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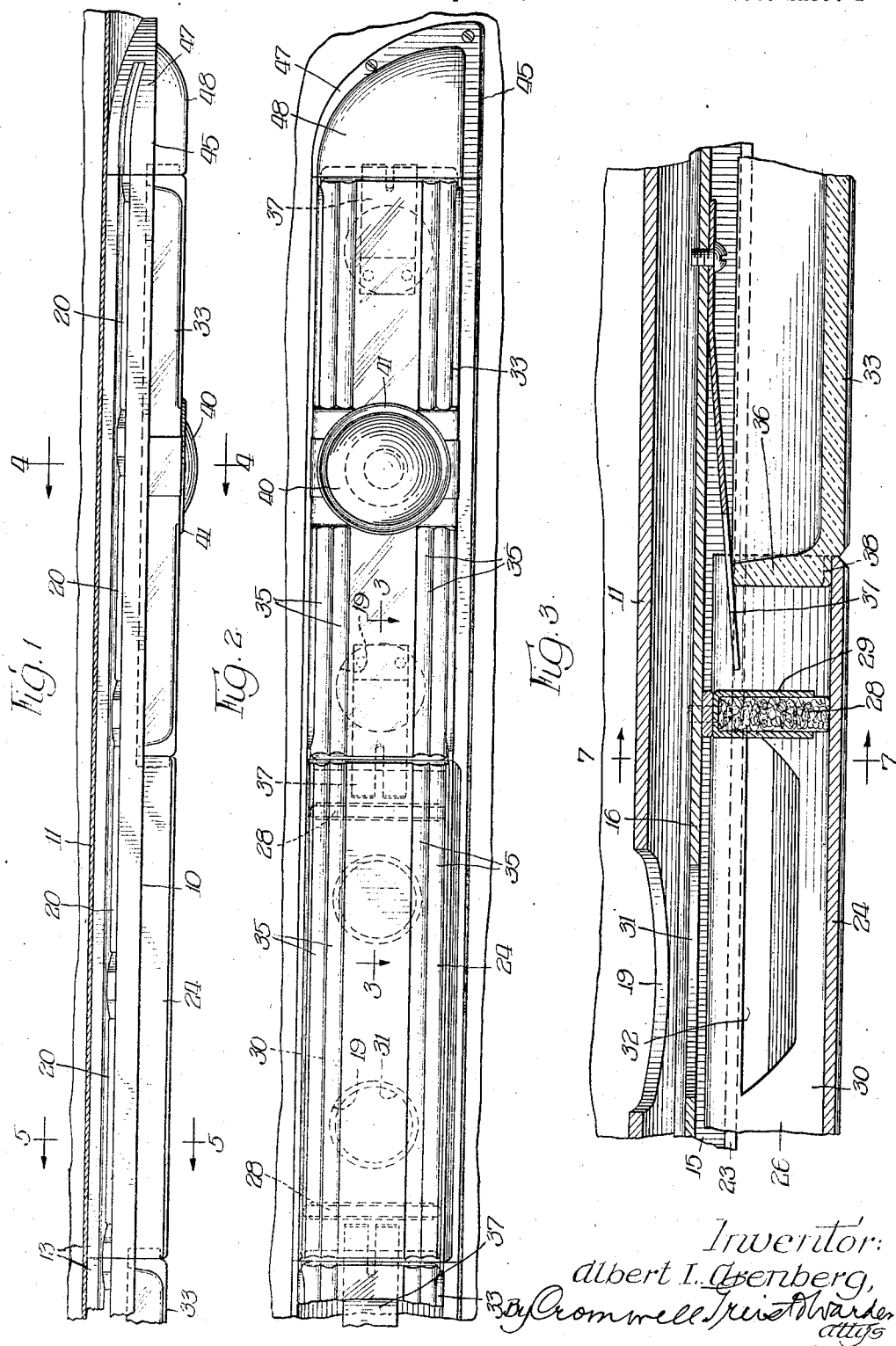
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2,167,383

