United States Patent

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[54] **LAMP SOCKET AND TERMINAL**
6 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **339/125**
[51] **Int. Cl.** **H01r 13/60**
[50] **Field of Search** 339/125-
—8, 60, 59, 50, 17, 205; 248/71, (Inquired), 217,
220.5, 223; 24/(Inquired), 73—7, 81.7, 73 (SC)

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ABSTRACT: A lamp socket for receiving an easily replaceable lamp bulb, comprising a plastic housing having a pair of opposing terminals extending therethrough for receiving the base of the lamp bulb therebetween to make both mechanical and electrical contact therewith, and mounting means integrally formed with a sidewall of the housing for snapping the lamp socket onto a mounting tab extending from a panel. A first embodiment of mounting means includes a resilient arm having a lock tab at the free end thereof for insertion into an aperture in the panel mounting tab, and a second embodiment includes a pair of opposing arms and a nib extending therebetween from one wall of the housing. The arms hold the panel tab against the housing wall and the nib is received in the aperture of the panel tab to retain the socket on the panel.

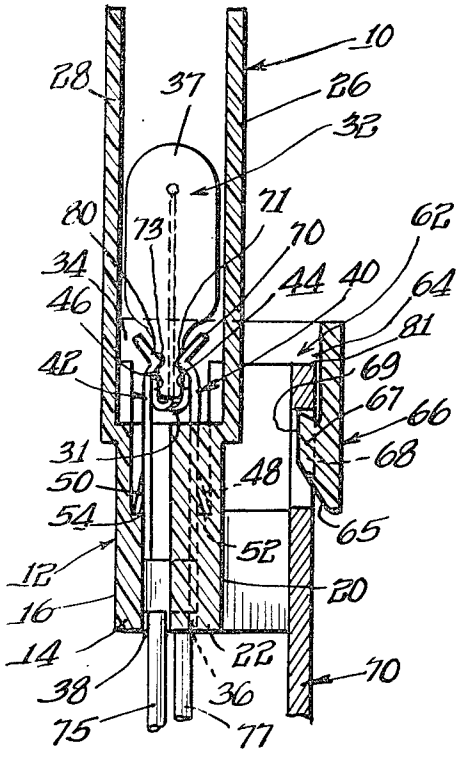


Fig. 1.

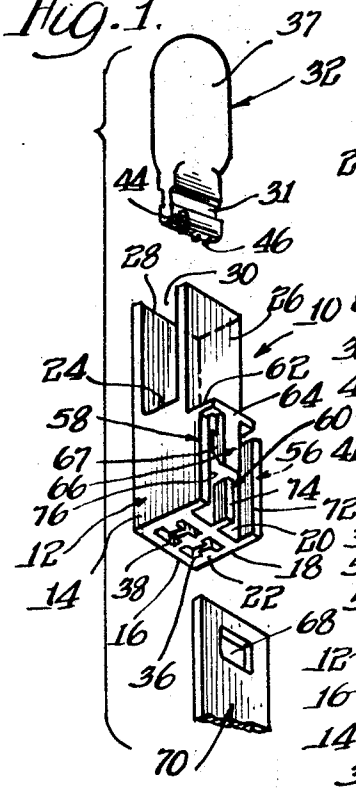


Fig. 2.

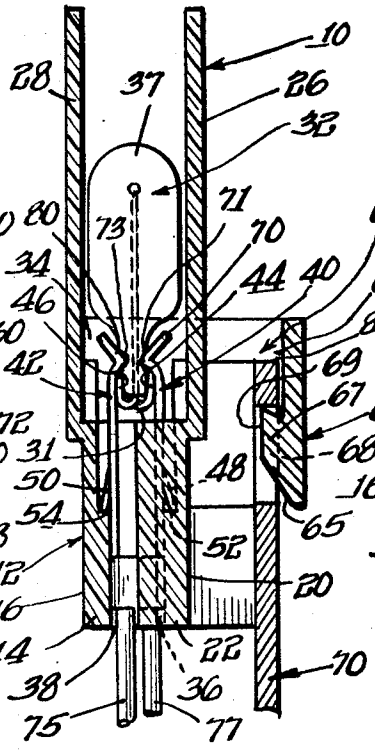


Fig. 3.

