

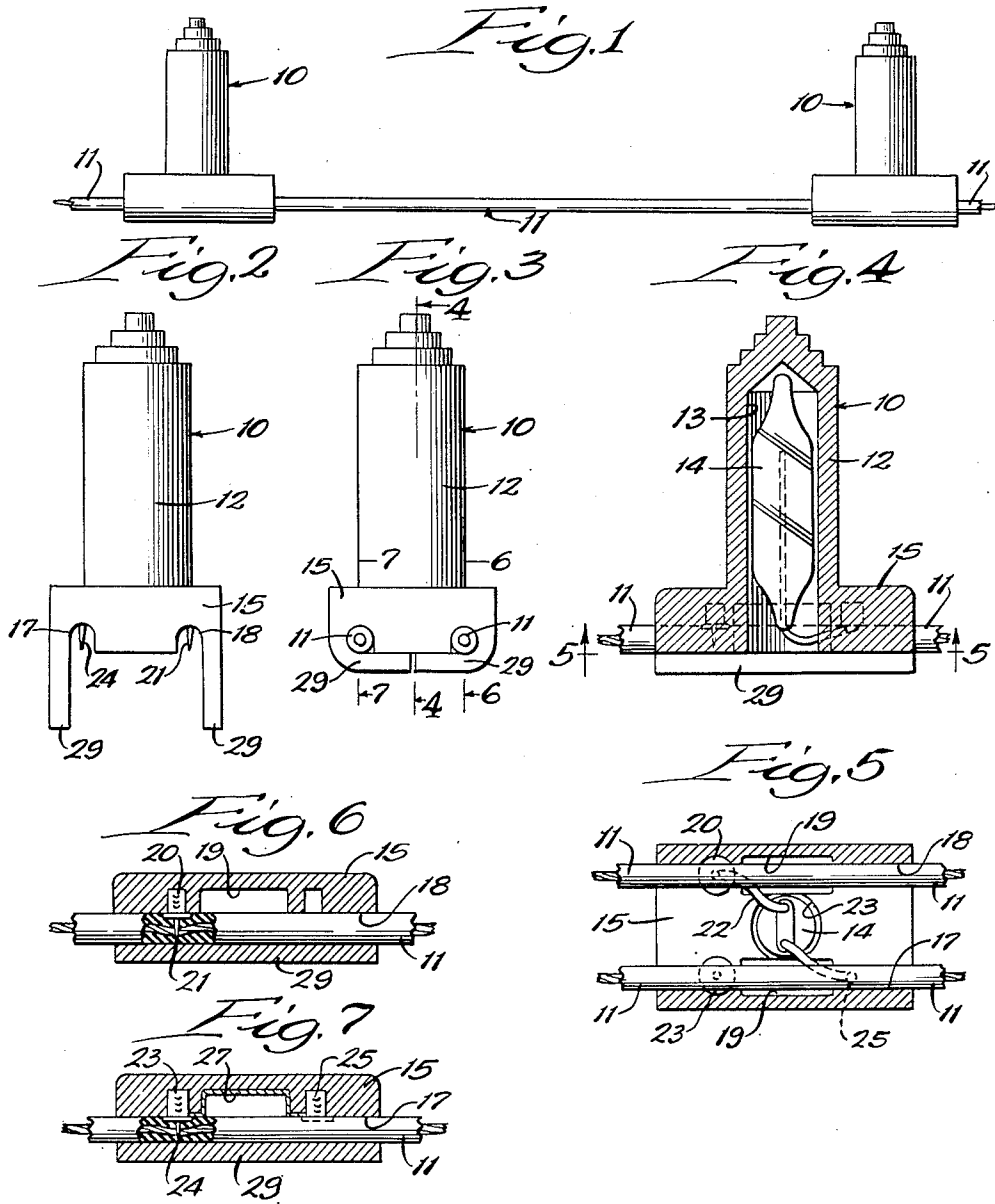
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LIGHTING DEVICE

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LIGHTING DEVICE

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6 Claims. (Cl. 240-10)

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This invention relates to lighting devices and more particularly to Christmas tree lighting devices.

The principal object of this invention is to provide an improved lighting device having the features of ease of production, safety, long life and ornamental value and wherein the need for light bases and changing lamps is eliminated.

