Nov. 17, 1953 G. P. WAKEFIELD 2,659,811

LUMINAIRE FOR ELONGATED TUBULAR LAMPS

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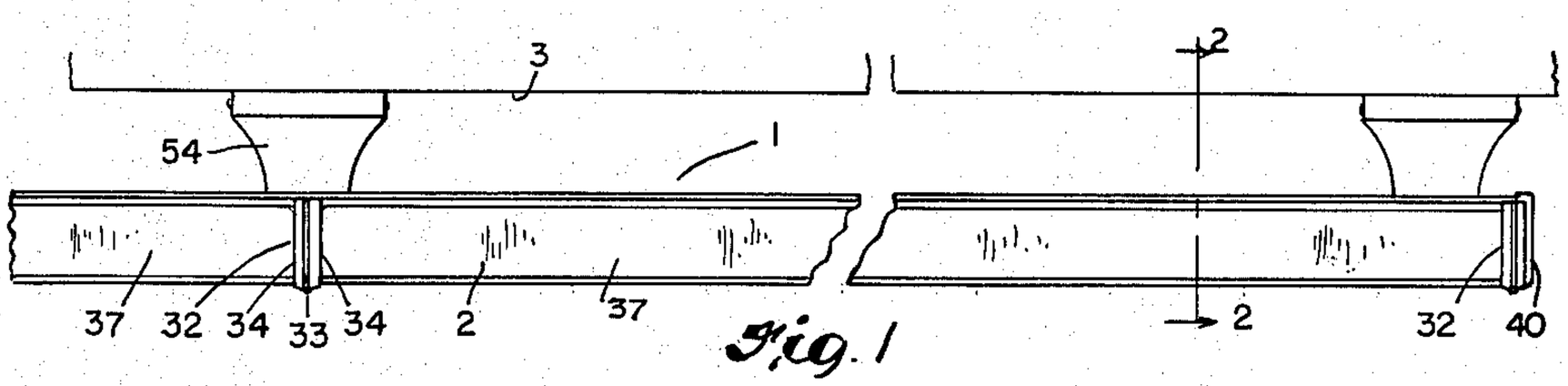