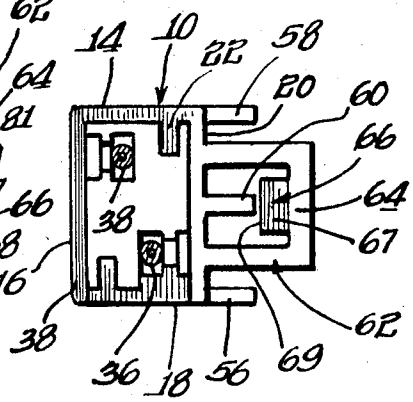


Fig. 4.

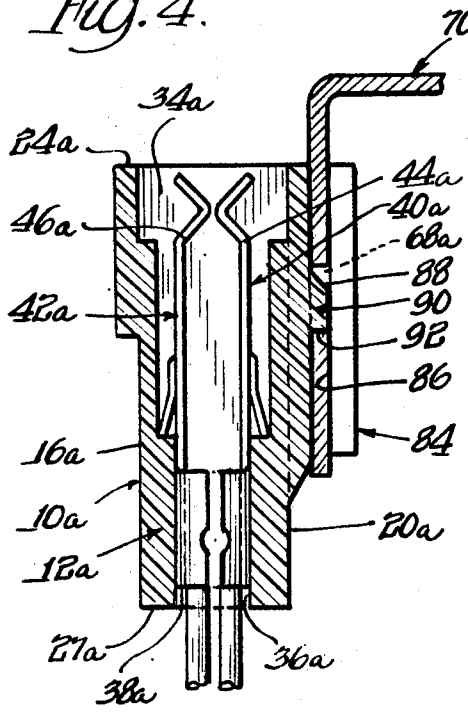
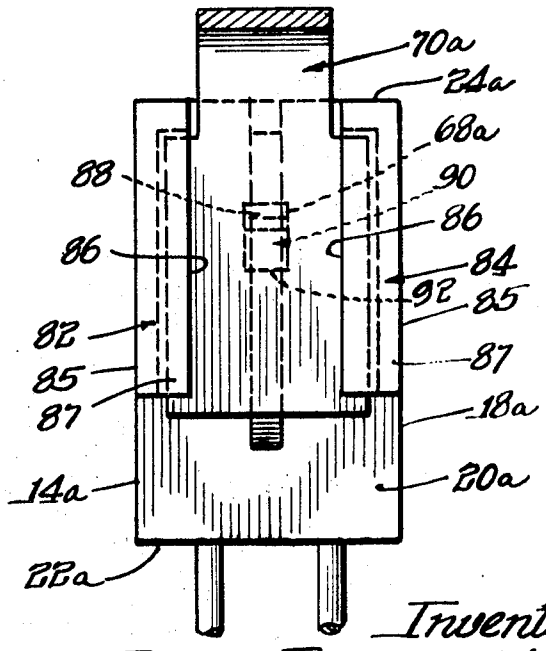


Fig. 5.



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LAMP SOCKET AND TERMINAL

BACKGROUND OF THE INVENTION

The present invention relates generally to lamp sockets and more particularly to those lamp sockets which are mountable on the chassis of a unit of electrical equipment.

Conventionally, in the case of automobiles, high fidelity record players, radios, television receivers, and the like, small lamps are used to illuminate dials, etc., or to indicate that the equipment is functioning. Usually these small lamps are the type which have a threaded or a bayonet-type base and are screwed or twisted into a complementary socket which has been fastened to the chassis of the equipment by means of rivets or screws.

Fastening a lamp socket in the above-described manner requires high installation costs and is time consuming. In addition, the placement of these socket and lamp arrangements often is such that they are virtually inaccessible once the unit is completed. Consequently, when the time arrives to change a burned out lamp, it becomes a major undertaking.

SUMMARY OF THE INVENTION

In accordance with the present invention a plastic lamp housing is provided. Terminals which are preattached by crimping to lead wires are inserted into the housing and snapped into place with the wires extending from the housing. The ends of the terminals opposite to the lead wires are configured for engagement with a lamp inserted into the housing. The housing is provided with an integral lateral resilient structure for latching onto a mounting panel.

Accordingly, it is a primary object of this invention to provide a new and improved lamp socket which is easily and quickly mounted on the chassis of a unit of electrical equipment and which accommodates a lamp which is easily replaceable.

It is another object of this invention to provide a lamp socket of the above-described type which is snapped onto a chassis and receives a lamp which is inserted thereinto.

It is yet another object of this invention to provide a lamp socket of the above-described type which includes a snap-in mounting tab for insertion into an aperture in the chassis of a unit of electrical equipment.

It is yet another object of this invention to provide a lamp socket which accommodates a glass base, push in–pull out lamp which is inexpensive to produce and replace.

