United States Patent

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[54] ILLUMINATION DEVICE FOR EDGELIGHTING TRANSPARENT PANELS

16 Claims, 8 Drawing Figs.

[52] **U.S. Cl.** ..... **240/8.16,** 339/125 L, 339/145 R
[51] **Int. Cl.** **B60g 3/04,** H01r 13/12
[50] **Field of Search** ..... 240/8.16, 2.1; 339/145, 176 L, 17 D, 189, 190, 221, 126, 125 L

[56] **References Cited**

UNITED STATES PATENTS

271,171	1/1883	Weston	339/176
3,176,255	3/1965	Jensen	240/8.16 X
3,450,870	1/1969	Curl	240/8.16

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Assistant Examiner—Denis E. Corr
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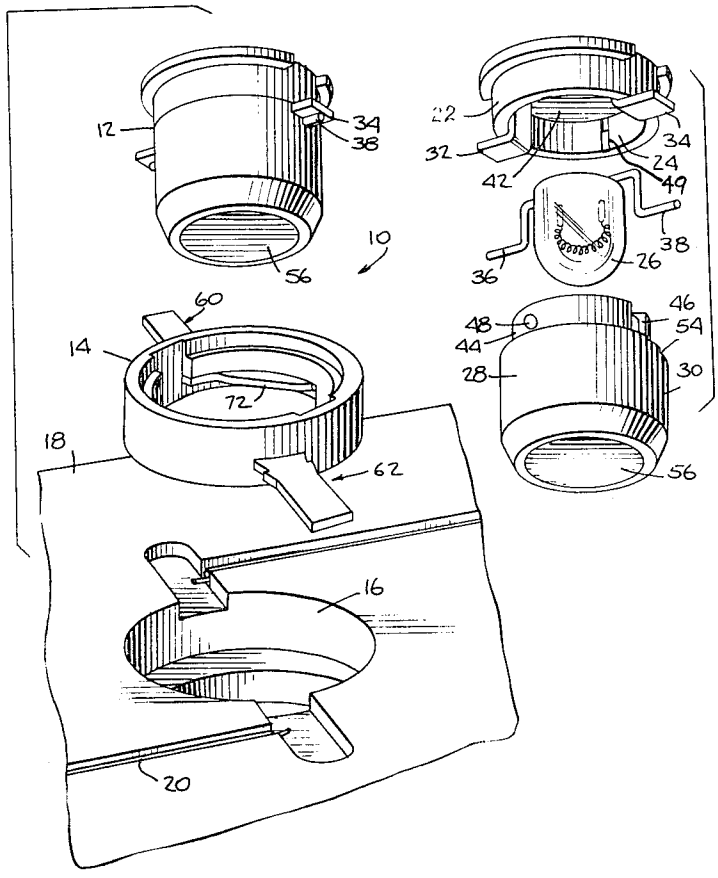
ABSTRACT: An illumination device includes a lamp assembly enclosing a lamp bulb and providing electrically conductive tabs extending outward from the sidewalls of the lamp assembly and connected in electrical communication with the lamp bulb, and a socket adapted for mounting in a hole in a transparent panel. The socket includes contact spring locking means consisting of a finger portion extending outside of the socket and a bowed spring portion connected to such finger portion and fitting into recesses formed in the inner walls of the socket. The finger portions tightly lock into grooves formed on opposite sides of the panel hole so as to lock the socket in the panel. The lamp assembly is adapted to be inserted into the socket and locked into place by pressing the lamp assembly with its tabs against the socket and rotating such lamp assembly relative to the socket to compress the bowed portion and permit such tabs to pass over center and lock into place in the recesses provided in the socket.



