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(54) **LIGHT-EMITTING MODULE**

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F21V 8/00 (2006.01)

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CPC ***G02B 6/0038*** (2013.01); ***G02B 6/0055*** (2013.01); ***G02B 6/0068*** (2013.01)

(58) **Field of Classification Search**
CPC ... G02B 6/0038; G02B 6/0055; G02B 6/0068
See application file for complete search history.

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(57) **ABSTRACT**

A light-emitting module includes: a plurality of light sources; and a lightguide plate including a plurality of light source placement sections, in each of which at least one light source is arranged, arrayed in a first direction and a second direction orthogonal to the first direction. The lightguide plate defines at least one first-A light control groove and at least one first-B light control groove that extend parallel to the second direction between a first light source placement section and a second light source placement section adjacent to the first light source placement section in the first direction, and at least one second-A light control groove and at least one second-B light control groove that extend parallel to the first direction between the first light source placement section and a third light source placement section adjacent to the first light source placement section in the second direction.

19 Claims, 11 Drawing Sheets

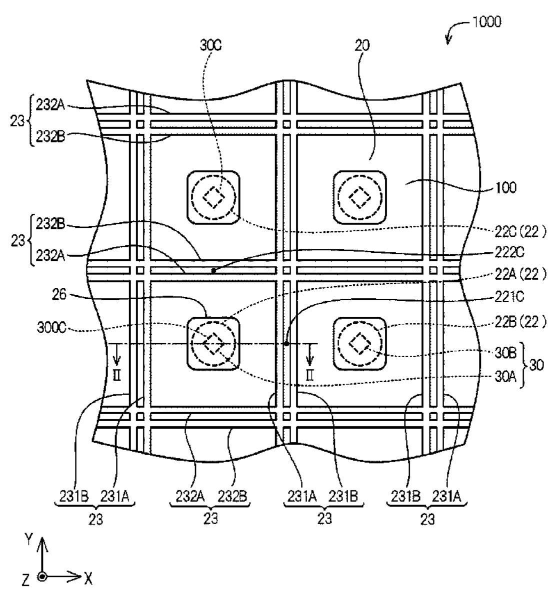

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FIG.1

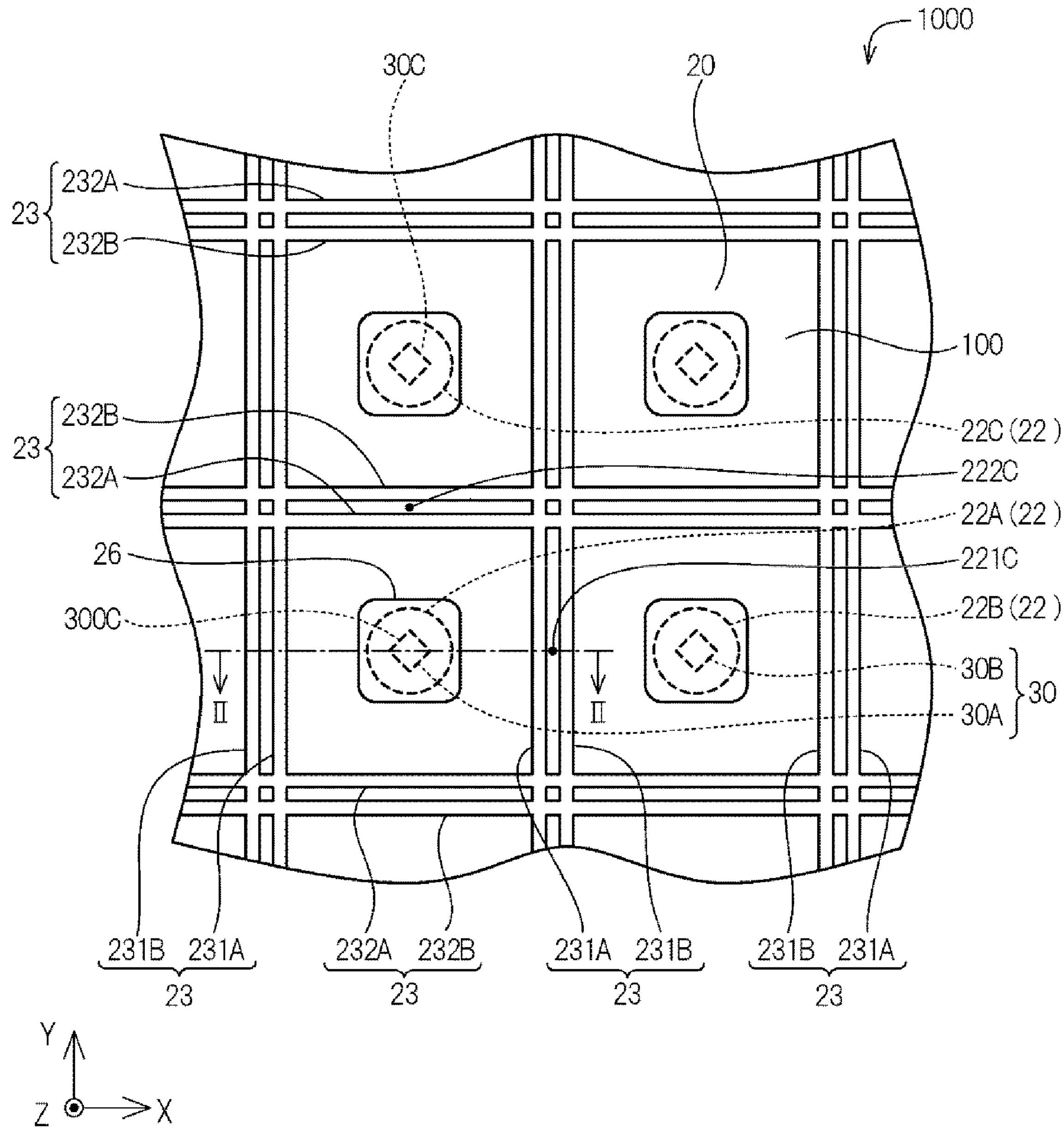

1000
30C
20
232A
23
232B
100
232B
23
232A
22C (22)
222C
22A (22)
26
221C
300C
22B (22)
30B
30
30A
II
II
231B 231A
23
232A 232B
23
231A 231B
23
231B 231A
23
Y
Z
X

FIG.2

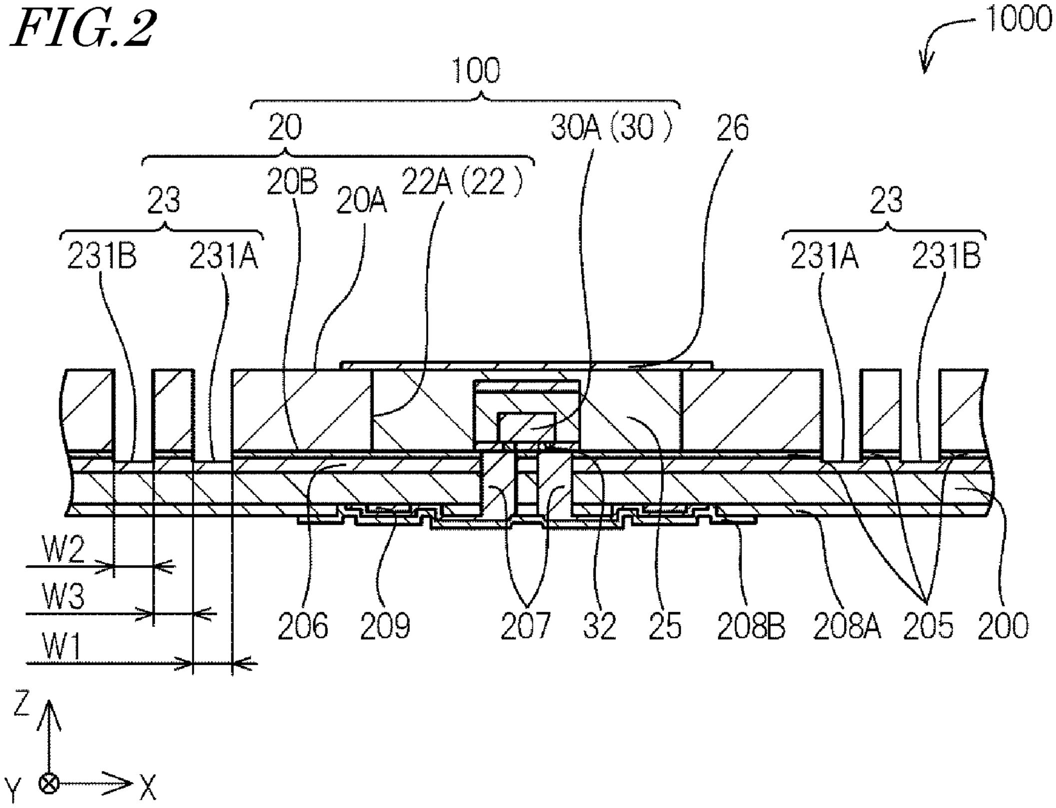

1000
100
20
30A (30)
26
23
20B
20A
22A (22)
231B
231A
23
231A
231B
W2
W3
W1
206
209
207
32
25
208B
208A
205
200
Z
Y
X

FIG.3

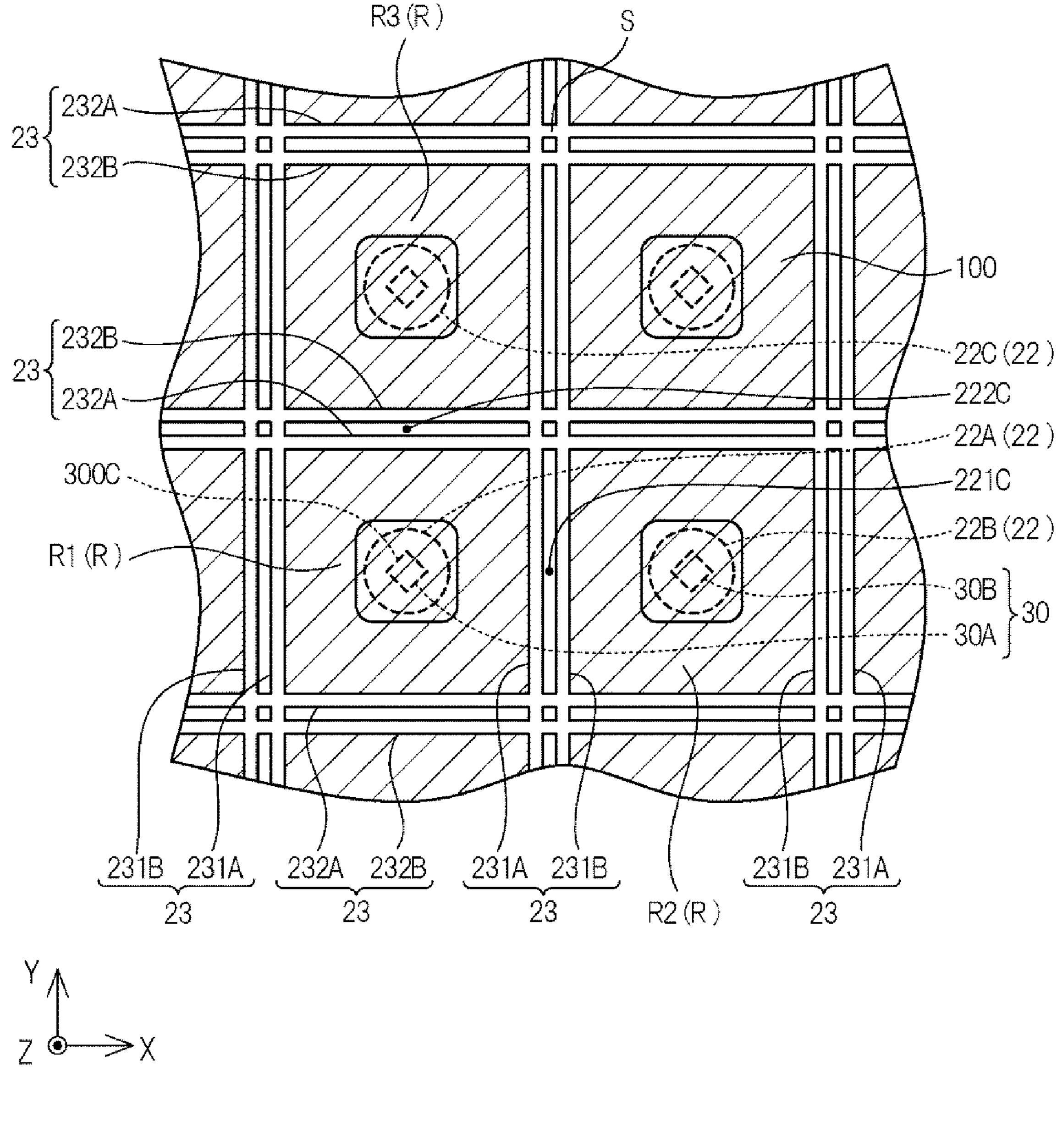

R3 (R)
S
232A
23
232B
100
232B
23
232A
22C (22)
222C
22A (22)
300C
221C
R1 (R)
22B (22)
30B
30
30A
231B
231A
23
232A
232B
23
231A
231B
23
R2 (R)
231B
231A
23
Y
Z
X