Fig. 1

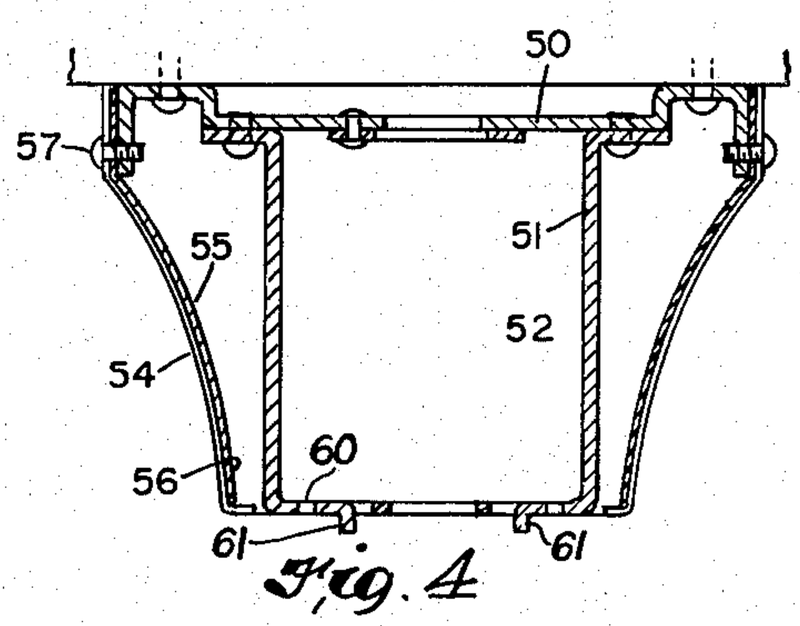

Fig. 4

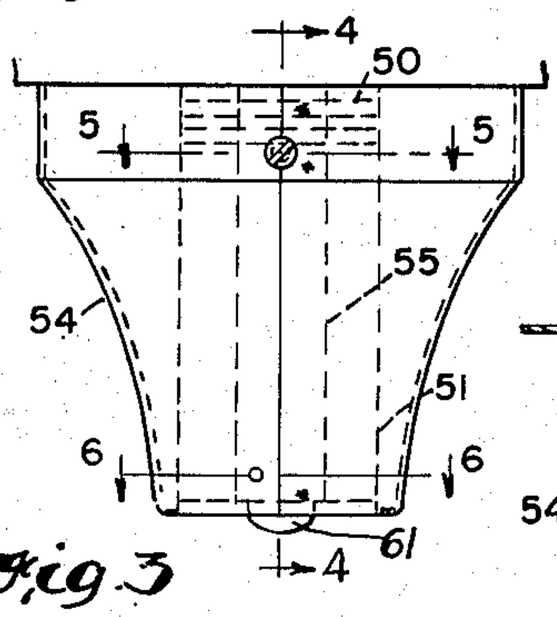

Fig. 3

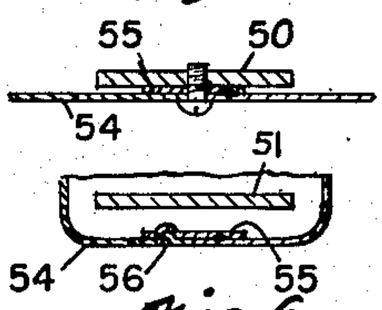

Fig. 5

Fig. 6

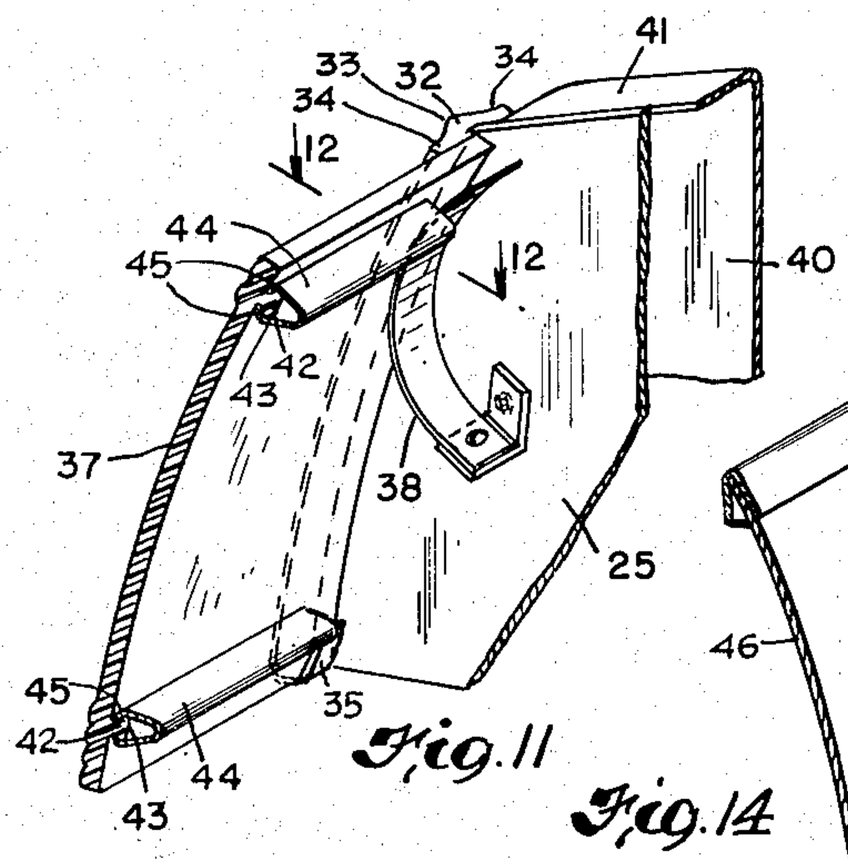

Fig. 11

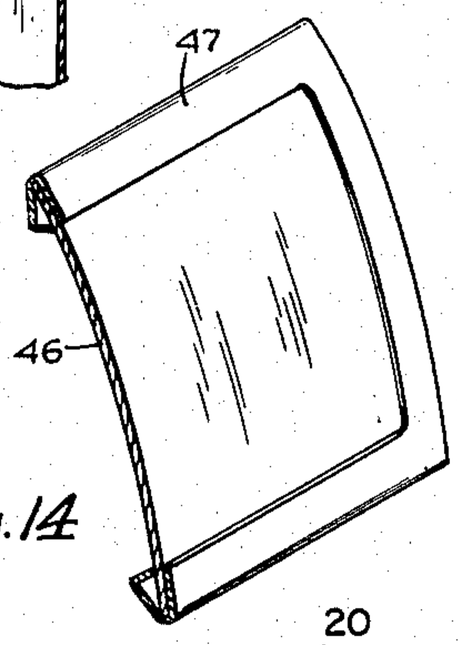