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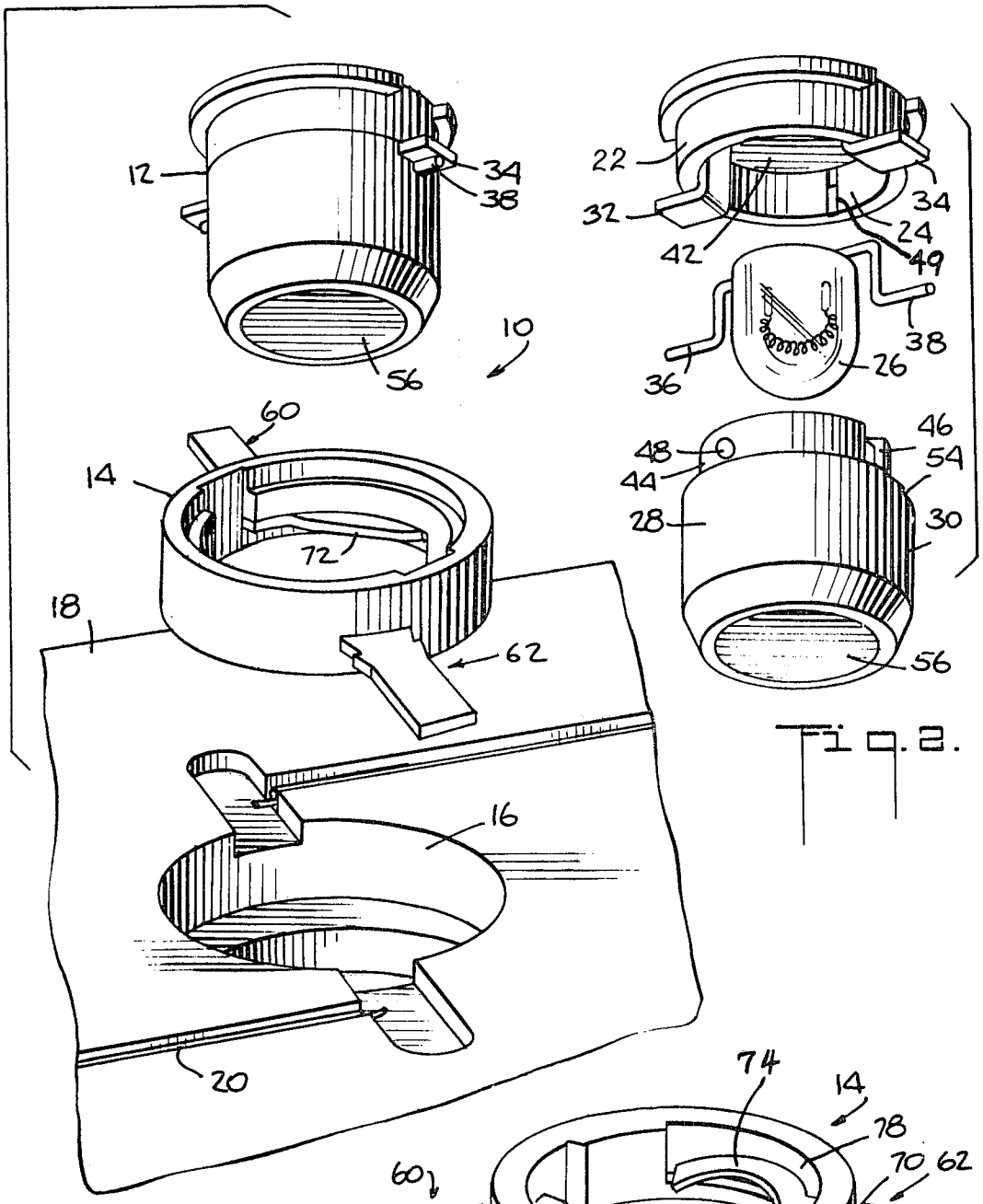

Fig. 1.

Fig. 2.

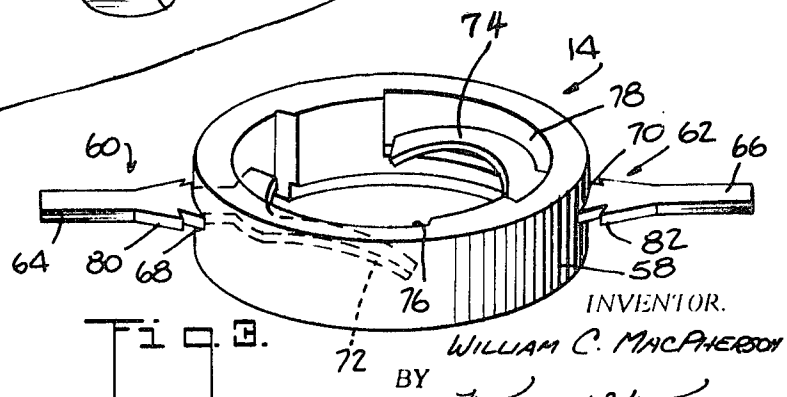

Fig. 3.

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Fig. 4.

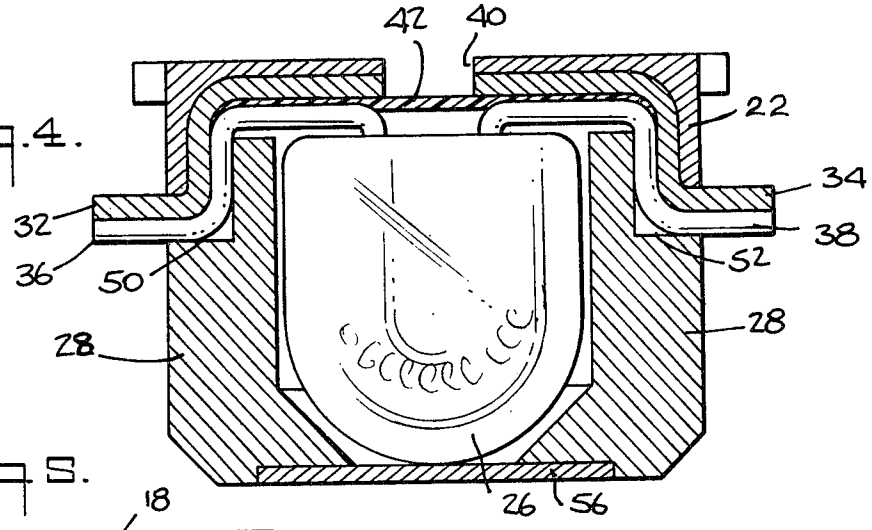


Fig. 5.