FIG.4A

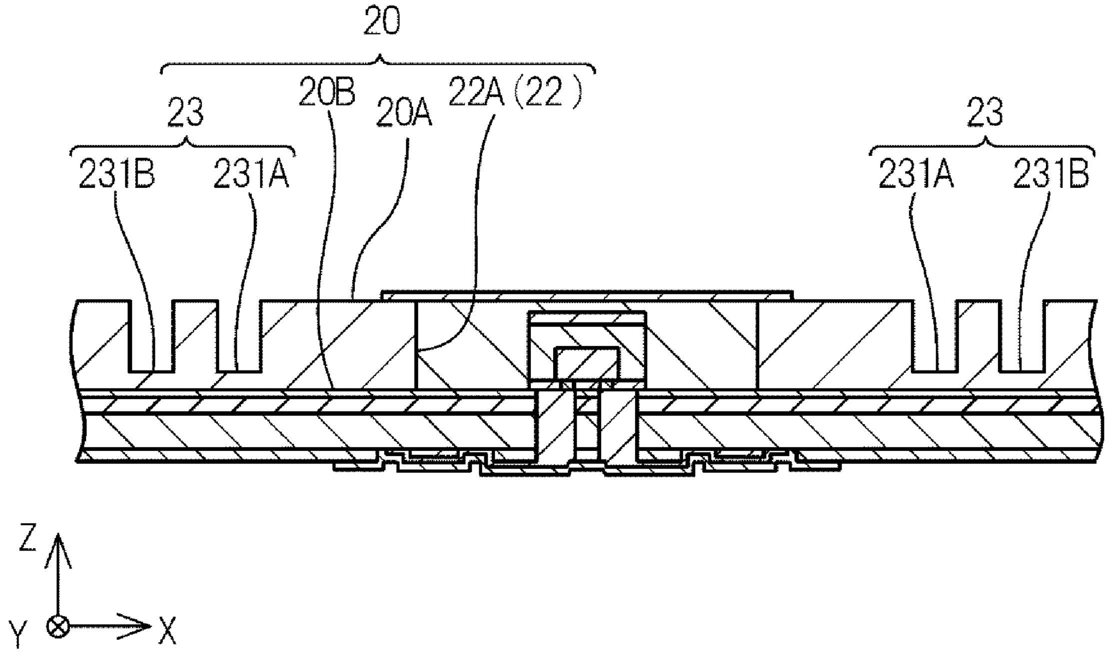

20
23
20B
20A
22A (22)
231B
231A
23
231A
231B
Z
Y
X

FIG.4B

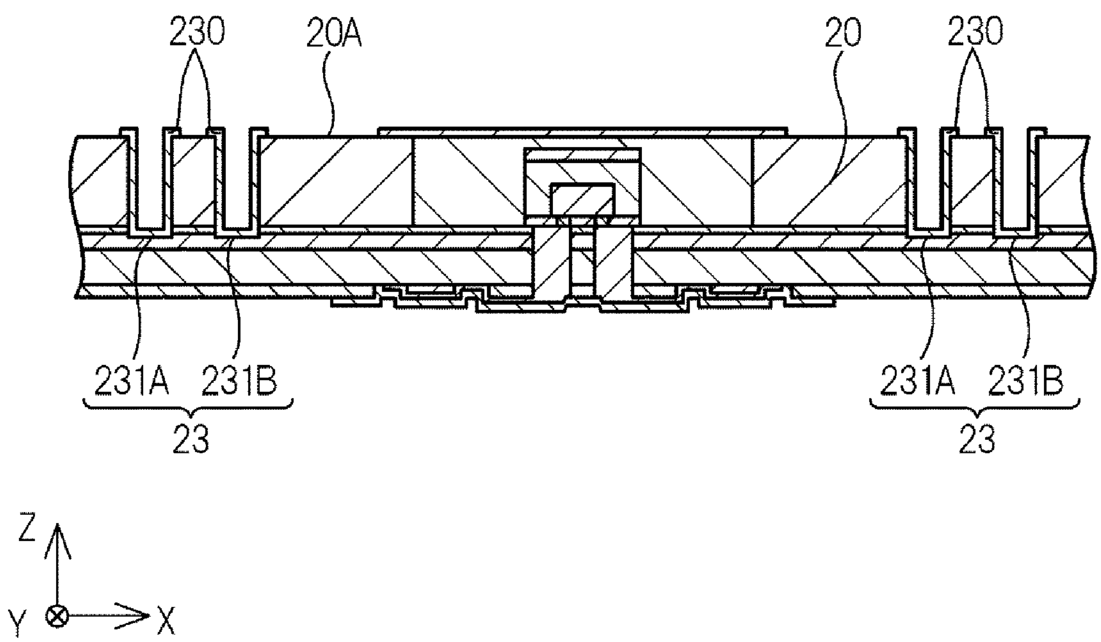

230
20A
20
230
231A
231B
23
231A
231B
23
Z
Y
X

FIG.5

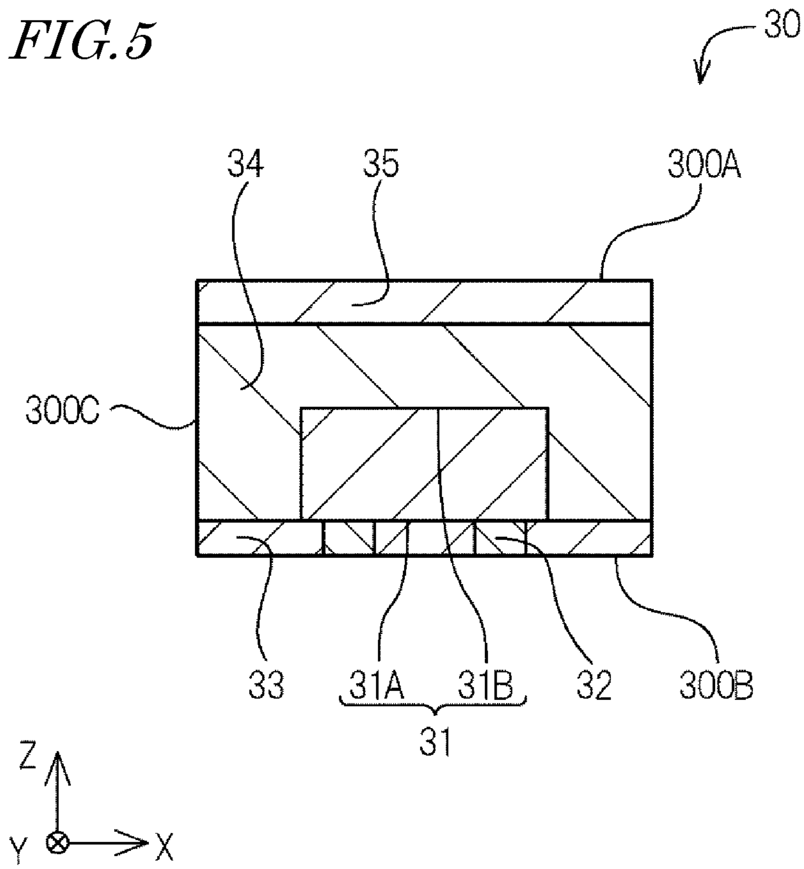
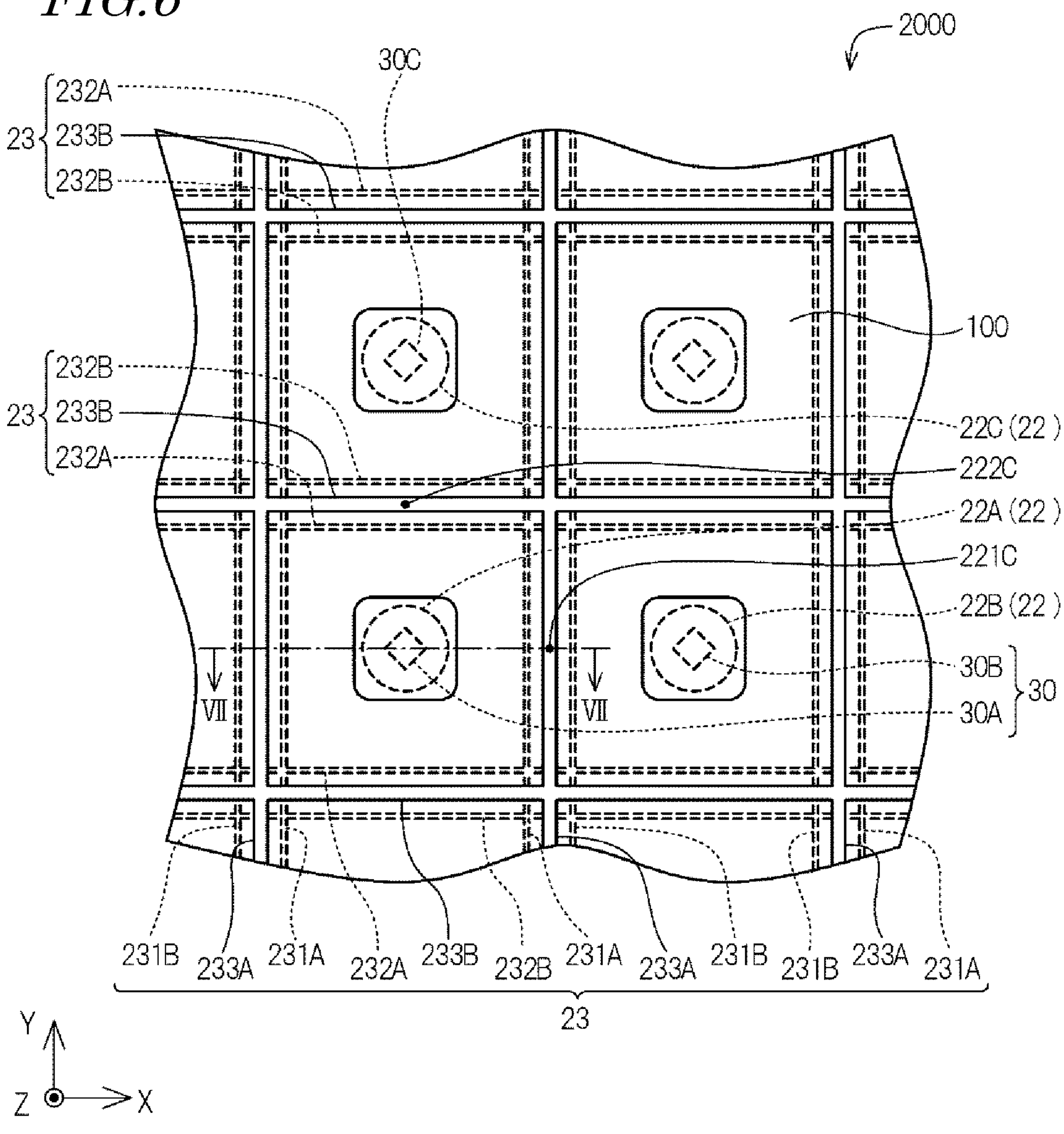