LIGHTING FIXTURE

Filed April 8, 1936

3 Sheets-Sheet 1



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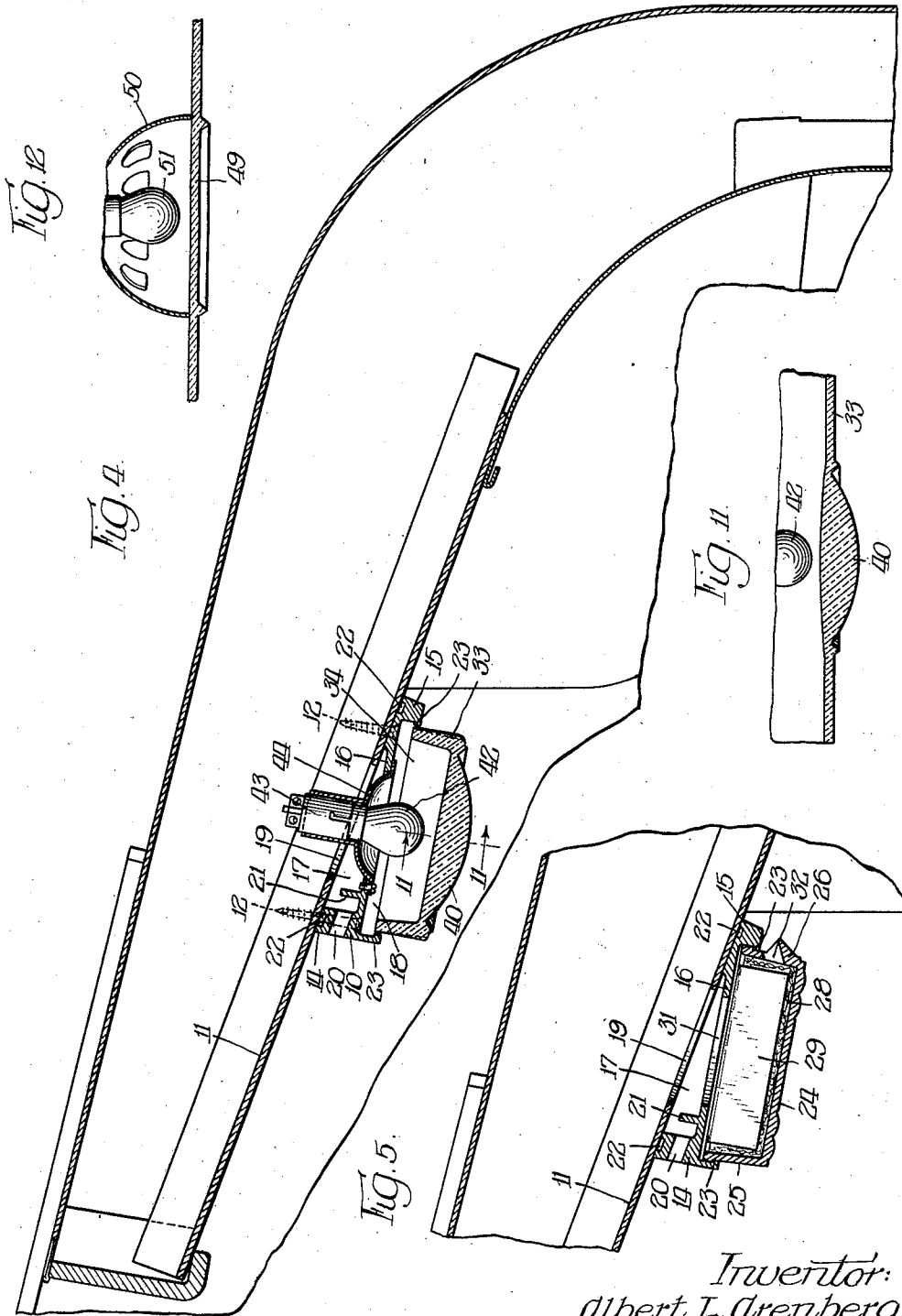
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3 Sheets-Sheet 2