DESCRIPTION OF THE DRAWINGS

A better understanding of the present invention and its organization and construction may be had by referring to the description below in conjunction with the accompanying drawings wherein:

FIG. 1 is an exploded perspective view of a lamp socket, lamp and mounting panel tab according to the invention;

FIG. 2 is a side sectional view of the lamp socket, mating lamp and mounting tab of FIG. 1 shown in an assembled condition;

FIG. 3 is a bottom end view of the lamp socket of FIG. 1;

FIG. 4 is a side sectional view of an alternative embodiment of a lamp socket mounted on a panel mounting tab, according to the invention; and

FIG. 5 is a side plan view of the embodiment of FIG. 4.

DETAILED DESCRIPTION

Referring to the drawings in more detail, a lamp socket, indicated generally by the numeral **10**, is shown in FIGS. **1—3** thereof. The lamp socket **10** comprises a one-piece, molded plastic housing **12** including four interconnected, rectangularly shaped sidewalls **14**, **16**, **18** and **20**, respectively, in rectangular section, and a pair of end walls **22** and **24**. Two opposing sidewalls, **16** and **20**, extend outwardly from the upper end of the housing to form projections **26** and **28**, respectively, the space **30** therebetween providing protection

or a covering for a lamp **32** received therein, (FIGS. **1** and **2**). A cavity **34** in the upper end wall **24** and extending into housing **12**, is provided to receive the base **31** of lamp **32** which is mounted therein.

A pair of spaced-apart terminal-receiving apertures **36** and **38** extend into lower end wall **22** through the housing **12** and open into cavity **34**. A pair of flat terminals **40** and **42** received therein, respectively, extends outwardly into cavity **34** to make an electrical connection with the lamp terminals **44** and **46** at the base **31** of the lamp **32**.

The flat terminals **40** and **42** of the socket are separate and snap into place in respective apertures in the housing **12**. The inserted ends **70** and **80** of the terminals extend into cavity **34** and are V-shaped, with the edges **71** and **73**, respectively, thereof being in opposing relation to receive the base **31** of lamp **32** therebetween.

Lamp bulb **32** is of the type having an integrally formed glass base **31** and head **37**, with a pair of terminals extending from head **31** thereof through the base and turned back across the recesses therein. Upon the insertion of the lamp base into cavity **34**, the base is engaged by the opposing terminal ends with edges **71** and **73** thereof extending into respective recesses of the lamp base, to hold the lamp in place and also making both a mechanical and electrical connection with the terminals thereof. The lamp is easily replaceable, a bad lamp is merely pulled from cavity **34** and a new lamp is inserted therein.

Each of the terminals **40** and **42** includes a tab **48** and **50**, respectively, each of which upon insertion of a respective terminal into a corresponding aperture in the housing, engages a shoulder portion **52** and **54**, respectively, molded into the housing. This prevents the terminals from being inadvertently pulled from the housing via end wall **22**. Each of the free ends of the terminals includes a crimp connector for connecting the terminals to external circuitry via wires **75** and **77**, to supply current for the energization of lamp **32**. While a crimp connector is provided herein, it is to be understood that any suitable means of connecting a wire to the terminal may be used.

A second pair of wall projections **56** and **58** extends outwardly from sidewalls **14** and **18** and parallel thereto, respectively, one on each side of wall **20** at right angles thereto, and a third, medial wall **60** extends outwardly from the surface of wall **20** a distance equal to that of the extensions **56** and **58** and in parallel relation thereto. While extensions **56** and **58** are substantially the length of the walls **14** and **18**, respectively, the third, medial wall **60** is substantially shorter. A U-shaped base support **62** is formed at the upper end of housing **12** (FIG. **3**) and extends outwardly from wall **20** between extensions **56** and **58**, and in alignment with medial wall **60** as shown in FIG. **2**. Formed with the bight **64** of the U-shaped base support **62** and extending outwardly therefrom substantially parallel to wall **20**, or perpendicular to the plane of the U-shaped base support, and toward medial wall **60**, is a resilient arm **66**. The arm **66** includes a lock tab **67** extending therefrom inwardly toward wall **20**. The lock tab **67** includes an inclined cam surface **65** on one end and a shoulder portion **69** at the opposite end thereof which is adapted for snapping into an aperture **68** in a mating panel tab **70** connected to a chassis or mounting panel of a unit of electrical equipment.