In carrying out the object of the invention there is provided a thermoplastic housing having a base portion and a cavity opening into the base portion for receiving a lamp such as a two-electrode neon lamp. The thermoplastic housing which receives the lamp is preferably transparent or translucent and provides a soft candle-like illumination. The base portion is preferably provided with grooves for receiving insulated wires and connectors located in the grooves electrically connect the wires and lamp. The connectors may be provided with sharp points for piercing the insulation of the wire to establish the electrical connections. A limiting resistor in one of the grooves may be included in the electrical connections. Wings formed on the base portion may be heated and folded over the base portion to cover the lamp-receiving cavity and the grooves and hold the wires in contact with the connectors.

Further objects of this invention reside in the details of construction and the cooperation between the component parts of the lighting device.

Other objects and advantages will become apparent to those skilled in the art upon reference to the accompanying specification, claims and drawing, in which—

Figure 1 illustrates a string of lights incorporating the lighting device of this invention;

Fig. 2 is an end elevational view of the lighting device with the wings unfolded;

Fig. 3 is a view similar to Fig. 2 but with the wings folded;

Fig. 4 is a vertical sectional view taken substantially along the line 4-4 of Fig. 3;

Fig. 5 is a horizontal sectional view taken substantially along the line 5-5 of Fig. 4;

Fig. 6 is a vertical sectional view taken along the line 6-6 of Fig. 3; and

Figure 7 is a vertical sectional view taken substantially along the line 7-7 of Fig. 3.

As shown in Fig. 1, the lighting device is generally designated at 10 and has electrical energy supplied thereto by insulated wires 11. A plurality of lighting devices may be associated with the wires 11 to form a string of lights particularly

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adaptable for lighting and ornamentation of Christmas trees.

As shown in Figs. 2 to 7, the lighting device 10 includes a housing 12 having a cavity 13 for receiving a lamp 14 and also provided with a base portion 15. The housing 12, including the base portion 15, is made of a thermoplastic material which is preferably transparent or translucent. The lamp 14, insertable in the cavity 13, may be a conventional two electrode neon lamp, which is noted for its long life. Illumination given off by the lamp 14 passes through the transparent or translucent thermoplastic housing 12 to provide a soft candle-like illumination. The top of the housing 12 may be of stepped formation, as illustrated, in order to enhance the ornamental characteristics thereof.

The base portion 15 of the housing is provided with a pair of horizontal grooves 17 and 18 for receiving the insulated wires 11 and the grooves may be enlarged, as at 19, to accommodate the lead wires extending to the lamp 14.

An electrical connector 20 having a sharp point 21 is embedded in or forced into the base portion 15 along the groove 18 and this connector 20 is connected by a lead wire 22 to one of the electrodes of the lamp 14. When the wire 11 is inserted in the groove 18, the sharp point 21 punctures the insulation of the wire and establishes an electrical connection with the conductor in the wire.

Also forced into or imbedded in the base portion 15 along the groove 17 is another connector 23 having a sharp point 24 which is adapted to pierce the insulation of the wire 11 in the groove 17 and establish electrical connection with the conductor within the wire.

The connector 25 is forced into or imbedded in the base portion 15 along the groove 17 and this connector 25 is electrically connected by a lead wire 26 to the other electrode of the lamp 14.

Preferably electrical connection is established between the connectors 23 and 25 by means of a limiting resistor 27 therebetween. The limiting resistor 27 may be a conventional resistor electrically connected to the connectors 23 and 25 or it may be formed by spraying the bottom of the groove 17 and the enlargement 19 thereof with a slightly conductive paint to provide a high resistive electrical path between the connectors 23 and 25. Preferably, the limiting resistor has a value of around 100,000 ohms. The electrical circuit may, therefore, be traced from the wire 11 in the groove 17, through connector 23, limiting resistor 27, connector 25, lead wire 26, lamp 14,

lead wire 22, and connector 20 to the wire 11 in the groove 18.

