Jan. 11, 1938. A. L. ARENBERG 2,105,447

LIGHTING FIXTURE

Filed July 20, 1936 3 Sheets-Sheet 1

Fig. 1

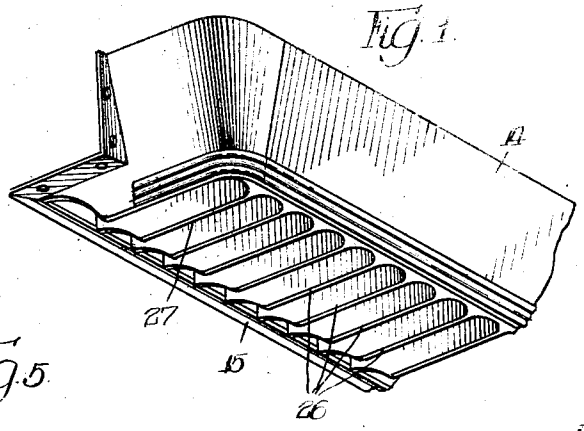


Fig. 5

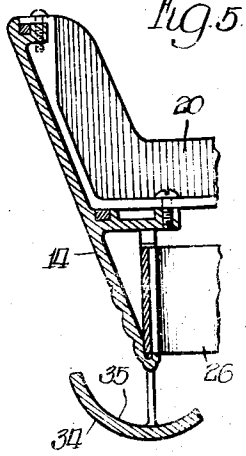


Fig. 2

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Jan. 11, 1938. A. L. ARENBERG 2,105,447

LIGHTING FIXTURE

Filed July 20, 1936 3 Sheets-Sheet 2

Fig. 3

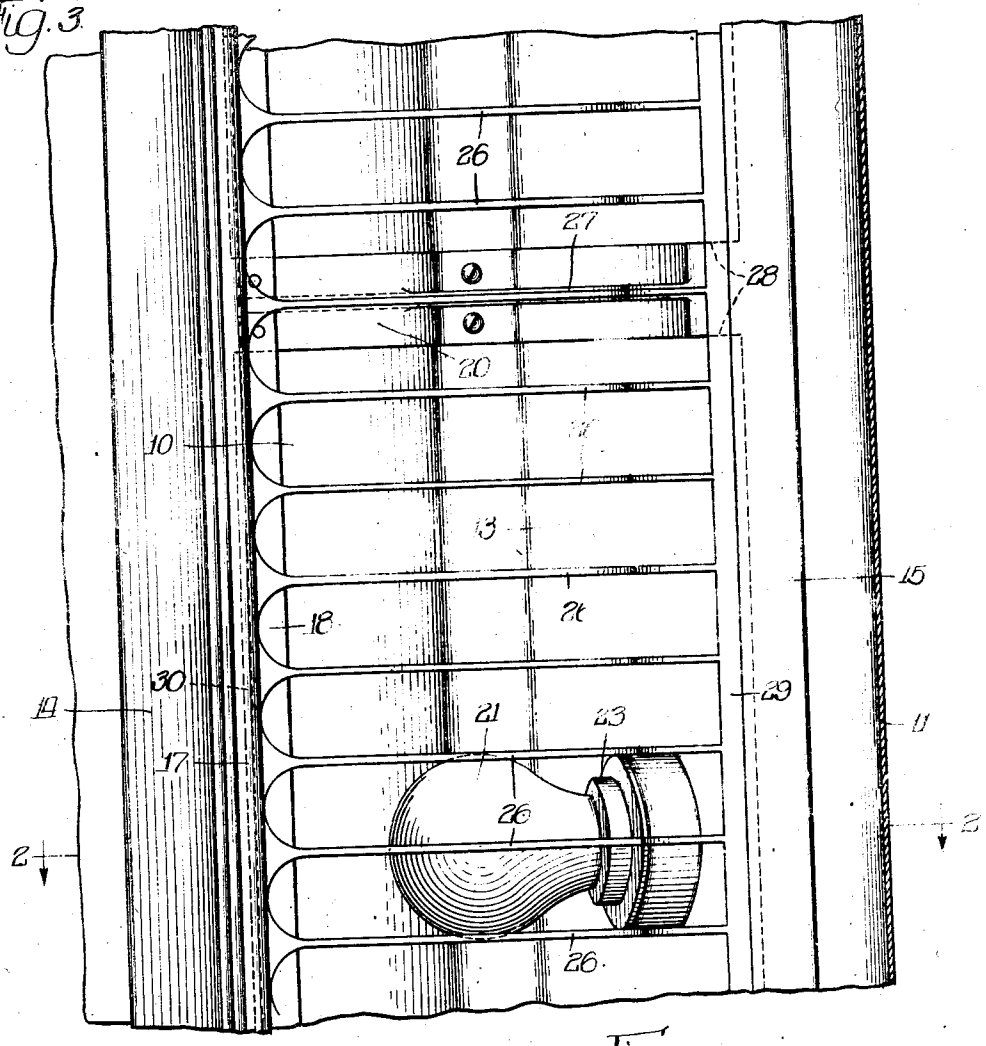
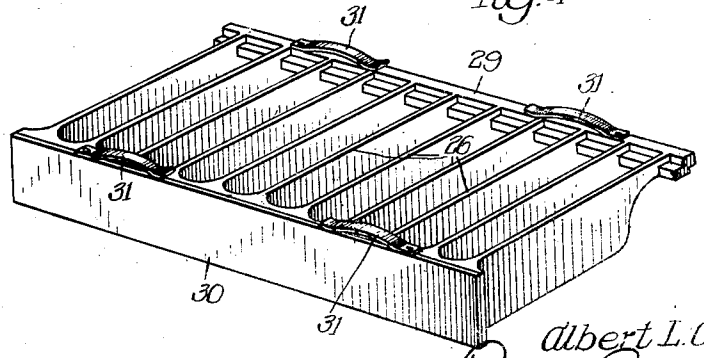


