A lighting fixture (10) for a gas discharge lamp is disclosed. The lighting fixture (10) comprises an outer housing (12), a translucent member (26) disposed within the housing (12), a lighting device (18, 20) adjacent to a side surface of the translucent member (26) and a reflector (34, 36, 38) disposed adjacent to the back surface of the translucent member (26) and adjacent to a lighting device (18, 20), wherein the reflector (38) is disposed on the side of the lighting device (18, 20), opposite to the side surface of the translucent member (26). The lighting fixture (10) also includes a prismatic layer (32) disposed on the output surface of the translucent member (26).
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LIGHT GUIDE FOR EDGE LIGHTING

This application claims priority of United States provisional application number 60/059,203, filed on September 18, 1997.

BACKGROUND OF THE INVENTION

The present invention relates to light guides for light fixtures for gas discharge lamps. More particularly, the invention relates to a light guide suitable for light fixtures for gas discharge lamps having one or more lighting devices within the fixture.

Gas discharge lamps are highly efficient sources of light energy. Gas discharge lamps are typically formed of gas filled vessels having electrodes. In order to power the lamp, a high voltage is applied across the electrodes at a high frequency. Gases within the tube become ionized as they are excited by high energy radiation. The light output of the lamp is thus directly related to the input power signal characteristics.

SUMMARY OF THE INVENTION

The present invention comprises a light guide that is particularly suitable for light fixtures having one or more lighting devices disposed within a housing, near the perimeter of a chamber in the housing. One possible light source may be fluorescent or neon tubes, although other lighting devices such as light emitting diodes may also be used.

The light guide according to the present invention comprises a translucent polymeric member, one or more lighting devices disposed near an edge of the translucent member, a reflector that substantially surrounds those portions of the lighting device which are not adjacent to the translucent member, a reflector disposed behind the translucent member, and a prismatic layer disposed or integrally formed with the output
surface of the translucent polymeric member. The output surface and/or back surface of the translucent member may be sand blasted to improve the light reflecting characteristics of the translucent member.

In a first embodiment, particularly suitable for relatively thin, flat rectangular lighting devices, the translucent member includes reflectors adjacent to its side surfaces and its back surface, and an integrally-formed prismatic layer on the output surface of the translucent member. The prisms are two, or more faceted prisms that collimate light by reflecting back any light which strikes them at a substantially 90 degree angle, and by transmitting and collimating any light which strikes the prism from the translucent member side at an obtuse angle. The lighting devices are disposed along one or more side surfaces of the translucent member, and the reflector is disposed on the sides of the lighting devices opposite to the side adjacent to the translucent member. As a result, substantially all the light from the lighting devices is transmitted into the translucent member, and out the upper or output surface of the translucent member into the prisms adjacent to the output surface.

In a second embodiment of the invention, particularly suitable for lighting devices having a curved or circular perimeter, a substantially cylindrical translucent member has one or more curved lighting devices disposed therein. One or more prismatic layers may be disposed radially outward from the lighting devices and adjacent thereto, so as to collimate light striking the prismatic layers, and transmitting the light back toward the center of the lighting fixture and toward the centrally-disposed translucent member. These prismatic layers are preferably injection molded. The rounded lighting fixture also has a centrally-disposed translucent member with a prismatic layer adjacent to an outer
surface thereof; the prismatic layer is preferably integrally formed with the translucent member.

It may be desirable to provide a contoured back surface on the translucent member to allow a greater portion of light to be emitted away from the lamp-illuminated regions of the translucent member than if the back surface is parallel to the output surface, thereby increasing the uniformity of the light output in all regions of the lighting fixture.

In yet another embodiment of the invention, the reflector that is provided on the side of the lighting device opposite to the translucent member may be configured as two adjacent parabolas. This arrangement will efficiently reflect more light from behind the lighting device back into the centrally disposed translucent member.