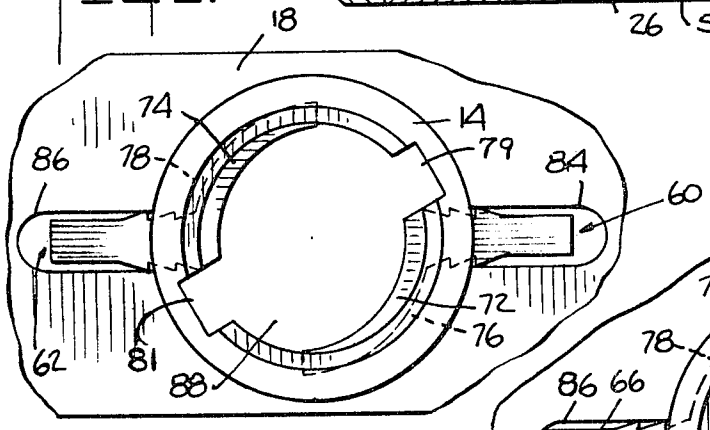


Fig. 6.

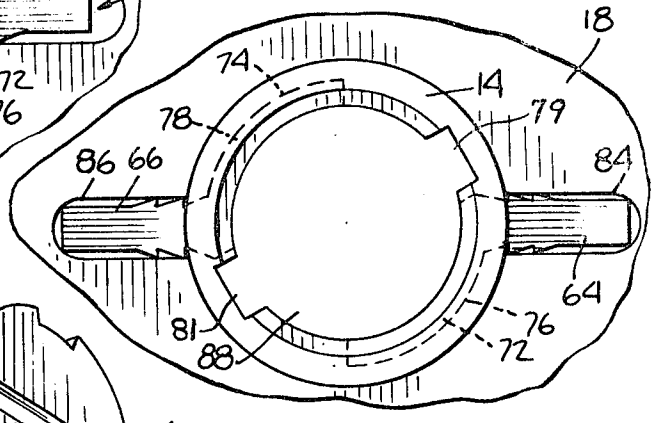


Fig. 7.

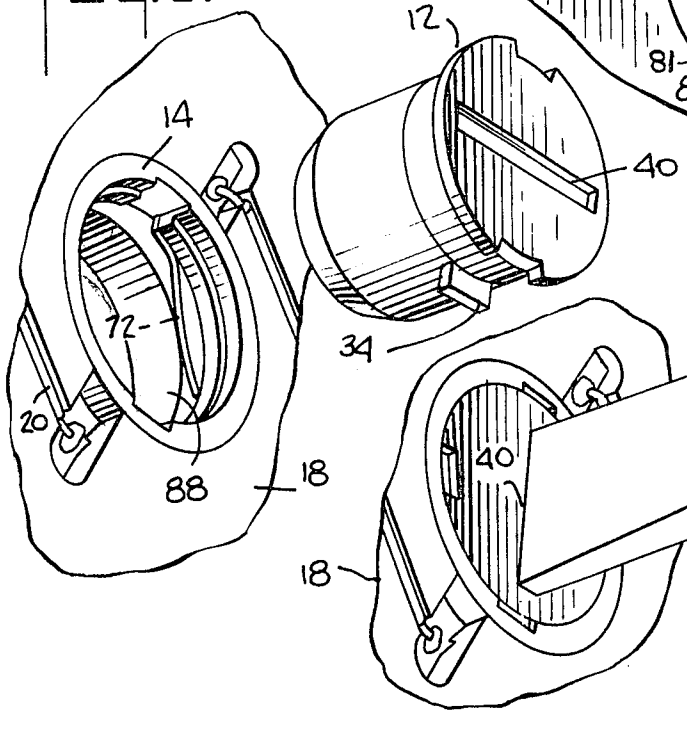
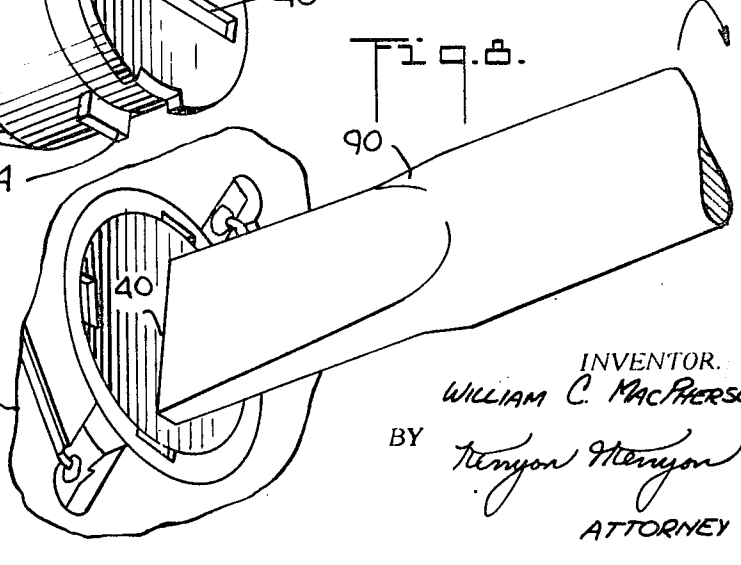


Fig. 8.



