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L. E. MADANSKY
EDGE-LIGHTED PANEL ASSEMBLY

3,065,335

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Fig. 1

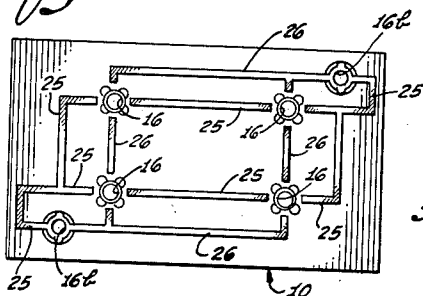


Fig. 2

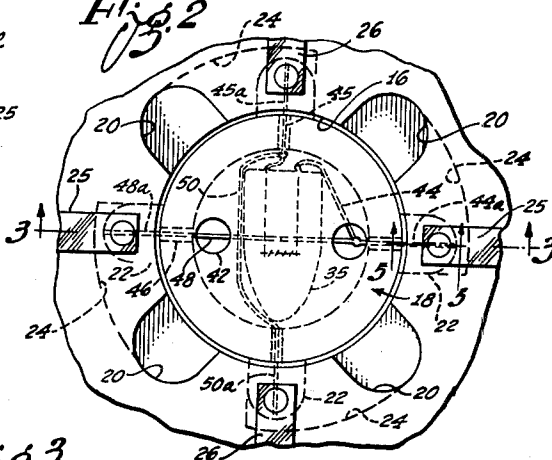


Fig. 4

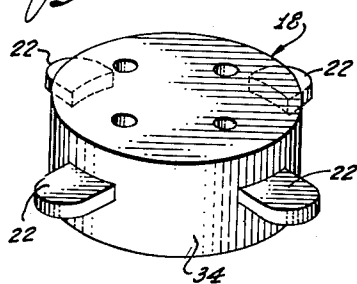


Fig. 3

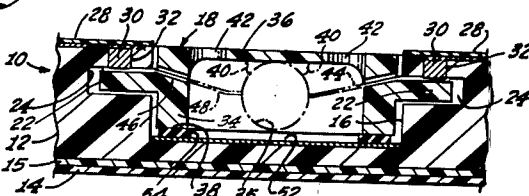


Fig. 6

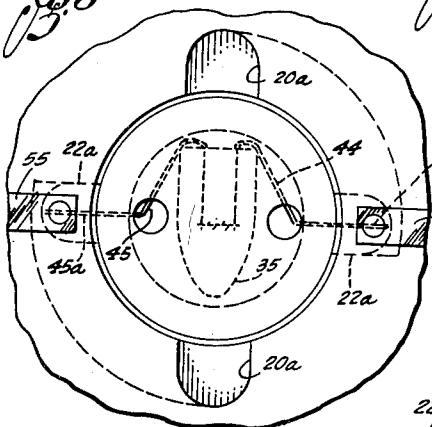


Fig. 7

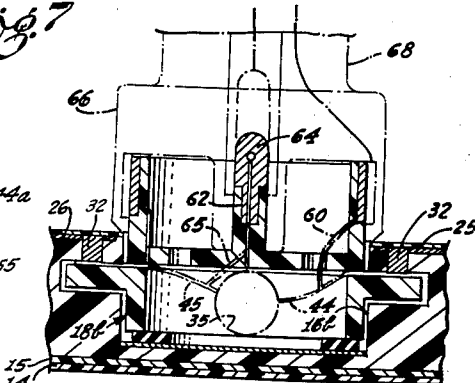
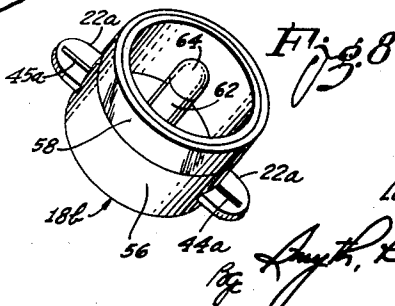
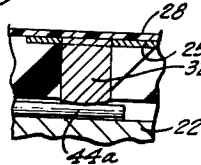


Fig. 5



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EDGE-LIGHTED PANEL ASSEMBLY

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This invention relates to a panel of the type commonly used on aircraft wherein the panel is made largely of transparent material and is internally edge-lighted to illuminate indicia on the panel. The indicia are formed by cut-outs in an opaque layer on the front face of the panel. More particularly, the invention relates to the incorporation of lamps in such a panel construction and the further incorporation of circuit means for energizing the lamps.