The reflectors used in the present invention may be made from polyethylene (sold under the trademark TYVEK) or from other diffusively reflective materials such as polytetrafluoroethylene, polyolefin, polyethylene or titanium dioxide. The translucent member may be made from acrylic or other translucent polymers that may be readily injection molded.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a top view of a rectangular lighting fixture according to the present invention having dual, opposed elongated lighting devices.

FIG. 2 is a cross-sectional end view of the lighting fixture of FIG. 1.

FIG. 3 is a top view of a circular lighting fixture incorporating the present invention.

FIG. 4 is a side cross-sectional view of the lighting fixture of FIG. 3.

FIG. 5 is a cross-sectional end view of a translucent member with a contoured back surface.
FIG. 6 is a cross-sectional end view of a light guide having adjacent parabolic reflectors behind the lighting device.

FIG. 7 is a side cross-sectional view of a lighting fixture having opposed linear lamps on opposite sides of a translucent member.

FIG. 8 is a side cross-sectional view of a lighting fixture having a single linear lamp disposed near a side surface of a translucent member wherein the translucent member has an angled or contoured diffuser/reflector back surface.

FIG. 9 is an exploded view of a lighting fixture having a translucent member, lamp and reflector assembly wherein the lamp is disposed along a curved side surface of the translucent member.

FIG. 10 is an exploded cross-sectional view of a translucent member, lamp and reflector assembly wherein the reflector has a curved surface near the back surface of the light fixture to direct light towards the output surface of the translucent member.

FIG. 11 is an exploded cross-sectional end view of a translucent member, lamp and reflector assembly in which the translucent member has a curved edge surface corresponding to the shape of the lamp.

FIG. 12 is a schematic end view of a prism layer that may be used with the translucent member according to the present invention, in which adjacent prisms have decreasing angles of inclination a, b and c.

FIG. 13 is a schematic view of a reducing focal length Fresnel lens that may be formed integral with the translucent member or attached to the translucent member output surface.

**DETAILED DESCRIPTION OF THE INVENTION**

FIGS. 1 and 2 depict a first embodiment of the invention, namely a rectangular lighting fixture having dual, opposed elongated lighting devices or lamps. In
FIGS. 1 and 2, lighting fixture 10 includes a housing 12 having cavities 14 and 16 that receive respective lighting devices or lamps 18 and 20. Housing 12 also includes a cavity 22 that receives a power supply or ballast. A switch 24 may be included to actuate the lamps 18 and 20.

A translucent member or light guide 26 is centrally disposed between dual lamps 18 and 20. In the alternative, it is contemplated that the lighting fixture 10 may contain a single lamp. Translucent member 18 may be made from a translucent polymer as discussed above. As best shown in FIG. 2, the translucent member is covered by a cover 28. The components of the lighting fixture may be sealed, with the entire fixture being covered by a snap-on bezel 30. The color or style of the bezel may be changed for aesthetic purposes.

Referring again to FIG. 2, translucent member 26 has disposed thereon one or more prismatic layers 32. Layers 32 may be integrally formed with translucent member 26 by injection molding or otherwise, or may be distinct films. One suitable film is sold by Minnesota Mining and Manufacturing under the names "BRIGHTNESS ENHANCEMENT FILM II" or "DUAL BRIGHTNESS ENHANCEMENT FILM."

Various configurations of the prismatic layers or films are possible. The prismatic layer preferably comprises a plurality of elongated multi-faceted prisms separated by valleys. Such prisms are disclosed in U.S. Patent No. 4,755,921 issued July 5, 1988 to 3M, and U.S. Patent No. 4,952,023 issued August 28, 1990 to 3M, both of which are incorporated by reference herein. In some applications, it may be desirable to use two prismatic films or layers, wherein the prisms are at 90 degrees or another angle with respect to each other. The use of two such prismatic films at different angles is disclosed in U.S. Patent No. 4,108,540 issued August 22, 1978 to Minnesota Mining and Manufacturing, and
U.S. Patent No. 4,542,449 issued September 17, 1985 to Canadian Patents and Development Ltd., both of which are incorporated by reference herein.

