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[54] ELECTRICAL FIXTURE CASE
1 Claim, 6 Drawing Figs.

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[50] **Field of Search**..... 339/147,
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[56]

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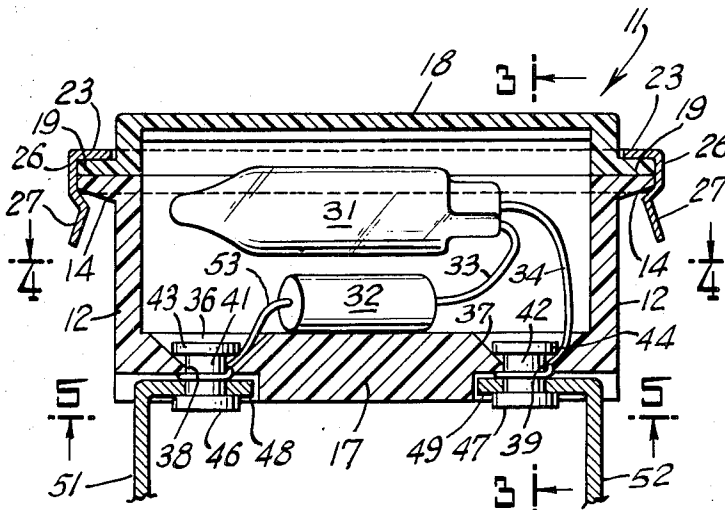
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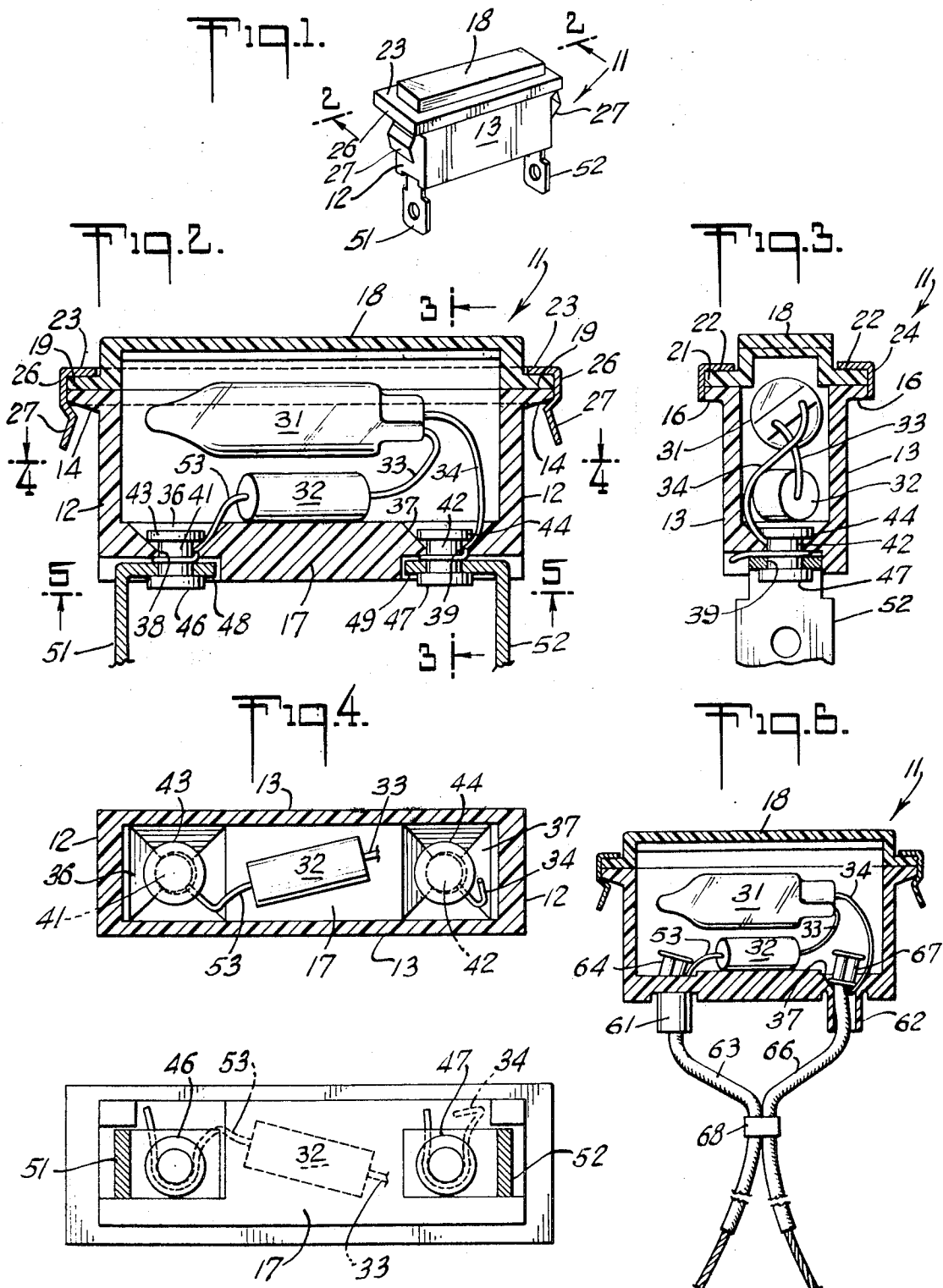
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ABSTRACT: An electrical fixture case having interior funnel recesses and guides for accommodating rivet or wire connections.