Heretofore the usual manner of providing for illumination of such a panel has been to bore holes completely through the panel, to receive lamp housing and to provide the necessary circuit conductors on one or both faces of the panel. In some instances, the conductors are printed circuit elements covered by a lamination of the panel. The lamp housings typically protrude from the front face of the panel to make them accessible for replacement of the enclosed lamp bulbs.

A serious disadvantage of such a panel construction is that the forwardly protruding lamp housings not only detract from the appearance of the panel but also, and more important, reduce the face area of the panel that is available for indicia. Another serious disadvantage is that it is difficult to avoid excessive voltage drop because the circuit conductors on the panel are inherently of high resistance and the circuit paths are relatively long. Consequently some lamps may burn dimly.

It is difficult to keep the circuit paths short for two reasons. In the first place, since the lamp housings protrude from the front face of the panel, they must avoid the indicia instead of being ideally distributed over the panel area. In the second place, even when placed on the back of the panel away from the indicia, the conductors must avoid numerous components such as switches, valve controls, indicator instruments, etc. Consequently, the conductors follow circuitous paths.

One proposed answer to these problems is to imbed long-life miniature lamp bulbs in the panel back of the front surface of the panel. For this purpose, recesses such as blind bores are provided on the back face of the panel and the miniature lamp bulbs are "potted" in these recesses. In other words, the lamp bulbs are installed in the recesses, connected to the circuit conductors on the panel, and then the recesses are filled with a suitable light-transmitting plastic material to imbed the lamp bulbs in a permanent manner.

Since the imbedded lamps do not take up any of the area on the front surface of the panel, this arrangement does make it possible to locate the lamps without regard for the indicia on the panel and the greater freedom for lamp location does permit some shortening of the circuit conductors. A serious disadvantage, however, is that the lamp bulbs cannot be readily replaced. In practice, a whole panel is discarded if one of the imbedded lamp bulbs fails prematurely.

The present invention achieves the same advantages but avoids the necessity of discarding the panel when an imbedded lamp bulb fails. Each lamp bulb is mounted in a light-transmitting lamp housing or shell that is adapted to be removably mounted in a recess on the back of the panel. The shell has exposed terminals connected to the enclosed lamp bulb and the installation of the shell in the recess automatically places the exposed terminals in contact with the circuit conductors of the panel.

In the present embodiment of the invention, the shell

has radial bayonet lugs to cooperate with and releasably engage corresponding bayonet grooves in the panel recess. As will be explained, important features of the invention relate to the provisions whereby the bayonet lugs themselves, together with associated structure of the panel, serve as means to complete the lamp circuits.

A feature of some practices of the invention is that conductor elements of the panel circuit terminate at a recess and the shell in the recess not only serves to connect the enclosed lamp bulb to the conductor elements but also serves as a conductor bridge across the recess. Thus, two conductors on opposite sides of the lamp circuit may intersect the recess and be physically interrupted by the recess but not functionally interrupted.

Such an arrangement in permitting conductors to intersect at lamp recesses affords greater freedom in the location of the conductors and thus makes it possible to reduce the length of the paths of current flow from the current source to the various lamps. The invention also contemplates the use of such shell with or without a lamp to serve as plug means to connect the circuitry on the panel to a current source. The paths of current may be shortened as much as desired by using shells on lamp housings to connect the lamp circuit to the current source at a plurality of points on the panel.

A further feature of the invention is the concept of coloring the lamp-enclosing capsules or shells to serve as filters for the transmitted light. The shells may, for example, be colored amber, red or green for this purpose.

The features and advantages of the invention may be understood from the following detailed description and the accompanying drawing.