Fig. 4



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Jan. 11, 1938. A. L. ARENBERG 2,105,447

LIGHTING FIXTURE

Filed July 20, 1936 3 Sheets-Sheet 3

Fig. 6.

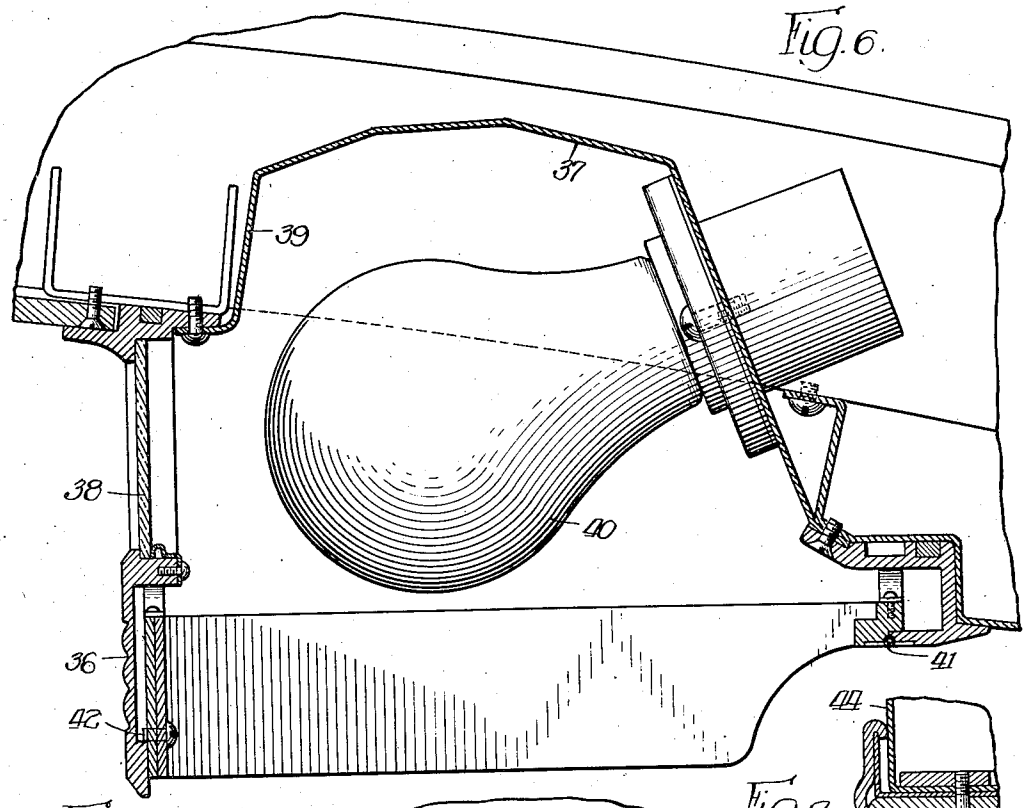


Fig. 7.