Referring again to FIG. 2, the lighting fixture may include reflectors 34 and 36 which are disposed adjacent to lamps 18 and 20, respectively, on the opposite side of the lamps from translucent member 26. The lighting fixture also includes a reflective layer 38 disposed adjacent to the back surface of translucent member 26. The reflectors are preferably diffusive reflectors, and may comprise one or more sheets of material or may be integrally formed with the housing. Also, a specular type of reflector may be used in place of a diffusive reflector.

FIGS. 3 and 4 depict a second embodiment of the invention incorporated into a circular lighting fixture. In FIGS. 3 and 4, lighting fixture 40 includes a circular housing 42 having a cavity 44 that receives an elongated, curved lighting device or lamp 46. Lamp 46, like lamps 18 and 20 discussed above, are preferably gas discharge lamps, although incandescent lights or other types of lamps may be used. Lamp 46 is depicted as comprising a single circular lamp, although it is apparent that several distinct curved lamps could be used instead.

Referring again to FIGS. 3 and 4, lighting fixture 40 also includes a cavity 48 that receives a power supply or ballast 50, the ballast being comprised of a plurality of segmented circuit boards 52, which are potted. The ballast may be manufactured as a single circuit board, with the circuit boards thereafter being divided apart to fit into curved compartment 48. Wires 54 apply power to ballast 50, and extend through a compartment 56 and out apertures 58. A switch device 60 is disposed in series between the fixture's main power supply and ballast 50.

A translucent member 62 is centrally disposed radially inward from lamp 46, and is similar in
composition to translucent member 26 discussed above in connection with FIGS. 1 and 2. Translucent member 62 also has disposed thereon one or more prismatic layers or films as discussed above.

As best shown in FIG. 4, the sealed housing may be covered with a bezel or cover 64. The housing may also include a reflective layer 66 that at least partially surrounds the lamp, and a reflective layer 68 that is disposed adjacent to the back surface of translucent member 62. As also shown in FIG. 4, the second embodiment may include one or more curved prismatic layers 70 which are disposed clearly outward from lamp 48. Prismatic layer 70 may be a prismatic film as discussed above, or it may comprise a prismatic layer that is integrally formed by injection molding into the translucent lens member. Prismatic layer 70 may have a composition similar to the prismatic layers 32 discussed above in connection with FIG. 2. Prismatic layer 70 will reflect light from behind lamp 48 radially inward toward centrally-disposed translucent member 62.

FIGS. 5 through 11 are schematic diagrams which depict alternate embodiments of the translucent member and reflectors according to the present invention. In FIG. 5, translucent member 72 includes an integrally formed prismatic layer 74. Translucent member 72 also has a contoured rear surface 76 which is itself the shape of a two-faceted prism. A prismatic layer is disposed between one or more lamps 78. Light from behind lamp 78 is reflected towards the center of translucent member 72 by reflectors 80. The structure may include an optional reflective layer 82.

The purpose of the embodiment depicted in FIG. 5 is to insure that central regions of the lighting fixture output significant amounts of light and are not dim. One problem with edge lighting fixtures, particularly of the dual lamp variety, is that insufficient amounts of light are transmitted uniformly
throughout the lens. By providing a contoured or faceted back surface 76 of translucent member 72, light from lamps 78 is reflected off of the facets and a significant portion of this light is transmitted out of central region 72a of translucent member 72, to avoid having a dim center as in the prior art.

Referring again to FIG. 5, light which strikes contoured surface 76 is reflected towards prismatic layer 74 and is collimated by the prisms. However, light, indicated by arrows 84, which strikes the prismatic layer at a right angle is internally reflected by the prism, as depicted by arrows 86 and 88. The prisms discussed above in connection with the first embodiment operate in a similar manner; that is, light which strikes the prism at an obtuse angle passes through the prism facet and is collimated, while light which strikes the prism at a 90 degree angle is internally reflected.