FIG.6



2000
30C
232A
233B
232B
23
100
22C (22)
222C
22A (22)
221C
22B (22)
30B
30A
30
VII
VII
231B
233A
231A
232A
233B
232B
231A
233A
231B
231B
233A
231A
23
Y
Z
X

FIG. 7

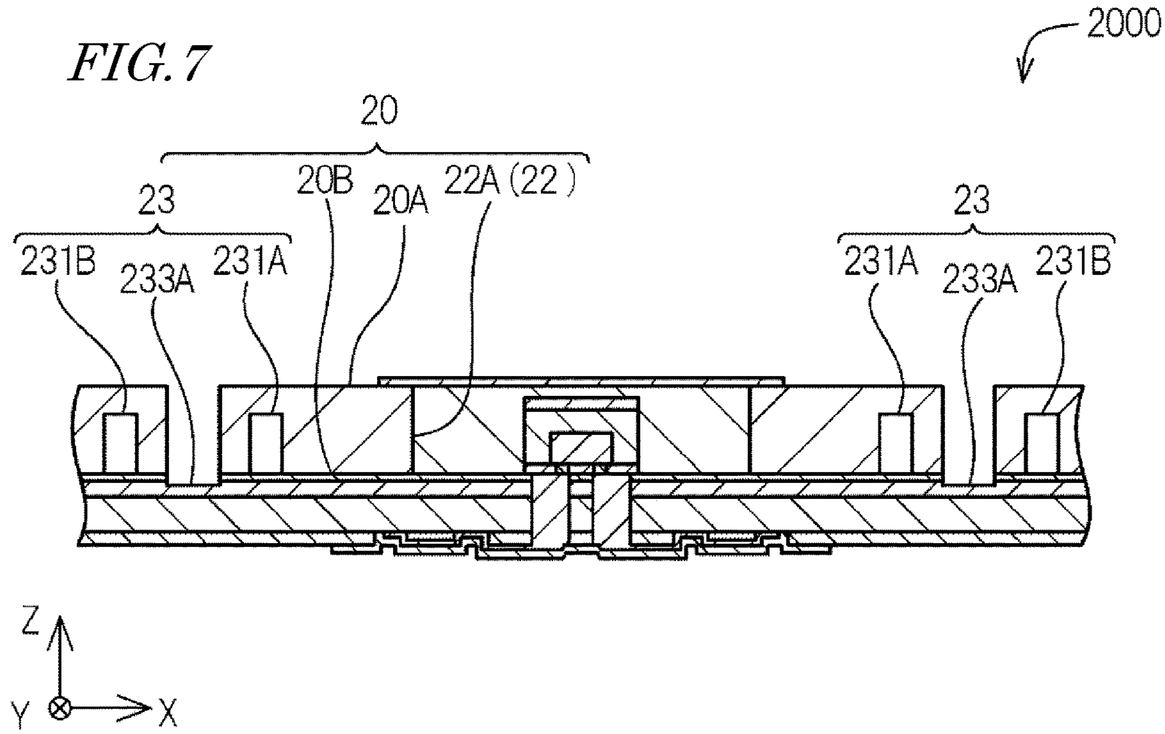

2000
20
23
20B
20A
22A (22)
23
231B
233A
231A
231A
233A
231B
Z
Y
X

FIG. 8

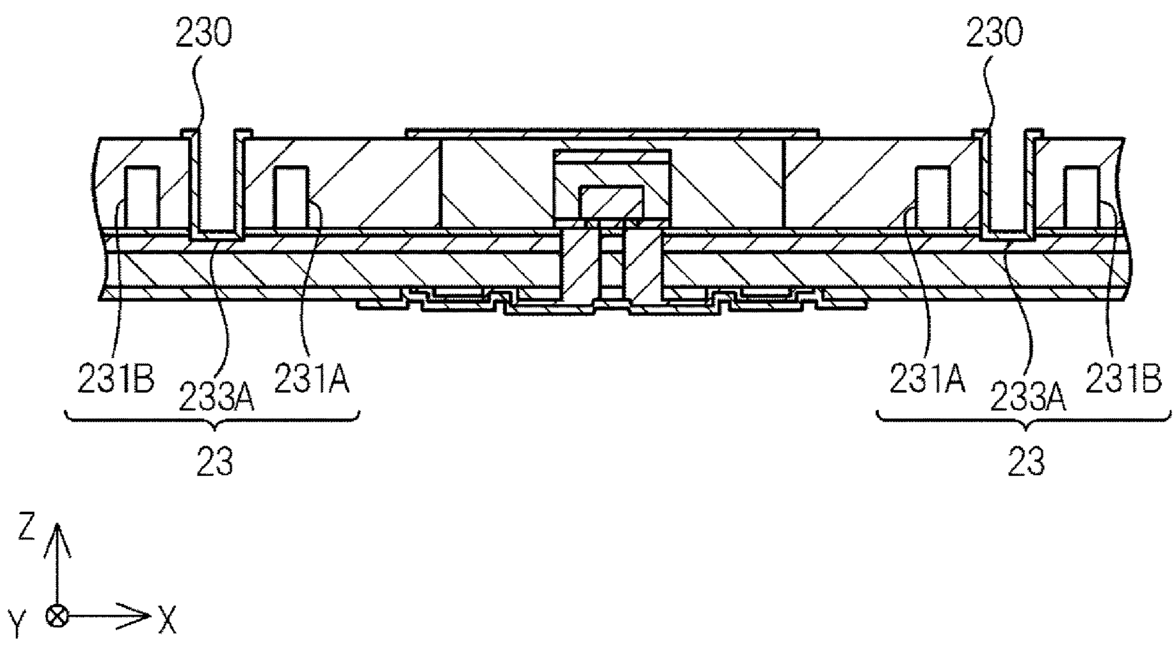
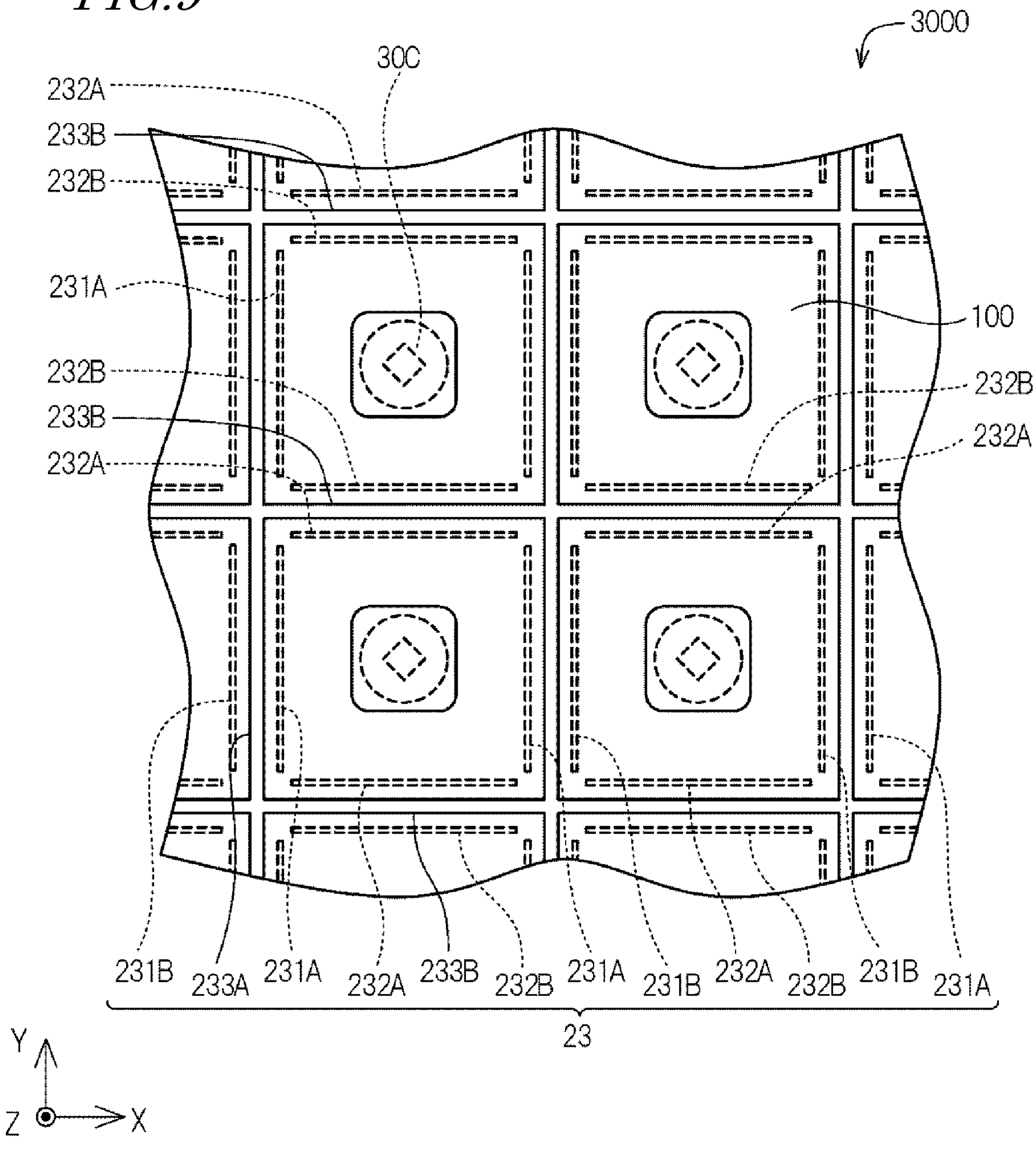

230
230
231B
233A
231A
231A
233A
231B
23
23
Z
Y
X

FIG.9



3000
30C
232A
233B
232B
231A
232B
233B
232A
100
232B
232A
231B
233A
231A
232A
233B
232B
231A
231B
232A
232B
231B
231A
23
Y
Z
X