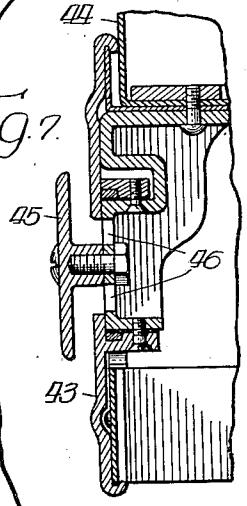
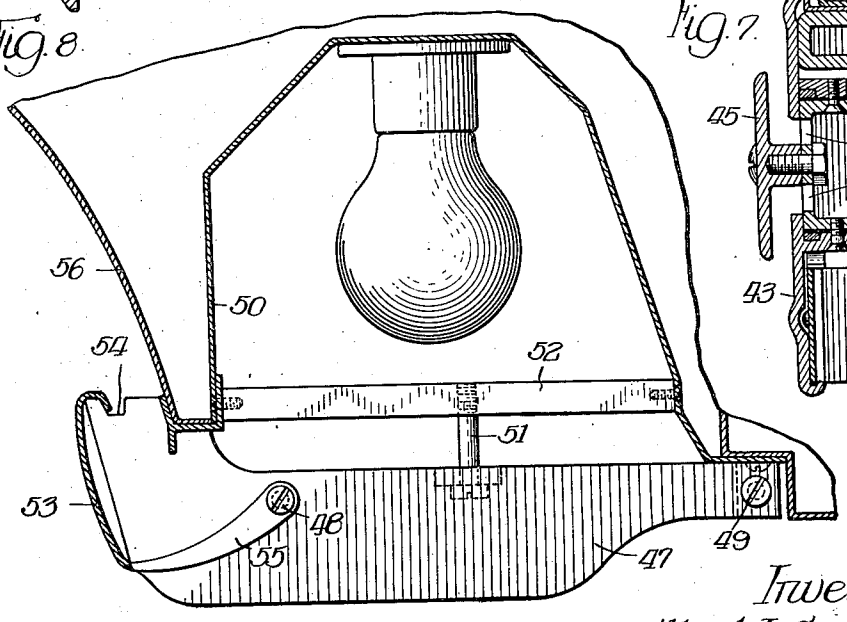


Fig. 8.



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Patented Jan. 11, 1938 2,105,447

UNITED STATES PATENT OFFICE

2,105,447

LIGHTING FIXTURE

Albert L. Arenberg, Highland Park, Ill., assignor to Patent License Corporation, Chicago, Ill., a corporation of Illinois

Application July 20, 1936, Serial No. 91,493

11 Claims. (Cl. 240—7.35)

This invention has to do with lighting fixtures for railway cars and other passenger vehicles, and is particularly concerned with lighting fixtures of the type adapted to extend continuously along both sides of the ceiling of a car above the seats.

One of the objects of the invention is to provide an improved lighting fixture in which a row of transversely disposed slat-like louvers is utilized to produce an effective distribution of light.

Another object of the invention is to provide in such a fixture an arrangement of the lamp bulbs which will furnish direct illumination for the reading areas at the seats and indirect illumination for the aisle between the rows of seats, all without any glare to the passengers either when sitting or standing and without the formation of any noticeable shadows.

Another object is to provide a strong, light, compact and inexpensive fixture, which is easy to open up for cleaning and renewal of the lamps, and which adds materially to the appearance of the interior of the car.

While the new fixture will ordinarily be made up so as to extend without interruption from substantially one end of the car to the other, it may of course be constructed in shorter longitudinally separated sections if desired.

Other objects and advantages of the invention will be apparent to those skilled in the art upon a full understanding of the construction and arrangement of the parts of which the fixture is composed.

A preferred embodiment of the invention and four modifications thereof are presented herein for the purpose of exemplification, but it will of course be appreciated that the invention is capable of being incorporated in still other structurally modified forms coming equally within the spirit of the invention and the scope of the appended claims.