FIG. 6 depicts an embodiment of a reflector which may be used in the present invention. In FIG. 6, translucent member 90 includes an integrally formed prismatic layer 92. A lamp 94 is disposed near a side surface of translucent member 90. Adjacent to lamp 94 on an opposite side of the lamp from translucent member 90 is disposed a reflector 96 comprising adjacent parabolic reflectors 98 and 100. Parabolic reflectors 98 and 100 insure that all available light from the back side of lamp 94 is reflected back towards translucent member 90. A reflective layer or reflector 102 may be provided adjacent to a back surface 90a of translucent member 90.

The regular prisms discussed above may be replaced with negative focus lens segments such that the focal points are reduced toward the edge of the lens.

In another embodiment, the prismatic layer may be formed such that the prismatic facet angles gradually diverge or converge the output light from the center of the lens towards the edge of the lens.
In yet another embodiment, the prisms may be replaced with Fresnel type lens in which each facet or each group of facets have reducing or increasing focal lengths. These arrangements enable precise control of the output illumination level and the spread of the output light.

FIG. 7 is a side cross-sectional view of a lighting fixture having opposed linear lamps 104 and 106. The linear lamps 104 and 106 are on opposite sides of a translucent member 108. Dual parabolic reflectors 110 and 112 are positioned to the outside of lamps 104 and 106. Parabolic reflectors 110 and 112 ensure that all available light from the back side of lamps 104 and 106 are reflected back towards translucent member 108. A reflective layer or reflector 114 may be provided adjacent to a back surface 108a of translucent member 108. An integrally formed prismatic layer 116 of the translucent member 108 is positioned on an output surface of the translucent member 108. The translucent member 108 may include a contoured back surface 118 or a diffuser such that the focal points may be reduced toward the center of the lens.

FIG. 8 is a side cross-sectional view of a lighting fixture having a single linear lamp 120. The lamp 120 is disposed near an adjacent side surface 122 of a translucent member 124. In FIG. 8, translucent member 124 includes an integrally formed prismatic layer 126. A parabolic reflector 128 shaped like a segmented cylinder is positioned on the opposite side of lamp 120. Parabolic reflector 128 ensures that substantially all available light from the back side of lamp 120 is reflected back toward translucent member 124. The translucent member 124 has an angled or contoured diffuser or reflector back surface 130.

FIG. 9 is an exploded view of a translucent member 132, a lamp 134, and a reflector assembly 136. The lamp 134 is disposed along a curved side surface 138 of
the translucent member 132. The parabolic reflector 136 is disposed on the opposite side of the lamp 134. The positioning of parabolic reflector 136 ensures that substantially all available light from the back side of the lamp 134 is reflected back towards the translucent member 132.

FIG. 10 is an exploded cross-sectional view of a translucent member 140, a lamp 142, and a curved reflector 144. The translucent member 140 has a curved edge surface 146 adjacent to the lamp 142. The reflector assembly 144 has a curved surface near the back surface of the light fixture 142 to direct light towards the output surface of the translucent member 140.

FIG. 11 is an exploded cross-sectional end view of a translucent member 148, a lamp 150, and a reflector assembly 152. The translucent member 148 has a curved edge surface 154 corresponding to the shape of the lamp 150. The reflector assembly 152 comprises three sides, 156, 157 and 158, wherein sides 156 and 158 are disposed at an obtuse angle to each other.

FIG. 12 is a schematic end view of a prism layer 160 that may be used with a translucent member. The adjacent prisms 162, 164 and 166 have decreasing angles of inclination a, b and c.