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ILLUMINATION DEVICE FOR EDGELIGHTING TRANSPARENT PANELS

BACKGROUND OF THE INVENTION

The present invention relates to illuminating devices for edgelighting transparent panels, and more particularly to a miniature lamp assembly and socket adapted for mounting in such panel and connected in electrical communication to other circuit elements.

The miniature lamp art has developed rapidly with the advances in transistor circuitry involving the use of relatively low voltages and miniaturization in the volume of instruments and electronic gear. One type of these miniature lamps, commonly called the short integral lighting lamp, is presently widely used for edgelighting plastic panels, for example, in the aircraft industry to provide low level illumination for the nomenclature and instruments during night flying. These lamps, having a general cylindrical shape, are made as small as about one-eighth of an inch in diameter and about one-seventh of an inch in height. The lamps are set into holes in the panels in a position such that the flat surfaces of the lamp lie in a plane either parallel to or perpendicular to the panel surface, and the wire leads of the lamps are connected in electrical communication with wiring set within grooves in the panels so as to provide a source of electrical current for the lamps. Generally, these lamps are designed to fit entirely within the transparent panels so as not to protrude from either panel side.

In one prior art lamp assembly, an incandescent lamp is permanently mounted on a disc-shaped base. A cylindrical filter, made of a clear or colored material, such as plastic, substantially encloses the lamp while permitting the light from the lamp to pass through to the transparent panel. One or more screw threads are provided on the lamp base periphery which threadingly engage with corresponding screw threads on the filter thereby securing the parts together. The filter is inserted into a flat bottom hole formed in the panel and chemically cemented into place therein. Electrical contact wires extend out of the circular sides of the filter for connection to wiring in the transparent panel. While this lamp assembly does facilitate lamp replacement without disturbing the panel wiring, there are several disadvantages accompanying this type of lamp assembly. One disadvantage is that the lamp assembly is very sensitive to the shock and vibration normally experienced in aircraft use. Because of the very shallow depth of the screw base, often, approximately only one thread is in contact with the threads of the lamp filter. This results in poor mechanical thread strength and a weak and loose connection between the parts. Another disadvantage is that installation of the lamp assembly requires the use of a chemical bonding agent to cement the filter into the transparent panel. The presence of the bonding agent between the filter and the transparent panel disturbs and distorts the optical light path between the filter and the transparent panel, resulting in reduced efficiency of light transmission from the lamp to such panel. Also, the bonding agent may run onto the surfaces of the electrical contacts and cause electrical failures and poor reliability.

Another disadvantage associated with this type of lamp assembly is that it is difficult to consistently mount the lamp filament in the position which provides uniform light distribution throughout the edgelighted transparent panel, and assures uniform brightness in all illuminated areas. This is because the screw base will be tightened to various positions relative to the filter, depending on manufacturing tolerances and the force used to tighten the parts together, and therefore, the position of the lamp filament, relative to the transparent panel, is not consistently controlled. The position of the lamp bulb is important since, in edgelighted transparent panels, the light emitted in the plane perpendicular to the plane of the lamp filament and passing through the lamp axis may be as much as twice the amount of light emitted in an intersecting plane lying perpendicular to the surface of the transparent panel and passing through the plane of the lamp filament.

One further disadvantage associated with the prior art lamp assembly is that the fragile glass envelope of the lamp protrudes substantially from the relatively short screw base to which it is permanently attached. This frequently requires replacement as a result of breakage of the lamp glass envelope, which is exposed prior to assembly into its filter and installation into the transparent panel. In addition, because of the very small size of the screw base, a slight force may be enough to break the bond between the lamp bulb, the insulator and the screw base and thereby unseat the lamp bulb from its base. Replacement of the entire lamp and base combination is a costly item when compared with the cost of the lamp bulb alone.

OBJECTS

Therefore, it is an object of the present invention to provide an illuminating device suitable for edgelighting transparent panels which will permit easy replacement in the wall of the panel. It is another object to provide an illuminating device suitable for edgelighting transparent panels which permits installation of a lamp assembly and socket in the wall of such panel by a simple mechanical means, without the use of cements or chemical bonding agents at the filter/panel interface. It is another object to provide an illuminating device which permits positive orientation of the filament of the lamp bulb with respect to the lamp assembly and socket, and consequently, to the transparent panel. It is yet another object to provide an illuminating device in which the lamp bulb is securely mounted within the lamp assembly, socket and transparent panel so as to resist the shock and vibration normally experienced in aircraft use. It is a further object to provide an illuminating device in which the lamp bulb is substantially protected from breakage during handling, storage and replacement in the panel.