FIG.10

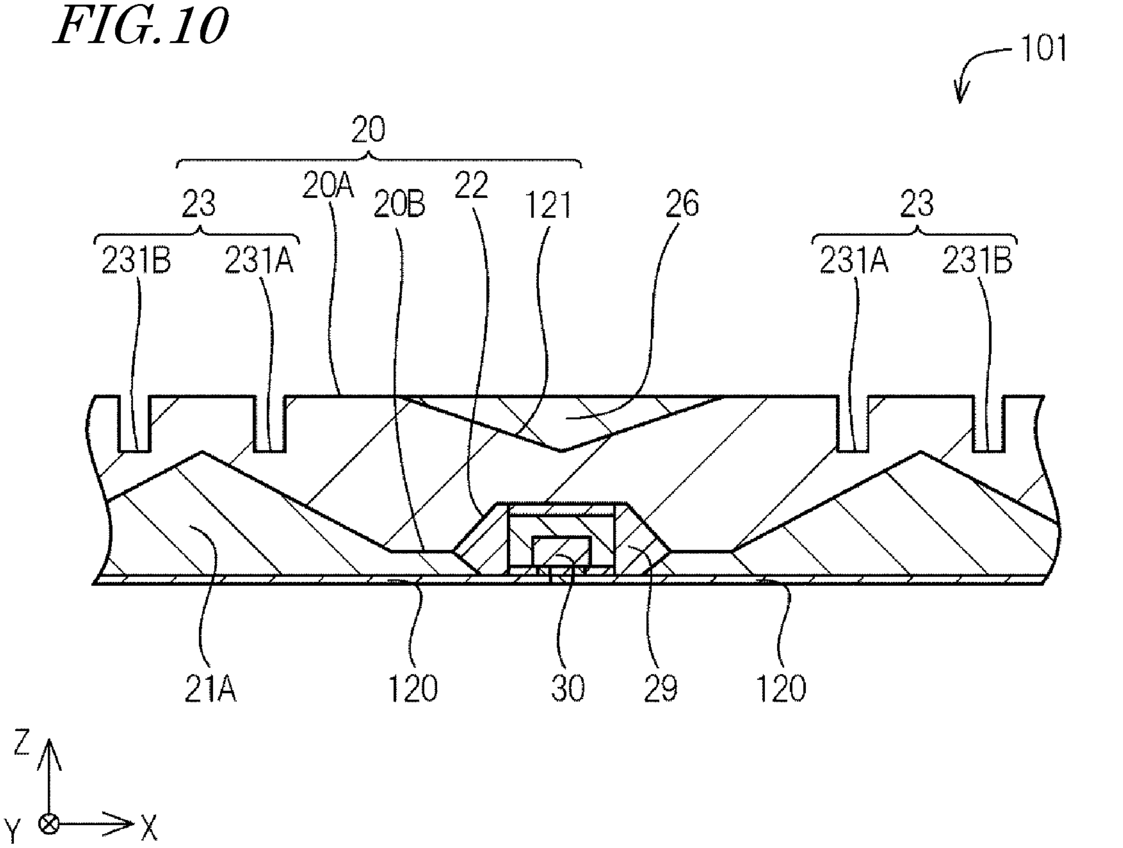

101
20
23
20A
20B
22
121
26
23
231B
231A
231A
231B
21A
120
30
29
120
Z
Y
X

FIG. 11

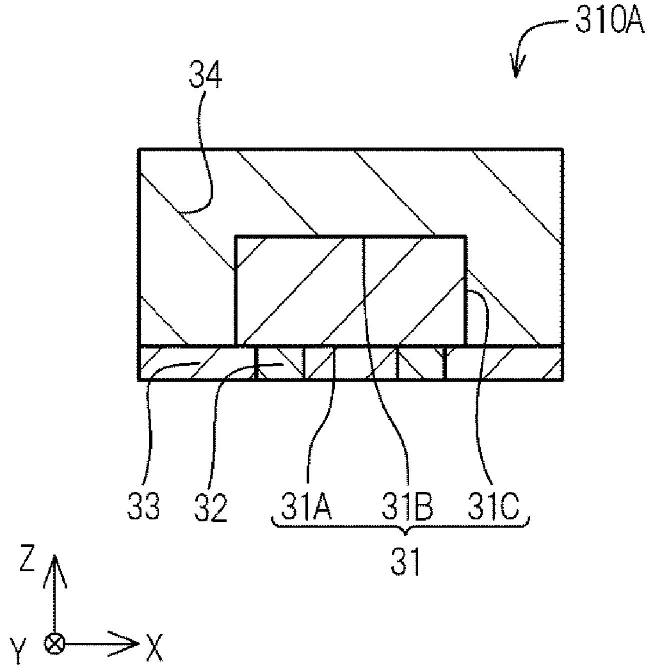

310A
34
33
32
31A
31B
31C
31
Z
Y
X

FIG. 12

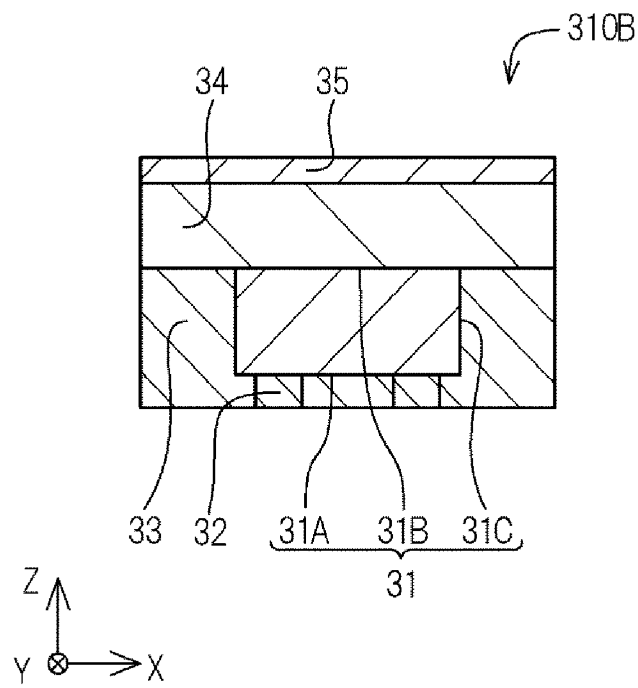

310B
34
35
33
32
31A
31B
31C
31
Z
Y
X

FIG.13

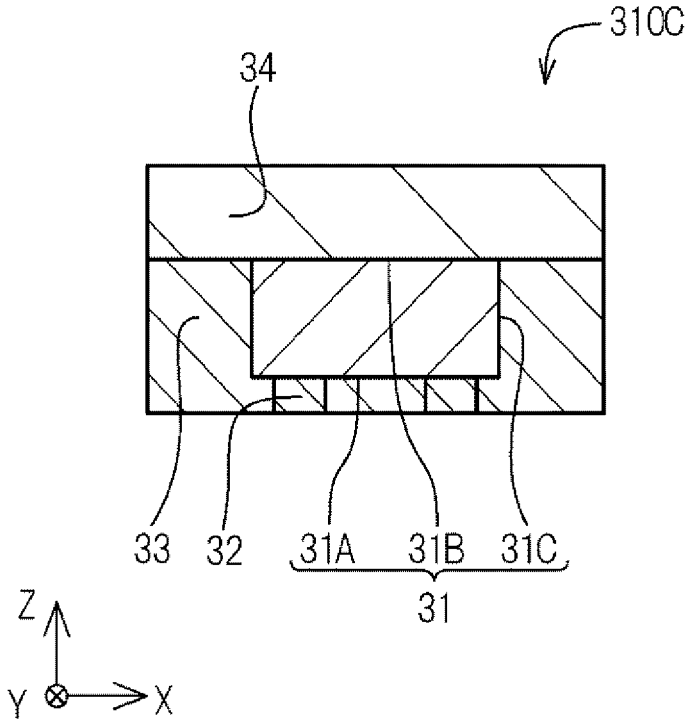
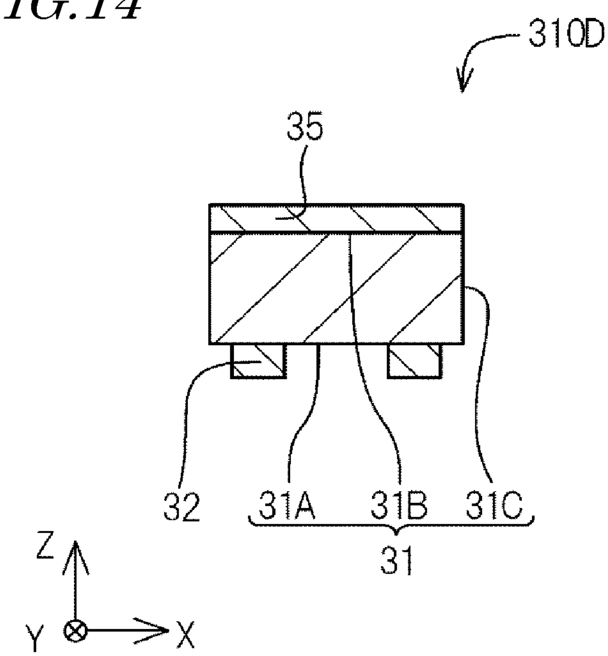


FIG.14



LIGHT-EMITTING MODULE

CROSS REFERENCE TO RELATED APPLICATION

This is a continuation application of U.S. patent application Ser. No. 17/305,185, filed Jul. 1, 2021, which claims priority to Japanese Patent Application No. 2020-113886, filed on Jul. 1, 2020, the disclosure of which is hereby incorporated by reference in its entirety.

BACKGROUND

The present disclosure relates to a light-emitting module.

A light-emitting module using a light source and a lightguide plate is used for a backlight device for a liquid crystal display device (see, for example, Japanese Patent Publication No. 2008-59786). For such light-emitting modules, a technique has been developed, in which a light-emitting surface is demarcated into a plurality of light-emitting regions and brightness is controlled for each light-emitting region.

SUMMARY

With such light-emitting modules, there is a demand for further improving the contrast ratio between lit areas and non-lit areas.

A light-emitting module according to one embodiment includes: A light-emitting module includes: a plurality of light sources; and a lightguide plate including a first surface, a second surface opposite to the first surface, and a plurality of light source placement sections arrayed in a first direction and a second direction orthogonal to the first direction, at least one of the plurality of light sources being arranged in each of the plurality of light source placement sections. The plurality of light sources are located at a side of the second surface. The plurality of light source placement sections include a first light source placement section, a second light source placement section that is adjacent to the first light source placement section in the first direction, and a third light source placement section that is adjacent to the first light source placement section in the second direction. The lightguide plate defines at least one first-A light control groove and at least one first-B light control groove that extend parallel to the second direction between the first light source placement section and the second light source placement section, and at least one second-A light control groove and at least one second-B light control groove that extend parallel to the first direction between the first light source placement section and the third light source placement section.

According to certain embodiments of the present disclosure, it is possible to provide a light-emitting module with which it is possible to improve the contrast ratio between lit areas and non-lit areas.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic top view showing an example of a surface light source according to a first embodiment of the present disclosure.

FIG. **2** is a schematic cross-sectional view taken along line II-II of FIG. **1**, showing the example of the surface light source according to the first embodiment.

FIG. **3** is a schematic top view showing light-emitting regions of the example of the surface light source according to the first embodiment.

FIG. **4**A is a schematic cross-sectional view showing a variant example of the surface light source according to the first embodiment.

FIG. **4**B is a schematic cross-sectional view showing a variant example of the surface light source according to the first embodiment.

FIG. **5** is a schematic cross-sectional view showing a light source according to the first embodiment.

FIG. **6** is a schematic top view showing an example of a surface light source according to a second embodiment of the present disclosure.

FIG. **7** is a schematic cross-sectional view taken along line VII-VII of FIG. **6**, showing the example of the surface light source according to the second embodiment.

FIG. **8** is a schematic cross-sectional view showing a variant example of the surface light source according to the second embodiment.

FIG. **9** is a schematic top view showing an example of a surface light source according to a third embodiment of the present disclosure.

FIG. **10** is a schematic cross-sectional view showing a surface light source according to a first variant example.

FIG. **11** is a schematic cross-sectional view showing a light source according to a second variant example.

FIG. **12** is a schematic cross-sectional view showing a light source according to a third variant example.

FIG. **13** is a schematic cross-sectional view showing a light source according to a fourth variant example.

FIG. **14** is a schematic cross-sectional view showing a light source according to a fifth variant example.