FIG. 13 is a schematic view of a reducing focal length Fresnel lens that may be formed integral with a translucent member. FIG. 13 illustrates that light radiating from a point source 168 may reflect off a prism layer 170 at angles such that as the focal lengths and the angles of the individual prisms in prism layer 170 decrease, the light radiating through prism layer 170 diffuses in a broader pattern. Thus, the illumination intensity decreases as the focal length and the angle of the individual prisms decreases. To the eye, such a diffusion pattern gives the appearance of a greater illumination intensity near the center of the light fixture and a gradual
decreasing light intensity toward the edges. The angle of defraction from prism layer 170 is collimated into a translucent member 172.

Although several embodiments of the invention have been shown and described, alternate embodiments may be apparent to those skilled in the art. Therefore, the invention is to be limited only to the following claims.
CLAIMS

We claim:

1. A lighting fixture for a gas discharge lamp, comprising:
   a translucent member, having an output surface, a back surface opposed to said output surface, and a plurality of side surfaces;
   at least one lighting device disposed adjacent to at least one of said side surfaces;
   a reflector disposed adjacent to said back surface and adjacent to said at least one lighting device on a side of the lighting device opposite to said side surface; and
   a layer including a plurality of prisms disposed adjacent to said output surface.

2. The lighting fixture of claim 1, wherein said prismatic layer is integrally formed with said translucent member by at least one of casting and injection molding.

3. The lighting fixture of claim 1, wherein said prismatic layer comprises a plurality of sublayers disposed between said output surface and said prisms.

4. The lighting fixture of claim 1, wherein said prisms are regular prisms.

5. The lighting fixture of claim 1, wherein said translucent member is made from acrylic.

6. The lighting fixture of claim 1, wherein said at least one lighting device comprises at least one elongated gas discharge lamp.
7. The lighting fixture of claim 1, wherein said fixture further comprises an outer housing having a cavity adapted to receive a ballast.

8. The lighting fixture of claim 7, wherein said ballast is formed on a plurality of segmented circuit boards.

9. The lighting fixture of claim 1, further comprising:
   a second prismatic layer disposed adjacent to said lighting device on the opposite side of said lighting device from said translucent member.

10. The lighting fixture of claim 1, wherein said back surface of said translucent member is contoured.

11. The lighting fixture of claim 1, wherein said reflector includes:
   at least two parabolic reflectors disposed adjacent to said lighting fixture on the opposite side of said lighting fixture from said translucent member.

12. The lighting fixture of claim 1, wherein said prismatic layer comprises prisms of decreasing angles from one another.

13. The lighting fixture of claim 1, wherein said reflector comprises at least two segments, and wherein the two segments are positioned at an obtuse angle from one another.

14. The lighting fixture of claim 1, wherein at least a portion of said reflector is substantially the same shape as the lighting device.
15. The lighting fixture of claim 1, wherein said lighting fixture outputs light having an illumination intensity and wherein said translucent member has edges, and wherein the illumination intensity gradually decreases towards the edges of said translucent member.
AMENDED CLAIMS

[received by the International Bureau on 3 March 1999 (03.03.99); original claim 7
cancelled; original claim 1 amended; original claim 8 amended and renumbered 7;
original claims 9-15 renumbered 8-14; remaining claims unchanged (2 pages)]

1. A lighting fixture for a gas discharge lamp,
comprising:
a translucent member, having an output surface, a
back surface opposed to said output surface, and a
plurality of side surfaces;
at least one lighting device disposed adjacent to
at least one of said side surfaces;
a reflector disposed adjacent to said back surface
and adjacent to said at least one lighting device on a
side of the lighting device opposite to said side
surface;
a layer including a plurality of prisms disposed
adjacent to said output surface; and
an outer housing having a cavity adapted to
receive a ballast.

2. The lighting fixture of claim 1, wherein said
prismatic layer is integrally formed with said
translucent member by at least one of casting and
injection molding.

