7 the strip 5 is forced past the protrusions 40 as strip 5, which has some resilient properties, is deformed. After passing the protrusions 40, insulating strip 5 regains its original shape to be retained in the closed position by the protrusions 40.

A unique feature of this insulating strip 5 is its cooperation with a protrusion 41 formed on the back cover 6 of the housing, i. e., the ears 37, which cooperate with the notches 39 to provide support of the insulating strip 5, retain the outer ends of the strip 5 while the center of the strip 5 adjacent the notch 38 comes into contact with the protrusion 41 on the back cover 6 whereby the strip 5 is deformed to maintain it in an open position for easy access to the terminal screw 27.

Looking at Figure 5, it is seen that when the insulating strip 5 is pivoted to its open position, the marginal edge of the strip adjacent its hinged axis scrapes against the bottom wall of the base 7.

In order to maintain the insulating strip 5 in the open position, the protrusion 41 is formed in cooperation with the notches 39 to bow the strip 5 outwardly in the center. Consequently, the contact of the strip 5 with the bottom of the base 7 is not along a straight line but along a curved line as is clearly seen in Figure 7.

Therefore, in wiring this improved lampholder, it is not necessary as in some prior art arrangements to hold the insulating strip open with one hand, leaving only the other hand for completing the operation, but the insulating cover stays open leaving both hands free.

Modifications of this invention will occur to those skilled in the art and it is desired to be understood, therefore, that this invention is not to be limited to particular embodiment disclosed, but that the appended claims are meant to cover all the modifications which are within the spirit and scope of this invention.

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

1. An improved fluorescent lampholder comprising a housing, a movable plunger for receiving the contact pin of a fluorescent lamp, a current-carrying spring member for operating said plunger and for electrical connection with said contact pin, said housing having internally thereof a pair of spaced parallel slots cooperating with a pair of external ears on the said movable plunger for guiding the movement thereof, the outer ends of said slots being closed by end walls to limit the outward movement of the plunger, each of said walls having a recessed control portion so that contact between each slot end wall and the cooperating plunger ear is made over spaced areas.

2. In an improved fluorescent lampholder comprising a hollow housing of insulating material, electrical contact means within the housing for cooperation with a lamp base, and outwardly exposed terminal means joined with the said contact means for connecting said lampholder in an electric circuit, a pair of opposed notches formed in said housing adjacent said terminal means, and a pivoted insulated strip of resilient material for covering the said terminal means of said lampholder, said strip being pivotally mounted by means of spaced ears seated in said notches, and a projection formed on said housing adjacent the pivotal edge of the strip for bearing against the outer surface of said strip to deform and hold the strip in a transversely arcuate shape when the strip is pivoted to its final open position.

3. In a fluorescent lampholder as recited in claim 2 wherein the pivotal edge of the insulating strip while in its final open position frictionally bears against an outer wall of said housing.

4. In a fluorescent lampholder as recited in claim 2 wherein the said pivotal edge of the insulating strip is formed with a notch to provide clearance between the housing projection and the strip while the strip is in its closed position.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
2,237,362	Rieman	Apr. 8, 1941
2,427,225	Mueller	Sept. 9, 1947
2,447,676	Webster	Aug. 24, 1948
2,461,135	Bently	Feb. 9, 1949
2,464,643	Kulka	Mar. 15, 1949
2,495,196	Kulka	Jan. 17, 1950
2,604,505	DeReamer	July 22, 1952

FOREIGN PATENTS

Number	Country	Date
464,805	Canada	May 2, 1950