DETAILED DESCRIPTION

Embodiments of the present disclosure will be described in detail with reference to the drawings. The following embodiments are illustrative, and a surface light source and a light-emitting module according to the present disclosure are not limited to the embodiments described below. For example, the numerical values, shapes, materials, etc., to be shown in the embodiments described below are merely examples, and various modifications can be made thereto as long as they do not result in technical contradictions. The embodiments to be described below are merely illustrative, and various combinations are possible as long as they do not result in technical contradictions.

The size, the shape, etc., of the components shown in the figures may be exaggerated for the ease of understanding, and they may not represent the size and the shape of the components, the size relationship therebetween in an actual surface light source or light-emitting module. In order to prevent the figures from becoming excessively complicated, some components may be omitted, and a cross-sectional end view that shows only a cross section may be used as a cross-sectional view.

In the following description, components of like functions may be denoted by like reference signs and may not be described redundantly. Terms indicating specific directions and positions (e.g., “upper”, “lower”, and other terms including such terms) may be used. These terms are used merely for ease of understanding relative directions or positions in the figure being referred to. The arrangement of components in drawings of documents other than the present disclosure, actual products, etc., does not need to be equal to that shown in the figure being referred to, as long as it conforms with the directional or positional relationship as indicated by terms such as "upper" and "lower" in the figure being referred to. In the present specification, the term "parallel" encompasses cases where two straight lines, sides, planes, etc., are in the range of about 0±5°, unless otherwise specified. In the present specification, the term "orthogonal" or "perpendicular" encompasses cases where two straight lines, sides, planes, etc., are in the range of approximately 90±5°, unless otherwise specified. Moreover, the positional relationship represented as "on/above" encompasses an object being in contact with another object and an object being not in contact with but positioned above another object.

First Embodiment

An illustrative surface light source **1000** according to the present embodiment will be described with reference to FIG. **1** to FIG. **5**. The surface light source **1000** includes a light-emitting module **100** and a wiring board **200**. The light-emitting module **100** includes a plurality of light sources **30** and a lightguide plate **20**. The light-emitting module **100** may further include an adhesive sheet **205** and a light-reflecting sheet **206**. The lightguide plate **20** is arranged on the wiring board **200**, and the plurality of light sources **30** are arranged on the wiring board **200**. The wiring board **200** may be further provided with a first insulating layer **208**A and a second insulating layer **208**B. The adhesive sheet **205** and the light-reflecting sheet **206** are arranged between the wiring board **200** and the lightguide plate **20**. The adhesive sheet **205** bonds the lightguide plate **20** and the light-reflecting sheet **206** together. For the adhesive sheet **205**, for, example, an Optical Clear Adhesive (OCA), can be used. The light-emitting module **100** may include an adhesive sheet that bonds together the wiring board **200** and the light-reflecting sheet **206**. The light-reflecting sheet **206** reflects a portion of light emitted from the light source **30**. The first insulating layer **208**A and the second insulating layer **208**B cover a lower surface of the wiring board **200**. The first insulating layer **208**A protects the lower surface of the wiring board **200** from the external environment. The second insulating layer **208**B prevents electrical short-circuiting of a terminal **209** of the wiring board **200** located on the lower surface of the wiring board **200**, and protects the lower surface of the wiring board **200** from the external environment.

The wiring board **200** is a member that electrically connects the plurality of light sources **30**. For example, as shown in FIG. **2**, the wiring board **200**, the adhesive sheet **205** and the light-reflecting sheet **206** define through holes, and a wiring **207** is disposed in each of the through holes. One end portion of each wiring **207** is in contact with an external electrode member of a light source, and another end portion of each wiring **207** is connected to a terminal **209** located on the lower surface of the wiring board **200**. Thus, the wiring board **200** is electrically connected to the plurality of light sources **30**.

The light-reflecting sheet **206** preferably overlaps with the light source **30** in a top plan view. With this structure, light from the light source **30** is more easily reflected at the light-reflecting sheet **206**. This allows for improving the efficiency of light extraction from the light source **30**. The light-reflecting sheet **206** preferably overlaps with the outer edge of the light source placement section to be described below in a top plan view. The light-reflecting sheet **206** more preferably overlaps with the outer edge of the light-emitting region to be described below in a top plan view. This allows for further improving the efficiency of light extraction from the light source **30**.

For the light-reflecting sheet **206**, a resin sheet containing a large number of bubbles (e.g., a foamed resin sheet), a resin sheet containing a light-diffusing material, or the like can be used. Examples of a resin used for the light-reflecting sheet **206** include a thermoplastic resin such as an acrylic resin, a polycarbonate resin, a cyclic polyolefin resin, a polyethylene terephthalate resin or a polyester resin, and a thermosetting resin such as an epoxy resin or a silicone resin. A known material such as titanium oxide, silica, alumina, zinc oxide or glass may be used for the light-diffusing material.

The light-emitting module **100** includes the plurality of light sources **30** and the lightguide plate **20**. The lightguide plate **20** includes a first surface **20**A, a second surface **20**B, and a plurality of light source placement sections **22**, and defines light control grooves **23**. The light control grooves **23** include first-A light control grooves **231**A, first-B light control grooves **231**B, second-A light control grooves **232**A and second-B light control grooves **232**B. The second surface **20**B is located opposite to the first surface **20**A. The plurality of light sources **30** is located on a second surface **20**B side. At least one of the plurality of light sources **30** is disposed in each of the plurality of light source placement sections **22**. The plurality of light source placement sections **22** are arranged in an array extending in the first direction and the second direction orthogonal to the first direction. The plurality of light source placement sections **22** include a first light source placement section **22**A, a second light source placement section **22**B that is adjacent to the first light source placement section **22**A in the first direction, and a third light source placement section **22**C that is adjacent to the first light source placement section **22**A in the second direction. One of the first-A light control groove **231**A and one of the first-B light control grooves **231**B extend parallel to the second direction between the first light source placement section **22**A and the second light source placement section **22**B. One of the second-A light control grooves **232**A and one of the second-B light control grooves **232**B extend parallel to the first direction between the first light source placement section **22**A and the third light source placement section **22**C. In FIG. **1**, the first direction is the X direction, and the second direction is the Y direction.

In the present specification, the expression "a light control groove extending in the first direction or the second direction" means that two opposite sides of a light control groove **23** that define outer edges of the light control groove **23** are parallel to the first direction or the second direction. For example, the expression "the first-A light control groove **231**A extending parallel to the second direction" means that two opposite sides of a first-A light control groove **231**A that define outer edges of the first-A light control groove **231**A are parallel to the second direction. The light source disposed in the first light source placement section **22**A may be referred to as a "first light source **30**A", a light source disposed in the second light source placement section **22**B may be referred to as a "second light source **30**B", and a light source disposed in the "third light source placement section **22**C" may be referred to as a third light source **30**C.

The lightguide plate **20** is a light-transmitting member that allows light emitted from the light source **30** arranged in the light source placement section to propagate therethrough and to be emitted from the first surface **20**A of the lightguide plate **20**. The lightguide plate **20** may be constituted of a single layer or may have a layered structure in which a plurality of layers are layered. When using the lightguide plate **20** having a layered structure in which a plurality of layers are layered, for example, a layered lightguide plate in which two lightguide plates are bonded together by an adhesive sheet may be employed. Examples of materials that may be used for the lightguide plate **20** include a thermoplastic resin such as an acrylic resin, a polycarbonate resin, a cyclic polyolefin resin, a polyethylene terephthalate resin or a polyester resin, a thermosetting resin such as an epoxy resin or a silicone resin, and glass, etc. The lightguide plate **20** preferably has a thickness of 200 μm or more and 800 μm or less, for example.

As shown in FIG. **1**, each first-A light control groove **231**A and a corresponding first-B light control groove **231**B are located between corresponding adjacent ones of the plurality of light source placement sections **22** in the first direction (the X direction). A first-A light control groove **231**A is located closer to the first light source placement section **22**A than a corresponding first-B light control groove **231**B in the first direction. The first light source placement section **22**A is located between a corresponding pair of first-A light control grooves **231**A that are adjacent to each other in the first direction. A first-B light control groove **231**B is located closer to the second light source placement section **22**B than a corresponding first-A light control groove **231**A in the first direction. The second light source placement section **22**B is located between a corresponding pair of first-B light control grooves **231**B that are adjacent to each other in the first direction.

As shown in FIG. **1**, each second-A light control groove **232**A and a corresponding second-B light control groove **232**B are located between corresponding adjacent ones of the plurality of light source placement sections **22** in the second direction (the Y direction). A second-A light control groove **232**A is located closer to the first light source placement section **22**A than a corresponding second-B light control groove **232**B in the second direction. The first light source placement section **22**A is located between a corresponding pair of second-A light control grooves **232**A that are adjacent to each other in the second direction. A second-B light control groove **232**B is located closer to the third light source placement section **22**C than a corresponding second-A light control groove **232**A in the second direction. The third light source placement section **22**C is located between a corresponding pair of second-B light control grooves **232**B that are adjacent to each other in the second direction.

A region that is surrounded by light control grooves **23** that are located close to a light source placement section **22** is referred to as a "light-emitting region R". Each hatched region in FIG. **3** represents a light-emitting region R. For example, the "light-emitting region R corresponding to the first light source placement section **22**A" refers to a region that is surrounded by corresponding first-A light control grooves **231**A and corresponding second-A light control grooves **232**A. The "light-emitting region R corresponding to the second light source placement section **22**B" refers to a region that is surrounded by corresponding first-B light control grooves **231**B and corresponding second-A light control grooves **232**A. The "light-emitting region R corresponding to the third light source placement section **22**C" refers to a region that is surrounded by corresponding first-A light control grooves **231**A and corresponding second-B light control grooves **232**B. It is not necessary that the entire periphery of a light-emitting region R be surrounded by light control grooves **23**. Each light-emitting region R is defined to not include light control grooves **23**. The light-emitting region corresponding to a first light source placement section **22**A may be referred to as a "first light-emitting region R**1**", the light-emitting region corresponding to a second light source placement section **22**B may be referred to as a "second light-emitting region R**2**", and the light-emitting region corresponding to a third light source placement section **22**C as a "third light-emitting region R**3**".

The lightguide plate **20** has a demarcating region(s) S in a region other than the light emitting regions R in a top plan view. The demarcating region S includes first regions each located between a corresponding first-A light control groove **231**A and a corresponding first-B light control groove **231**B that are adjacent to each other in the first direction, and second regions each located between a corresponding second-A light control groove **232**A and a corresponding second-B light control groove **232**B in the second direction. Note that it is not necessary that the entire peripheries of the first and second regions be surrounded by light control grooves **23**. A demarcating region S is defined to include light control grooves **23** and not include light-emitting regions R. A portion of light from the light source preferably enters the demarcating region S. With this structure, it is possible to prevent the demarcating region from becoming excessively dark.

With the lightguide plate **20** defining the first-A light control groove **231**A and the first-B light control groove **231**B extending parallel to the second direction between the first light source placement section **22**A and the second light source placement section **22**B, a portion of light that travels in the first direction from the first light source **30**A disposed in the first light source placement section **22**A is refracted or reflected by the first-A light control groove **231**A and/or the first-B light control groove **231**B. That is, a portion of light that travels in the first direction from the first light source **30**A is refracted or reflected by the first-A light control groove **231**A. A portion of light from the first light source **30**A that passes through the first-A light control groove **231**A and travels in the first direction is refracted or reflected by the first-B light control groove **231**B. Thus, it is possible to prevent a portion of light that travels in the first direction from the first light source **30**A from entering the second light-emitting region R**2**. In the present embodiment, the lightguide plate **20** defines two grooves, i.e., the first-A light control groove **231**A and the first-B light control groove **231**B, between the first light source placement section **22**A and the second light source placement section **22**B, it is possible to better prevent a portion of light that travels in the first direction from the first light source **30**A from entering the second light-emitting region R**2**. This allows for improving the contrast ratio between the first light-emitting region R**1** and the second light-emitting region R**2** when the first light source **30**A is lit and the second light source **30**B is not lit, it is possible to. Similarly, it is possible to prevent light from the second light source **30**B from entering the first light-emitting region R**1** when the second light source **30**B is lit and the first light source **30**A is not lit.

