

Dec. 3, 1946.

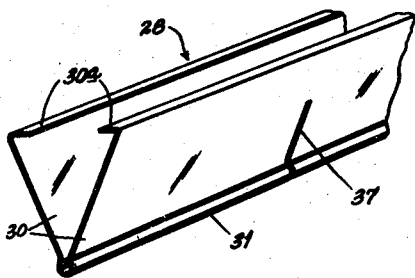
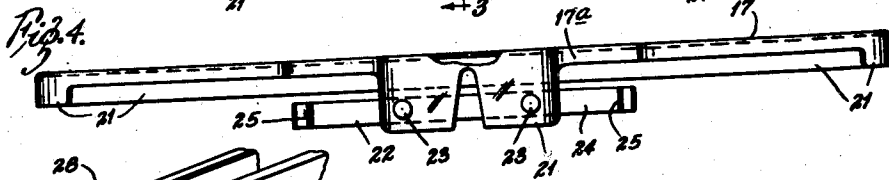
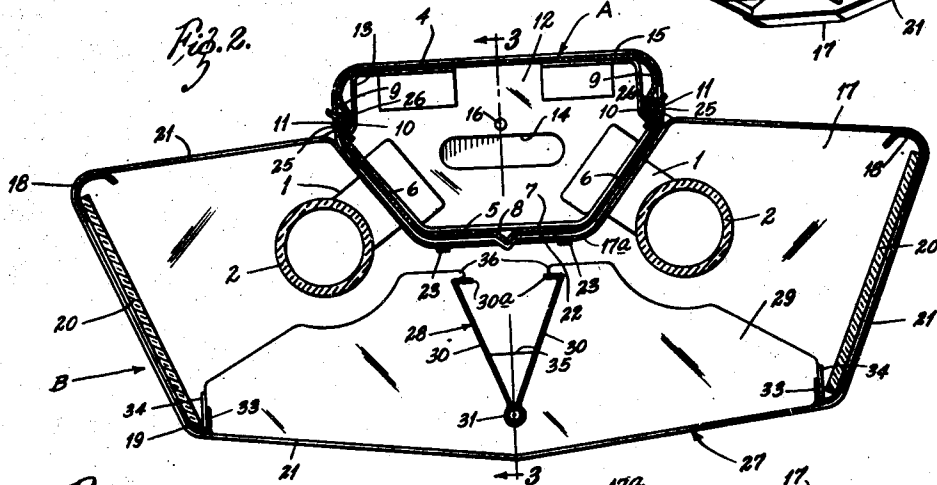
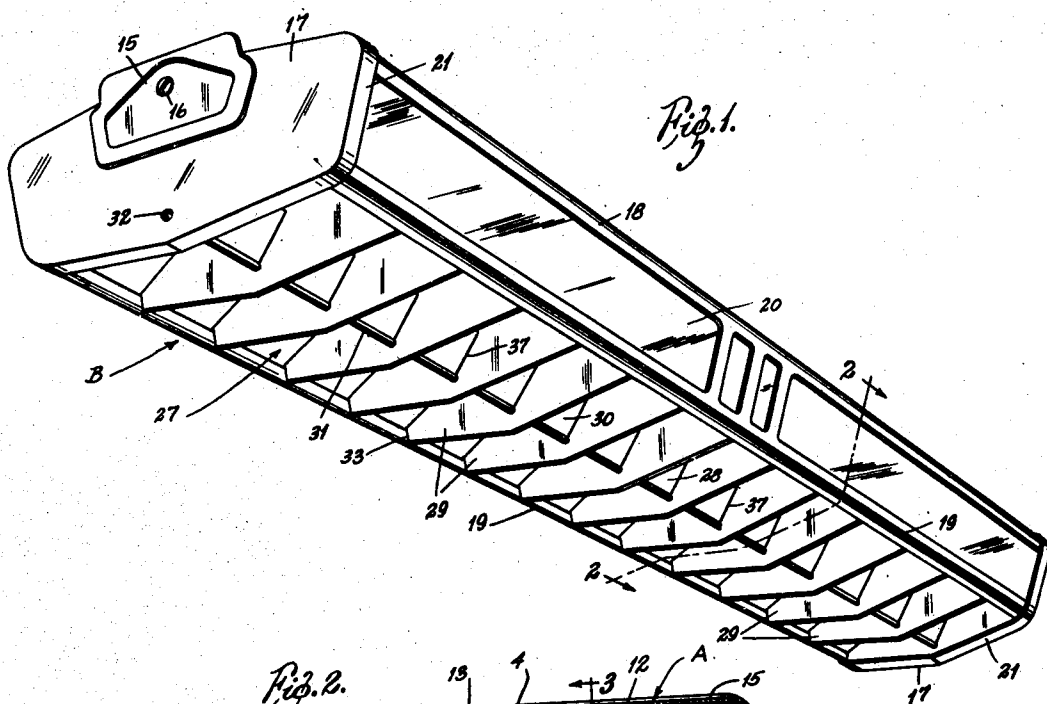
D. J. BILLER