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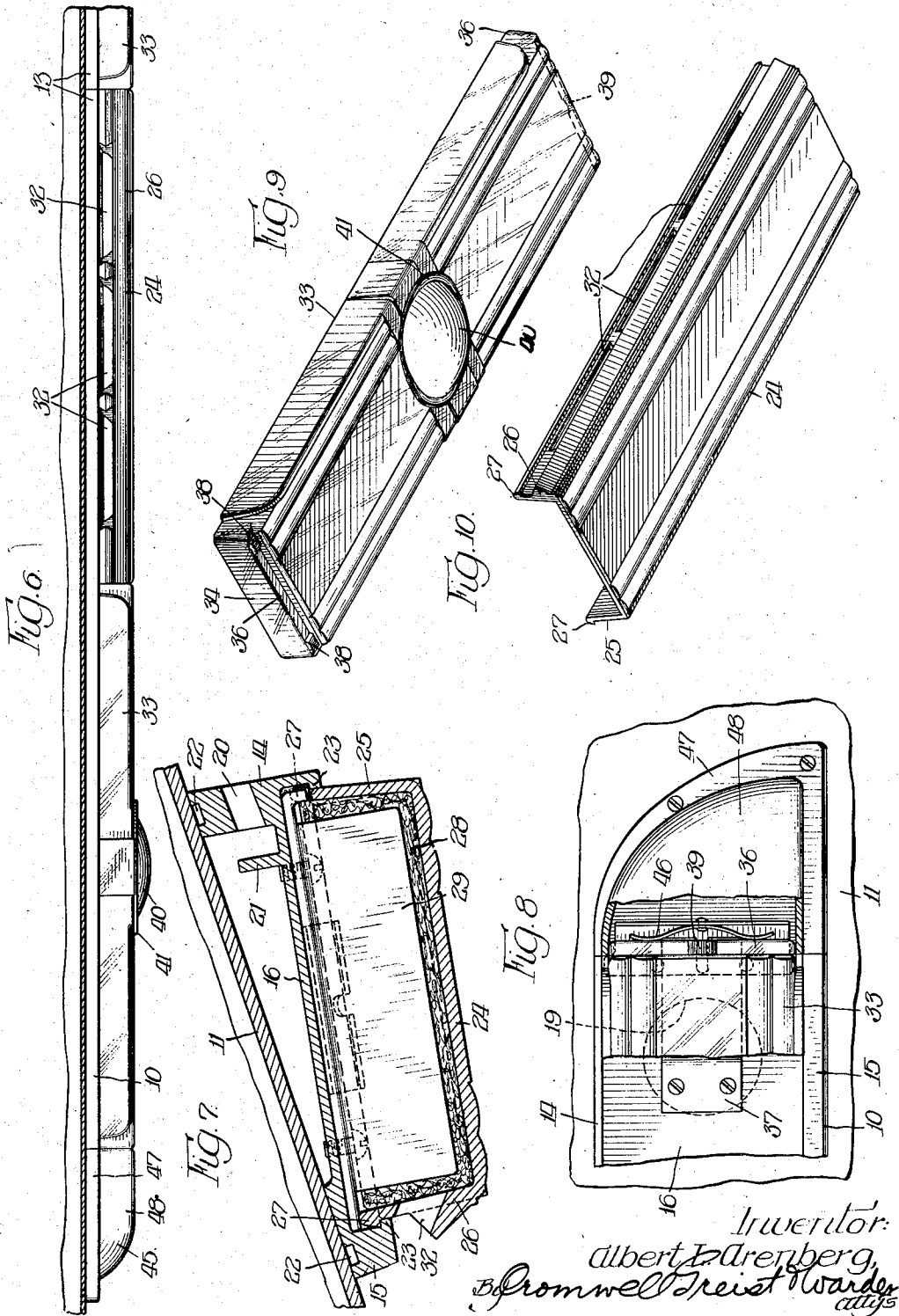
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UNITED STATES PATENT OFFICE

2,167,383

LIGHTING FIXTURE

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11 Claims. (Cl. 240—7.35)

The object of this invention is to provide an improved lighting fixture for buses and other vehicles.

The new fixture is a combination lighting and ventilating fixture which is adapted to be applied to the ceiling of the bus. The fixture is long and narrow and of but little depth, and when it is applied to the ceiling it will extend practically the full length of the latter and give much the same architectural effect as an inconspicuous but highly attractive molding. Two of the fixtures can advantageously be used in one bus, each of the fixtures being preferably fastened to the curved part of the ceiling at each side of the bus above the row of seats at that side.