In the drawing, which is to be regarded as merely illustrative:

FIG. 1 is a rear view of a panel constructed in accord with the invention;

FIG. 2 is a greatly enlarged fragment of FIG. 1 showing a lamp-enclosing shell mounted in a recess on the back side of the panel;

FIG. 3 is a fragmentary section taken as indicated by the line 3—3 of FIG. 2;

FIG. 4 is a perspective view of the shell;

FIG. 5 is a greatly enlarged fragmentary section taken as indicated by the line 5—5 of FIG. 3 and showing the manner in which conductor means carried by the lamp-enclosing shell makes contact with a circuit conductor on the panel;

FIG. 6 is a view similar to FIG. 2 wherein the lamp-enclosing shell has only two bayonet lugs instead of four and bridges a single pair of conductor elements instead of two pairs;

FIG. 7 is a fragmentary sectional view showing how a shell secured in a recess in the panel by bayonet lugs may serve as means to plug the panel into a source of current; and

FIG. 8 is a perspective view of the plug-in shown in FIG. 7.

FIG. 1, exemplifying a typical practice of the invention, shows the back face of a panel, the panel being generally designated by the numeral 10, and FIG. 3 shows in cross section the typical structure of such a panel. As indicated in FIG. 3, the panel is of multiple layer construction and includes a relatively thick main layer 12 of transparent or semi-transparent plastic material through which light may be transmitted throughout the length and breadth of the panel. The front face of the panel has a thin outer opaque layer 14 and a thin translucent layer 15 under the opaque layer. In a well-known manner, the opaque layer 14 has cut-outs in the form of letters, numerals, or other indicia, which indicia are illuminated by light transmitted through the main layer 12.

As indicated in FIG. 1, the rear face of the panel 10 is

provided with a plurality of circular recesses 16 which have the cross-sectional configuration shown in FIG. 3. The recesses 16 receive corresponding lamp housings or shells 18 of the configuration shown in FIGS. 3 and 4.

Each of the circular recesses 16 has four side pockets or bayonet grooves 20 to receive four corresponding bayonet lugs 22 of a lamp housing 18. Each of the bayonet grooves 20 is formed with an offset locking portion 24 and each of these locking portions may extend circumferentially 45°. By virtue of this construction, a lamp housing 18 may be inserted in a recess 16 with the bayonet lugs 22 of the lamp housing in the corresponding bayonet grooves 20 and then the lamp housing may be rotated 45° to shift the bayonet lugs into the locking portions 24 of the grooves to secure the lamp housing. In this particular embodiment of the invention, each recess 16 has two pairs of diametrically positioned bayonet grooves 20 with the bayonet grooves spaced 90° apart and the four bayonet lugs 22 have corresponding positions on the lamp housing 18.

The panel 10 is provided with suitable circuit means for energizing lamp bulbs in the various lamp housings 18. As indicated in FIG. 1, the circuit means may provide a first pair of conductors 25 on one side of the lamp circuit with the pair of conductors terminating at the recess and the circuit means may further include a second pair of conductors 26 on the other side of the circuit also terminating at the recess. In the construction shown, each of these pairs of conductors 25 and 26 are positioned diametrically of the recess with the four conductors 90° apart and with the four conductors positioned 45° from the entrances to the bayonet grooves 20. It is to be understood, however, that the pairs of conductors need not be positioned diametrically of a panel recess 16 and need not be spaced 90° apart.

The conductors 25 and 26 may comprise wires suitably mounted on the back of the panel, but in this instance, the conductors are printed circuit conductors on the back side of the panel. The conductors 25 and 26 are preferably imbedded in the transparent layer 12 of the panel and are covered by a protective layer 28 on the back face of the panel. The protective layer 28 may, for example, be a thin layer of epoxy resin.