3. The lighting fixture of claim 1, wherein said
prismatic layer comprises a plurality of sublayers
disposed between said output surface and said prisms.

4. The lighting fixture of claim 1, wherein said
prisms are regular prisms.

5. The lighting fixture of claim 1, wherein said
translucent member is made from acrylic.

6. The lighting fixture of claim 1, wherein said
at least one lighting device comprises at least one
elongated gas discharge lamp.
7. The lighting fixture of claim 1, wherein said ballast is formed on a plurality of segmented circuit boards.

8. The lighting fixture of claim 1, further comprising:
   a second prismatic layer disposed adjacent to said lighting device on the opposite side of said lighting device from said translucent member.

9. The lighting fixture of claim 1, wherein said back surface of said translucent member is contoured.

10. The lighting fixture of claim 1, wherein said reflector includes:
   at least two parabolic reflectors disposed adjacent to said lighting fixture on the opposite side of said lighting fixture from said translucent member.

11. The lighting fixture of claim 1, wherein said prismatic layer comprises prisms of decreasing angles from one another.

12. The lighting fixture of claim 1, wherein said reflector comprises at least two segments, and wherein the two segments are positioned at an obtuse angle from one another.

13. The lighting fixture of claim 1, wherein at least a portion of said reflector is substantially the same shape as the lighting device.

14. The lighting fixture of claim 1, wherein said lighting fixture outputs light having an illumination intensity and wherein said translucent member has edges, and wherein the illumination intensity gradually decreases towards the edges of said translucent member.
STATEMENT UNDER ARTICLE 19

The Applicant has placed original claim 7 in independent form by amending claim 1 to include the limitations of claim 7. All the remaining claims are dependent on amended claim 1. None of the cited references shows or suggests the combination of features in claim 1, including the newly recited outer housing having a cavity that is adapted to receive a ballast.
### A. CLASSIFICATION OF SUBJECT MATTER

**IPC 6** F21V8/00

According to International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC 6** F21V

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of data base and, where practical, search terms used)

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>EP 0 590 511 A (IBM) 6 April 1994</td>
<td>1-6, 14, 15</td>
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<tr>
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<td>see the whole document</td>
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<tr>
<td>Y</td>
<td>US 4 974 122 A (J.E.SHAW) 27 November 1990</td>
<td>1, 5</td>
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<td>see abstract; figures 1-3</td>
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<td>Y</td>
<td>FR 2 632 432 A (G.DARIC) 8 December 1989</td>
<td>1, 2, 6, 14, 15</td>
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<tr>
<td></td>
<td>see page 5 – page 7; figures 1-4</td>
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<tr>
<td>Y</td>
<td>US 4 542 449 A (L.A.WHITEHEAD) 17 September 1985</td>
<td>3, 4</td>
</tr>
<tr>
<td></td>
<td>cited in the application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see abstract; figures 1-5</td>
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Date of mailing of the international search report: 15/01/1999

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<tr>
<td></td>
<td></td>
<td>BR 9303492 A</td>
<td>05-04-1994</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 6194653 A</td>
<td>15-07-1994</td>
</tr>
<tr>
<td>US 4974122 A</td>
<td>27-11-1990</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>FR 2632432 A</td>
<td>08-12-1989</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>US 4542449 A</td>
<td>17-09-1985</td>
<td>CA 1217462 A</td>
<td>03-02-1987</td>
</tr>
<tr>
<td></td>
<td></td>
<td>DE 3430192 A</td>
<td>14-03-1985</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FR 2551179 A</td>
<td>01-03-1985</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GB 2145809 A, B</td>
<td>03-04-1985</td>
</tr>
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<td></td>
<td>JP 1037801 B</td>
<td>09-08-1989</td>
</tr>
<tr>
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<td>JP 1552142 C</td>
<td>23-03-1990</td>
</tr>
<tr>
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<td></td>
<td>JP 6007601 A</td>
<td>22-04-1985</td>
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