July 18, 1939. R. L. HOHL 2,166,149

ILLUMINATING DEVICE

Filed Sept. 2, 1936 2 Sheets-Sheet 1

Fig. 5.

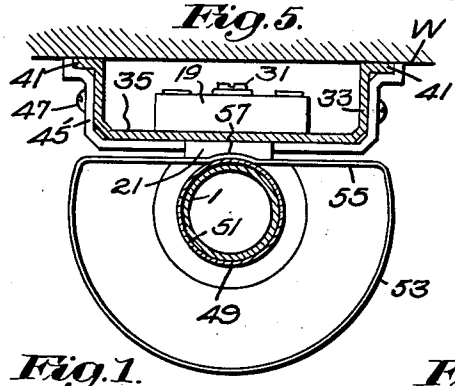


Fig. 4.

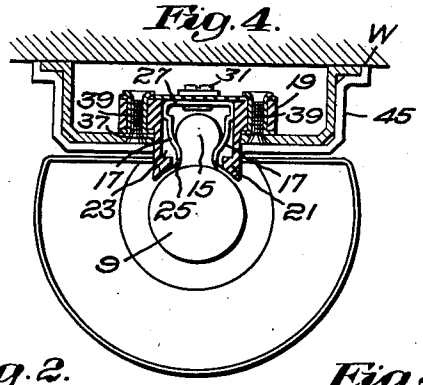


Fig. 1.

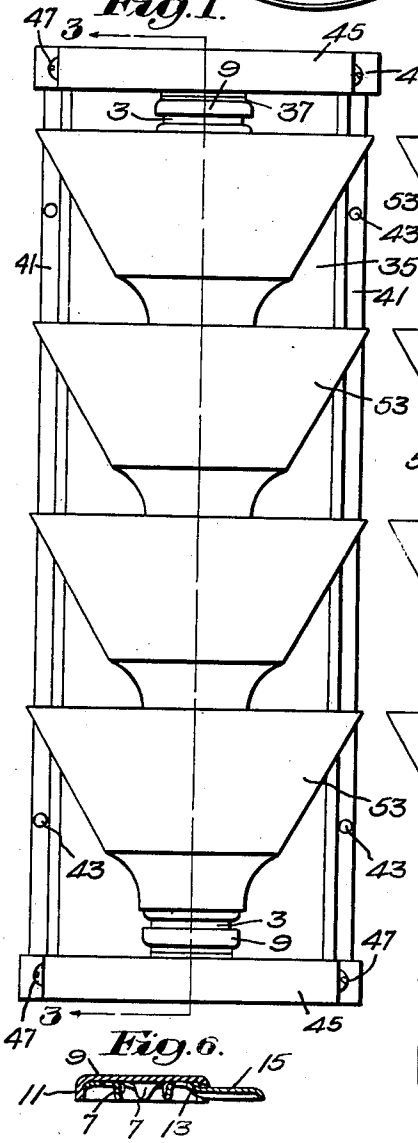


Fig. 2.

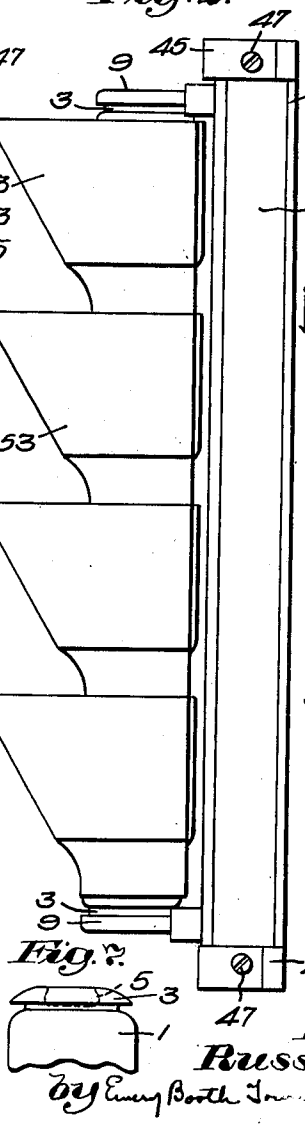


Fig. 3.