Fig. 14

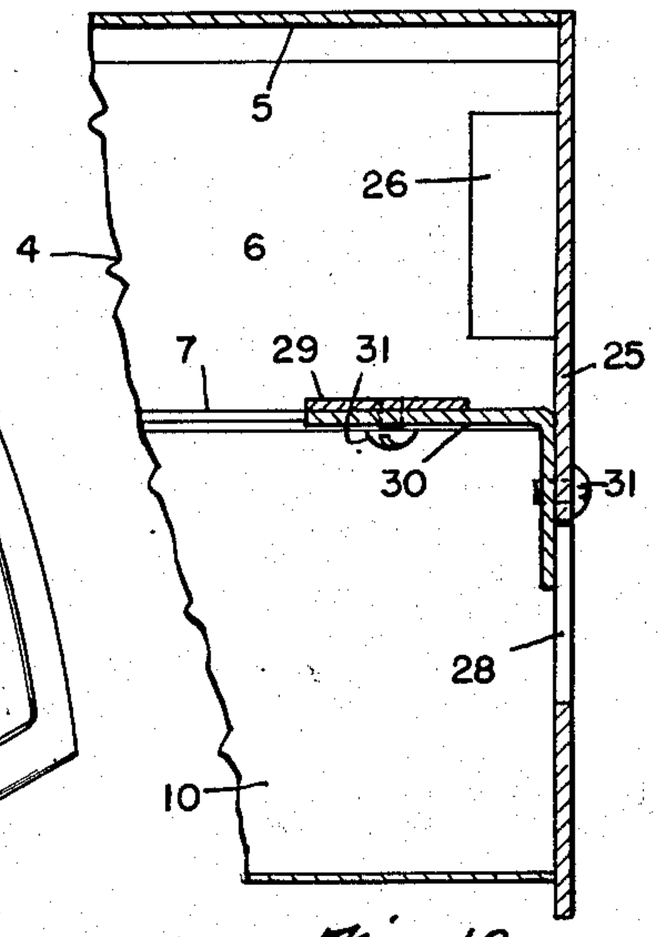

Fig. 10

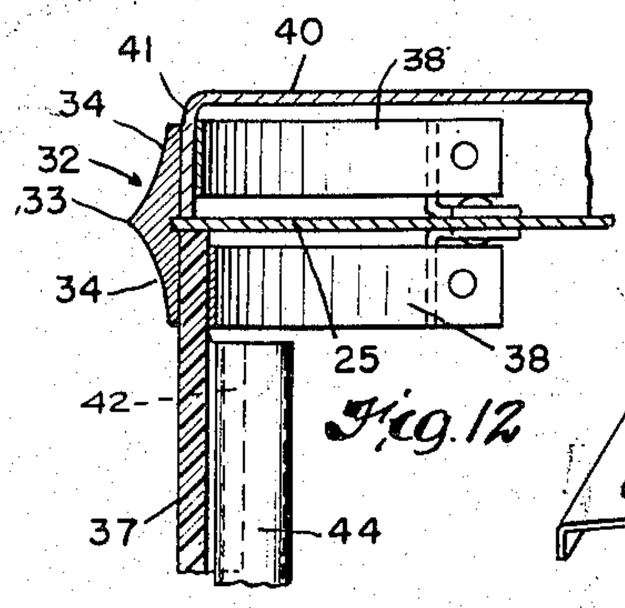

Fig. 12

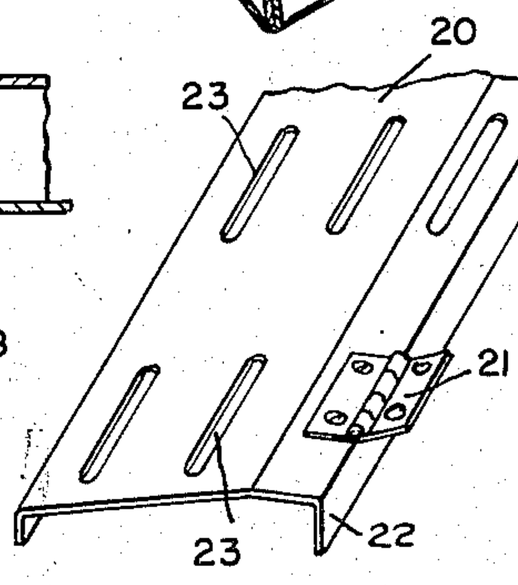

Fig. 13

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Fig. 9.