SUMMARY OF THE INVENTION

These and other objects, which will become apparent from the detailed disclosure and claims to follow, are achieved by the present invention which provides an illuminating device suitable for edgelighting transparent panels comprising, in combination, (a) a lamp assembly having a generally cylindrical shape and provided with tabs extending outward from the sidewalls of said lamp assembly and connected in electrical communication with a lamp bulb enclosed in the lamp assembly; and (b) a socket which includes a ring adapted to receive the lamp assembly, and two contact spring locking means disposed on opposite sides of said socket ring and consisting of a finger portion extending outside of the socket ring through an opening in the ring wall, and a bowed spring portion connected to such finger portion and fitting into recesses formed along a portion of the interior walls of such socket ring. The socket ring is adapted to fit into a hole in the transparent panel with the finger portions of the spring locking means tightly fitting into grooves formed on opposite sides of the hole so as to lock the socket in the transparent panel. The lamp assembly is adapted to be inserted into the socket and locked into place by pressing the lamp assembly with its tabs against the socket and rotating the lamp assembly relative to the socket to compress the bowed portion and permit such tabs to pass over center and lock into place in the recesses in the socket ring.

Also, the lamp assembly further comprises: (a) a lamp bulb having terminal leads for connection in an electrical circuit; (b) a lamp base adapted for supporting the lamp bulb; (c) electrically conductive rigid tabs extending outward from the sides of the lamp base; (d) a generally hollow, cylindrical filter having an opening at one end for receiving the lamp bulb therein; and (e) means for securing the filter onto the lamp base with the lamp bulb securely mounted within the enclosure defined by the filter and the lamp base so that the filter, lamp base and lamp bulb constitute the lamp assembly, with the tabs permitting electrical connection to the lamp bulb from the exterior of the lamp assembly.

It is to be understood that as used herein the term "lamp assembly" is intended to mean the part of the illumination device comprising the lamp bulb, the lamp base and the filter which are secured together so that the lamp assembly can be inserted as an entity into the socket set within the transparent panel.

THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a perspective view of the illumination device illustrative of the invention, with the lamp assembly and the socket shown broken away from the transparent panel, prior to installation in the wall of such panel;

FIG. 2 is a perspective view of the lamp assembly of FIG. 1, with the lamp bulb and the filter shown broken away from the lamp base, prior to assembly;

FIG. 3 is a perspective view of the socket of FIG. 1, showing in detail the arrangement of the socket ring and the contact spring locking means;

FIG. 4 is a longitudinal cross-sectional view of the assembled lamp assembly shown in FIG. 2;

FIG. 5 is a plan view of the socket in its position in the hole provided in the panel, prior to being locked in place;

FIG. 6 is a plan view of the socket and panel as shown in FIG. 5, wherein the spring locking means are locked, together with the socket, in place in the panel hole;

FIG. 7 is a perspective view of the illumination device with the lamp assembly shown prior to installation in the socket set within the panel; and

FIG. 8 is a perspective view of the panel shown in FIG. 7, wherein the lamp assembly is locked in place in the panel by a suitable tool.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings, FIG. 1 shows the illumination device **10** generally comprising a lamp assembly **12** and a socket **14** adapted for mounting in an opening **16** in a transparent panel **18**. Panel **18** is provided with electrical leads or wires **20** laid in grooves running to each opening **16** for supplying electrical current to the lamp assembly **12** mounted therein. Lamp assembly **12**, as more specifically shown in FIG. **2**, includes a lamp base **22** having a generally cylindrical shape forming an opening **24** at one end for receiving a lamp bulb **26** therein. Completing the lamp assembly **12** is a hollow filter **28** having cylindrical sidewalls **30** and opening at one end to accommodate the glass envelope of the lamp bulb **26** when the parts are assembled together. The other end of the filter **28** has an opening which is closed off by a metal heat sink/reflector **56**. Filter **28** is made of a clear or colored plastic material, such as polycarbonate, which permits the light to pass substantially undistorted and undisturbed, resulting in an efficient transmission of light from the lamp bulb **26** to the panel **18**.

Lamp base **22** is provided with two tabs **32** and **34** which extend outward from the sides of the lamp base **22**. Tabs **32** and **34** are made of a rigid material which is electrically conductive to permit external electrical communication to the leads or wires **36** and **38**, respectively, of the lamp bulb **26** contained within the lamp assembly **12**. Formed in the end wall of lamp base **22** is a slot **40** for facilitating rotation of the lamp assembly **12** in the socket **14**, with a tool such as a screwdriver. An insulative disc **42** is preferably placed at the seat of the base opening **24** to cover the slot **40**, in the event such slot **40** extends through the end wall of the lamp base **22**, and to protect the lamp bulb **26** and the leads **36** and **38** and provide a shock cushion for such lamp bulb **26**. Disc **42** is coated with a reflective material, such as a white or silver paint, on the side facing the lamp bulb **26**, while the opposite disc side is coated with a light or heat absorptive material, such as black paint. Similarly, the heat sink-reflector **56** may comprise an aluminum disc which provides a reflective inside surface which faces the lamp bulb **26**, while the outside surface is coated with a black chemical finish, such as black aluminum anodize, which increases the efficiency of the heat sink to radiate and dissipate the heat.