The fixture will furnish shadowless illumination for the reading areas of the seats in the bus, in accordance with the disclosure in Patent No. 2,020,273 and will at the same time provide evenly distributed draftless ventilation for the interior of the bus.

Other more specific objects and advantages of the invention will be apparent to those skilled in the art upon a full understanding of the construction of the fixture.

One embodiment of the invention is presented herein, but it will of course be appreciated that such embodiment has been chosen primarily for the purpose of illustration and that the invention is capable of being embodied in other structurally modified form coming equally within the scope of the appended claims.

In the accompanying drawings:

Fig. 1 is a side view of a portion of the fixture;
Fig. 2 is a bottom view of the same portion;

Fig. 3 is a vertical longitudinal section through the fixture and ceiling of the bus, taken on the line 3—3 of Fig. 2;

Fig. 4 is a vertical transverse section through the fixture and ceiling, taken on the line 4—4 of Fig. 1.

Fig. 5 is a similar section, taken on the line 5—5 of Fig. 1;

Fig. 6 is a different side view of the fixture, showing the side opposite to that illustrated in Fig. 1;

Fig. 7 is a vertical transverse section, taken on the line 7—7 of Fig. 3;

Fig. 8 is a bottom view of the fixture at the extreme end thereof;

Fig. 9 is a perspective view of one of the glass panels;

Fig. 10 is a perspective view of one of the metal panels;

Fig. 11 is a vertical longitudinal section

through one of the glass panels, taken on the line 11—11 of Fig. 4; and

Fig. 12 is a sectional view, corresponding to Fig. 11, showing one of the glass panels in slightly modified form.

The fixture illustrated in the drawings includes an extruded aluminum base member 10 which extends the full length of the fixture and is adapted to be fastened securely against the ceiling 11 of the bus by means of screws 12. To facilitate manufacture and installation, the base member 10 is preferably made up in several comparatively short sections 13 which are connected together end to end in a straight line at the time of installation.

The base member 10 is wedge-shaped in cross section to conform in part to the slope of the ceiling and is characterized by a relatively wide flat side wall 14, a relatively narrow outer wall 15, an angularly disposed partition 16 between the side walls, an upwardly opening channel 17 above the partition, and a downwardly opening channel 18 below the partition. The portions of the side walls 14 and 15 which project upwardly from the partition are of widely different widths, while the portions of the side walls which project downwardly from the partition are substantially equal in width.

When the base member 10 is placed in position against the ceiling the upwardly opening channel 17 is closed off by the ceiling and forms a longitudinally extending air conduit which is connected with the space above the ceiling through one or more openings 19 in the latter. The wide inner side wall 14 of the base member, which faces toward the center aisle of the bus, is provided with a plurality of longitudinally disposed extending slots 20 which extend almost continuously in end to end relation throughout the length of the base member and communicate with the previously described air conduit located in the upper part of the base member above the partition 16. The slots 20 slope downwardly somewhat so as to conceal from view the inside of the base member from the aisle and give the slots more the appearance of an ornamental molding groove. An upstanding rib 21 is provided on the partition 16 immediately back of the slots to further conceal the interior of the fixture. The rib 21 also serves as a baffle for equalizing the distribution of air currents passing between the openings 19 and the relatively numerous slots 20. The upper edges of the side walls 14 and 15 are provided with small grooves 22 for the reception of dowel-like pins for use in

keying the sections 13 of the base member together in proper alignment, and the lower edges of the side walls are provided with small in-turned lips 23 for a purpose which will hereinafter be described.

The base member 10 serves to support a number of extruded aluminum panels 24 of upwardly opening U-shaped cross section which are elongated in the direction of extent of the base member and are spaced apart from each other approximately the same distance as their lengths. The panels 24 are provided on the upper edges of their side walls 25 and 26 with outturned hook-shaped lips 27 which snap resiliently behind the lip 23 on the side walls 14 and 15 of the base member when the panels are forced upwardly into the channel 18 in the base member and the side walls 25 and 26 are sprung inwardly far enough to allow the lips 27 to pass the lips 23. After the panels 24 have been assembled with the base member 10 in this fashion the interlocking lips will hold the panels in place and the tendency of the side walls of the panels to spring outwardly again will prevent the development of any play.