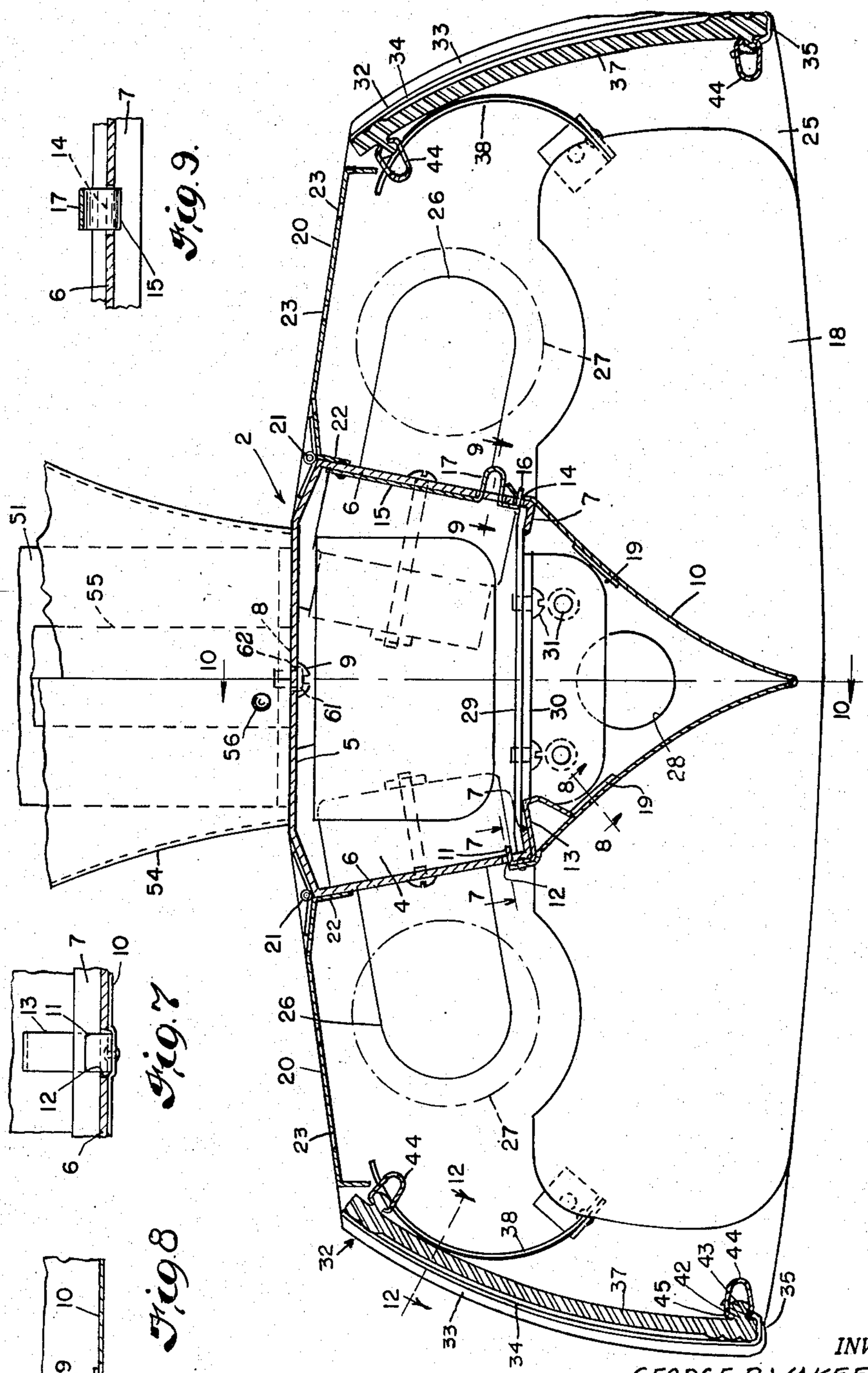

Fig. 12

Fig. 7

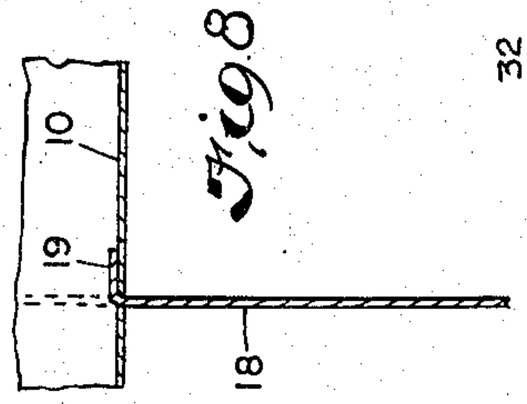

Fig. 8

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LUMINAIRE FOR ELONGATED TUBULAR LAMPS

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Application March 12, 1947, Serial No. 734,043

5 Claims. (Cl. 240—78)

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This invention relates to luminaires and particularly to luminaires to be suspended from ceilings.