The outer edges **72**, **74** and **76** (FIG. **1**) of the wall extensions **56** and **58**, and medial wall member **60**, respectively, are slid over and rest on the surface of mounting tab **70** of the mounting panel upon receipt of the tab **70** between arm **66** and wall **20**. Thus, the panel member is well separated from the lamp and electrical connections to the socket itself. The lock tab **67** is forced outwardly as the cam surface **65** thereof slides over tab **70** until the aperture **68** in the tab comes into alignment with shoulder **69**. At that time shoulder **69** is snapped into the aperture to lock the socket **10** to tab **70** and the chassis. The aperture **68** is spaced approximately the same distance from the end **81** of tab **70** as is the lock tab **67** from the base support **64** so that the two will be aligned upon the mounting of a socket on the panel tab.

An alternative embodiment of the lamp socket according to the invention is shown in FIGS. 4 and 5. Like numerals have been employed in the last-mentioned FIG. wherever possible, with the addition thereto of the suffix *a*.

The lamp socket 10*a* is very similar to the lamp socket 10 of FIGS. 1—3, in that the socket comprises a one-piece, molded plastic housing 12*a* having a cavity 34*a* opening into the upper end wall 24*a* thereof for receiving a lamp (not shown). A pair of flat terminals 40*a* and 42*a* of the lock or snap-in type are received in apertures 36*a* and 38*a*, respectively, in the housing with ends 44*a* and 46*a* thereof extending into cavity 34*a* to make electrical and mechanical contact with the lamp electrodes extending along opposite sides of the lamp base.

Unlike lamp socket 10, there are no upwardly extending projections of opposing walls 16*a* and 20*a* to provide a protective shield or covering for a lamp received in cavity 34*a*. The elimination of these wall projections, however, allows illumination on all sides of the cavity, whereas in the lamp socket 10 the light rays were allowed to be emitted only in two sidewise directions and endwise therefrom. Furthermore, the means for mounting the socket 10*a* and panel tab 70*a* is somewhat different from that of lamp socket 10 of FIGS. 1—3. In the case of socket 10*a*, a protruding nib 90 is formed integrally with and extends outwardly from the plane of wall 20*a*. Also connected to wall 20*a*, on opposite sides of nib 90, and near the vertical edges of wall 20*a*, are a pair of opposing, inwardly facing arms 82 and 84. The arms are each L-shaped in cross section, with a first leg 85 of the L being connected along the sidewall of the housing and the other leg 87 of the L extending inwardly toward the corresponding leg 87 of the L of the opposing arm. Between each of the legs 87 of arms 82 and 84 and the wall 20*a* there is provided a space 86 (FIG. 4). Tab 70*a* of the mounting panel, which is of a width approximately equal to the distance between arms 82 and 84, is received between the opposing arms in space 86. The tab 70*a* is forced into space 86 camming over the inclined leading end portion 88 of the nib 90 until aperture 68*a* in the tab 70*a* receives the nib 90 therein. This locks the lamp socket to the tab 70*a*.

Once the nib 90 is fully received in aperture 68*a*, the lamp socket 10*a* is not easily removed from the tab 70*a*. A shoulder 92 on the opposite trailing end of nib 90 prevents the pulling of lamp socket 10*a* from panel tab 70*a*.

Although one particular mounting structure for the socket has been disclosed, others are within the purview of the invention. By way of specific example I mention the connector disclosed and claimed in my copending application for "Side Mount Connector," Ser. No. 749,207, filed July 31, 1968, which is herein incorporated by reference.

While preferred embodiments of the invention have been shown and described, it should be understood that the invention is not limited thereto, since many modifications may be made. It is therefore contemplated to cover by the present application any and all such modifications as fall within the true spirit and scope of the appended claims.

I claim:

1. A lamp socket for mounting on a panel member including an aperture therein, said lamp socket comprising a housing of insulating material including a cavity in one end thereof for receiving a lamp member therein, a pair of terminals mounted in said housing and having first ends thereof extending into said cavity for electrically and mechanically connecting said lamp member thereto, the opposite ends of said terminal pair connecting said terminals to external wiring for energizing said lamp member, and means connected to said housing for mounting said socket to said panel member, said means including a resilient member extending from said housing for snapping into the aperture in said panel member, said mounting member comprising an arm connected at one end thereof on a sidewall of said housing, said arm extending in a direction substantially parallel to said housing along said wall and including at the free end thereof an inwardly facing lock tab, said panel member being receivable between said arm and said housing whereby said lock tab is inserted into said aperture in said panel member to secure said lamp socket to the latter, said sidewall including a plurality of projections formed thereon, and extending outwardly therefrom in the direction of said arm and wherein said panel member is received between said arm and said extensions so as to rest on the latter.