2,411,952

OVERHEAD ELECTRIC LIGHTING FIXTURE

Filed Sept. 9, 1944

2 Sheets-Sheet 1



INVENTOR:

David J. Biller,
by Can. Lauterbach.

HIS ATTORNEYS.

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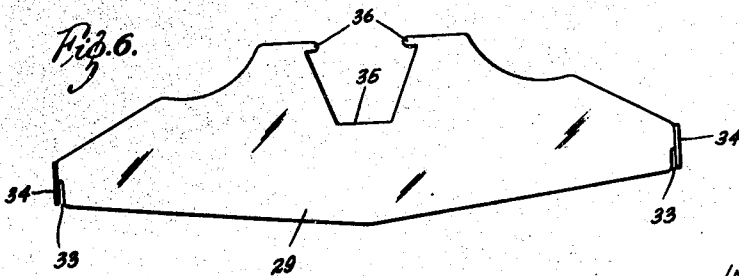
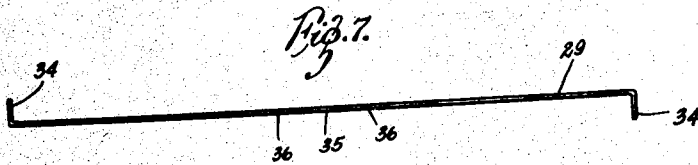
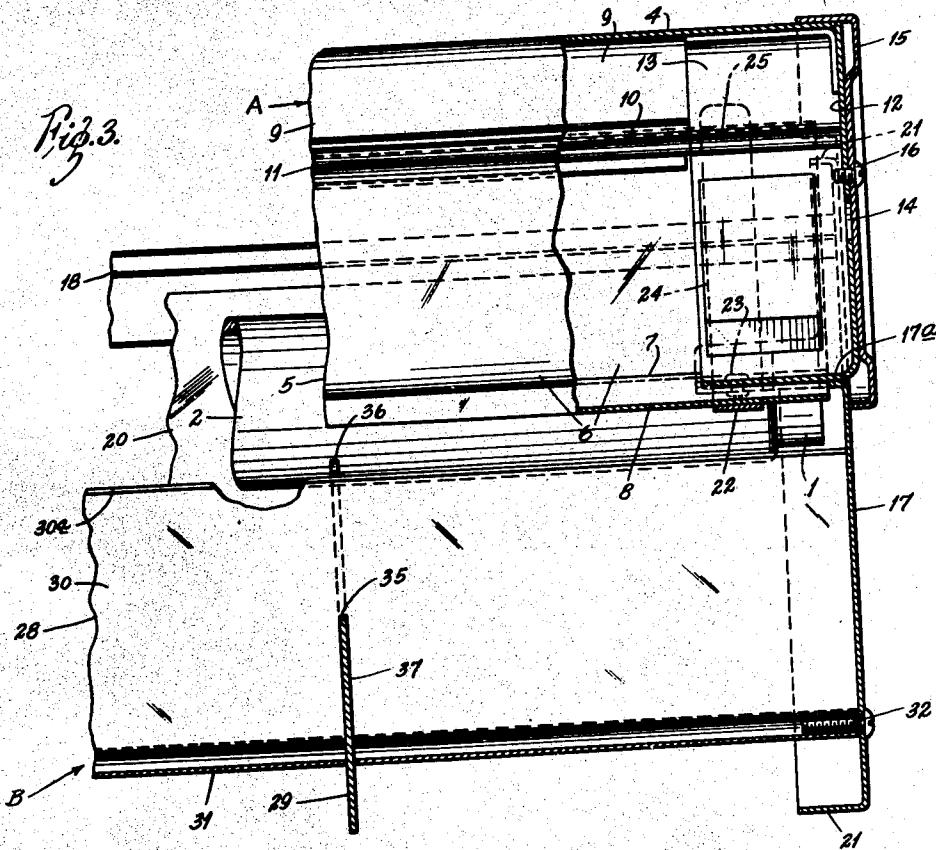
D. J. BILLER

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OVERHEAD ELECTRIC LIGHTING FIXTURE

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2 Sheets-Sheet 2



INVENTOR:
David J. Biller,
by Carl Hare Kravely,
HIS ATTORNEYS.