It has become a common practise in the illumination field to illuminate rooms by means of elongated luminaires which are suspended from and extend parallel to the ceiling and for considerable distances endwise of the luminaires. In many installations, the luminaires are arranged endwise of each other in broken or unbroken lines, each of which lines is substantially coextensive with the major portion of the length or width of the room. Since the ceiling dimensions vary throughout a wide range, a large number of selected luminaires must be provided to meet the various conditions. Usually the appearance of luminaires so assembled is not as pleasing as desired due to their jointed appearance when installed, particularly where the ends of adjacent luminaires are abutted. Furthermore, they are difficult to install in accurate alignment and proper abutting relationship. Again, the panels used and the manner in which they are connected to the supporting body of the luminaire impose certain difficulties in installation and result in undesirable shadow effects on the panels and ceilings.

An object of the invention is to provide new and improved luminaire canopy, panel, and body elements by which luminaire units of identical appearance can be assembled and the units, in turn, can be assembled, in situ, into luminaires of substantially any required length with a minimum of basic elements and which, when assembled, provide a luminaire which is free from the objectionable jointed appearance of prior luminaires and in which undesirable shadow effects are reduced to a minimum.

Another object is to provide a split canopy for a luminaire so arranged that it can be installed readily after the luminaire is suspended in situ, so that, during installation, and in subsequent servicing, all parts of the luminaire are readily accessible.

Another object is to provide an improved means of attaching translucent panels to the luminaire body so that they can be installed readily after the luminaire body is suspended from a ceiling and can readily be removed for repair, replacement with like or different panels, and yet are supported so that undesirable shadow effects are reduced to a minimum.

Another object is to provide an elongated luminaire panel of translucent or transparent plastic material so reinforced by metal that adequate

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strength is afforded so that the panel can be supported by its end portions without danger of warpage or distortion.

Another object is to provide for accurate alignment of the luminaire bodies in endwise relation to each other.

Other objects and advantages will become apparent from the following description of a preferred embodiment of the invention illustrated in the drawings, in which:

Fig. 1 is a side elevation showing a luminaire embodying the principles of the present invention;

Fig. 2 is an enlarged cross sectional view of one of the luminaire sections and canopy illustrated in Fig. 1 and showing the means for connecting it to a ceiling;

Fig. 3 is an end elevation of the split canopy and support;

Fig. 4 is a cross sectional view taken on line 4—4 of Fig. 3;

Figs. 5 and 6 are fragmentary sectional views taken on lines 5—5 and 6—6 respectively of Fig. 3;

Figs. 7, 8, 9 and 10 are fragmentary sectional views taken on lines 7—7, 8—8, 9—9, and 10—10 of Fig. 2;

Fig. 11 is a fragmentary perspective view of a portion of an end plate assemblage and panel of the present invention;

Fig. 12 is a sectional view taken on line 12—12 of Fig. 11;

Fig. 13 is a fragmentary perspective view of one of the closure plates of the luminaire unit; and

Fig. 14 is a fragmentary perspective view of a modified form of panel.

Referring to the drawings, there is illustrated in Fig. 1 an elongated luminaire 1 embodying the present invention and formed of a plurality of basic elements hereinafter described.

The luminaire comprises a plurality of elongated units 2 arranged in a row in end to end abutting relation to each other, each unit being supported independently from a ceiling 3 at spaced locations therealong.

The luminaire units are preferably identical so that any number may be assembled to provide a luminaire which, regardless of the number of units, is uniform in appearance for its entire length, and the basic elements of each unit provide for a number of designs to meet the lighting demands of the customer.

Referring next to Fig. 2, one of the units 2 and

the basic elements of which it is constructed are illustrated.

The unit 2 comprises a main body or supporting channel 4 which is preferably formed of sheet metal and arranged to be suspended from a supporting means with its base 5 uppermost and horizontal and its flanges 6 generally upright and in depending relation to the base, thus providing a downwardly open body of which the interior is readily accessible. The bottom margins of the walls or flanges 6 are preferably inturned to provide horizontal flanges 7.

To secure the base 5 to a support or hanger, the base 5 is provided with suitable connecting means. For purposes of illustration the attachment means is shown as a number of shaped perforations 8 adapted for registry selectively with threaded perforations in the hangers so as to receive screws 9 upwardly. Thus the channel 4 may be secured to the hangers from the underside, the screws being readily accessible through the open side of the channel.