The panels 24 form with the base member 10 a metal casing which is generally rectangular in cross section at the spaced locations of such panels. The ends of the panels 24 are sealed off by blocks 28 of felt or other suitable packing material, which blocks are mounted in sheet metal brackets 29 attached to the under side of the partition 16. The sealing elements 28 divide the lower part of the base member 10 into a number of longitudinally separated air chambers 30. The partition 16 in the base member is provided above the panels 24 with openings 31 which connect the chambers 30 with the air conduit in the upper part of the base member, and the outer side walls of the panels 24 are provided with longitudinally disposed slots 32 which vent the chambers 30. The slots 32 open into the interior of the bus from the opposite side of the fixture from the slots 20 and are inclined upwardly toward the ceiling.

The gaps in the fixture between the metal panels 24 along the under side of the base member 10 are occupied by glass panels 33 which are of substantially the same size and shape as the metal panels 24 except for the addition of end walls 34. The bottoms and side walls of the glass panels 33 are arranged flush with the bottoms and side walls, respectively, of the metal panels 24, giving the effect of one long continuous molding of uniform cross-sectional shape, and whatever ornamental embellishments are formed on the surfaces of the metal panels, such as the longitudinal ribs 35, are preferably continued without appreciable interruption in the corresponding surfaces of the glass panels 33, all as clearly shown in Fig. 2.

When in position between the metal panels 24, the ends 36 of the glass panels 33 project into the ends of the metal panels and rest on the bottoms of the latter. The ends 36 are narrowed and upwardly offset a little where they project into the ends of the metal panels in order to keep the bottoms and sides of all of the panels substantially flush. The panels 33 are held in position by the pressure of leaf springs 37 which are fastened to the under side of the partition 16 of the base member and project downwardly at an angle into engagement with the upper edges of the end walls 34. The springs 37 will yield sufficiently to permit first one end of each glass

panel and then the other end to be inserted in place, the panel being shifted at the time of insertion first in one direction beyond its normal position and then in the other direction back to its normal position, in which latter position it is held again in endwise movement by the edges of the adjoining metal panels. Any possibility of the glass panels 33 rattling by rocking sidewise on the ends of the metal panels 24 due to unevennesses in the molded glass, is eliminated by providing a three-point support for each of the glass panels, two raised contact points 38 being provided on one end of each panel and a single raised contact point 39 being provided on the other end.

The glass panels 33 are frosted, enameled or otherwise treated to render them light-diffusing in character, the finish of the glass being preferably such as to match the finish of the adjoining metal as closely as possible when the fixture is viewed in daylight. At their centers the glass panels 33 are provided with clear glass lens portions 40, which lens portions are circular and downwardly convex on their bottoms, and are preferably set back up into the bottoms of the panels a little in order to leave circular rims 41 of diffusing glass around the same to partially blank off the lens portions from the side. The upper surfaces of the lens portions 40 on the inside of the glass panels are preferably flat crosswise of the panels and curved lengthwise of the panels, in order to produce an approximately oval light pattern in the area beneath each lens portion where two pieces of reading matter would normally be held in front of a double transversely disposed seat. In this respect, as well as in others, the lens units of this invention are improvements over those disclosed in the Patent No. 2,020,273.

Electric bulbs 42 are positioned in the fixture directly above the lens portions 40 of the glass panels. The bulbs 42 are mounted in sockets 43 and the sockets are in turn supported in reflectors 44 which are secured to the partition 16 of the base member over apertures provided in the partition. The wiring required for the sockets 43 may advantageously be disposed within the air conduit in the upper part of the base member.

The ends of the fixture are finished off with caps 45 into which the ends 36 of the last glass panels 33 of the fixture project. The open ends of the caps 45 cooperate with the ends of the glass panels in the same fashion as the open ends of the metal panels 24. If desired, leaf springs 46 may be fastened in the caps in positions where they will exert end pressure on the glass panels projecting into the caps. The size and shape of the end caps 45 are such as to conform to the adjoining portions of the fixture, that is to say, the end caps, though preferably made in one piece, are provided with rims 47 which have the appearance of being the ends of the base member. The rims 47 of the caps are preferably curved for the purpose of ornamentation and the portions 48 of the caps which continue flush with the bottoms of the last glass panels 33 are preferably rounded off for the same purpose.