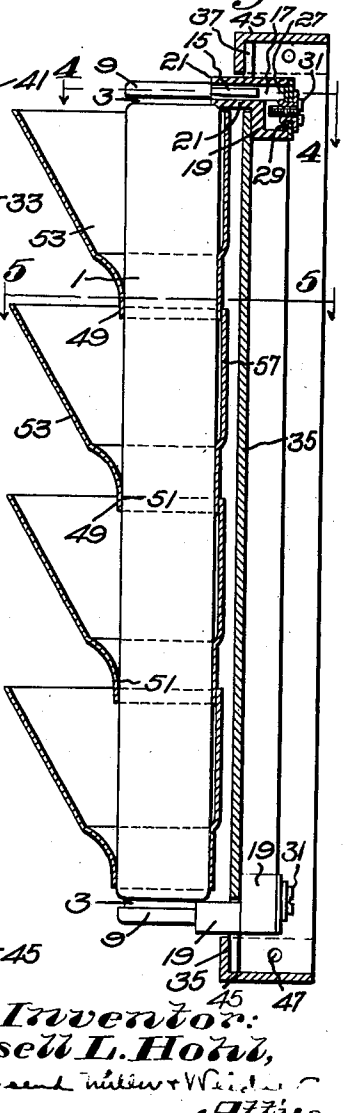


Fig. 6.

Fig. 7.

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Fig. 8

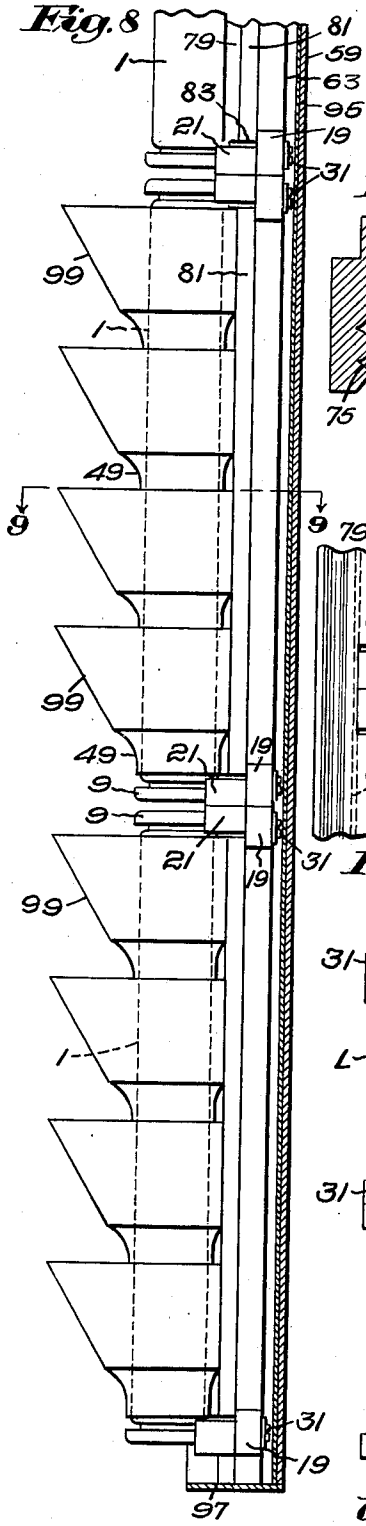


Fig. 9.

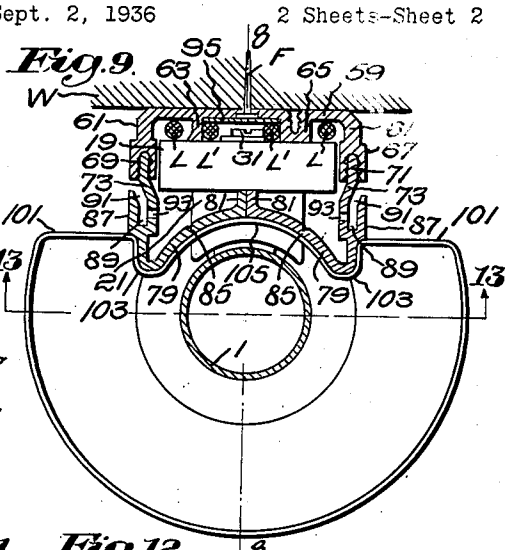


Fig. 10.