Detachably secured to each channel 4 is a closure element or cover 10 which preferably is an open top channel of V-shaped cross section. At spaced points along its length, at the upper margin of one side, are suitable tongues or hooks 11 which are received in correspondingly spaced apertures 12 in the lower margins of the walls 6. Usually such tongues and apertures are required only adjacent the ends of the cover 10 as the V-shape section provides great rigidity for a given metal thickness. In order to hold the cover 10 tightly against the channel 4 at the points of connection of the tongues 11, suitable rests 13 are provided in the cover adjacent the tongues. The rests preferably are strips of metal bent to form with the wall of the cover a triangular frame.

The rests 13 are spaced from the tongues 11 a distance such that the rests lead to the tongues into the apertures 12 and engage the underside of the flange 7 when the cover 10 is installed.

Near the upper margin of the wall of the cover 10 opposite from the tongues 11 are apertures 14 adapted for registry with apertures near the bottom edge of the wall 6. Secured in the supporting channel 4 are snap fastening means such as leaf springs 15 having detents 16 which are received through the apertures 14, folds 17 in the springs 15 protruding outwardly through suitable apertures in the wall 6 for access by the operator for springing the detents 16 out of engagement with the cover 10.

In most cases, louvers are desired for directing the light downwardly. In such instances, they may be carried by the cover 10 so as to be removed readily from the luminaire unit for installing or servicing of the unit. In the form illustrated, a plurality of louvers 18 are provided, the louvers being spaced apart flatwise in a direction endwise of the supporting channel 4 and secured to the cover by suitable tongues 19 which extend through slits in the cover 10 and are bent over against the inner wall surface thereof.

In many instances it is desirable to close the top of the unit and yet permit a limited amount of light to reach the ceiling. For this purpose, closure plates 20 are provided. Each plate 20 is secured by a hinge 21 to the channel 4, preferably to the base 5 thereof adjacent the side walls 6. The inner margins 22 of the plates 20 are turned downwardly to form abutments engageable with the walls 6 to limit the downward swinging movement of the plates 20. Each plate is preferably coextensive endwise with the channel 4 and can be swung upwardly to afford ready access to the fluorescent lights and their mountings, later to be described. Rows of slits or perforations 23 are formed in the plates to permit a limited amount of light to strike the ceiling.

Detachably fastened to the respective ends of the channel 4 are end plates 25, each of which carries suitable sockets 26 for fluorescent light bulbs 27. Each end plate 25 has an opening 28 through which electric wires may extend from one unit to the next adjoining unit. The end plates may be secured to the channel 4 through the medium of bridges 29 which are spot welded to the flanges 7 and positioned one at each end of the channel 4. Suitable brackets 30 are secured to the end plates 25 and to the bridges 29 by screws 31.

The outer edges of the end plates 25 preferably slope outwardly and downwardly, as illustrated, and are curved at their outer edges so as to conform to the contour of the outer surfaces of the panels to be associated therewith.

Each end plate is provided on its outer lateral edge with a retaining band 32 which is fixedly secured thereto. In the form illustrated, the bands 32 are of extruded aluminum, each having a central longitudinal rib 33 extending along and aligned laterally of the unit with the associated edge of the plate 25. Extending in opposite directions endwise of the unit from the central rib 33 and in alignment with each other are retaining flanges 34. Each rib extends from the top of the lateral edge of its associated end plate to and beyond the bottom thereof and is inturned at the bottom edge of the plate 25 and then upturned at its innermost end to from a cradle 35 for receiving the lower edge of a panel. The flanges 34 extend only a short distance beyond the associated end plates lengthwise of the unit; for example, about ¼ to ⅜ of an inch.

Panels 37 substantially coextensive endwise of the unit with space between the end plates are provided and are placed in position by inserting them downwardly from the top of the unit in back of the flanges 34 until their lower edges rest in the cradle 35. In order to hold the panels 37 detachably in position, resilient means, such as C-springs 38, are carried by the unit. The springs 38 preferably are connected at one of their ends to the end plates 25, their opposite ends curving upwardly and inwardly so as to form at their upper end a wide trough for guiding the panels into place.

The springs 38 resiliently engage the panels near their ends and press them outwardly, tightly against the flanges 34. They are preferably coextensive endwise of the unit with their associated flanges 34 so as not to cast shadows on the exposed portion of the panels 37.