In the preferred fabrication procedure, a bore 30 is provided from the back face of the panel 10 to each of the locking portions 24 of the bayonet grooves, as best shown in FIG. 3, and each of these bores is occupied by a body 32 of conducting material. In the fabrication procedure, each of the bores 30 is first filled with a viscous plastic material containing numerous silver particles. The viscous plastic material is cured to form the conducting body 32 and then the printed circuit elements are applied to the back face of the panel to join the imbedded conducting bodies 32. After the printed circuit elements are applied and cured, the protective epoxy layer 28 is applied. An important advantage of this procedure is that the viscous conducting plastic material initially placed in each of the bores 30 desirably bulges from the inner ends of the bore into the locking portions 24 of the bayonet grooves to serve as electrical contacts.

Each of the lamp shells or housings 18 has a cylindrical peripheral wall 34 dimensioned to fit into a circular recess 16, this cylindrical wall being made of light-transmitting material to permit the light from a lamp bulb 35 in the housing to enter the transparent panel layer 12 edgewise thereof. In this particular embodiment of the invention, each of the lamp housings or shells 18 is a one-piece cup-shaped member of a suitable plastic material in which the peripheral wall 34 is integral with a transverse back wall 36. Each lamp housing 18 is mounted in the corresponding recess 16 with the rim 38 of the peripheral wall 34 directed inwardly of the recess, as may be seen in FIG. 3. Thus the installed lamp housing cooperates with the panel recess to form a closed lamp chamber. The light-transmitting plastic material of the lamp housing 18 may be

colored to serve as a filter for the transmitted light. For example, the filtered light may be red, green or amber. The coloring may be applied to the surface of a lamp housing or may be incorporated in the plastic material from which the housing is fabricated.

As best shown in FIG. 3, the lamp bulb 35, which may be of a well-known type of miniature lamp bulb, is bonded to the transverse back wall 36 of the lamp housing by suitable cementitious material 40. Also, as indicated in FIG. 3, the back wall 36 of the lamp housing may be provided with a plurality of apertures 42 for ventilation of the lamp chamber formed by the housing.

As noted above, the two conductors on the two sides of the lamp circuit are interrupted at each of the panel recesses 16 and a feature of the invention is the manner in which each of the lamp housings 18 in the recesses provides means to bridge the two pairs of interrupted conductors. Thus a lamp housing 18 in a panel recess 16 not only connects the opposite sides of the enclosed lamp bulb to the two pairs of conductors 25 and 26 but also provides for bridging the two pairs of conductors respectively.

Each of the lamp bulbs 35 is provided with two wires 44 and 45 for connecting the lamp bulb to opposite sides of a lamp circuit. In this particular embodiment of the invention, the peripheral wall 34 of the lamp housing is provided with a small bore 46 adjacent each of the four bayonet lugs 22. A wire 44 from one side of the lamp bulb 35 extends through one of these small bores 46 and terminates on the surface of the corresponding bayonet lug 22. The end portion 44a of the wire 44 is bonded to the surface of the bayonet lug by suitable cementitious material, with the end portion of the wire exposed for contact with the corresponding conductive body 32 in the corresponding bore 30. In this instance, the wire 44 makes contact with one of the conductors of the diametrically opposite pair of conductors 25 adjacent the recess.

A short wire 48 is soldered or otherwise connected to the wire 44 and extends across the housing to pass through a small bore 46 to the diametrically opposite bayonet lug. The end portion 48a of the wire 48 is bonded to the second bayonet lug in the previously described manner and is exposed in a position for contact with the corresponding conductive body 32 of the second conductor of the pair of conductors 25. Thus the two wires 44 and 48 not only serve to connect one side of the lamp bulb 35 to one side of the lamp circuit but also serve as means to bridge the recess for electrically connecting the pair of circuit conductors 25.

In like manner, a second wire 45 from the other side of the lamp bulb 35 extends through a small bore 46 and has its end portion 45a exposed on the surface of a bayonet lug 22 to cooperate with one of the conductors of the second pair of conductors 26. A wire 50 which is soldered or otherwise connected to the wire 45 extends across the lamp housing and through the fourth small bore 46 with the end portion 50a of the wire exposed on the fourth bayonet lug 22 to make contact with the second conductor of the pair of conductors 26. Here again the two wires 45 and 50 not only serve to connect the second side of the lamp bulb to the second side of the lamp circuit, but also serve as means to bridge electrically the second pair of conductors 26. It is apparent that the end portions 44a, 45a, 48a and 50a of the wires constitute, in effect, conductive parts of the corresponding bayonet lugs on which they are mounted.