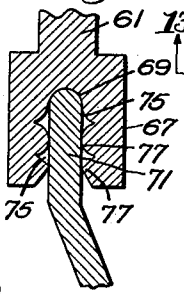


Fig. 11.

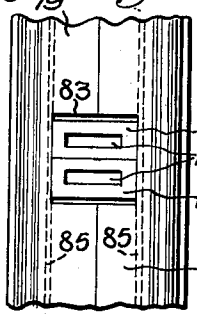


Fig. 12.

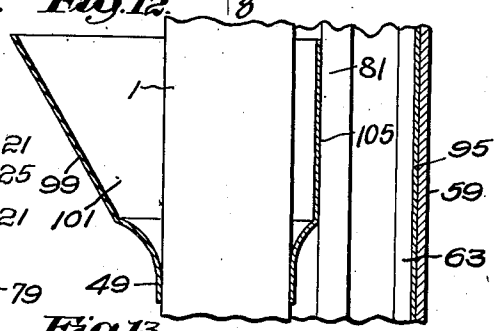


Fig. 13

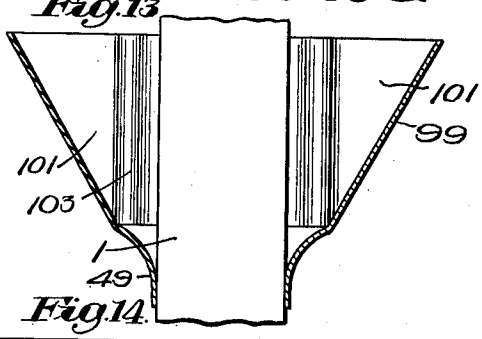


Fig. 15

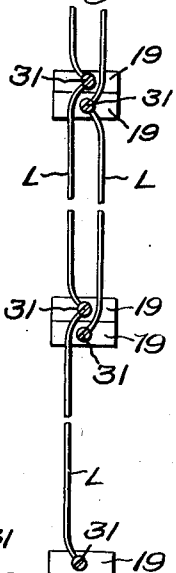
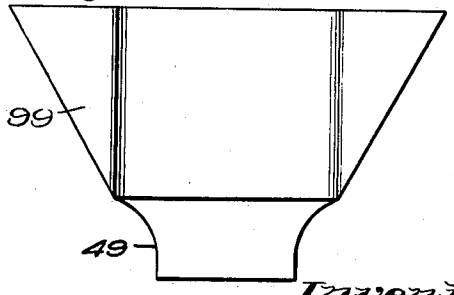


Fig. 14.



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UNITED STATES PATENT OFFICE

2,166,149

ILLUMINATING DEVICE

Russell L. Hohl, New York, N. Y.

Application September 2, 1936, Serial No. 99,067

9 Claims. (Cl. 240—73)

My invention relates to illuminating devices.

The invention, which has among its objects the provision of improved reflecting means for a lamp, will be best understood from the following description when read in the light of the accompanying drawings of an embodiment of the invention, the scope of which latter will be more particularly pointed out in the appended claims.

In the drawings:

Fig. 1 is a front elevation of an illuminating device constructed according to the invention;

Fig. 2 is a side elevation according to Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 1, with parts in elevation;

Figs. 4 and 5 are sections on the lines 4—4 and 5—5 of Fig. 3, with parts in elevation;

Fig. 6 is a section through the plug-in lamp socket on the line 3—3 of Fig. 1;

Fig. 7 is an elevation of the end portion of the tubular lamp;

Fig. 8 shows a modified form of illuminating device, being a section on the line 8—8 of Fig. 9 with the wiring bases, lamps, reflectors and associated parts in elevation;

Fig. 9 is a section, on an enlarged scale, on the line 9—9 of Fig. 8;

Fig. 10 shows a detail of Fig. 9 on an enlarged scale;

Fig. 11 shows a detail, being a fragment of a bottom view of the parts shown in Fig. 9 with the lamps, and reflectors carried by the lamps, omitted;

Fig. 12 is a section on the line 8—8 of Fig. 9, and corresponds to a fragment of Fig. 8 on an enlarged scale with the reflector in section;

Fig. 13 is a section on the line 13—13 of Fig. 9, with parts omitted;

Fig. 14 is an elevation of the reflector looking from the right in Fig. 12; and

Fig. 15 is a wiring diagram.