In the accompanying drawings:

Fig. 1 is a perspective view of one end of the new fixture;

Fig. 2 is a vertical transverse section through the fixture, taken on the line 2—2 of Fig. 3;

Fig. 3 is a plan view of a portion of the fixture, looking upwardly at the under side of the same;

Fig. 4 is a perspective view of one of the removable louver sections;

Fig. 5 is a fragmentary section through one side of a modified form of the fixture;

Fig. 6 is a similar section, showing another modified form;

Fig. 7 shows another modification; and

Fig. 8 shows still another modification.

The new fixture is particularly well suited for application to a streamlined railway car. In the car structure shown in Fig. 2 of the drawings the raised deck portion 10 of the ceiling of the car is practically as wide as the car and terminates but a short distance from the side 11. A recess 12 is provided in the ceiling near the side for the reception of the lighting fixture, and from this recess the ceiling curves upwardly to the center of the top of the car above the aisle between the seats.

The lighting fixture includes a downwardly opening trough which is characterized by a reflector 13 and a face plate 14. The reflector is located along one side only of the trough and is curved transversely through approximately a quarter of a circle, with its upper edge attached to the ceiling where the latter starts upwardly and with its lower edge attached to a channel member 15. The face plate 14 is located along the aisle side of the trough, opposite the reflector, with the upper edge of the face plate spaced horizontally from the upper edge of the reflector so as to leave an opening 16 in the top of the trough, and with the lower edge of the face plate set inwardly somewhat with respect to the upper edge. The lower edge of the face plate is turned inwardly and upwardly to form a small ledge 17, and this ledge, together with the flange 18 which extends inwardly from the face plate, forms a channel member in opposition to the channel member 15.

The reflector 13 and the face plate 14 are supported on transverse brackets 20 which are located at regular intervals longitudinally of the fixture. These brackets follow the contour of the reflector from the channel member 15 to the upper edge of the reflector and then dip downwardly and extend across to the face plate 14 over the top of the flange 18 and upwardly against the inside of the face plate, the reflector and face plate being secured to the brackets at suitable points by means of screws.

Lamp bulbs 21 are positioned in the trough between the brackets 20. The bulbs project into the trough through openings 22 in the reflector 13 and are mounted in sockets 23 which are supported in adapters 24 secured to the back of the reflector. The wiring 25 for the sockets is located in the recess 12 behind the reflector.

The lower open face of the trough is spanned by a large number of closely arranged louver strips 26 which are disposed in planes at right

angles to the axis of the trough. These louver strips are removable except for single louver strips 27 which are located directly below the brackets 20. The single strips 27 are stationary and the ends of the same are secured in the channel members 15 and 19. The removable strips 26 between the stationary strips are grouped into rigid grid-like sections 28, with the ends of the strips in each of the sections attached to longitudinally extending bars 29 and 30. All of the strips preferably have their ends at the face plate flared, so that the ends of the slots between the strips are rounded. This not only enhances the appearance of the fixture as a whole but greatly facilitates cleaning.

The louver sections 28 fit snugly between the single separating louver strips 27, and all of the strips are so uniformly spaced and matched as to make the strips in the removable sections practically indistinguishable from the stationary strips on casual inspection. The connecting bars 29 and 30 for the strips in the removable sections fit respectively into the channel members 15 and 19 and are held down against the lower flanges of the channel members by means of leaf springs 31 on the upper edges of the bars, which springs bear against the upper flanges of the channel members.

To remove any of the louver sections from the trough, it is merely necessary to raise one side of the section far enough against the yielding resistance of the springs at that side to allow a groove 32 in the bar 29 to clear the edge of the lower flange of the channel member 15, whereupon the raised edge of the section can be shifted far enough into the channel member to allow the opposite edge of the section to clear the channel member 19. As soon as this has been done the louver section can be slipped out without any difficulty. To replace the section, this procedure is of course reversed. The position of the section when being removed or replaced is shown in dotted lines in Fig. 2.

The ends of the louver strips nearest the side 11 of the car are preferably reduced in vertical extent by having their lower edges curved upwardly at 33, whereby to prevent the formation of any noticeable shadows on the side of the car.