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ELECTRICAL FIXTURE CASE

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to electrical fixture cases and, more particularly, to a boxlike case made of insulating material and containing electrical elements therein, said fixture case having funnel-shaped recesses leading to apertures in said case whereby electrical connector elements such as rivets or wire crimping elements will be nested securely therein for connection to wires or conductor elements extending through said aperture.

2. Description of the Prior Art

Prior art fixture cases having apertures through which lead wires extend for connection with electrical elements within said case lack any provision for anchoring securely various connector elements such as rivets or wire crimping elements in position. They also provide obstacles for the quick and easy assembly of such devices when lead wires are to be laced through the case apertures for connection to the electrical elements located in the interior of the case. It has been found that difficulty is encountered in lacing lead wires through small apertures in fixture cases by manual means since such apertures are of only slightly greater diameter than said lead wires.

SUMMARY OF THE INVENTION

The foregoing disadvantages are overcome by providing a funnel-shaped recess within the fixture case leading to each of the leadline or electrical connector apertures whereby said funnel-shaped recesses perform the following functions:

1. Where rivet studs are used as connectors between the interior and exterior of the switch case, the shanks of said rivet studs extend through the apertures while the rivet heads thereon are nested into said rivet recesses so that they may be secured firmly in position. Furthermore, when rivets are used, the funnel-shaped recess may be pyramidal in shape whereby a connector wire has room at the angle formed by two adjacent walls of said pyramid to bypass the head of the rivet without disturbing the alignment of the latter within the case aperture.

2. Where flexible electrical leadlines are to be connected to electrical elements within the case, said lead wires may be laced easily through the apertures by passing the ends of said lead wires into respective funnel-shaped recesses which offer a comparatively wide target for the ends of the lead wire which is then guided by the sloping walls of the recess into and through the case aperture. The metal crimped element which connects the lead wire to a conductor wire in the interior of the case also becomes nested, at least partially, within said funnel-shaped recesses so that it may be firmly secured therein in order to stabilize the electrical elements that are connected through said crimped element to its respective lead wire.