Referring particularly to Figs. 1 to 7 of the drawings, the source of light is afforded by an electric lamp having the elongated tubular glass bulb 1. The details of this lamp, and of the plug-in lamp socket and wiring base which support the lamp, form no part of the present invention, and, being known, will be described only with such particularity as is necessary to understand the present invention.

As illustrated, the lamp bulb 1 is provided at opposite ends thereof with metallic caps 3 Fig. 7) which form the opposite terminals for the filament (not shown) which extends lengthwise of the bulb from one cap to the other. Each of these filament terminal caps is provided with a flared socket 5 into which is adapted to snap a split resilient stud, comprising the prongs 7 (Fig. 6) carried by a plug-in lamp socket, the arrangement being closely like that of the ordinary snap fastener. This socket comprises a shallow cup 9 of insulating material having a marginal wall 11. The prongs forming the stud 7 are struck up from a sheet metal plate 13 secured within the cup, this plate also being formed to provide a plug-in contact portion 15 extending through an opening in the side wall of the cup.

The contact 15 of the plug-in lamp socket is shaped as indicated in Fig. 4 so that it will snap between the jaws 17 of a spring clip carried by a wiring base the body of which is formed of insulating material. This body comprises a base portion 19 which at one side thereof has a projecting portion 21, the latter formed with a cavity 23 receiving the jaws 17 of the spring clip, which cavity opens on the outer end of the projection 21 to form an opening 25 through which the plug-in contact 15 may be inserted. The spring clips are formed integrally with a base portion 27 which has an offset portion 29 carrying a terminal 31 to which a lead for energizing the lamp filament may be connected.

As shown, the wiring bases are carried at opposite ends of a casing, conveniently formed as a channel-shaped extrusion having the webs 33 and base 35. As shown, the base 35 of the extrusion at opposite ends of the casing is slotted as indicated at 37 for receiving the projecting portion 21 of the wiring base and permitting the base portion 19 of the latter to be entered into the casing. This base portion of the wiring base rests against the inner side of the base 35 of the extrusion and is secured thereto by screws 39. By this construction the terminals 31 are within the channel-shaped casing.

As illustrated, the webs 33 of the channel-shaped extrusion of the casing are formed with flanges 41, which latter are adapted to rest against a wall W or other supporting structure and be secured thereto by screws passing through holes 43 formed in said flanges. At opposite ends the casing conveniently is provided with caps 45 secured thereto in any convenient manner, as, for example, by screws 47.

It will be understood that the casing may be of any suitable length, and, if desired, may carry any number of lamps 1, said lamps when a plurality thereof are employed preferably being arranged with their axes in alignment.

As illustrated, along the lamp are distributed a plurality of reflectors. These reflectors, which

preferably are formed of sheet metal, are cup-shaped. As shown, they comprise reduced cylindrical end portions 49 forming openings 51 through which the tubular lamp bulb 1 extends. These cylindrical portions contact with the lamp bulb and frictionally secure the reflectors thereto. Sufficient friction may be provided by slightly deforming with the fingers the portions 49 from their truly cylindrical shape, this being readily accomplished because the reflectors are made of thin sheet metal.

The reflectors illustrated further comprise portions 53 which are in tht shape of a frustum of a cone having flattened sides 55 adjacent the casing. At their medial portions the flattened sides 55 are shown as swelled out, as indicated at 57 (Figs. 3 and 5), so that the cylindrical portions 49 which grip the lamp bulb may extend into the larger ends of adjacent reflectors.

The reflectors shaped and arranged as illustrated permit direct rays from the lamp, when the latter is positioned vertically, to pass diagonally upward, while the rays which strike the reflectors are projected for the most part against the exterior of the adjacent reflector immediately above it. The net result is a diffused light. The illuminating device illustrated may be placed, for example, on a wall at opposite sides of a mirror or a dressing table with satisfactory results in respect to keeping direct rays of the eyes of the user of the mirror or dressing table. When placed on a ceiling with the lamps in horizontal position, the light is reflected toward the walls of the room to give a diffused light without subjecting persons within the room to the direct rays.

