

Sept. 9, 1969

V. RUSSENBERGER

3,466,648

ONE-PIECE LUMINOUS WARNING DEVICE

Filed April 4, 1966

2 Sheets-Sheet 1

Fig.1.

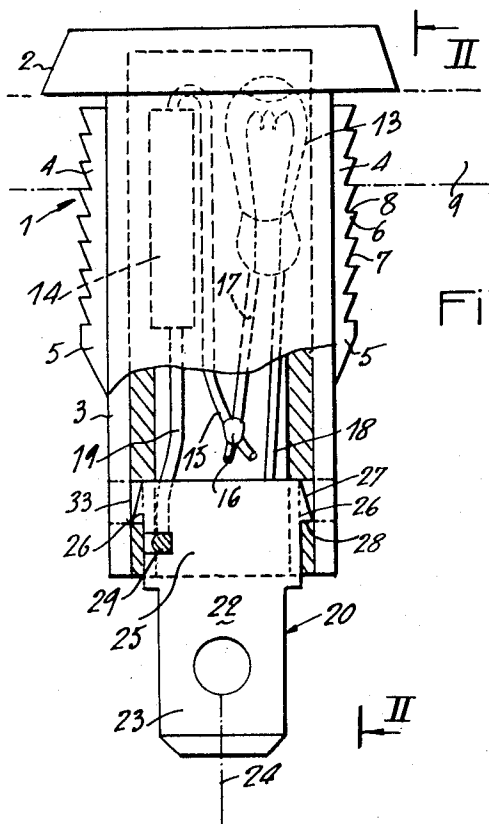


Fig.3.

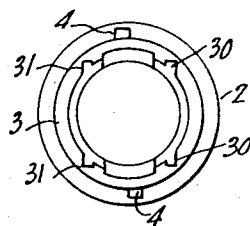


Fig.2.

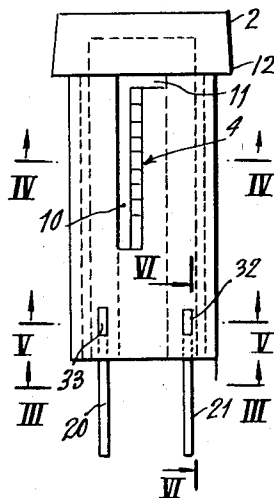


Fig.4.

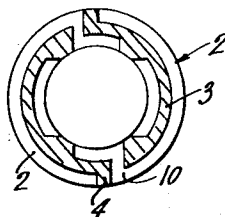


Fig.5.

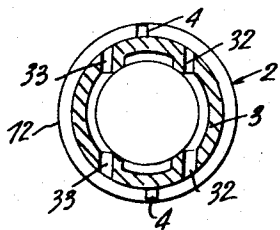
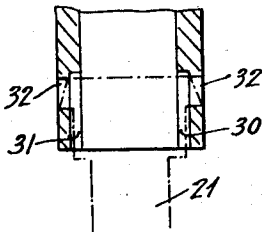


Fig.6.



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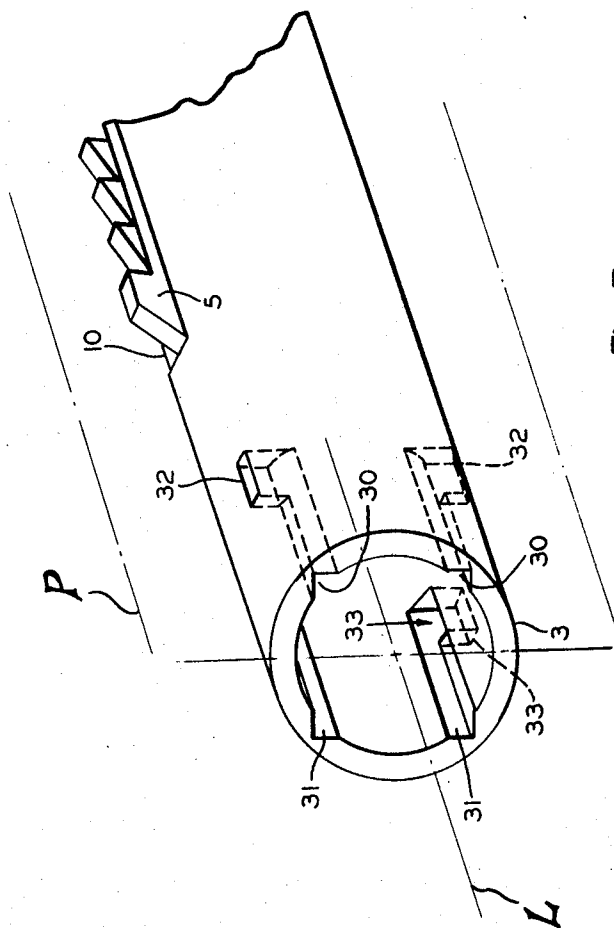