It is desirable to mask the inner end of each recess 16 with opaque material to keep the light from the enclosed lamp bulb from unduly illuminating the thin portion of the transparent plastic layer 12 that separates the lamp recess from the forward face of the panel. It is also desirable to reflect the heat away from the inner surface of the recess. It is further desirable to provide means for preloading each of the lamp housings in a

yielding manner to resist the tendency for vibration to dislodge the housing from the recess in which it is mounted.

A feature of the present embodiment of the invention is that all of these purposes may be served by a thin disk 52 of reflective material and an associated resilient means 54, the disk and resilient means being interposed under compression between the rim 38 of the lamp housing and the inner surface of the recess. The disk 52 may be a thin metal plate, for example an aluminum plate, or may be a piece of aluminum foil or may be a thin plastic sheet with an aluminum facing. In this embodiment of the invention, the resilient means 54 is simply a ring-shaped member of rubber-like material. It is apparent that the compression of the rubber-like ring 54 creates a yielding reaction force which urges the exposed wire on each of the bayonet lugs 22 into pressure contact with the corresponding conductive body 32.

The manner in which the invention serves its purpose may be readily understood from the foregoing description. In preparation for mounting one of the small shells or lamp housings 18 in a recess 16, a reflector disk 52 is placed in the recess against the inner surface of the recess and a rubber-like ring 54 is placed on the disk. The lamp housing is positioned with its four bayonet lugs 22 opposite the four bayonet grooves 20; the lamp housing is moved into the recess to position the bayonet lugs at the inner ends of the bayonet grooves with the rubber-like ring 54 under compression; and finally the lamp housing is rotated 45° to place the bayonet lugs at limit positions in the locking portions 24 of the bayonet grooves. The ventilation apertures 42 may serve as convenient means to receive a spanner-type tool for carrying out this operation.

The installing of a lamp housing 18 in this manner places the four exposed wire ends 44a, 45a, 48a and 50a in contact with one of the conducting bodies 32 so that the installation of the lamp housing not only connects the enclosed lamp bulb into the lamp circuit but also electrically bridges the pairs of circuit conductors 25 and 26 at the panel recess. It is apparent that it is not necessary to place the lamp housing at any particular position of rotation in installing the lamp housing in a panel recess in the described manner. Thus the pair of wires 44 and 48 may bridge the pair of circuit conductors 25 and the pair of wires 45 and 50 may bridge the pair of circuit conductors 26, as indicated in FIG. 2, or, alternatively, the pair of wires 44 and 48 may bridge the pair of circuit conductors 26 and the pair of wires 45 and 50 may bridge the pair of circuit conductors 25.

FIG. 6 shows how a lamp housing 18a may be provided with a single pair of diametrically opposite lugs to connect the enclosed lamp bulb to a single pair of conductors terminating at a recess 16a, the pair of conductors being on opposite sides of a lamp circuit. The lamp housing 18a in FIG. 6 is largely identical with the previously described lamp housing 18, as indicated by the use of corresponding numerals to indicate corresponding parts. The recess 16a differs from the previously described panel recess 16 merely in having a single pair of diametrical bayonet grooves 20a instead of two pairs and in having the locking portions of the grooves extend circumferentially 90° instead of 45°. A pair of conductors 55 of the lamp circuit on the panel extends to the opposite sides of the recess 16a and includes the usual conductive bodies 32 extending into the panel into the locking portions of the two locking grooves respectively.

The wire 44 of the lamp bulb has an exposed end portion 44a bonded to the corresponding bayonet lug 22a in the previously described manner, and the other wire 45 of the lamp bulb has an end portion 45a bonded and exposed on the other bayonet lug 22. When the lamp housing 18a is moved into the recess 16a with the bayonet lugs 22a in the two bayonet grooves 20a and then the lamp housing is rotated 90° to place the two bayonet

lugs in the locking portions of the bayonet grooves, the pair of exposed wire ends 44a and 45a are placed in contact with the pair of circuit conductors 55.