In the modification of the invention shown by Figs. 8 to 15 the wiring bases for a plurality of lamps are shown as carried by a conduit comprising a channel-shaped extrusion having the web 59 and opposite flanges 61, this extrusion being secured to a wall, ceiling, or other support W by nails F extending through the web. The construction comprising this extrusion and associated parts forms part of the subject matter of my copending application Serial No. 93,852, filed August 1, 1936, and therefore will not be described herein with any more particularity than is necessary to convey an understanding of the present invention.

As illustrated, the web 59 of this extrusion is formed on its inner side with a pair of spaced, longitudinally extending ribs 63 and 65, on the edges of which are adapted to rest the "bottom" surfaces of the base portions 19 of the wiring bases for the lamps. These wiring bases preferably extend from one flange 61 to the other of the extrusion. The spaces between the two ribs 63 and 65 and between each of these and the adjacent flange 61 form channels or grooves for receiving the lead wires L for energizing the lamps and for receiving such auxiliary lead wires L' as it may be desired to conduct, which lead wires L' may be used for a different group of lamps than those energized by the lead wires L.

The flanges 61 of the base extrusion, as best illustrated in Figs. 9 and 10, have thickened lower edge portions 67 provided with longitudinally extending grooves 69 into which fit the upper edge portions 71 of the side walls 73 of combined wiring-base retaining and reflector members, which latter are also in the form of elongated extrusions. Preferably all these extrusions are made of aluminum, or high content aluminum alloy, such as "duralium," having the relatively soft properties of aluminum. Preferably the side walls of the grooves 69 are formed with longitudinally extending grooves 75 to provide one or more raised surfaces 77 which contact with the sides of the upper edge portions 71, and the metal of these parts, being soft, galls when the parts, which have a tight fit, are forced together, this affording sufficient friction to prevent separation of the parts except when they tend to be separated with considerable force.

As illustrated, the combined wiring-base retaining and reflector portion, which also form a cover for the channel of the base extrusion, is made in two parts each of which has an arcuate portion 79 the adjacent edges of which are formed with upward projecting ribs 81 which abut in the assembled device and the edges of which engage with the base portions 19 of the wiring bases to hold the latter against the ribs 63 and 65. The adjacent edge portions of the arcuate portions 79 of the extrusions as shown are notched at 83 (Fig. 11) through which the projecting portions 21 of the wiring bases extend. Conveniently, the arcuate portions of the extrusions are formed on their upper surfaces with longitudinally extending grooves 85 of V-shaped cross-section, as illustrated in Fig. 9, and, by sawing inward with a hack-saw from the edges of the arcuate portions to these grooves, the parts between the saw cuts may be readily broken off at the V-shaped grooves to form the notches which, when the arcuate portions are placed together, form the openings 83.

As illustrated, the side wall 73 of each wiring-base retaining extrusion is formed with a thickened portion 87 provided with a longitudinally extending groove 89 the upper portion of which is inclined outwardly, as indicated at 91, to open on the exterior of the side walls. If desired, communicating with the grooves 89 may be provided holes 93 for the purpose of ventilating the interior of the conduit formed by the extrusions.

In the assembled device the wiring bases for adjacent ends of pairs of lamps may be placed back to back, as best illustrated in Figs. 8 and 11, for supporting a plurality of axially aligned lamps. Before assembling the extrusions the lead wires L are connected to the terminal screws 31 in the manner indicated in Fig. 15. Conveniently, a strip 95 of fiberboard or other insulating material is placed in the bottom of the groove formed by the ribs 63 and 65 of the base extrusion to provide against the possibility of the screws 31 forming a short circuit if they become loose.

If desired, only one lamp may be provided, instead of a plurality thereof, in connection with the modification shown by Figs. 8 and 15. The openings formed by the ends of the extrusion of this modification may be closed in any convenient manner, as by a plate 97 indicated at the lower end of Fig. 8. These plates may be secured to the extrusions by screws which enter the ends of the grooves 89, into the side walls of which grooves the screws will "self tap" due to the soft nature of the metal of which the extrusions are formed.

The parts so far described of the modification shown by Figs. 8 to 15 form the subject matter of my copending application Serial No. 93,852, filed August 1, 1936.