These and other novel features and advantages of the present invention will be described and defined in the following specification and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the case embodying the present invention;

FIG. 2 is a greatly enlarged section view taken on line 2—2 of FIG. 1, some parts being shown in elevation and some parts being broken away;

FIG. 3 is a view taken on line 3—3 of FIG. 2;

FIG. 4 is a view taken on line 4—4 of FIG. 2, some parts being shown in elevation and some parts being shown in dotted outline;

FIG. 5 is a view taken on line 5—5 of FIG. 2, some parts being shown in dotted outline; and

FIG. 6 is a view similar to FIG. 2, of another embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawing in detail, there is shown a pilot light case, generally designated 11, made in a rectangular boxlike shape made of insulating material such as Bakelite, nylon, or the like, said case having a pair of spaced-apart end walls 12 and a pair of spaced-apart sidewalls 13, integrally formed with each other.

The upper end walls 12 terminate in integrally formed, outwardly extending flanges 14, while the upper ends of sidewalls 13 terminate in integrally formed, outwardly extending flanges 16, said flanges 14 and 16 forming a unitary rim at the upper end of case 11.

Integrally formed with the bottom end portions of walls 12 and 13 is a floor 17. The upper, open end of case 11 is enclosed by a transparent or translucent rectangular window element 18 formed of lucite or the like, said window element having end flanges 19 and side flanges 21 which together form a unitary rim which coincides dimensionally with the rim formed by flanges 14 and 16 of case 11.

Window element 18 is secured to case 11 by means of a sheet metal rectangular frame comprising spaced-apart side elements 22 resting upon flanges 21, and end elements 23 resting upon flanges 19. End elements 22 have integrally formed, downwardly extending leaves 24 which enclose the edges of flanges 16 and 21, while end elements 23 have integrally formed, downwardly extending leaves 26 which enclose end flanges 14 and 19. Leaves 26 have integrally formed, downwardly extending spring bow clamps 27 which releaseably secure said frame in position to cause window 18 to remain in position upon case 11. Access to the interior of case 11 is readily obtained by urging clamps 27 outwardly to release the clamping frame and to remove both said frame and window element 18 from case 11.

Located in the interior of case 11 is a neon indicator tube 31 or the like, and a suitable resistor 32. A leadline 33 connects resistor 32 to one electrode, not shown, in tube 31 while the other electrode, not shown, of tube 31 is connected to a leadline 34.

The interior surface of floor 17 has a pair of spaced-apart funnel-shaped recesses 36 and 37, said recesses being conical or pyramidal in form with their inwardly converging walls terminating in respective circular apertures 38 and 39 near the bottom portion of floor 17.

In the embodiment shown in FIGS. 1 through 5 of the drawing, recesses 36 and 37 are pyramidal in shape and within them are nested terminal studs 41 and 42, respectively, said studs being retained in position by their respective integrally formed heads 43 and 44. The lower ends of studs 41 and 42 extend through apertures 38 and 39, respectively, and below the surface of suitable cutout recesses in floor 17 and terminate in heads 46 and 47, respectively, which secure arms 48 and 49 of circuit terminals 51 and 52, respectively, to the bottom of floor 17.

Resistor 32 is electrically connected by way of lead line 53 to stud 41 while neon bulb 31 is electrically connected by way of leadline 34 to stud 42. It will be noted that when recesses 36 and 37 are formed in a pyramidal shape, an angular space is provided at the juncture between two adjacent walls of said recess to permit leadlines 34 and 53 to bypass the respective heads 44 and 43 of studs 42 and 41, respectively, whereby said heads are properly nested firmly within said recesses while the shanks of said studs are coaxially located within apertures 38 and 39, respectively. Thus, said studs are properly aligned for securing arms 48 and 49 of terminal lugs 51 and 52 to floor 17.

Another embodiment of the invention as shown in FIG. 6 has essentially the same components as those shown in FIGS. 1—5, except for the omission of terminal studs 41 and 42 and circuit terminals 51 and 52, respectively. The floor 17 of case 11, however, is altered by integrally formed tubes 61 and 62 located at the lower ends of funnel-shaped recesses 36 and 37, respectively. In FIG. 6, funnel recess 36 at the left is not shown in order to illustrate tube 61 in elevation while funnel-shaped

recess 37 at the right is illustrated in order to show tube 62 in cross section.