FIGS. 7 and 8 show how a lamp housing 18b similar to the lamp housing 18a in FIG. 6 may be modified to serve as plug means for plugging the lamp circuit on the panel into a current source. The lamp housing 18b in FIGS. 7 and 8 is similar in construction to the lamp housing 18a, as indicated by the use of corresponding numerals to indicate corresponding parts. The lamp housing is formed with a plastic skirt 36 concentric to the peripheral wall of the housing and this skirt carries a conductor ring 58 which is connected to the wire 44 by a branch wire 60. The lamp housing 18b is further provided with an axial prong 62 which incorporates a conductor nose 64. The conductor nose 64 is connected to the second wire 45 by a branch wire 65.

As indicated in phantom in FIG. 8, the conductor ring 58 and the axial prong 62 of the lamp housing 18b are adapted to mate in a well known manner with a socket fitting 66 on the end of a dual conductor cable 68 to connect the conductor ring 58 and the conductor nose 64 to opposite sides of a current source. It is apparent that the lamp housing 18b in FIG. 8 not only serves to connect the lamp bulb 35 to the lamp circuit on the panel but also serves to connect the lamp circuit to a current source for energization of the lamp circuit.

By way of illustration, FIGS. 1 and 8 show how two lamp housings 18b may be mounted in corresponding recesses 16b in the previously described panel to energize the lamp circuit at two widely spaced points in the lamp circuit. This arrangement shortens the paths of current flow and thus minimizes the voltage drop in the panel lamp circuit. A previously mentioned conductor 25 terminates at one side of each recess 16b and a previously mentioned conductor 26 terminates at the other side of the recess. Thus when the two lamp housings 18b are placed in the two panel recesses 16b in the manner shown in FIG. 7 and are each connected to a current source by a cable 68, the lamp housing connects the panel circuit to the current source at widely spaced points on the panel. Obviously, the lamp bulbs may be omitted from the two housings 18b if the additional illumination is not needed.

My description in specific detail of the selected practices of the invention will suggest various changes, substitutions and other departures from my disclosure within the spirit and scope of the appended claims. For example, the lamp bulb 35, which is shown in FIGS. 2 and 3 as lying with its longitudinal axis parallel with the planes of the panel 10, may be turned with its axis perpendicular to the planes of the panel in those instances where a relatively thick panel is used.

I claim:

1. In an edge-lighted panel assembly, the combination of: a panel having a light-transmitting layer, said panel having at least one recess extending into said layer from one face of the panel; a shell having a peripheral wall of light-transmitting material fitting into said recess, said shell forming a lamp chamber; a lamp substantially smaller than said chamber mounted in the chamber; means securing said shell in said recess; circuit means on said panel including two conductors on opposite sides of a circuit terminating at said recess; conductor means carried by said shell and connected to said lamp, said conductor means being positioned on the shell in contact with said two conductors to complete a circuit through the lamp; a reflector positioned across the inner end of said shell at the installed position of the shell and blocking rays from the lamp towards the other face of the panel and to reflect heat from the lamp back towards the open side of the recess; and apertures in said shell on the open side of the recess for ventilation of said chamber.

2. In an edge-lighted panel assembly, the combination of: a panel having a light-transmitting layer and having

at least one blind recess extending into said layer from the back face of the panel, said recess being formed with a pair of bayonet grooves; circuit means on the panel including two conductors adjacent the back face of the panel on opposite sides of a circuit having exposed portions adjacent said grooves respectively; a lamp housing having light-transmitting walls enclosing a lamp bulb, said housing fitting into said recess wholly between the plane of the two faces of the panel and having a pair of bayonet lugs releasably engaging said bayonet grooves respectively; and a pair of conductor means carried by said housing and electrically connected to said lamp bulb, said pair of conductor means extending to said lugs respectively and having exposed portions at the lugs in contact with said exposed portions of said two conductors respectively.