In this modification of the invention the cup-shaped reflectors carried by the lamps, as heretofore described, comprise cylindrical reduced end portions 49 through which the lamp bulbs extend and which frictionally grip the lamp bulbs. As illustrated, the conical portions 99 of the re-

flectors at the sides adjacent the support are flattened at opposite sides, as indicated at 101, these flattened portions 101 being connected by the portions 103 and 105 respectively formed to provide a groove and a fragment of a cylindrical surface, so that the reflector conforms to the lower portions of the side walls and the arcuate portions 79 of the wiring-base retaining extrusions.

The reflectors of the device shown by Figs. 8 to 15 produce the same effect as those described in connection with Figs. 1 to 7. In each of these modifications the face of the lamp holder, for example the arcuate portions 79 of Fig. 9, also may act as a reflector, particularly if it is desired to omit one or more of the reflectors carried by the lamps.

It will be understood that within the scope of the appended claims wide deviations may be made from the forms of the invention illustrated without departing from the spirit of the invention.

I claim:

1. An illuminating device having, in combination, an elongated lamp, an elongated holder for said lamp, carrying means for engaging said lamp at opposite ends thereof for supporting said lamp in parallel closely spaced relation to said holder, and a plurality of cupped reflectors between said means distributed along said lamp, said reflectors having reduced end supporting portions frictionally engaging said lamp and adapted to enter the open ends of adjacent reflectors, said reflectors at the sides thereof adjacent said holder being shaped to present surfaces closer to the axis of said lamp than at other portions thereof.

2. An illuminating device having, in combination, an elongated lamp, an elongated holder for said lamp, carrying means for engaging said lamp at opposite ends thereof for supporting said lamp in parallel closely spaced relation to said holder, and a plurality of cupped reflectors between said means distributed along said lamp, said reflectors having reduced end portions frictionally engaging said lamp and adapted to enter the open ends of adjacent reflectors, said reflectors having flattened sides adjacent said holder.

3. An illuminating device comprising a tubular lamp, a holder for said lamp comprising a base member and a cover member forming a chamber, a wiring-base for said lamp within said chamber, and a cupped reflector carried by said lamp, said reflector at the side thereof adjacent said cover member being shaped to present surfaces closer to the axis of said lamp than at the opposite side thereof.

4. An illuminating device comprising an elongated tubular lamp, a holder for said lamp comprising a base portion and a cover portion, the surface of the latter at the outer side of said holder being concave, wiring-bases for said lamp at opposite ends thereof carried by said holder, a cupped reflector carried by said lamp, said reflector having a portion of shape complementary to the concaved surface of said cover portion.

5. An illuminating device comprising an elongated tubular lamp, a holder for said lamp comprising a base portion and a cover portion, the surface of the latter at the outer side of said holder being concave, wiring-bases for said lamp at opposite ends thereof carried by said holder, a cupped reflector having a portion engaging said lamp and supported thereby, said reflector having a portion of shape complementary to the concaved surface of said cover portion.

6. An illuminating device having, in combination, an elongated concave reflector, an elongated tubular lamp associated with said reflector in spaced parallel relation thereto, a plurality of auxiliary cup-shaped reflectors surrounding said lamp and distributed therealong, said auxiliary reflectors being supported by said lamp and having the portions thereof adjacent said elongated reflector shaped to contact therewith.

7. An illuminating device having, in combination, a part presenting an elongated trough-like surface, a tubular lamp associated with said surface and arranged in spaced parallel relation thereto, a plurality of cup-shaped reflectors distributed along said lamp, which reflectors have reduced end portions frictionally engaging said lamp whereby they are supported thereby, said reflectors being deformed at one side thereof to provide elongated interiorly concave raised portions entering the trough formed by said trough-like surface and exteriorly contacting therewith.

8. A reflector having, in combination, a cup-shaped body portion provided with a reduced neck adapted to engage the exterior of a tubular lamp, one side of said body portion being flattened.

9. A reflector having, in combination, a cup-shaped body portion provided with a reduced neck adapted to engage the exterior of a tubular lamp, one side of said body portion being flattened and provided with an exteriorly convex and interiorly concave portion with a longitudinally extending groove at each side of said convex portion.

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