UNITED STATES PATENT OFFICE

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OVERHEAD ELECTRIC LIGHTING FIXTURE

David J. Biller, St. Louis, Mo., assignor to Day-Brite Lighting, Inc., St. Louis, Mo., a corporation of Missouri

Application September 9, 1944, Serial No. 553,331

5 Claims. (Cl. 240-78)

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This invention relates to electric lighting fixtures, particularly overhead fluorescent lighting fixtures of the kind having a removable light modifying trough with a louvered light emitting opening in the bottom thereof.

The invention has for its principal objects to provide an increased output and controlled distribution of the light emanating from the louvered opening in the bottom of the lighting trough; to provide for the easy mounting, adequate support and proper spacing of the louvers for said opening; and to provide for the easy attachment and removal of said lighting trough.

The invention consists principally in providing the bottom opening of the lighting trough with a central longitudinal louver having downwardly converging specular side surfaces that reflect the light downwardly and outwardly on opposite sides of the trough to thereby increase the intensity of the light and direct it into the desired zone; it also consists in utilizing such central longitudinal louver as a means for accurately spacing cross louvers lengthwise of said opening; and it also consists in providing the electric lighting fixture with quick releasable snap fastening means for attaching said lighting trough to said fixture. The invention further consists in the louvered fluorescent lighting fixture and in the parts and combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a perspective view, looking from below, of a louvered fluorescent lighting fixture embodying my invention,

Fig. 2 is an enlarged vertical cross-sectional view on the line 2-2 in Fig. 1,

Fig. 3 is an enlarged fragmentary central vertical longitudinal sectional view on the line 3-3 in Fig. 2,

Fig. 4 is a top plan view of one of the end walls of the lighting trough,

Fig. 5 is a perspective view of a portion of the longitudinal specular louver,

Fig. 6 is a side elevational view of one of the transverse louvers; and

Fig. 7 is a top plan view of the transverse louver shown in Fig. 6.

In the accompanying drawings, my invention is shown embodied in a fluorescent lighting fixture comprising an elongated upper wiring housing A adapted for direct attachment to or suspension from a ceiling or other overhead support

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(not shown), suitable lampholders 1 projecting from opposite sides of said housing near the ends thereof, tubular fluorescent lamps 2 extending longitudinally of said housing and supported at their ends in said lampholders, and a lower elongated light modifying member in the form of a trough B that encloses the lower portion of said housing and the lamps supported exteriorly thereof.

The housing A preferably comprises an inverted channel-shaped upper section 4 and a quick-detachable lower channel-shaped section 5 having upwardly diverging flanges or side walls 6 and a bottom 7 with an exterior longitudinal strengthening rib 8 pressed therein. The side walls or flanges 9 of the upper, inverted channel-shaped section 4 of the housing A have their lower marginal portions bent to provide outwardly opening longitudinal grooves 10 along the outer side faces of said flanges; and the upper margins of the diverging side walls 6 of the channel-shaped lower section 5 of said housing are bent to provide inwardly facing longitudinal beads or ribs 11 adapted, when said lower section is forced upwardly into engagement with said upper section, to snap into said longitudinal side grooves thereof and thus releasably secure said lower section thereto. The lampholders 1 are mounted in the lower section 5 for attachment and removal therewith.

The housing A is closed at each end by means of an end plate 12 fixed to a strap or stirrup 13 which is located within the upper section 4 of said housing and has its upper ends welded or otherwise permanently secured to the top wall thereof. The stirrup 13 extends below the depending side flanges 9 of the upper housing section 4 where it is shaped to conform to the cross-sectional shape of the lower housing section 5 whose bottom 7 and upwardly diverging sides 6 seat against the correspondingly shaped portions of said stirrup and thus limit the upward movement of said lower section relative to said upper section. As shown in the drawings, each end closure plate 12 of the housing A has a wiring opening 14 therethrough that is normally covered by an ornamental cover plate 15 detachably secured to said end wall by means of a screw 16 or other suitable fastener. When, however, two or more housings A are arranged in end to end relation to form a continuous lighting fixture, the ornamental cover plates 15 at the abutting ends of such housings are removed to permit flush engagement of the end closure plates 12 thereof and to establish communication between said

housings through the wiring openings 14 in said end closure plates.