3. In an edge-lighted panel assembly, the combination of: a panel having a light-transmitting layer and having at least one blind recess extending into said layer from the back face of the panel, said recess being formed with a pair of bayonet grooves; circuit means on the panel including two conductors adjacent the back face of the panel on opposite sides of a circuit having portions exposed adjacent said grooves respectively; a lamp housing having light-transmitting walls enclosing a lamp bulb, said housing fitting into said recess and having a pair of bayonet lugs releasably engaging said bayonet grooves respectively; a pair of conductor means carried by said housing and electrically connected to said lamp bulb, said pair of conductor means extending to said lugs respectively and being exposed at the lugs in contact with said exposed portions of said two conductors respectively; and resilient means interposed under compression between the housing and the inner end of said recess and placing said bayonet lugs under stress for resistance of the housing to vibration.

4. Means for illumination of an edge-lighted panel of the character described, comprising: a panel having a light-transmitting layer, said panel having a recess extending into said layer from one face of the panel, said recess having a first pair and a second pair of bayonet grooves; circuit means on the panel including a first pair of conductors on one side of a circuit exposed in said first pair of grooves respectively and including a second pair of conductors on the other side of the circuit exposed in said second pair of grooves respectively; a lamp housing having walls of light transmitting material enclosing a lamp bulb and fitting into said recess, said housing having a first pair of bayonet lugs and a second pair of bayonet lugs fitting into said first and second pairs of bayonet grooves respectively and removably securing the lamp housing in the recess; a first conductor means carried by said lamp housing and electrically connected to one side of said lamp bulb, said conductor means having portions exposed at surfaces of said first pair of lugs respectively in contact with said first pair of conductors; and a second conductor means carried by said housing and connected to the second side of said lamp, said second conductor means having portions exposed at the surfaces of said second pair of lugs respectively in contact with said second pair of conductors, said first and second conductor means bridging said first and second pairs of conductors respectively as well as connecting the opposite sides of the lamp bulb to the first and second pairs of conductors respectively.

5. Means for illumination of an edge-lighted panel of the character described, comprising: a panel having a light-transmitting layer, said panel having a recess extending into said layer from one face of the panel, said recess having a first pair and a second pair of bayonet grooves, each of said grooves having a locking portion; circuit means on the panel including a first pair of conductors on one side of a circuit exposed in the locking portions of said first pair of grooves respectively, said circuit means including a second pair of conductors on

the other side of the circuit exposed in the locking portions in the second pair of grooves respectively; a lamp housing having a peripheral wall of light-transmitting material enclosing a lamp bulb and dimensioned to fit into said recess, said housing having a first pair of bayonet lugs and a second pair of bayonet lugs fitting into said first and second pairs of bayonet grooves respectively and engaging the locking portions of the grooves to retain the lamp housing in the recess; a first conductor means carried by said housing and electrically connected to one side of said lamp bulb, said conductor means being exposed at the locking portions of said first pair of grooves respectively and contacting said first pair of conductors respectively; and a second conductor means carried by the housing and connected to the second side of said lamp bulb, said second conductor means being exposed at the locking portions of said second pair of grooves respectively and contacting said second pair of conductors respectively, said first and second conductor means bridging said first and second pairs of conductors respectively as well as connecting the opposite sides of the lamp bulb to the first and second pairs of conductors respectively.

6. In an edge-lighted panel assembly, the combination of: a panel having a light-transmitting layer and having at least one circular blind recess extending into said layer from one face of the panel, said recess being formed with a pair of bayonet grooves; circuit means on the panel including two conductors on opposite sides of a circuit having exposed portions at said grooves, respectively; a circular lamp housing, said housing enclosing a lamp bulb and having a circular peripheral wall of light-transmitting material fitting into said recess with the rim of the wall directed inwardly of the recess and having a pair of bayonet lugs releasably engaging said bayonet grooves respectively; a pair of conductor means carried by said housing and electrically connected to said lamp bulb, said pair of conductor means extending to said lugs respectively and having exposed portions at the lugs in contact with said exposed portions of said two conductors respectively; and a thin body of resilient rubber-like material interposed in compression between the rim of said housing and the inner end of the recess sealing off the interior of the recess stressing said lugs for resistance to vibration and pressing the exposed portions of said pair of conductor means against the exposed portions of said pair of conductors.