Fig. 7

1

2

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ONE-PIECE LUMINOUS WARNING DEVICE

Victor Russenberger, 40 Ave. de la Source,
Nogent-sur-Marne, France

Filed Apr. 4, 1966, Ser. No. 539,698

Claims priority, application France, Apr. 7, 1965,
12,344

Int. Cl. G09f 9/00; H02b 1/06; H01r 13/24

U.S. Cl. 340—381

5 Claims

ABSTRACT OF THE DISCLOSURE

A miniature tell-tale or warning lamp assembly requiring a single molded plastic element comprising a casing having an externally-projecting integral rib for mounting the assembly in a hole of a support, with slots cut in the casing to allow the rib to be compressed inwardly when the assembly is pushed into the hole, and with slots and parallel faces at the rear end of the casing to allow flat terminal blades to be locked in place at the rear end of the assembly.

The present invention relates to a new one-piece luminous warning device more particularly intended to be mounted on the supply circuit of various electrical appliances so as to form a luminous warning signal and indication of undervoltage.

Some objects of the invention are to provide a simple but mechanically-strong lamp assembly, and particularly one which is economical to manufacture, and easily removable and replaceable.

According to the invention, the one-piece luminous warning device comprises a body of insulating material, transparent or translucent, comprising a tubular casing having external means for attaching the assembly to a support that are radially distortable when said casing is inserted in the hole of the support, and having internal openings into which widened portions of from two metal connecting blades may be anchored, with the connecting terminal blades electrically connected up to at least one miniature warning light situated inside the casing.

Various other characteristics of the invention will moreover be revealed by the detailed description which follows.

One embodiment of the invention is shown by way of non-restrictive example in the attached drawing.

FIGURE 1 is an elevation, partly in section, of the device according to the invention.

FIGURE 2 is an elevation on a smaller scale, taken substantially along the line II—II of FIG. 1.

FIGURE 3 is a view taken along the line III—III of FIG. 2 with blades 20 and 21 removed.

FIGURES 4 and 5 are cross sections taken substantially along the lines IV—IV and V—V of FIG. 2.

FIGURE 6 is a partial elevation-section taken substantially along the line VI—VI of FIG. 2.

FIGURE 7 is an isometric view of a portion of the tubular casing of the invention.

According to the drawings, and more particularly FIGS. 1 and 2, the luminous warning device, according to the invention, chiefly comprises a tubular body 1 advantageously made of an insulating material, preferably a transparent or translucent moulded plastic material. The moulding operation is effected so that the body 1 has a head 2 from which a tubular cylindrical casing 3 extends rearwardly to be inserted in a corresponding hole or bore in a support wall or plate of an electrical device on the supply circuit of which the lamp assembly is to be installed. To this end, the tubular casing 3 includes two axially projecting diametrically-opposed ribs 4, 4 which extend appreciably rearwardly from the head 2, along ap-

proximately two-thirds or more of the length of the casing 3. These ribs 4, 4 formed on the peripheric external wall of the casing 3 are provided with rear sloping ramps 5, and are provided with teeth 6 along their entire length. Each tooth is defined by a sloping face 7 and by an abrupt face 8 which tends to oppose the disengaging of the body 1 from the support 9, which is diagrammatized in dotted lines. As can be seen in FIG. 1, the length of the axial ribs 4 and the number of teeth 6 provided are chosen to allow mounting of the body 1 in supports 9 having various thicknesses, up to but not exceeding the effective length of the ribs 4.