The light modifying trough B comprises end walls 17 connected on opposite sides of the trough by means of top and bottom side rails 18 and 19, respectively, said top rails being of substantially inverted channel-shaped section and said bottom rails being in the form of upwardly opening channels. The side openings defined by the end walls 17 of the trough B and upper and lower side rails 18 and 19 thereof are closed by light transmitting panels 20 that are supported in said side rails and on inwardly extending flanges 21 that extend continuously around the edges of the end walls 17 of said trough. The end walls 17 of the lighting trough B have central depressions 17a in the tops thereof that are shaped to fit the quick attachable and detachable lower section 5 of the wiring housing B below the snap ribs 11 along the upper side edge of said section. Mounted in the recess 17a in each end wall 17 of the lighting trough B is a channel-shaped spring clip 22 which is riveted or otherwise permanently secured, as at 23, to the bottom of said recess and has upwardly diverging spring arms 24 that extend along opposite sides of said recess and terminate at their upper ends in locking ribs or beads 25 adapted, when said trough is forced upwardly against the underside of the lower section of said housing, to snap into the outwardly facing grooves 26 formed in said section by the inwardly facing ribs 11 at the upper ends of the upwardly diverging side walls 6 thereof and thus releasably secure said trough to said housing.

The bottom side rails 19 and inwardly extending edge flanges 21 of the end walls 17 of the lighting trough B cooperate to define a light emitting opening 27 in the bottom thereof. This bottom opening 27 is provided with a louver construction comprising a single longitudinal louver 28 and a plurality of cross or transverse louvers 29. The central longitudinal louver 28 is of V-shaped cross-section; that is, it comprises upwardly diverging resilient side walls 30 connected by a hollow longitudinal bottom bead or rib 31 and terminating at their free upper edges in intumed flanges 30a. The longitudinal louver 28 extends from end to end of the lighting trough B and is held in place by means of screws 32 that extend through the end walls 17 of said trough and have self-threading engagement in the adjacent ends of the hollow rib or bead 31 which has a spring grip on said screws and thus prevents them from working loose. The V-shaped louver 28 is located midway between the lamps 2 and extends below the level thereof and has a specular surface, whereby the upwardly flaring side walls 30 of said louver are adapted to direct the light rays angularly downwardly through the opening 27 in the bottom of the lighting trough B.

Each of the cross or transverse louvers 29 is in the form of an upright light reflecting plate that spans from side to side of the bottom opening 27 of the trough B and is notched, as at 33, to straddle the upstanding inner side walls of the bottom side rails 19 of said trough. The cross louver 29 terminates at its ends in laterally bent flanges 34 that are disposed in and seat on the bottom of the side rails 19 of the trough B. The outstanding end flanges 34 of the cross louver 29 extends one on each side thereof and bear flatwise against the inner side walls of the bottom side rails to prevent endwise movement of said louver. The transverse louver 29 has a notch 35 formed in its top midway of its ends that is of

less depth than the longitudinal louver 28 and is shaped to receive and confine the upper portions of the side walls 30 thereof. The notch 35 has inwardly extending lugs 36 at its upper corners that seat on top of the intumed top flanges 30a of the longitudinal louver 28. The longitudinal louver 28 has a series of vertical slots 37 therein that are spaced apart longitudinally thereof and extend upwardly through the beaded lower edge 31 of said louver and upwardly along the diverging side walls 30 thereof. The cross louvers 29 extend through the slots 37 in the longitudinal louver 28 and are thus spaced apart thereby; and the upper ends of said slots seat on the bottoms of the notches 35 in said cross louvers, whereby said cross louvers are adapted to provide vertical support for said longitudinal louver intermediate between the ends thereof.

The hereinbefore described construction has several important advantages. The snap fastening means provided by the rib-and-groove connections between the two sections of the wiring housing permit the lower section to be quickly and easily attached to and removed from the upper section; and, likewise, the similar spring clip connections between the lighting trough and said wiring housing provide for quick attachment and removal of said lighting trough without disturbing the louvers therein. The central longitudinal specular louver increases the light output through the bottom opening in the lighting trough and permits controlling the distribution of the light so that it may be directed into the desired zone. By disposing the sides of the specular louver at the proper angle, and properly positioning said louver with respect to the lamps, an angle of distribution of light may be obtained that will direct the light so as to avoid direct glare in the eye at the normal angle of vision. Thus the specular louver may perform its normal louver function of shielding against glare and at the same time increase the intensity of the light emanating from the fixture. The longitudinal louver is quickly and easily secured in position in the lighting trough by means of the screws threaded into the beaded lower edge. The bead creates a strong tension that prevents it from opening up when engaged by the screw. Thus a thread cutting screw may be used and there is no necessity for special internal threaded devices for receiving the screws. The cross louvers are firmly held by the longitudinal louver in proper spaced relation and against cross tilting; and the cross louvers are supported at their ends in the bottom side rails of the trough and are held by said rails against endwise movement and provide vertical support for the longitudinal louver intermediate between its ends. The longitudinal and cross louvers are quickly and easily locked together in proper assembled relation by forcing the cross louvers into the slots in the longitudinal louver until the bottoms of the notches in the cross louvers abut against the upper ends of said slots and the lugs at the upper corners of said notches ride over and seat on the intumed flanges at the upper edges of the flaring side walls of said longitudinal louver.