With the lightguide plate **20** including the second-A light control groove **232**A and the second-B light control groove **232**B extending parallel to the first direction between the first light source placement section **22**A and the third light source placement section **22**C, a portion of light that travels in the second direction from the first light source **30**A is refracted or reflected by the second-A light control groove **232**A and/or the second-B light control groove **232**B. That is, a portion of light that travels in the second direction from the first light source **30**A is refracted or reflected by the second-A light control groove **232**A. A portion of light from the first light source **30**A that passes through the second-A light control groove **232**A and travels in the second direction is refracted or reflected by the second-B light control groove **232**B. This allows for preventing a portion of light that travels in the second direction from the first light source **30**A from entering the third light-emitting region R**3**. Accordingly, it is possible to improve the contrast ratio between the first light-emitting region R**1** and the third light-emitting region R**3** when the first light source **30**A is lit and the third light source **30**C is not lit. Similarly, it is possible to prevent light from the third light source **30**C from entering the first light-emitting region R**1** when the third light source **30**C is lit and the first light source **30**A is not lit.

The light control grooves **23** of the lightguide plate **20** may be through holes that are open in the first surface **20**A and the second surface **20**B, may be recesses that are open in the second surface **20**B and are apart from the first surface **20**A, or may be recesses that are open in the first surface **20**A and are apart from the second surface **20**B. In the present specification, the term "grooves" includes such recesses and through holes. That is, the term "grooves" in the present specification refer both to recesses that do not extend through the body (e.g., the lightguide plate **20**) in which the grooves are formed and to through holes that run therethrough. As shown in FIG. **2**, the two opposing sides of a groove in a cross-sectional view may extend parallel to the Z direction, or the two opposing sides of a groove may be inclined from the Z direction. When the two opposing sides of a groove are inclined from the Z direction, the shape of the groove in a cross-sectional view may be a V-shape or may be a trapezoidal shape. The outer edge of a groove may be curved in a cross-sectional view.

In the present embodiment, the first-A light control groove **231**A, the first-B light control groove **231**B, the second-A light control groove **232**A and the second-B light control groove **232**B are through holes that are open in the first surface **20**A and the second surface **20**B of the lightguide plate **20**. With the first-A light control groove **231**A is open in the first surface **20**A, light from the first light source **30**A can more easily be emitted to the outside of the lightguide plate **20** from the first surface **20**A of the lightguide plate **20**. Thus, it is possible to prevent light from the first light source **30**A from entering the second light-emitting region R**2**, which allows for improving the contrast ratio between the first light-emitting region R**1** and the second light-emitting region R**2**. Similarly, with the first-B light control groove **231**B, the second-A light control groove **232**A and/or the second-B light control groove **232**B that are open in the first surface **20**A, it is possible to improve the contrast ratio between adjacent light-emitting regions.

When the first-A light control groove **231**A is a through hole that is open in the first surface **20**A and the second surface **20**B, increase of the surface area of the lightguide plate **20** in the first-A light control groove **231**A can be facilitated. Thus, light from the first light source **30**A can more easily be emitted to the outside of the lightguide plate **20** from the first-A light control groove **231**A. This allows for preventing light from the first light source **30**A from entering the second light-emitting region R**2**, so that it is possible to improve the contrast ratio between the first light-emitting region R**1** and the second light-emitting region R**2**. Similarly, with the first-B light control groove **231**B, the second-A light control groove **232**A and/or the second-B light control groove **232**B that are through holes open in the first surface **20**A and the second surface **20**B, it is possible to improve the contrast ratio between adjacent light-emitting regions.

As shown in FIG. **4**A, the first-A light control groove **231**A and the first-B light control groove **231**B may be recesses that are open in the first surface **20**A and are apart from the second surface **20**B of the lightguide plate **20**. Thus, the first light-emitting region R**1** and the second light-emitting region R**2** are connected to each other by the lightguide plate **20**, which allows for increasing the amount of light from the light source that enters the demarcating region S located between the first light-emitting region R**1** and the second light-emitting region R**2**. With this structure, it is possible to prevent the demarcating region from becoming excessively dark. Similarly, the second-A light control groove **232**A and the second-B light control groove **232**B may be recesses that are open in the first surface **20**A and are apart from the second surface **20**B of the lightguide plate **20**.

The inside of each light control groove **23** may be an air layer, or a first member **230** comprising or consisting of a light-transmitting material or a light-reflecting material, etc., may be disposed in each light control groove **23** as shown in FIG. **4**B. The first member **230** may be disposed in the form of a layer extending along the inner surface defining the light control groove **23** as shown in FIG. **4**B, or the first member **230** may fill part or whole of the inside of the light control groove **23**. The first member **230** may cover a portion of the first surface **20**A of the lightguide plate **20**. This allows for improving the adhesion between the first member **230** and the lightguide plate **20**.

In the present embodiment, the inside of the light control groove **23** is an air layer. Because the refractive index of the air layer is lower than the refractive index of the lightguide plate **20**, light from the light source is more likely to be totally reflected at the interface between the lightguide plate **20** and the air layer. Thus, it is possible to improve the contrast ratio between adjacent light-emitting regions. The first member **230** disposed inside the light control groove **23** may have any appropriate refractive index, but is preferably higher than the refractive index of the lightguide plate **20**. With this structure, light from the light source is more likely to be refracted at the interface between the lightguide plate **20** and the first member **230**. In particular, when an air layer is located between opposite portions of each first member **230** in the first direction as shown in FIG. **4**B, it is preferable that the refractive index of the first member **230** is higher than the refractive index of the lightguide plate **20**. With such a reflective index, difference in the refractive index between the first member **230** and the air layer is increased, so that light from the light source is more likely to be totally reflected at the interface between the first member **230** and the air layer. Thus, it is possible to improve the contrast ratio between adjacent light-emitting regions.

When the first member **230** comprises or consists of a light-transmissive material, it is possible to prevent reduction in brightness directly above the light control groove **23**. The resin used for the light-transmitting material or the light-reflecting material may be a thermoplastic resin such as an acrylic resin, a polycarbonate resin, a cyclic polyolefin resin, a polyethylene terephthalate resin or a polyester resin, or a thermosetting resin such as an epoxy resin or a silicone resin. The light-transmitting material or the light-reflecting material can contain a light-diffusing material. For, the light-diffusing material, a known material such as titanium oxide, silica, alumina, zinc oxide or glass can be used. Examples of a metal used for the light-reflecting material include platinum (Pt), silver (Ag), rhodium (Rh) or aluminum (Al), for example.

In a top plan view, the first-A light control grooves **231**A and the second-A light control grooves **232**A may be connected to or spaced apart from the first-B light control grooves **231**B and the second-B light control grooves **232**B. In the present embodiment, the first-A light control grooves **231**A, the second-A light control grooves **232**A are connected to the first-B light control grooves **231**B and the second-B light control grooves **232**B. This structure allows for facilitating improvement in the contrast ratio between adjacent light-emitting regions.

As shown in FIG. **1**, it is preferred that one of the first-A light control grooves **231**A is located between a first midpoint **221**C (which is the midpoint between the central portion of the first light source placement section **22**A and the central portion of the second light source placement section **22**B) and the central portion of the first light source placement section **22**A in the first direction, and located closer to the first midpoint **221**C than to the central portion of the first light source placement section **22**A in the first direction. With this structure, it is possible to increase the area of the first light-emitting region R**1** in the first direction.

In the present specification, "the central portion of a light source placement section" refers to the centroid of the light source placement section **22** in a top plan view. For example, when the light source placement section **22** has a circular shape, the central portion of the light source placement section refers to the center of the circular shape, and when the shape of the light source placement section **22** has a rectangular shape, the central portion of the light source placement section refers to the intersection between the diagonals of the light source placement section.

It is preferred that one of the first-B light control grooves **231**B is located between the first midpoint **221**C and the central portion of the second light source placement section **22**B in the first direction, and located closer to the first midpoint **221**C than to the central portion of the second light source placement section **22**B in the first direction. With this structure, it is possible to increase the area of the second light-emitting region R**2** in the first direction.

It is preferred that one of the second-A light control grooves **232**A is located between a second midpoint **222**C (which is the midpoint between the central portion of the first light source placement section **22**A and the central portion of the third light source placement section **22**C) and the central portion of the first light source placement section **22**A in the second direction, and located closer to the second midpoint **222**C than to the central portion of the first light source placement section **22**A in the second direction. With this structure, it is possible to increase the area of the first light-emitting region R**1** in the second direction.

It is preferred that one of the second-B light control grooves **232**B is located between the second midpoint **222**C and the central portion of the third light source placement section **22**C in the second direction, and located closer to the second midpoint **222**C than to the central portion of the third light source placement section **22**C in the second direction. With this structure, it is possible to increase the area of the third light-emitting region R**3** in the second direction.

It is preferred that the shortest width of each first-A light control groove **231**A and/or the shortest width of each first-B light control groove **231**B are shorter than the shortest width of the first light source placement section **22**A in the first direction. With this structure, it is easier to increase the size of the first light-emitting region R**1** and/or the second light-emitting region R**2** in the first direction. In the first direction, the shortest width of each first-A light control groove **231**A and/or the shortest width of each first-B light control groove **231**B are 0.05 times or more and 0.2 times or less of the shortest width of the first light source placement section **22**A, for example. When the shortest width of each first-A light control groove **231**A and/or the shortest width of each first-B light control groove **231**B are 0.05 times or more of the shortest width of the first light source placement section **22**A in the first direction, it is possible to prevent light emitted to the outside of the lightguide plate **20** from the first-A light control groove **231**A and/or the first-B light control groove **231**B from re-entering the lightguide plate **20**. When the shortest width of each first-A light control groove **231**A and/or the shortest width of each first-B light control groove **231**B are 0.2 times or less of the shortest width of the first light source placement section **22**A in the first direction, it is easier to increase the size of the first light-emitting region R**1** and/or the second light-emitting region R**2** in the first direction. In the first direction, the shortest width W**1** of each first-A light control groove **231**A and/or the shortest width W**2** of each first-B light control groove **231**B are 0.1 mm or more and 2 mm or less, for example. In the present specification, the width of a groove means the width of the groove at the opening thereof on the first surface **20**A and/or the second surface **20**B. With the first-A light control groove **231**A in the present embodiment open in the first surface **20**A and the second surface **20**B, the shortest width of the first-A light control groove **231**A refers to the shorter one of the width of the first-A light control groove **231**A at the opening thereof in the first surface **20**A and the width of the first-A light control groove **231**A at the opening thereof in the second surface **20**B. In the present specification, the width of a light source placement section refers to the width of the light source placement section at the opening thereof on the first surface **20**A and/or the second surface **20**B.

It is preferred that the shortest width of each second-A light control groove **232**A and/or the shortest width of each second-B light control groove **232**B are shorter than the shortest width of the first light source placement section **22**A in the second direction. With this structure, it is easier to increase the size of the first light-emitting region R**1** and/or the third light-emitting region R**3** in the second direction. In the second direction, the shortest width of each second-A light control groove **232**A and/or the shortest width of each second-B light control groove **232**B are 0.05 times or more and 0.2 times or less of the shortest width of the first light source placement section **22**A, for example. In the second direction, the shortest width of each second-A light control groove **232**A and/or the shortest width of each second-B light control groove **232**B are 0.1 mm or more and 2 mm or less, for example.