The sidewall portion **44** of filter **28** is sized to fit within the base opening **24**, with two slots **46** in such wall portion **44** opening at the rim of wall portion **44** and spaced to receive the tabs **32** and **34**, respectively. Also provided in the sidewall portion **44** of the filter **28** are locking means, such as one or more balls or protrusions **48**, which lockingly engage with mating sockets or depressions in the inner wall of base **22**, such as the slot **49** shown in FIG. **2**. It is to be pointed out that, while the FIGS. **1**, **2** and **4** show the lamp assembly **12** in the position it would assume prior to insertion in the socket **14** below, the actual assembly of the lamp base **22**, the lamp bulb **26** and the filter **28** can be accomplished with the lamp assembly **12** inverted with respect to the position shown in FIGS. **1**, **2** and **4**, That is, the lamp assembly **12** would be viewed upside down with the lamp base **22** on the bottom. In such case, assembly of the lamp bulb **26**, lamp base **22** and the filter **28** would be accomplished by placing the lamp bulb **26** in the base opening **24** with the electrical leads **36** and **38** positioned against the tabs **32** and **34**, respectively, as shown in FIG. **4**. Filter **28** is brought down over the lamp bulb **26** with the slots **46** receiving the leads **36** and **38** and the tabs **32** and **34**. When filter **28** is seated on the base **22**, the balls **48** will snap and lock in the corresponding slots **49** in the base **22** and the shoulder portions **50** and **52** will be firmly pressed against the leads **36** and **38** to thereby maintain such leads **36** and **38** in physical contact and electrical communication with the tabs **32** and **34**, respectively. In addition, a notch **54** can be provided in each shoulder portion **50** and **52** to maintain the lead wires **36** and **38** in position. Alternately, assembly can be effected by first inserting the lamp bulb **26** into the opening of filter **28**, and then placing the lamp base **22** over the filter opening and locking it onto the filter **28**. In this fashion, a lamp assembly **12** having a readily replaceable lamp bulb **26** is provided without requiring any permanent bond to the bulb leads **36** and **38**. In another embodiment, the terminal leads **36** and **38** are firmly bonded to the tabs **32** and **34** by welding, ultrasonic bonding or soldering.

Replacement of the lamp bulb **26** can be effected simply by applying a separation force between the filter **28** and the lamp base **22** to overcome the ball and socket lock, described above, whereupon such parts **28** and **22** will separate and the bulb **26** replaced. Where replacement of the lamp bulb **26** is not contemplated, a bonded joint may, if desired, be used between the filter **28** and the lamp base **22**.

Referring to FIG. **3**, the socket **14** comprises a socket ring **58** and a pair of contact springs **60** and **62**. The socket ring **58** is formed of an electrically insulative material, such as glass-filled nylon, which is substantially rigid so as to firmly support the lamp assembly **12** therein. Also, socket ring **58** is made of or coated with a black, nonreflective material. The contact springs **60** and **62** are made of an electrically conductive spring material, such as beryllium copper, suitable for use as both an electrical conductor and a spring lock. Contact springs **60** and **62** are each constituted by fingers **64** and **66**, respectively, which pass outside of the socket ring **58** through openings **68** and **70**, respectively, in the wall of socket ring **58**, and bowed spring portions **72** and **74**, respectively, which are connected to finger portions **64** and **66**, respectively. Bowed spring portions **72** and **74** are adapted to fit into recesses **76** and **78**, respectively, formed along the interior walls of socket ring **58**. Slots **79** and **81**, shown in FIGS. **5** and **6**, are provided in the interior walls of socket ring **58** adjacent recesses **76** and **78**, respectively, and are arranged to receive the tabs **32** and **34**, respectively, to permit the lamp assembly to be inserted into, or withdrawn from, the socket **14**. Each finger portion **64** and **66** can include one or more sharp points **80** and **82**, respectively, along the opposite sides for the purpose of permitting easy entry of the socket **14** into the transparent panel material by cutting away such material as the finger portions **64** and **66** are urged into grooves **84** and **86**, respectively, formed on opposite sides of each opening **16** in the panel **18**. The sharp points **80** and **82**, or lance barbs as they are sometimes called, also act to resist exit of the finger portions **64** and **66** from the panel material after entry therein.

As shown in FIG. 5, the contact springs 60 and 62 are supplied with the bowed spring portions 72 and 74 not fully seated in the horizontal slots 76 and 78 to permit the entire socket 14 to be easily seated in the opening 16, with the ends of the finger portions 64 and 66 fitting into the horizontal grooves 84 and 86. Locking of the socket 14 can be accomplished by inserting a camming tool, not shown, into the socket opening 88 and rotating such tool to cause the cam surfaces to force the finger portions 64 and 66 further into the grooves 84 and 86, with the sharp points 80 and 82 digging into the walls of such grooves 84 and 86 thereby locking the socket 14 to the panel 18, as shown in FIG. 6. In another embodiment, the socket 14 is permanently mechanically bonded in place by potting the grooves 84 and 86 and the wiring 20 running to such grooves 84 and 86 for electrical communication with the finger portions 64 and 66. It is to be understood, however, that the socket 14 is firmly locked in place by the gripping action of the sharp points 80 and 82, without the necessity for potting the grooves 84 and 86.