Obviously, the hereinbefore described electric lighting fixture admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the precise construction shown and described.

What I claim is:

1. An overhead electric lighting fixture comprising an elongated light modifying trough hav-

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ing a longitudinal opening in the bottom thereof, spaced longitudinally disposed tubular lamps in said trough, and a louver extending longitudinally of said trough opposite said opening and intermediate between said spaced lamps, said louver having upwardly flaring specular opposite side faces adapted to reflect the rays of said lamps angularly downwardly through said opening, and a series of spaced transverse louvers located in said trough and spanning from side to side of said opening, said longitudinal louver having cross slots therein spaced apart longitudinally thereof, said transverse louvers extending through said slots.

2. An overhead electric lighting fixture comprising an elongated light modifying trough having a longitudinal opening in the bottom thereof, spaced longitudinally disposed tubular lamps in said trough, a louver extending longitudinally of said trough opposite said opening and substantially between said spaced lamps, said louver having upwardly flaring specular opposite side faces adapted to reflect the rays of said lamp angularly downwardly through said opening, and a series of spaced transverse louvers mounted in said trough and spanning said opening, said longitudinal louver having a series of spaced transverse slots in the lower portion thereof, said transverse louvers extending through said slots and having notches in their upper edges with bottom edges seating against the upper ends of said slots and upwardly flaring side edges seating against said upwardly flaring side faces of said longitudinal louver above the slots therein.

3. An overhead electric lighting fixture comprising an elongated light modifying trough having a longitudinal opening in the bottom thereof, spaced longitudinally disposed tubular lamps in said trough, a louver extending longitudinally of said trough opposite said opening and substantially between said spaced lamps, said louver having upwardly flaring specular opposite side faces adapted to reflect the rays of said lamp angularly downwardly through said opening, and a series of spaced transverse louvers mounted in said trough and spanning said opening, said longitudinal louver having a series of spaced transverse slots in the lower portion thereof, said transverse louvers extending through said slots and having notches in their upper edges with bottom edges seating against the upper ends of said slots and upwardly flaring side edges seating against said upwardly flaring side faces of said longitudinal

louver above the slots therein, said transverse louvers having inwardly projecting lugs at the tops of the side edges of the notches therein that seat on the top of said longitudinal louver.

4. An overhead electric lighting fixture comprising an elongated light modifying trough having a longitudinal opening in the bottom thereof, spaced longitudinally disposed tubular lamps in said trough, a louver extending longitudinally of said trough opposite said opening and substantially between said spaced lamps, said louver having upwardly flaring specular opposite side faces adapted to reflect the rays of said lamp angularly downwardly through said opening, and a series of spaced transverse louvers mounted in said trough and spanning said opening, said longitudinal louver having a series of spaced transverse slots in the lower portion thereof, said transverse louvers extending through said slots and having notches in their upper edges with bottom edges seating against the upper ends of said slots and upwardly flaring side edges seating against said upwardly flaring side faces of said longitudinal louver above the slots therein, said trough including longitudinal side rails of substantially channel-shaped cross-section defining the longitudinal side edges of said opening, said transverse louvers having their lower edges notched to straddle the inner side walls of said side rails and having laterally bent ends supported in said side rails.

5. An overhead electric lighting fixture comprising an elongated light modifying trough having a longitudinal opening in the bottom thereof, spaced longitudinally disposed tubular lamps in said trough, and a louver extending longitudinally of said trough opposite said opening and intermediate between said spaced lamps, said louver having upwardly flaring opposite side walls adapted to reflect the rays of said lamps angularly downwardly through said opening, and a series of spaced transverse louvers located in said trough and spanning from side to side of said opening, said longitudinal louver having downwardly opening cross slots therein spaced apart longitudinally thereof, said transverse louvers extending through said slots and having upwardly opening notches shaped to receive and confine said upwardly flaring opposite side walls of said longitudinal louver above the downwardly opening cross slots therein.

DAVID J. BILLER.