It is preferred that the shortest width W**1** of each first-A light control groove **231**A in the first direction and the shortest width W**2** of a corresponding first-B light control groove **231**B in the first direction are equal to each other. With this structure, the ratio of light from the light source that is refracted or reflected at the first-A light control groove **231**A and the ratio of light from the light source that is refracted or reflected at the first-B light control groove **231**B can be easily made generally equal to each other. This allows for facilitating reduction in brightness variation between the first light-emitting region R**1** and the second light-emitting region R**2**. It is preferred that the shortest width of each first-A light control groove **231**A in the first direction, the shortest width of each first-B light control groove **231**B in the first direction, the shortest width of each second-A light control groove **232**A in the second direction, and the shortest width of each second-B light control groove **232**B in the second direction are equal to each other. This structure allows for facilitating reduction in brightness variation between the first light-emitting region R**1**, the second light-emitting region R**2** and the third light-emitting region R**3**. The expression "widths being equal to each other" in the present specification encompass variation within ±5%.

It is preferred that the shortest distance W**3** between each first-A light control groove **231**A and a corresponding first-B light control groove **231**B is equal to or shorter than the shortest width W**1** of the respective first-A light control groove **231**A in the first direction. With this structure, it is easier to increase the size of the first light-emitting region R**1**. Similarly, it is preferred that the shortest distance between each second-A light control groove **232**A and a corresponding second-B light control groove **232**B is equal to or shorter than the shortest width of the respective second-A light control groove **232**A in the second direction.

The light source placement section **22** of the lightguide plate **20** is a space for disposing the light source **30**. That is, the light source **30** is disposed in the light source placement section **22**. The light source placement section **22** may be a through hole that is open in the first surface **20**A and the second surface **20**B of the lightguide plate **20**, or may be a recess that is open in the second surface **20**B and is apart from the first surface **20**A. When the light source placement section **22** is a through hole that is open in the first surface **20**A and the second surface **20**B, reduction in the thickness of the lightguide plate **20** in the Z direction can be facilitated, so that it is possible to reduce the thickness of the light-emitting module **100**. When the light source placement section **22** is a recess that is open in the second surface **20**B and is apart from the first surface **20**A, the lightguide plate **20** is located directly above the light source **30**. This structure allows for facilitating adjustment of the intensity of light emitted to the outside of the lightguide plate **20** at a portion directly above the light source **30** with the lightguide plate **20**. While the light source placement section **22** has a circular shape in a top plan view in the present embodiment, it may have an elliptical shape or a polygonal shape such as a triangular shape, a rectangular shape, a hexagonal shape or an octagonal shape. The width of the light source placement section **22** in the first direction or the second direction is preferably 1.5 mm or more and 15 mm or less, and more preferably 2 mm or more and 6 mm or less, for example. The distance between light source placement sections **22** that are adjacent to each other in the first direction (the X direction) or the second direction (the Y direction) is preferably 1 mm or more and 20 mm or less, and more preferably 4 mm or more and 10 mm or less. As shown in FIG. **2**, the two opposing sides of a light source placement section in a cross-sectional view may extend parallel to the Z direction or the two opposing sides of a light source placement section may be inclined with respect to the Z direction. For example, when the opposing two sides of a light source placement section are inclined from the Z direction, the light source placement section in a cross-sectional view may have a V-shape or may have a trapezoidal shape. The outer edge of the light source placement section may be curved in a cross-sectional view.

While a single light source **30** is disposed in a single light source placement section **22** in the present embodiment, two or more light sources **30** may be disposed in the light source placement section **22**. As shown in FIG. **5**, the light source **30** includes an upper surface **300**A, a lower surface **300**B and lateral surfaces **300**C. The light source **30** in a top plan view has a rectangular shape having four lateral surfaces **300**C, for example. As shown in FIG. **1**, for example, the sides (the lateral surfaces **300**C) of the rectangular shape of the light source **30** in a top plan view are non-parallel to the first direction (the X direction) or the second direction (the Y direction). In a top plan view, the sides (the lateral surfaces **300**C) of the rectangular shape of the light source **30** are at an angle of +45 degrees or 135 degrees (−45 degrees) with respect to the first direction (the X direction) or the second direction (the Y direction). With such an arrangement, each of the four lateral surfaces **300**C of the light source **30** faces a respective one of the four corners of the light-emitting region in a top plan view, which allows for preventing reduction of the brightness in the vicinity of the four corners of the light-emitting region located farthest from the central portion of the light-emitting region.

The light source **30** may be a light-emitting device or may be a structure including an optical member, such as a wavelength conversion member, combined with a light-emitting device. As will be described as variant examples below, the light source **30** may have various configurations.

As shown in FIG. **5**, the light source **30** according to the present embodiment includes a light-emitting device **31**, an external electrode member **32**, a cover member **33**, a second light-transmitting member **34** and a second light control member **35**. The light-emitting device **31** includes at least a semiconductor stack body and positive and negative electrodes. The light-emitting device **31** is a light-emitting diode (LED), for example, configured to emit blue light, for example. For example, $In_xAl_yGA_{1-x-y}N$ ($0 \le x$, $0 \le y$, $x+y \le 1$) can be contained to be used for the semiconductor stack body. The light-emitting device **31** has a first surface **31**A on which positive and negative electrodes are arranged, and a second surface **31**B opposite to the first surface **31**A. The cover member **33** may contain or be made of, for example, a resin material containing a light-diffusing material, and covers the first surface **31**A of the light-emitting device and the lower surface of the second light-transmitting member **34**. More specifically, for the cover member **33**, a silicone resin, an epoxy resin, or the like containing titanium oxide, silica, alumina, zinc oxide, glass, or the like serving as the light-diffusing material can be used.

The second light-transmitting member **34** covers the second surface **31**B and the lateral surfaces of the light-emitting device **31**. For example, a light-transmitting resin material can be used for the second light-transmitting member **34**. Examples of the resin material used for the second light-transmitting member **34** include an epoxy resin, a silicone resin, and a resin in which these resins are mixed. The second light-transmitting member **34** may or may not contain a phosphor in the resin material. When the second light-transmitting member **34** contains a phosphor, the second light-transmitting member **34** serves as a wavelength conversion layer.

For the phosphor, a yttrium aluminum garnet-based phosphor (e.g., $Y_3(Al,Ga)_5O_{12}$:Ce), a lutetium aluminum garnet-based phosphor (e.g., $Lu_3(Al,Ga)_5O_{12}$:Ce), a terbium aluminum garnet-based phosphor (e.g., $Tb_3(Al,Ga)_5O_{12}$:Ce), a β-Sialon phosphor (e.g., $(Si,Al)_3(O,N)_4$:Eu), an α-Sialon phosphor (e.g., $M_z(Si,Al)_{12}(O,N)_{16}$ (where $0 \le z \le 2$, and M is Li, Mg, Ca, Y and a lanthanide element excluding La and Ce)), a nitride-based phosphor such as a CASN-based phosphor (e.g., $CaAlSiN_3$:Eu) or an SCASN-based phosphor (e.g., $(Sr,Ca)AlSiN_3$:Eu), a fluoride-based phosphor such as a KSF-based phosphor (e.g., K_2SiF_6:Mn) or an MGF-based phosphor (e.g., $3.5MgO \cdot 0.5MgF_2 \cdot GeO_2$:Mn), a quantum dot phosphor, or the like can be used.

The second light-transmitting member **34** may include different kinds of phosphors, e.g., a phosphor that absorbs blue light and emits yellow light and a phosphor that absorbs blue light and emits red light, which allow for emitting, for example, white light from the light source **30**. The second light-transmitting member **34** may contain a light-diffusing material in such an amount that light is not blocked. The content of the light-diffusing material contained in the second light-transmitting member **34** may be adjusted so that the transmittance of the second light-transmitting member **34** for light emitted from the light-emitting device **31** is 50% or more and 99% or less, and preferably 70% or more and 90% or less. Examples of the light-diffusing material include titanium oxide, silica, alumina, zinc oxide, glass, or the like.

The second light control member **35** is arranged on the upper surface of the second light-transmitting member **34**. The second light control member **35** may contain or be made of, for example, a light-reflecting material such as a resin material or a metal material that contains a light-diffusing material. The second light control member **35** may be a distributed bragg reflector (DBR), for example. The second light control member **35** reflects at least a portion of light propagated from the second light-transmitting member **34**. The second light control member **35** may allow a portion of light propagated from the second light-transmitting member **34** to pass therethrough. If the transmittance of the second light control member **35** for light coming from the light-emitting device **31** is sufficiently low, e.g., 1% or more and 50% or less, and preferably 3% or more and 30% or less, the second light control member **35** serves as a light-blocking film, and it is possible to prevent the brightness directly above the light source **30** from becoming too high.

As shown in FIG. **2**, a first light-transmitting member **25** is arranged in the light source placement section **22**, covering the upper surface and the lateral surface of the light source **30**. For the first light-transmitting member **25**, for example, a light-transmitting resin material may be used. As with the lightguide plate **20**, the resin material may be a thermoplastic resin, a thermosetting resin, or the like. The first light-transmitting member may or may not contain a phosphor in the resin material. The first light-transmitting member may or may not contain a light-diffusing material in the resin material.

A first light control member **26** is arranged on the first light-transmitting member **25**. The first light-transmitting member **25** may have a circular shape, an elliptical shape or a polygonal shape such as a triangular shape, a rectangular shape, a hexagonal shape or an octagonal shape in a top plan view. The first light-transmitting member **25** in the present embodiment has a rectangular shape with four rounded corners in a top plan view. The first light control member **26** reflects at least a portion of light from the light source **30** that has passed through the first light-transmitting member **25**. The first light control member **26** may allow a portion of light propagated from the first light-transmitting member **25** to pass therethrough. The first light control member **26** may contain or be made of a resin material containing a light-diffusing material or may contain or be made of a metal material, for example. For example, a silicone resin, an epoxy resin, a resin in which a silicone resin and an epoxy resin are mixed together, etc., can be used for the resin material. A known material such as titanium oxide, silica, alumina, zinc oxide or glass may be used for the light-diffusing material. A dielectric multi-layer film may be used for the first light control member **26**. While the first light control member **26** is a film in the present embodiment, it may have a dotted pattern, for example. While the first light control member **26** in the present embodiment covers the entire upper surface the first light-transmitting member **25** in a top plan view, a portion of the upper surface of the first light-transmitting member **25** may be exposed through the first light control member **26**.

Second Embodiment

Next, the second embodiment will be described.

As shown in FIG. **6**, a surface light source **2000** according to the present embodiment includes a third-A light control groove **233**A that is located between the first-A light control groove **231**A and the first-B light control groove **231**B and extends parallel to the second direction, and a third-B light control groove **233**B that is located between the second-A light control groove **232**A and the second-B light control groove **232**B and extends parallel to the first direction. The first-A light control groove **231**A and the first-B light control groove **231**B are recesses that are open in the second surface **20**B and are apart from the first surface **20**A. Other configuration and the advantageous effects of the present embodiment are similar to those of the first embodiment. The light control grooves **23** include first-A light control grooves **231**A, first-B light control grooves **231**B, second-A light control grooves **232**A, second-B light control grooves **232**B, third-A light control grooves **233**A and third-B light control grooves **233**B.