In the embodiment shown in FIG. 6, the electrical components of the switch are assembled outside of case 11 by connecting neon tube 31 by means of conductor wire 33 to resistor 32; thereafter, resistor 32 is connected by means of conductor wire 53 to the upper end of an insulated leadline 63. That connection is made by stripping the insulation of leadline 63 a short distance, after which the end of conductor wire 53 is electrically connected to the conductor wires of lead line 63 by means of a crimped element 64.

The upper end of a similar insulated lead line 66 is connected to the end of conductor wire 34 by means of crimped element 67. Crimped elements 64 and 67 are connected to the respective junctions by means of a suitable crimping tool or the like. In some embodiments, the connection between conductor wires 53 and 34 to leadlines 63 and 66, respectively, may be made by soldering or other suitable electrically connecting means.

With window 18 separated from case 11, leadlines 63 and 66 are then laced through the interior of case 11, through respective funnel recesses 36 and 37 and through tubes 61 and 62, respectively. This is done while neon tube 31 and resistor 32 are connected to leadlines 63 and 66, as described hereinbefore.

It will be noted that the lacing of leadlines 63 and 66 through tubes 61 and 62 is facilitated by the provision of funnel recesses 36 and 37, respectively, since the generally semiskilled or unskilled laborer performing the assembly function would otherwise have difficulty in performing this lacing operation if said funnel recesses were not provided. If the upper surface of floor 17 were completely flat and it would have been necessary to lace lead lines 63 and 64 through apertures in tubes 61 and 62 whose diameters are only slightly larger than the outside diameters of said leadlines, it is evident that such lacing would be extremely difficult for even skilled labor. The funnel-shaped recesses 36 and 37, which may be conical or pyramidal in shape, serve to guide the lower free ends of leadlines 63 and 66 properly and easily into the interior channel formed within tubes 61 and 62, respectively.

The lacing of leadlines 63 and 66 through tubes 61 and 62, respectively, simultaneously carries the assembly of bulb 31, resistor 32, and crimped elements 64 and 67 into the interior of case 11, after which window 18 is secured over the top of said case by the frame comprising elements 22 and 23. Leadlines 63 and 66 emerging from tubes 61 and 62 are pulled downwardly and drawn together to be secured to each other by a crimped element 68 whereby crimped elements 64 and 67 are drawn downwardly at least partially to rest within funnel-shaped recesses 36 and 37, respectively. Therefore, the tension applied by crimped element 68 to leadlines 63 and 66 firmly secures the whole assembly of tube 31, resistor 32, and crimped connection elements 64 and 67 within case 11 so that said assembly is ready for interconnection by way of the free ends of leadlines 63 and 66 to the electrical apparatus with which it cooperates.

Although the present invention has been described with reference to particular embodiments and examples, it will be apparent to those skilled in the art that variations and modifications can be substituted therefor without departing from the principles and true spirit of the invention.

I claim:

1. An electrical fixture comprising a boxlike case made of insulating material, said case having at least one electrical component in the interior thereof, at least one aperture in the bottom of said case for connection of said component with an electrical circuit externally of said case, a wide-mouthed funnel-shaped recess in the bottom of said case and having sloping walls terminating in a small diameter aperture, an electrically conductive stud extending through said aperture for connecting said component to said external electrical circuit, a head on said stud resting securely within said funnel-shaped recess, said funnel-shaped recess being pyramidal in shape to form at least one space adjacent said stud head, and a conductor wire, one end portion of said wire being connected to the shank of said stud and extending inwardly into the interior of said case and bypassing said head through said space at the juncture between two adjacent sloping walls of said pyramidal-shaped recess, the other end of said wire being connected to said electrical component.

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