The arrangement of the reflector 13, face plate 14, opening 16 and louver strips 26 with respect to the lamp bulbs 21 is such as to produce an effective distribution of light. The seats along the side of the car beneath the lighting fixture and the reading areas about the seats receive direct illumination from the bulbs through the louver strips, which strips prevent any glare from the bulbs by shielding the latter from sight in the normal range of vision of a person looking lengthwise of the car. The face plate 14 similarly prevents any glare from the bulbs in the eyes of a person seated across the aisle or walking through the aisle. The bulbs project toward the face plate just far enough to illuminate the ceiling of the car through the gap 16, which results in indirect illumination of the aisle. The narrowed end portions 33 of the louver strips permit direct illumination of the side of the car without allowing the louver strips to cast any noticeable shadows thereon, but if such illumination is not desired these end portions of the strips can of course be easily blanked off by means of a longitudinally extending baffle strip of any suitable description. The upper portion of the inner surface of the face plate 14 serves as a reflector for increasing the illumination of the ceiling immediately adjacent the fixture. The reflector 13 of course serves to direct the light rays from the bulbs both downwardly and outwardly at an angle, whereby to provide a rather wide distribution of the direct lighting from the side of the car right up to the usual location of the center aisle.

In the modification which is shown in Fig. 5 a small longitudinally extending baffle plate 34 is positioned below the face plate 14 in spaced relation to the lower edge of the latter. This baffle plate is curved transversely and its concave upper surface 35 acts as a reflector for indirectly illuminating the ornamented outer surface of the face plate and the ceiling from the lamp bulbs in back of the face plate.

In the modification which is shown in Fig. 6 the face plate 36 is somewhat different in construction and function. It is not spaced from the reflector 37 at its upper edge but is arranged in a vertical position and is provided in its upper portion with a panel 38 of translucent material, through which panel the ceiling of the car is softly illuminated. In this particular fixture the reflector 37 curves downwardly at 39 on the aisle side of the lamp bulbs 40, whereby to rather strongly illuminate the upper portion of the side of the car. This feature is especially advantageous if the lighting fixture is used in a street car where advertising matter is ordinarily displayed at the side of the car close to the ceiling. In this modification the louver sections, instead of being bodily removable, are hinged at 41 to one edge of the trough and the opposite sides of the sections are removably held in position by set screws 42 or by any other suitable means.

In the modification which is shown in Fig. 7 the face plate 43 extends up to the side of the ceiling 44, without any spacing therebetween and without the addition of any glass panel. The outer surface of the panel 43 is indirectly illuminated by means of a baffle plate 45 which is spaced from the face plate and forms a shield over openings 46 in the face plate. Through these openings light rays from the bulbs behind the face plate reflect against the rear surface of the baffle plate 45 and illuminate the upper and lower portions of the front surface of the face plate.

In the modification which is shown in Fig. 8 the louver construction is different. All of the louvers are sheet metal stampings 47 which are secured together in spaced relation on tie rods 48 and 49. The louvers with their tie rods are grouped into longitudinally abutting units, and each of the units is held up in position against the bottom of the light trough 50 by means of hanger bolts 51 which screw into cross members 52. The ends of the louvers at the aisle side of the fixture are capped by a sheet metal face plate 53, which plate hooks over the ends of the louvers in a groove 54 formed in the latter and is held in position by tongues 55 which extend inwardly at intervals to the tie rod 48. The upper edge of the face plate 53 is preferably spaced from the adjacent portion 56 of the ceiling, whereby to permit light rays from the lamp bulbs to be reflected against the inside surface of the face plate onto the ceiling.

I claim:

1. In a car lighting fixture, a longitudinally extending trough characterized by a transversely curved downwardly directed reflector and a vertically disposed face plate in the form of a translucent panel along one side of the reflector, lamp bulbs in the trough, and closely spaced

louver strips which extend across the open face of the trough from the face plate in planes at right angles to the axis of the trough.

2. In a lighting fixture, a trough characterized by a transversely curved reflector and a face plate along one side of the reflector, lamp bulbs in the trough, and closely spaced louver strips which extend across the open face of the trough from the face plate in planes at right angles to the axis of the trough, said louver strips being detachably secured to the trough in groups of several which are removable as units, and said removable units being separated from each other by single fixed louver strips which form transverse reinforcements for the trough.