7. In an edge-lighted panel assembly, the combination of: a panel having a light-transmitting layer and having at least one circular recess extending into said layer from one face of the panel, said recess being formed with a pair of bayonet grooves; circuit means on the panel including two conductors on opposite sides of a circuit having exposed portions at said grooves, respectively; a circular lamp housing, said housing enclosing a lamp bulb and having a circular peripheral wall of light-transmitting material fitting into said recess with the rim of the wall directed inwardly of the recess and having a pair of bayonet lugs releasably engaging said bayonet grooves respectively; a pair of conductor means carried by said housing and electrically connected to said lamp bulb, said pair of conductor means extending to said lugs respectively and having exposed portions at the lugs in contact with said exposed portions of said two conductors respectively; a reflector disk reflecting light from the lamp bulb back towards the lamp bulb; and a thin circular body of resilient rubber-like material, said disk and thin body being interposed under compression between said rim of the housing wall and the inner surface of said recess, the resiliency of the thin body stressing said bayonet lugs for resistance to vibration and pressing the exposed portions of said pair of conductor means against the exposed portions of said pair of conductors.

8. In an edge-lighted panel assembly, the combination of: a panel having a light-transmitting layer and having

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at least one recess extending into said layer from one face of the panel, said recess being formed with a pair of bayonet grooves; circuit means on the panel including two conductors on opposite sides of a circuit having exposed portions adjacent said grooves respectively; a lamp housing having light-transmitting walls enclosing a lamp bulb, said housing fitting into said recess and having a pair of bayonet lugs releasably engaging said bayonet grooves respectively; a pair of conductor means carried by said housing and electrically connected to said lamp bulb, said pair of conductor means extending to said lugs respectively and having exposed portions at the lugs in contact with said exposed portions of said two conductors respectively; and a pair of connector elements mounted on said housing and connected to said pair of conductor means respectively, said connector elements being exposed and positioned for plugging said circuit means into a current source.

9. In an edge-lighted panel assembly, the combination of: a panel having a light-transmitting layer and having at least one blind recess extending into said layer from the back face of the panel, said recess being formed with a pair of bayonet grooves each of said grooves having an offset locking portion, said panel having bores extending from said locking portions of the grooves respectively to said back face of the panel; circuit means on the panels including two conductors adjacent the back face of the panel on opposite sides of a circuit, said two conductors extending to said bores respectively and including bodies of conducting material extending through the bores to the locking portions of the grooves; a lamp housing lying wholly between the planes of the two faces of the panel and having walls of light-transmitting material enclosing a lamp bulb, said housing fitting into said recess and having a pair of bayonet lugs entering said bayonet grooves and engaging said locking portions of the grooves respectively to retain the housing in the recess; and a pair of conductor means carried by said housing and electrically connected to opposite sides of said lamp bulb, said pair of conductor means extending to said pair of lugs respectively and having exposed portions on the outer surfaces of the lugs, said exposed portions being positioned in contact with said two bodies of conducting material respectively.

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10. A combination as set forth in claim 9 which includes resilient means interposed under compression between said housing and the surface of said recess and placing said bayonet lugs under stress for resistance of the housing to vibration and pressing said exposed portions of the pair of conductor means against said bodies of conducting material respectively.

11. In an edge-lighted panel assembly, the combination of:

- 10 a panel having a light-transmitting layer and having a blind bore extending into said layer from the back face of the panel and terminating short of the front face of the panel, said bore having two peripherally spaced side pockets;
- 15 circuit means on said panel including two conductors extending to said two side pockets respectively;
- 15 a non-conducting body in said recess;
- 20 a pair of electrical connector elements mounted on said body and protruding therefrom for plugging into an emf source; and
- 20 a pair of lugs extending laterally from said body into said two side pockets respectively in positive engagement with the material of the panel to retain the body in the blind bore, at least parts of said lugs being conductive and being connected to said pair of connector elements respectively and being in electrical communication with said two conductors respectively at said side pockets for connecting the two conductors with said source.

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