The new fixture can be made up readily in any desired length. In the average bus two of the fixtures will be secured to the ceiling at opposite sides of the center aisle, above the rows of double seats, and each of the fixtures will have about ten or twelve of the illuminated glass panels in it, with a glass panel above every double seat. The enameled bottoms and sides of the panels will

illuminate the interior of the bus in every direction with softly diffused non-glaring light, while the lenses in the bottoms of the panels will produce downwardly directed overlapping shadowless beams on the reading areas of the seats, in accordance with the disclosure in Patent No. 2,020,073. These beams will cover but little more than the reading areas, with the result that the lenses will not appear as glaring bright spots to a passenger looking either ahead or behind in the bus and only the softly illuminated surfaces of the glass panels will be noticed. To render the brightness of the panels uniform throughout their light-diffusing areas, the enamel or frosting of such areas may be increased gradually in density near the locations of the light bulbs, so that the end portions of the panel will appear as bright as the center portions immediately surrounding the lenses.

The ease with which the glass panels may be removed and replaced permits them to be quickly cleaned and also permits the electric bulbs to be serviced without trouble. As the sections of the fixture into which the glass panels fit are entirely sealed off from the air currents passing through the other parts of the fixture, there is of course no accumulation in the panels of dust from any passing air currents.

The fixture is absolutely noiseless and will not rattle regardless of the severity of service to which the bus is subjected. The resilient engagement of the side walls of the metal panels with the side walls of the base member prevents any play developing between those parts, while the spring-pressed three-point engagement of the ends of the glass panels against the ends of the adjoining metal panels prevents the development of any noise at those locations.

To take out any of the glass panels, either to clean the latter or else replace the electric bulbs, it is merely necessary to push upwardly on one end of the panel against the yielding resistance of the spring thereabove, shift the panel endwise in one direction far enough for the opposite end to clear its seat, then lower that end and move the panel downwardly and outwardly in the direction in which it is then inclined.

This new fixture will provide excellent ventilation in both directions laterally of the same. The fresh air will enter the passageway 17 in the fixture through the openings 19 from the ventilating space above the ceiling and will be discharged through the slots 20 on one side of the fixture and the slots 32 on the other side.

In Fig. 12 one of the glass panels is shown in slightly modified form. In this embodiment the lens portion 40 is omitted and in place thereof a slightly frosted or else plain glass portion 49 is substituted. This type of construction would be used where cost is an item of great importance. If desired, the portion 49 might even be left open. In a construction using the portion 49 or an opening in place thereof, a ventilated reflector 50 is recommended, extending from the lamp bulb 51 to a point closely adjacent the border of the portion 49.

In the foregoing description and in the following claims the word "panel" is intended to designate a part, without regard to either the shape, size or contour of the part. In other words, the glass panels need not be rectangular in shape, nor substantially flat on the bottom, nor of the cross-sectional contour of the remaining parts of the fixture, unless specifically described in certain of the claims as having those characteris-

tics. The same of course applies to the metal panels as well.

I claim:

1. A combination lighting and ventilating fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle, comprising a long narrow metal casing provided with downwardly opening recesses of elongated rectangular form in the lower face thereof and ventilating air passages isolated from the recesses, glass panels of elongated rectangular form in the recesses, and electric bulbs in the casing behind the centers of the panels, said glass panels being of such character as to diffuse light throughout the major portion of their areas, and being provided directly opposite the bulbs with clear glass sections, and said casing being provided with ventilating openings in opposite sides thereof in communication with the air passages.

2. A combination lighting and ventilating fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle, comprising a long narrow metal casing provided with recesses in one face thereof and ventilating air passages isolated from the recesses, glass panels in the recesses, and electric bulbs in the casing behind the panels, said glass panels being of such character as to diffuse light throughout the major portion of their areas, and being provided directly opposite the bulbs with clear glass sections, and said casing being provided with ventilating openings in opposite sides thereof in communication with the air passages, and with the openings on one side substantially continuous and the openings on the other side interrupted only at the locations of the glass panels.