The base portion 15 is provided with a pair of wings 29 which are in the position shown in Fig. 2 during the assembly of the lighting device. After the lamp 14 has been inserted in the cavity 13 and the wires 11 have been inserted in the grooves 17 and 18 with the proper establishment of electrical connections the thermoplastic wings 29 may then be heated and folded over from the position shown in Fig. 2 to the position shown in Fig. 3. The wings, therefore, close the cavity 13 to retain the lamp 14 in place therein, close the grooves 17 and 18 to retain the wires 11 therein and maintain the wires in electrical contact with the connectors 20 and 23. By reason of this construction the assembly costs are reduced to a minimum, detachable and solder connections being omitted. The need for light bases and for changing lights is eliminated with this invention and because of the use of the neon lamp 14 in connection with the limiting resistor 27, the normal lighting life of the lighting device is somewhere between 12,000 and 15,000 hours, which represents about thirty-five years of lighting in connection with Christmas trees.

While for purposes of illustration one form of this invention has been disclosed, other forms thereof may become apparent to those skilled in the art upon reference to this disclosure, and, therefore, this invention is to be limited only by the scope of the appended claims and prior art.

What I claim is:

1. A lighting device for receiving a lamp and electrically connecting the lamp to wires comprising a thermoplastic housing having a base portion and a cavity for receiving the lamp opening into the base portion, grooves in the base portion for receiving the wires, connectors in the grooves to electrically connect the wires and the lamp, and wings formed on the base portion adapted to be heated and folded over the base portion to enclose the cavity and grooves.

2. A lighting device for receiving a lamp and electrically connecting the lamp to insulated wires comprising a thermoplastic housing having a base portion and a cavity for receiving the lamp opening into the base portion, grooves in the base portion for receiving the insulated wires, connectors in the grooves to electrically connect the wires and the lamp and having points for piercing the wire insulation, and wings formed on the base portion adapted to be heated and folded over the base portion to enclose the cavity and grooves and hold the wires against the connectors.

3. A lighting device for receiving a lamp and electrically connecting the lamp to a pair of insulated wires comprising a thermoplastic housing having a base portion and a cavity for receiving the lamp opening into the base portion, a pair of grooves in the base portion for receiving the pair of insulated wires, a connector in one of the grooves electrically connected to the lamp and having a point for piercing the insulation of the wire in that groove, a connector in the other groove electrically connected to the lamp, a connector in the last mentioned groove having a point for piercing the insulation of the wire in that groove, a limiting resistor between the last-mentioned connectors, and wings formed on the

base portion adapted to be heated and folded over the base portion to enclose the cavity and grooves and hold the wires against the connectors.

4. A lighting device for receiving a lamp and electrically connecting the lamp to a pair of insulated wires comprising a thermoplastic housing having a base portion and a cavity for receiving the lamp opening into the base portion, a pair of grooves in the base portion for receiving the pair of insulated wires, a connector in one of the grooves electrically connected to the lamp and having a point for piercing the insulation of the wire in that groove, a connector in the other groove electrically connected to the lamp, a connector in the last mentioned groove having a point for piercing the insulation of the wire in that groove, a slightly conductive paint on the groove between the last-mentioned connectors to form a limiting resistor, and wings formed on the base portion adapted to be heated and folded over the base portion to enclose the cavity and grooves and hold the wires against the connectors.

5. A lighting device for receiving a lamp and electrically connecting the lamp to a pair of insulated wires comprising a housing for supporting the lamp and having a base portion, a pair of grooves in the base portion for receiving the pair of insulated wires, a connector in one of the grooves electrically connected to the lamp and having a point for piercing the insulation of the wire in that groove, a connector in the other groove electrically connected to the lamp, a connector in the last mentioned groove having a point for piercing the insulation of the wire in that groove, a limiting resistor between the last mentioned connectors, and wings on the base portion adapted to be folded over the base portion to cover the grooves for securing the wires in the grooves against the pointed connectors.

6. A lighting device for receiving a lamp and electrically connecting the lamp to a pair of insulated wires comprising a housing for supporting the lamp and having a base portion, a pair of grooves in the base portion for receiving the pair of insulated wires, a connector in one of the grooves electrically connected to the lamp and having a point for piercing the insulation of the wire in that groove, a connector in the other groove electrically connected to the lamp, a connector in the last mentioned groove having a point for piercing the insulation of the wire in that groove, a slightly conductive paint on the groove between the last mentioned connectors to form a limiting resistor, and wings on the base portion adapted to be folded over the base portion to cover the grooves for securing the wires in the grooves against the pointed connectors.

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