2. A lamp socket as claimed in claim 1 wherein said one end of said arm includes a U-shaped base support member, said one end of said arm being connected at the bight portion of said U, and extending therefrom substantially perpendicularly to the plane of the U, with the ends of the legs of the latter being connected to said sidewall of said housing.

3. A lamp socket for mounting on a panel member including an aperture therein, said lamp socket comprising a housing of insulating material including a cavity in one end thereof for receiving a lamp member therein, a pair of terminals mounted in said housing and having first ends thereof extending into said cavity for electrically and mechanically connecting said lamp member thereto, the opposite ends of said terminal pair connecting said terminals to external wiring for energizing said lamp member, and means connected to said housing for mounting said socket to said panel member, said means including a resilient member extending from said housing for snapping into the aperture in said panel member, said mounting member includes a nib extending from a sidewall of said housing, wherein said mounting means further includes a pair of opposing inwardly facing arms mounted on said sidewall on opposite sides of said nib, said arms being spaced from said wall for receiving therebetween said panel member, said nib being received in said aperture in said panel member upon the receipt of said panel member between said arms, said nib including on the leading end thereof a cam surface and on the trailing end thereof a shoulder portion, said cam surface engaging said panel member upon receiving the latter between said arms, and said shoulder portion engaging said panel member at the edge of said aperture upon the receipt of said nib in the latter, to prevent easy removal of said lamp socket from said panel member.

4. The combination comprising a panel member having an aperture therein, and a lamp socket for mounting thereon, said lamp socket comprising: a housing of an insulating material, having a cavity in one end thereof for receiving the base of a lamp, first and second apertures extending through said housing from the opposite end thereof and communicating with said cavity, first and second terminals, each being mounted in a respective one of said apertures with first ends thereof extending into the cavity for electrically and mechanically contacting said lamp base, the opposite ends of the terminals connected to external circuitry for energizing said lamp, and mounting means formed integrally with said housing on a sidewall thereof, said mounting means including a resilient arm having a first end attached to said sidewall, said arm extending along said sidewall at a predetermined distance therefrom, and including at the second end thereof a locking tab, said tab being receivable in the aperture in said panel upon the receipt of said panel between said arm and said sidewall of said housing, thereby to secure said lamp socket to said panel, said panel member including a tab of a predetermined width having an aperture therethrough located a predetermined distance from the free end thereof, and wherein said resilient arm of said lamp socket is of a predetermined length so as to align said aperture in said panel tab and said lock tab, thereby to insure the receipt of the latter in the former.

5. A lamp socket for mounting on a panel member having an aperture therein, said lamp socket comprising: a housing of an insulating material, having a cavity in one end thereof for receiving the base of a lamp, first and second apertures extending through said housing from the opposite end thereof and communicating with said cavity, first and second terminals, each being mounted in a respective one of said apertures with first ends thereof extending into the cavity for elec-

trically and mechanically contacting said lamp base, the opposite ends of the terminals connected to external circuitry for energizing said lamp, and mounting means formed integrally with said housing on a sidewall thereof, said mounting means including a resilient arm having a first end attached to said sidewall, said arm extending along said sidewall at a predetermined distance therefrom, and including at the second end thereof a locking tab, said tab being receivable in the aperture in said panel upon the receipt of said panel between said arm and said sidewall of said housing, thereby to secure said lamp socket to said panel, a plurality of support projections integrally formed with said sidewall and facing outwardly toward said resilient arm, so that upon the receipt of said panel member between said arm and sidewall said panel member rests on said projections.

6. A lamp socket for mounting on a panel tab of a predetermined width, having an aperture extending therethrough, said lamp socket comprising: a housing of insulating material having four interconnected sidewalls and a pair of end walls, one of said end walls including a cavity therein for receiving the base of a lamp, and a pair of apertures extending through said housing from the opposite end wall thereof and communicating with said cavity, a pair of terminals, each being mounted in one of said apertures with a first end thereof extending outwardly into said cavity in spaced-apart relation for receiving said lamp base therebetween thereby to make an electrical connection therewith, and mounting means including a nib integrally formed with and extending outwardly from a first sidewall of said housing, and a pair of opposing arm members integrally formed with and extending from said first sidewall on opposite sides of said nib and spaced apart a distance approximately equal to the predetermined width of said panel tab, said panel tab being receivable between said spaced-apart arm members so that said nib is inserted into said aperture in said panel tab, thereby to secure said lamp socket thereto.