3. A combination lighting and ventilating fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle, comprising a long narrow metal casing provided with recesses in one face thereof and ventilating air passages isolated from the recesses, glass panels in the recesses, and electric bulbs in the casing behind the panels, the sides of the casing at right angles to the recesses being provided between the recesses with ventilating openings in communication with the air passages.

4. A combination lighting and ventilating fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle, comprising a long narrow metal casing of substantially uniform width provided with recesses in one face thereof and ventilating air passages isolated from the recesses, rectangular glass panels in the recesses, which panels are of the same width as the casing and are arranged with their end portions substantially flush with the adjacent portions of the casing, and electric bulbs in the casing behind the panels, the parts of the casing between the recesses being rectangular in shape and provided with ventilating openings in communication with the air passages and matching the glass panels in general cross-sectional contour and appearance.

5. A combination lighting and ventilating fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle, comprising a long narrow metal casing provided with recesses in one face thereof and ventilating air passages isolated from the recesses, glass panels in the recesses, and electric bulbs in the casing behind the panels, said glass panels being of slightly greater length than the recesses with their ends seated in pockets at the ends of the recesses, and being insertable and removable

when shifted in one direction into one pocket enough beyond the normal position to clear the opposite pocket.

6. A combination lighting and ventilating fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle, comprising a long narrow metal casing provided with recesses in one face thereof and ventilating air passages isolated from the recesses, glass panels in the recesses, and electric bulbs in the casing behind the panels, said glass panels being of slightly greater length than the recesses with their ends seated in pockets at the ends of the recesses, and being insertable and removable when shifted in one direction into one pocket enough beyond the normal position to clear the opposite pocket, and springs for maintaining the glass panels in their normal positions.

7. A combination lighting and ventilating fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle, comprising a long narrow metal base member containing an air passage, a plurality of metal panels secured to the base member in longitudinally spaced relation and containing air chambers in communication with said air passage, glass panels mounted in the spaces between the metal panels and supported on the ends of the latter, and electric bulbs carried by the base member behind the glass panels, said base member and metal panels being provided with ventilating openings, with the openings in the base member positioned at the opposite side of the fixture from the openings in the metal panels.

8. In a lighting fixture, an illuminated glass panel which is enameled or otherwise rendered light diffusing at all points except at its center and is provided at its center with a lens section, the edge of the lens section at the outer face of the panel being set back into the panel with respect to the surrounding enameled section, and the latter being formed immediately adjacent the lens section into a bordering rib.

9. In a lighting fixture, an elongated metal base of downwardly opening channel formation provided with spaced parallel side flanges, a plurality of metal panels of upwardly opening chan-

nel formation provided with spaced parallel side flanges for engagement with the side flanges of the base, interlocking lips on the engaging surfaces of the flanges of the base and panels for holding the panels in place after the flanges on the panels have been sprung far enough to allow the lips to pass each other, and a plurality of illuminated glass panels between the metal panels.

10. In a lighting fixture, an elongated metal base of downwardly opening channel formation provided with spaced parallel side flanges, a plurality of metal panels of upwardly opening channel formation provided with spaced parallel side flanges for engagement with the side flanges of the base, interlocking lips on the engaging surfaces of the flanges of the base and panels for holding the panels in place after the flanges on the panels have been sprung far enough to allow the lips to pass each other, and a plurality of illuminated glass panels between the metal panels, said glass panels being arranged substantially flush with the metal panels and having their ends offset upwardly to extend into and rest upon the ends of the metal panels.

11. A lighting fixture of continuous strip-like form, for application to the ceiling of a bus or other vehicle lengthwise of the same above the seats, to illuminate generally the interior of the bus while at the same time affording more concentrated illumination for longitudinally separated reading areas beneath the fixtures, comprising a long narrow metal casing provided in the bottom thereof with longitudinally separated recesses, which recesses extend up into the side walls of the casing, glass panels covering said recesses substantially flush with the bottom and sides of the casing, and electric bulbs in the casing behind the centers of the glass panels, said glass panels being of such character as to diffuse light throughout the major portion of their areas, including their sides, and being provided directly opposite the bulbs with clear glass sections, for the purposes described.

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