The casing 3 advantageously has a longitudinally-extending slot 10, as can be seen in FIG. 2, axially bordering each rib 4. The front end of each slot 10 terminates in a circumferentially-extending opening 11 which is provided on the casing next to a rear shoulder 12 formed by enlarged head portion 2. Each opening 11 extends circumferentially sufficiently far as to make that part of casing 3 between said opening 11 and slot 10, which part supports a rib 4, radially resilient or inwardly bendable, thereby enabling that part of the casing 3 to be subjected to an appreciable reduction of its external diameter. As will be clearly understood, this diameter reduction is used for facilitating the inserting of the casing 3 into the hole or bore of the support 9. The reaction to this resilient distortion tends, after the assembly is completely engaged, to firmly press the ribs 4 against the edges of the hole or bore of the support 9, thereby more solidly holding the assembly 1, with the abrupt faces 8 of the teeth 6 engaged and co-operating with the internal face of the support 9.

Although not shown, it should be understood that the body 1 can be associated with at least one thick washer threaded on to rear casing 3, to be brought into contact with the shoulder 12 of head 2, so as to obtain an effective engaging of the first teeth 6 when the support 9 has a relatively slight thickness. Likewise, we perceive that the casing 3, described above as having a cylindrical shape, can comprise a different number of ribs 4, one or three, for instance, according to the amount of locking required. One also may make the casing 3 of parallelepipedic shape, for example, extending rearwardly from a corresponding head 2, and in this case, said casing can include a given even or odd number of ribs 4 projecting from the flat faces which comprise the external contour of the parallelepipedic casing.

The cylindrical casing 3 of the tubular body 1 is intended to enclose a telltale lamp 13, preferably of the neon kind, so that the one-piece device according to the invention, has considerable working and lasting characteristics. It is obvious that in certain cases, the casing 3 can also incorporate a filament lamp according to the particular purposes for which the device is considered. In the example described above, the neon lamp 13 is associated with a resistance element or resistor to which one of the leads 15 is connected, for example, by soft soldering 16, to one of the conductors 17 of the lamp 13. The other conductor 18 of the latter and the free lead 19 of the resistance 14 are respectively electrically connected up to two identical connection terminals 20 and 21.

As shown in FIG. 1, each connecting terminal is formed by a small metal plate 22, preferably of bronze, with a lug portion 23 for connecting in any suitable manner, to an electric conductor 24 diagrammatized in dotted lines. The lug 23 has an extended portion or head 25 having a width exceeding that of said lug portion 23. The top terminal part of the head 25 is also cut so as to have two laterally-extending widened portions or spikes each respectively defined by a sloping face 27 sloping outwardly in the direction of the lug 23 an abrupt face 28. The connection of each terminal 20 or 21 with the corresponding lead 19 or conductor 18, can be effected in

several different ways by soldering, clipping or else by forcible insertion of the conductor into a notch 29, made, for instance, in the head portion 25 of the terminal blade.

The assembly formed as described above by the association of a telltale lamp 13, sometimes associated with a resistance 14, and including two connecting terminals 20 and 21, is normally inserted inside the tubular casing 3 in which it is held and definitely locked in place to form, with the body 1, a one-piece warning signal device. To this end, the casing 3 is preferably made directly by moulding so that its inside wall has two pairs of faces 30, 30 and 31, 31 facing each other in two parallel planes on opposite sides of a diametrical plane which passes, for instance, through the ribs 4, 4, as best seen in FIG. 7, wherein the plane is indicated by dashed lines at P. Each pair of faces 30, 31 has a distance between them corresponding to the width of the head portion 25 of the connecting terminals 20 and 21. These faces respectively terminate as can be seen more clearly in FIGS. 5 through 7, in openings 32 and 33 made crosswise in the casing 3.