With the socket 14 firmly in place in the panel 18, the lamp assembly 12 is inserted into the socket opening 88 and locked into place in the manner illustrated by the FIGS. 7 and 8. Specifically, a tool such as a screwdriver 90, is inserted into the slot 40 of the lamp base 22. As the tabs 32 and 34, respectively, are positioned into alignment with the slots 79 and 81, respectively, the lamp assembly 12 will be seated in the socket 14. Application of a slight downward pressure and a rotative torquing action to the screwdriver 90 will cause the bowed portions 72 and 74 of the contact springs 60 and 62 to compress as the tabs 32 and 34 of the lamp assembly 12 pass over center and lock into place in the socket recesses 76 and 78, respectively. The lamp assembly 12 will then be securely locked in place in the socket 14 and will not come loose as a result of the high shock and vibration forces often accompanying an aircraft. In this position, a source of electrical current is provided from the panel wires 20 to the lamp bulb 26 through the contact springs 60 and 62, the tabs 32 and 34, and the bulb leads 36 and 38.

Removal of the lamp assembly 12 from the socket 14 is effected simply by reversing the steps used to mount the same. That is, the screwdriver 90 is rotated in the direction opposite to the direction of rotation used to lock the lamp assembly 12, so that the tabs 32 and 34 move back over center on the other side, where the tabs 32 and 34 become aligned with the slots 79 and 81 so as to permit withdrawal of the lamp assembly 12.

What is claimed is:

1. An illuminating device suitable for edgelighting transparent panels comprising, in combination:

a. a lamp assembly, said lamp assembly having a generally cylindrical shape and provided with tabs extending outward from the sidewalls of said lamp assembly and connected in electrical communication with a lamp bulb enclosed therein; and

b. a socket which includes a ring adapted to receive said lamp assembly, and contact spring locking means disposed on opposite sides of said socket ring and consisting of a finger portion and a bowed spring portion, said finger portion extending outside of said socket ring through an opening in the ring wall, and said bowed portion having a bowed shape and connected to said finger portion and fitting into recesses formed along a portion of the interior walls of said socket ring, said socket ring being adapted to fit into a hole in said transparent panel with the finger portions of said contact spring locking means tightly fitting into grooves formed on opposite sides of said hole to thereby lock said socket within said transparent panel; whereby said lamp assembly is adapted to be inserted into said socket and locked into place by pressing said lamp assembly with said tabs against said socket and rotating said lamp assembly relative to said socket to compress the bowed spring portion of said contact spring locking means and permit said tabs to pass over center and lock into place in the recesses in said socket ring.

2. The illumination device as recited in claim 3, wherein said contact spring locking means are made of or coated with an electrically conductive material to thereby connect said tabs and said lamp bulb in electrical communication with said finger portion of said contact spring locking means, for connection to panel wiring.

3. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base for supporting said lamp bulb;

c. a hollow, generally cylindrical filter having an opening at one end for receiving said lamp bulb therein;

d. means for securing said filter onto said lamp base with said lamp bulb securely mounted within the enclosure defined by said filter and said lamp base so that said filter, lamp base and lamp bulb constitute said lamp assembly;

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said terminal leads, said tabs constituting rigid members having substantially flat surfaces which lie in a horizontal plane; and

f. said filter having slots in the sidewall, said slots opening at tone side to receive said tabs and said terminal leads therethrough, and said slots being closed at the other side by said sidewall so that when said filter is secured to said lamp base, said terminal leads will be firmly pressed in intimate contact against said tab means and maintained in electrical connection therewith; whereby said lamp assembly is adapted for mounting in said transparent panel and electrical connection to a source of electric current.

4. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base for supporting said lamp bulb;

c. a hollow, generally cylindrical filter having an opening at one end for receiving said lamp bulb therein;

d. a ball and socket arrangement located on said filter and said lamp hose for securing said filter onto said lamp base with said lamp bulb securely mounted within the enclosure defined by said filter and said lamp base so that said filter, lamp base and lamp bulb constitute said lamp assembly, whereby at least one ball or protrusion is locked into position in a corresponding detent or slot in the respective walls of said filter and said base; and

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said terminal leads; whereby said lamp assembly is adapted for mounting in said transparent panel and electrical connection to a source of electric current.

5. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base for supporting said lamp bulb;

c. a hollow, generally cylindrical filter having an opening at tone end for receiving said lamp bulb therein;

d. a bonding agent for securing said filter onto said lamp base with said lamp bulb securely mounted within the enclosure defined by said filter and said lamp base so that said filter, lamp base and lamp bulb constitute said lamp assembly; and

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said terminal leads; whereby said lamp assembly is adapted for mounting in a transparent panel and electrical connection to a source of electric current.

6. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base for supporting said lamp bulb, said lamp base including a cylindrical sidewall and an end wall having a screwdriver slot provided in the exterior portion of said end wall;

c. a hollow, generally cylindrical filter having an opening at tone end for receiving said lamp bulb therein;

d. means for securing said filter onto said lamp base with said lamp bulb securely mounted within the enclosure defined by said filter and said lamp base so that said filter, lamp base and lamp bulb constitute said lamp assembly; and

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said terminal leads; whereby said lamp assembly is adapted for mounting in a transparent panel and electrical connection to a source of electric current, with said screwdriver slot facilitating rotation of said lamp assembly.

7. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base for supporting said lamp bulb, the interior portion of said lamp base facing said lamp bulb having a flexible insulating material to protect the terminal leads of said lamp bulb and to provide a shock cushion for said lamp bulb;

c. a hollow, generally cylindrical filter having an opening at one end for receiving said lamp bulb therein;

d. means for securing said filter onto said lamp base with said lamp bulb securely mounted within the enclosure defined by said filter and said lamp base so that said filter, lamp base and lamp bulb constitute said lamp assembly; and

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said terminal leads; wherein said lamp assembly is adapted for mounting in a transparent panel and electrical connection to a source of electric current.

8. A lamp assembly as recited in claim **7**, wherein said insulating material comprises an insulating disc having a reflective surface on the side facing said lamp bulb.

4. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base for supporting said lamp bulb, said lamp base having a reflecting material coating on its inside surfaces facing said lamp bulb;

c. a hollow, generally cylindrical filter having an opening at one end for receiving said lamp bulb therein;

d. means for securing said filter onto said lamp base with said lamp bulb securely mounted within the enclosure defined by said filter and said lamp base so that said filter, lamp base and lamp bulb constitute said lamp assembly; and

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said terminal leads; whereby said lamp assembly is adapted for mounting in a transparent panel and electrical connection to a source of electric current.

10. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base for supporting said lamp bulb;

c. a hollow, generally cylindrical filter having an opening at one end for receiving said lamp bulb therein, and provided at its other end with a heat sink/reflector which forms the end wall for said filter;

d. means for securing said filter onto said lamp base with said lamp bulb securely mounted within the enclosure defined by said filter and said lamp base so that said filter, lamp base and lamp bulb constitute said lamp assembly; and

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said terminal leads; whereby said lamp assembly is adapted for mounting in a transparent panel and electrical connection to a source of electric current.

11. A lamp assembly as recited in claim **10**, wherein said heat sink/reflector comprises an aluminum disc having a reflective surface on the side facing the lamp bulb, while the other side is coated with a heat absorptive material.

12. A lamp assembly suitable for edgelighting a transparent panel, comprising:

a. a lamp bulb having terminal leads for connection in an electrical circuit;

b. a lamp base;

c. a hollow, generally cylindrical filter having an opening at one end for receiving said lamp bulb therein:

d. means for securing said filter onto said lamp base to form an enclosure for said lamp bulb which mechanically support said lamp bulb in fixed position between the inner walls of said lamp filter and said lamp base;

e. electrically conductive rigid tabs extending outward from the sides of said lamp assembly; and

f. openings in the sidewalls of said lamp assembly for receiving respective ones of said terminal leads therethrough, said terminal leads being pressed in intimate contact against said tabs and maintained in electrical communication therewith; whereby said lamp assembly is adapted for mounting in a transparent panel and electrical connection to a source of electric current.

13. A lamp assembly as recited in claim **12**, wherein said lamp bulb is supported in fixed position within said enclosure by means of its being trapped between the lamp base inner end wall and the inner walls of said filter.

14. A lamp assembly as recited in claim **12**, wherein said filter is removably secured to said lamp base by a position selective locking arrangement which maintains said filter and said lamp base in a predetermined axial relation.

15. A lamp assembly as recited in claim **14**, wherein said locking arrangement is a ball and socket located on said filter and said lamp base with at least one ball or protrusion locked into position in a corresponding detent or slot located in the respective walls of said filter and said base.

16. An illuminating device suitable for edgelighting a transparent panel, comprising:

a. a lamp assembly, said lamp assembly suitable for edgelighting transparent panels and including: a lamp bulb having terminals for connection in an electrical circuit; a lamp base for supporting said lamp bulb; a hollow, generally cylindrical filter having an opening at one end for receiving said lamp bulb therein; means for securing said filter onto said lamp base; and electrically conductive tabs extending outward from the sides of said lamp assembly and adapted for electrical connection with said lamp bulb terminals; and

b. a socket assembly including a socket ring portion adapted to receive said lamp assembly, and a spring locking means consisting of an internal bowed spring portion fitting into recesses formed along a portion of the interior walls of said socket ring and adapted to lockingly engage with said tabs on said lamp assembly, and an external portion extending outside of said socket ring and adapted for locking said socket within said transparent panel; whereby said lamp assembly is adapted to be inserted into said socket and locked into place by pressing said lamp assembly with said tabs against said socket and rotating said lamp assembly relative to said socket to compress the bowed spring portion of said contact spring locking means and permit said tabs to pass over center and lock into place in the recesses in said socket ring.