Four springs 38 are provided on each end plate 25, the springs 38 being arranged in pairs, one pair near each lateral edge of the associated plate 25. The springs of each pair are disposed on opposite faces of the associated end plate 25 and are aligned with each other endwise of the unit and aligned with the flanges 34, respectively, transversely of the unit. All of these end plate assemblages of the units are identical with each other.

When the units are arranged in a row in end to end relation, only one end plate assemblage is required on a given unit, except for the units at the ends of the row.

For example, when two units are abutting, the end plate at the abutting ends is common to the

two and the wiring can extend therethrough from one unit to the other.

In order to close the outer ends of the end units, closure caps **40** are provided. The caps **40** are provided with peripheral flanges **41** which fit against the flanges **34** of the bands **32** and are pressed thereagainst by the springs **38** on the outer end faces of the end plates. The flanges **41** are coextensive, endwise of the unit with the flanges **34**.

The panels **37** preferably are of translucent plastic having the desired surface configuration. In order to strengthen and reinforce them against warpage and distortion so as to permit their being supported only by their ends even with a span of four to six feet lengthwise of the unit, they have integral bosses, or projections **42** on their inner faces near the upper and bottom margins. The bosses may be in the form of continuous longitudinal ribs, or a row of longitudinally separated ribs, having enlarged head portions **43** at their inner extremities. Relatively stiff metal channels **44** with marginal flanges **45** are snapped or permanently bent so as to engage the projections **42** tightly beneath the head portions **43** respectively. The channels **44** add great rigidity to the panels and cast a minimum of objectionable shadow.

If desired, panels **46**, such as illustrated in Fig. 14 may be provided. The panels **46** also are of translucent plastic and are provided with a metal reinforcing frame **47** which embraces the entire margin of the panel. This permits the use of lighter plastic.

Instead of the panels above described, glass panels may be used in which case reinforcing is unnecessary.

In order to support the units from a ceiling, a suitable supporting strap **50** is secured to the ceiling and in turn supports a U shaped hanger **51** which depends from the ceiling and has its base adapted to rest on the upper surface of the base **5** of the channel **4**. It is provided with screw holes **60** adapted to receive the screws **9** and has downwardly struck metal tongues **61** engageable in corresponding apertures **62** in the base **5** of the channel **4** for aligning the channel **4** and the hanger **51** properly.

It is necessary for efficiency in installation that the strap **50** and hanger **51** and their connections be readily accessible. Also, the weight of even the elongated channel **4** is considerable and it is difficult to hold it in alignment and secure it to the hanger unless all connections therebetween are readily accessible and visible.

At the same time, customer demands require that the hanger and connections be concealed and enclosed laterally when the luminaire is installed.

Heretofore, canopies have been provided to conceal these parts, the canopy usually being a metal spinning or stamping having a continuous enclosing wall. Accordingly it was necessary to hold the canopy in position on the luminaire, raise the assemblage into position with the canopy concealing the hanger, and then seek to install the screws or other connectors for securing the luminaire to the hanger while holding the canopy tightly against the ceiling.

To eliminate these difficulties, the hanger **51** is provided with open sides **52** affording light and access to the interior. The strap **50** is first secured to the ceiling or a suitable outlet box. Next, the hanger **51** is secured to the strap. The wiring is readily accessible through the opening **52**.

Next, the channel support **4** of a single luminaire unit is connected to the hanger **51**, access to the screw **9** being had through the open bottom of the channel. When the channel **4** is secured to an adequate number of hangers, the next adjacent unit is similarly installed. When the desired number of units have been installed in end to end relation, the wiring and fluorescent bulbs are installed and checked, the wiring being readily accessible through the open channel **4**. When all is in working order, the panels **37** are snapped into place, followed by the cover **10** and its louvers **18**. Next the end caps **40** are installed.

Finally, in order to conceal the hanger **51** and strip **50** a split canopy **54** is provided. The canopy **54** comprises a plurality of sections which are assembled by movement laterally toward each other and which, when assembled, form a continuous side wall enclosing the strap **50** and hanger **51** and extending from the ceiling to the bottom wall **5** of the channel **4**.

The canopy illustrated comprises two substantially identical half sections of which the side walls are arranged to abut at their upright edges along a vertical median plane extending lengthwise of the luminaire units. One section is provided with a flange **55** along its abutting edge which is adapted to telescope within the other section and underlie and reinforce the margins thereof when the edges are in abutting relation.