To ensure the positioning of the working assembly described above, one proceeds, after definitely joining the various elements forming said assembly, with the preliminary engaging of the telltale lamp 13 as well, sometimes with that of the resistance 14. The head portion 25 of each connecting terminal 20 and 21 is then inserted in the corresponding grooves 30 or 31. As already mentioned above, the spikes 26 provide a width exceeding the distance between the grooves 30 or 31, so that it is necessary to subject each connecting terminal to an appreciable axial thrust to cause, by resilient distortion of the peripheric wall of the casing 3, the insertion of the spikes 26 into the grooves 30 or 31. This insertion is carried out until the spikes 26 seat in the openings 32 and 33, into which they totally penetrate as shown in FIG. 1. The abrupt faces 28 of the spikes or teeth 26 then form, in co-operation with the corresponding walls of the ports, abutments opposing the disengaging of the connecting terminals 20 and 21 which are also fixed in a maximum forward position by the front edges of the grooves 30 or 31, as shown in FIG. 6.

As can be seen from the foregoing, the simple but strong design of the device only requires slight assembly operations so that it can be mass-produced at a low unit cost price. This important advantage makes its application possible for use as a warning telltale device or for indication purposes even for cheap electrical appliances. Another advantage of the device lies in the fact that its replacement, in the even of faulty working, can be carried out without any long or delicate operation.

The particular simplicity of the luminous warning device, as described above, also enables one to obtain, prior to installation of the device, a strong and reliable operative assembly because the various connections, by soldering, for instance, between the terminals and telltale lamp 13, and sometimes a resistance 14, can be freely carried out by suitable tools without considering the coefficient of resistance to heat of the body 1.

I claim:

1. A lamp assembly, comprising in combination: a tubular casing made of insulating material, said casing carrying external attaching means which are radially distortable when said casing is inserted into the hole of a support plate and a plurality of internal slots spaced from each other around the internal periphery of said casing, each of said slots extending outwardly at least partially through the wall of said casing; electrical lamp means situated within said casing; electrical conductor means connected to said lamp means within said casing; and a plurality of metal connecting terminals for making electrical connections to said conductor means, said electrical terminals each including an end portion which extends outside said casing and a widened portion which seats within a respective pair of said internal slots to hold said terminals mechanically in place within said casing and to pressure engage said conductor means to make electrical contact between said conductor means and said terminals.

2. A lamp assembly according to claim 1 in which said tubular casing includes a light-transmissive front end, and in which said external attaching means comprises at least one external serrated rib which extends rearwardly from near said front end of said casing at least two-thirds of the length of said casing, with the rib radially sloping to the diameter of said casing at the rear end of said rib, said casing including a longitudinally-extending slot adjacent said rib and a circumferentially-extending opening situated between said front end of said casing and the front end of said serrated rib, the front end of said longitudinally-extending slot terminating in said circumferentially-extending opening.

3. A lamp assembly according to claim 1 having two pairs of mutually-opposite axially-extending parallel faces on the inside wall of said casing near the rear end of said casing, said parallel faces extending axially to said internal slots.

4. A lamp assembly according to claim 1 having a resistance element situated within said casing and connected in series with said lamp means, one conductor of said resistance element and one conductor from said lamp means being connected to said connecting terminals.

5. A lamp assembly according to claim 3 in which said electrical terminals include edges between said end portions and said widened portions which seat against said mutually-opposite axially-extending parallel faces.

References Cited

UNITED STATES PATENTS

3,246,320	4/1966	Houbolt	340—381
3,286,255	11/1966	Sanchez	340—381

THOMAS B. HABECKER, Primary Examiner
C. M. MARMELESTEIN, Assistant Examiner

U.S. Cl. X.R.

317—118; 339—251