3. In a lighting fixture, a trough characterized by a transversely curved reflector and a face plate along one side of the reflector, transverse brackets for supporting the face plate relative to the reflector, lamp bulbs mounted in the trough between the brackets, single transverse louver strips which extend across the trough beneath the brackets, ledges at the edges of the trough, and rectangular grids composed of closely arranged transverse lover strips removably mounted on the ledges in the spaces present between the single louver strips.

4. In a lighting fixture, a trough characterized by a reflector, lamp bulbs in the trough, grooves along the sides of the trough, and closely spaced louver strips which extend across the open face of the trough in planes at right angles to the axis of the latter, said louver strips being formed into units, which units are removably mounted in the grooves.

5. In a lighting fixture, a trough for application to the ceiling of a railway car or other passenger vehicle at one side of the center aisle close to the side wall above the seats at that side, said trough being characterized by a transversely curved downwardly and laterally directed reflector and a face plate along the aisle side of the reflector, lamp bulbs in the trough, and closely spaced louver strips which extend across the open face of the trough from the face plate in planes at right angles to the axis of the trough, said face plate being spaced from the adjacent edge of the reflector, said louver strips being cut away along their lower edges near the side wall of the car, and said bulbs being so located as to cast light rays downwardly through the louvers onto the seat areas, laterally through the cut-away portions of the louvers onto the side wall, and upwardly through the gap between the face plate and the reflector onto the ceiling above the aisle.

6. In a lighting fixture, a trough characterized by a transversely curved downwardly and laterally directed reflector and a face plate which is spaced from the edge of the reflector to provide a gap therebetween, lamp bulbs in the trough, horizontally disposed light-transmitting panels arranged across the open face of the trough between the lower edge of the face plate and the lower edge of the reflector, and a baffle plate associated with the face plate for permitting indirect illumination of the latter and the ceiling from the bulbs.

7. In a lighting fixture, a trough characterized by a transversely curved downwardly and laterally directed reflector and a face plate which is spaced from the edge of the reflector to provide a gap therebetween, lamp bulbs in the trough, horizontally disposed light-transmitting panels arranged across the open face of the trough between the lower edge of the face plate and the lower edge of the reflector, and a baffle plate associated with the face plate for permitting indirect illumination of the latter from the bulbs, said baffle plate being positioned beneath the face plate in spaced relation to the lower edge of the latter.

8. In a lighting fixture, a trough for application to the ceiling of a railway car or other passenger vehicle at one side of the center aisle above the seats at that side, said trough being characterized by a transversely curved downwardly directed reflector and a face plate in the form of a translucent panel along one side of the reflector, lamp bulbs in the trough, and closely spaced louver strips which extend across the open face of the trough at right angles to the axis of the trough, the position of the bulbs with respect to the lower side edges of the face place and reflector being such as to give unsymmetrical light distribution with a sharp cut-off angle on the side toward the aisle to prevent glare in passengers' eyes across the aisle and with a wider cut-off angle on the side toward the wall to illuminate the wall and any advertising matter thereon.

9. In a lighting fixture, a trough for application to the ceiling of a railway car or other passenger vehicle at one side of the center aisle above the seats at that side, said trough being characterized by a transversely curved downwardly directed reflector, lamp bulbs in the trough, and closely spaced louver strips which extend across the open face of the trough at right angles to the axis of the trough, the position of the bulbs with respect to the side edges of the trough being such as to give unsymmetrical light distribution with a sharp cut-off angle on the side toward the aisle to prevent glare in passengers' eyes across the aisle and with a wider cut-off angle on the side toward the wall to illuminate the wall and any advertising matter thereon, said trough being provided in the aisle side thereof with a translucent panel for illuminating the ceiling above the aisle.

10. In a lighting fixture, a trough characterized by a reflector, lamp bulbs in the trough, and closely spaced louver strips which extend across the open face of the trough in planes at right angles to the axis of the latter, the sides of the strips at corresponding ends thereof being flared outwardly toward each other to provide rounded ends to the slots present between the strips.

11. In a lighting fixture, a trough characterized by a reflector, lamp bulbs in the trough, and closely spaced louver strips which extend across the open face of the trough in planes at right angles to the axis of the latter, the lower edges of the strips at one side of the trough being tapered upwardly toward the upper edges to eliminate formation of shadows on any wall surfaces adjacent said side.

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