The flanges may be provided, near the lower end of the canopy, with depressions to receive ribs **56** pressed inwardly from the metal of the section to be associated therewith. Due to the stiffness of the metal, the ribs effect snap fastening engagement to hold the sections in assembled relation.

The upper portions of the canopy may be provided with like ribs and depressions but, if so, care must be exercised in separating the sections in event such becomes necessary later. Instead, screws **57** may be used, the screws passing through the flanges and into suitable screw holes in the strap **50**. The heads of the screws overlie adjacent margins of the sections, clamp the flange **55** against the strap **50** and clamp the margin of the unflanged section against the flange.

If desired, to eliminate the necessity of right and left hand canopy sections, only one flange may be provided on a section so that, when duplicate sections are turned end for end and assembled, one flange of each will telescope with an unflanged margin of the other.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims or the equivelent of such be employed.

I therefore particularly point out and distinctly claim as my invention:

1. A luminaire element comprising a horizontally disposed elongated body having vertical end walls, flanges on the end walls, respectively, and aligned endwise of the body with each other and extending generally toward each other and sloping downwardly and outwardly, an elongated panel extending between the end walls and having its end margins in engagement with the inboard faces of the flanges, upwardly open hook means on said body adjacent the ends engaging the lower edge of said panel, and resilient means carried by said end walls detachably engaging the panel adjacent the upper edge and adjacent the ends and yieldably urging the end margins of the

panel against the inboard faces of the flanges, each of said means comprising a leaf spring connected at its lower end in generally upright position to one of the end walls and having a portion adjacent its upper end sloping, inwardly of the body, away from the associated flange and out of engagement with said pane.

2. A luminaire element comprising an elongated body, an end assemblage at one end thereof and including an end wall, duplicate flanges on the said wall extending in opposite directions from the general plane of the wall and aligned with each other endwise of the body, resilient means carried by the wall and having portions yieldably urged toward the inboard faces of said duplicate flanges, respectively, a panel detachably receivable at one end between either of said flanges and its associated resilient means and held by the latter against the former when so received, an end cap for the end of the body and having a flange detachably receivable between either of said flanges and its associated resilient means and held by the latter against the former when so received, said body having at its other end a duplicate end wall assemblage, and said panel being of a length to extend substantially from one end wall to the other.

3. A luminaire element comprising an elongated body having end walls, resilient fastening means on the end walls, respectively, and aligned with each other endwise of the body, a panel of translucent synthetic plastic material detachably operatively held at its ends by said fastening means, said panel having transverse projections thereon, and metal reinforcing means secured to said projections and extending lengthwise of the pane substantially to the ends thereof.

4. A luminaire element comprising an elongated body, and an assemblage between the ends thereof and including a transverse wall, duplicate flanges on the said wall extending in opposite directions from the general plane of the wall and aligned with each other endwise of the body, resilient means carried by the wall and having portions yieldably urged toward the inboard faces of said duplicate flanges, respectively, a pair of endwise adjacent panels extending lengthwise of said body, each of said panels being detachably receivable at one end between one of said duplicate flanges and its associated resilient means and held by the latter against the former when so received, said body having at its opposite ends duplicate wall assemblages, and said panels each being of a length to extend substantially from said first wall to the wall at one end of said body and similarly held in place at its other end against the inboard face of the duplicate flanges of the respective duplicate wall assemblages, and an end cap for each end of said elongated body provided with a flange fitted between the flange and associated resilient means of the respective duplicate wall assemblages and resiliently engaged by the latter for frictionally retaining each said end cap at the respective ends of said body.

5. A luminaire element comprising an elongated body, and an assemblage between the ends thereof and including a transverse wall, duplicate flanges on the said wall extending in opposite directions from the general plane of the wall and aligned with each other endwise of the body, resilient means carried by the wall and having portions yieldably urged toward the inboard faces of said duplicate flanges, respectively, a pair of endwise adjacent panels each extending lengthwise of said body, each of said panels being detachably receivable at one end between one of said duplicate flanges and its associated resilient means and held by the latter against the former when so received, and hook means rigid with said wall and positioned to engage the lateral edges of the panel adjacent the flanges when the panel is so held, said body having at its opposite ends duplicate wall assemblages, and said panels each being of a length to extend substantially from said first wall to the wall at one end of said body and similarly held in place against the respective flanges of said duplicate assemblages by the resilient means and hook means of said duplicate assemblages, and an end cap for each end of said elongated body provided with a flange fitted between the flange and associated resilient means of the respective duplicate wall assemblages and resiliently engaged by the latter for frictionally retaining each said end cap at the respective ends of said body.

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