Each third-A light control groove **233**A and each third-B light control groove **233**B may be through holes that are open in the first surface **20**A and the second surface **20**B, recesses that are open in the second surface **20**B and are apart from the first surface **20**A, or recesses that are open in the first surface **20**A and are apart from the second surface **20**B. As shown in FIG. **7**, in the present embodiment, the third-A light control grooves **233**A and the third-B light control grooves **233**B may be through holes that are open in the first surface **20**A and the second surface **20**B of the lightguide plate **20**. With the third-A light control grooves **233**A and the third-B light control groove **233**B that are through holes, light from the first light source **30**A can be easily emitted to the outside of the lightguide plate **20** through the third-A light control groove **233**A and/or the third-B light control groove **233**B. This allows for reducing light from the first light source **30**A from entering the second light-emitting region and/or the third light-emitting region. Therefore, it is possible to improve the contrast ratio between adjacent light-emitting regions.

It is preferred that the third-A light control groove **233**A overlaps with the first midpoint **221**C in a top plan view. With this structure, the shapes of adjacent light-emitting regions of the lightguide plate **20** can easily be line-symmetric with each other with respect to a line that extends in the second direction passing through the first midpoint **221**C. This allows for facilitating reduction in brightness variation between adjacent light-emitting regions. It is preferred that one of the third-B light control grooves **233**B overlaps with the second midpoint **222**C in a top plan view.

The inside of each third-A light control groove **233**A and each third-B light control groove **233**B may be an air layer, or the first member **230**, which may comprise or consist of a light-transmitting material or a light-reflecting material, may be disposed in the third-A light control groove **233**A as shown in FIG. **8**. It is preferred that a light-reflective first member **230** is disposed in the third-A light control groove **233**A and the third-B light control groove **233**B. With this structure, it is possible to prevent light from the first light source **30**A from entering the second light-emitting region and/or the third light-emitting region, so that it is possible to improve the contrast ratio between adjacent light-emitting regions.

It is preferred that the shortest width of each third-A light control groove **233**A is longer than the shortest width of each first-A light control groove **231**A and the shortest width of each first-B light control groove **231**B in the first direction. With this structure, light from the first light source **30**A can more easily be emitted to the outside of the lightguide plate **20** through the third-A light control groove **233**A. The shortest width of each third-A light control groove **233**A is, for example, twice or more and five times or less of the shortest width of each first-A light control groove **231**A in the first direction. It is preferred that the shortest width of each third-B light control groove **233**B is longer than the shortest width of each second-A light control groove **232**A and the shortest width of each second-B light control groove **232**B in the second direction. With this structure, light from the first light source **30**A can be easily emitted to the outside of the lightguide plate **20** from a corresponding third-B light control groove **233**B. The shortest width of each third-B light control groove **233**B is, for example, twice or more and five times or less of the shortest width of each second-A light control groove **232**A in the second direction. The shortest width of each first-A light control groove **231**A and/or the shortest width of each first-B light control groove **231**B are, for example, 0.1 mm or more and 1 mm or less in the first direction. The shortest width of each third-A light control groove **233**A is 0.2 mm or more and 2 mm or less, for example, in the first direction. The shortest width of each second-A light control groove **232**A and/or the shortest width of each second-B light control groove **232**B are 0.1 mm or more and 1 mm or less, for example, in the second direction. The shortest width of each third-B light control groove **233**B is 0.2 mm or more and 2 mm or less, for example, in the second direction.

Third Embodiment

Next, the third embodiment will be described.

As shown in FIG. **9**, in a surface light source **3000** according to the present embodiment, the first-A light control groove **231**A, the second-A light control groove **232**A, the first-B light control groove **231**B and the second-B light control groove **232**B are spaced apart from each other. Other configurations and the advantageous effects of the present embodiment are similar to those in the second embodiment.

With the first-A light control groove **231**A and the second-A light control groove **232**A that are spaced apart from each other, light from the first light source can be easily guided to demarcating regions that are located in the vicinity of the corners of the first light-emitting region. Thus, it is possible to prevent the lowering of the brightness in the demarcating regions that are located in the vicinity of the corners of the first light-emitting region **R1**. Similarly, with the first-B light control groove **231**B and the second-A light control groove **232**A are spaced apart from each other, it is possible to prevent the lowering of the brightness in the demarcating regions that are located in the vicinity of the corners of the second light-emitting region. With the first-A light control groove **231**A and the second-B light control groove **232**B that are not connected to each other, it is possible to prevent reduction of the brightness in demarcating regions that are located in the vicinity of the corners of the third light-emitting region.

Variant examples, which are commonly applicable to the embodiments described above, will now be described.

A first variant example to be described below is an example where the wiring board **200** is not employed. Second to fifth variant examples are variant examples of the light source **30**. Views showing the variant examples are schematic, and elements therein may be omitted or simplified as needed. The embodiments described above and variant examples thereof to be described below may be used in any combination thereof.

As shown in FIG. **10**, in a light-emitting module **101** according to the present variant example, the wiring board is not employed. In the lightguide plate **20**, the light source placement sections **22** are recesses defined in the second surface **20**B of the lightguide plate **20**. Each light source **30** is disposed in a corresponding one of the light source placement sections **22**, and the space between each light source **30** and the lightguide plate **20** in the light source placement section **22** is filled with the securing member **29**. The securing member **29** may contain or be made of, for example, a light-transmitting resin material, for example. Each light source **30** is secured to the lightguide plate **20** via a corresponding securing member **29**.

A reflective partition member **21**A is disposed at the second surface **20**B side of the lightguide plate **20**. With the provision of the partition member **21**A, it is possible to improve the contrast ratio between adjacent light-emitting regions. The distal portion of the partition member **21**A extends in a lattice pattern in the first direction and the second direction, for example. The "distal portion of the partition member **21**A" as used herein refers to a portion where the thickness of the partition member **21**A in the Z direction is at maximum in a cross-sectional view. A portion of the partition member **21**A may be located in the light source placement section **22**. Positive and negative wirings **120** are arranged on the lower surface of the partition member **21**A. The positive and negative wirings **120** are electrically connected to the light source **30**. Recesses **121** are defined in regions of the first surface **20**A of the lightguide plate **20** each including a region directly above a respective light source placement section **22**. The first light control member **26** may or may not be disposed in the recess **121**. The first light control member **26** may have a conical shape or a pyramidal shape.

The light-emitting module **101** according to the present variant example is mounted on an external substrate (not shown), thus forming a surface light source. Then, electric power is supplied to the light source **30** from the external substrate.

Second Variant Example

As shown in FIG. **11**, a light source **310**A according to the present variant example includes the light-emitting device **31**, a pair of external electrode members **32**, the cover member **33** and the second light-transmitting member **34**. The pair of external electrode members **32** are connected to positive and negative electrodes that are arranged on the first surface **31**A of the light-emitting device **31**. The cover member **33** is disposed below the first surface **31**A of the light-emitting device **31** and surrounds the external electrode members **32**. The second light-transmitting member **34** covers the second surface **31**B and the lateral surfaces **31**C of the light-emitting device **31**. The second light-transmitting member **34** may or may not contain a phosphor.

Third Variant Example

As shown in FIG. **12**, a light source **310**B according to the present variant example is different from the light source **310**A according to the second variant example in that the cover member **33** covers the lateral surfaces **31**C of the light-emitting device **31**, that the second light-transmitting member **34** is disposed on the second surface **31**B of the light-emitting device **31** and that the second light control member **35** is disposed on the second light-transmitting member **34**.

Fourth Variant Example

As shown in FIG. **13**, a light source **310**C according to the present variant example is different from the light source **310**B according to the third variant example in that the second light control member **35** is not employed.

Fifth Variant Example

As shown in FIG. **14**, a light source **310**D according to the present variant example is different from the light source **310**A according to the second variant example in that the cover member **33** and the second light-transmitting member **34** are not employed and that the second light control member **35** is provided. The second light control member **35** is disposed on the second surface **31**B of the light-emitting device **31**.

Although examples where the lightguide plate **20** has a plate shape have been described in the embodiments and variant examples thereof described above, other configurations may be alternatively employed, and the lightguide plate **20** may be a layer disposed to cover the light source **30**. The lightguide plate **20** may be layered structure of a plurality of layers, or may be a plurality of blocks arranged corresponding to light-emitting regions R. The light source **30** may include a plurality of light-emitting devices. Moreover, the shape of the light-emitting region R is not limited to a rectangular shape, but may be, for example, a polygonal shape other than a rectangular shape such as a triangular shape or a hexagonal shape.

While certain embodiments of the present invention have been described with respect to exemplary embodiments thereof, it will be apparent to those skilled in the art that the disclosed invention can be modified in numerous ways and can assume many embodiments other than those specifically described above. Accordingly, it is intended by the appended claims to cover all modifications of the invention that fall within the true spirit and scope of the invention.

What is claimed is:

1. A light-emitting module comprising:

a plurality of lightguide members arranged in an array extending in a first direction and in a second direction orthogonal to the first direction, the plurality of lightguide members including:

a first lightguide member having a first lateral surface extending in parallel to the second direction and a first placement section,

a second lightguide member having a second lateral surface opposite the first lateral surface of the first lightguide member and a second placement section, and

a third lightguide member having a third placement section;

a first light source disposed in the first placement section;

a second light source disposed in the second placement section; and

a third light source disposed in the third placement section,

wherein the second lightguide member is adjacent to the first lightguide member in the first direction, and the third lightguide member is adjacent to the first lightguide member in the second direction;

wherein the first lightguide member has a first recess extending in parallel to the second direction between the first light source and the second light source.

2. The light-emitting module of claim **1**,

wherein, in the second direction, the first recess is longer in length than the first light source.

3. The light-emitting module of claim **2**,

wherein the first lightguide member further has a second recess extending in parallel to the first direction between the first light source and the third light source.

4. The light-emitting module of claim **3**,

wherein, in the first direction, the second recess is longer in length than the first light source.

5. The light-emitting module of claim **1**,

wherein the first lightguide member further has a second recess extending in parallel to the first direction between the first light source and the third light source.

6. The light-emitting module of claim **5**,

wherein, in the first direction, the second recess is longer in length than the first light source.

7. The light-emitting module of claim **1**,

wherein, in the first direction, a distance from the first light source to the first recess is greater than a distance from the first lateral surface to the first recess.

8. The light-emitting module of claim **7**,

wherein the first recess is not on a first imaginary line that connects the first light source and an end of the first lateral surface in the second direction in a plan view.

9. The light-emitting module of claim **1**,

wherein the first recess is not on a first imaginary line that connects the first light source and an end of the first lateral surface in the second direction in a plan view.

10. The light-emitting module of claim **1**,

wherein, in a cross section taken along the first direction and perpendicularly to the second direction, at least a part of the first recess is located lower than an upper surface of the first light source.

11. The light-emitting module of claim **1**, further comprising a first light control member above the first light source,

wherein the first light control member has a planar area greater than that of the first placement section of the first lightguide member in a plan view.

12. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member.

13. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member,

wherein, in the second direction, the first recess is longer in length than the first light source.

14. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member,

wherein the first lightguide member further has a second recess extending in parallel to the first direction between the first light source and the third light source.

15. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member, wherein the first lightguide member further has a second recess extending in parallel to the first direction between the first light source and the third light source,

wherein, in the second direction, the first recess is longer in length than the first light source.

16. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member,

wherein the first lightguide member further has a second recess extending in parallel to the first direction between the first light source and the third light source,

wherein, in the second direction, the first recess is longer in length than the first light source,

wherein the first recess is not on a first imaginary line that connects the first light source and an end of the first lateral surface in the second direction in a plan view.

17. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member,

wherein, in the second direction, the first recess is longer in length than the first light source,

wherein the first recess is not on a first imaginary line that connects the first light source and an end of the first lateral surface in the second direction in a plan view,

wherein the first lightguide member further has a second recess extending in parallel to the first direction between the first light source and the third light source,

wherein, in the first direction, the second recess is longer in length than the first light source.

18. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member,

wherein the first recess is not on a first imaginary line that connects the first light source and an end of the first lateral surface in the second direction in a plan view.

19. The light-emitting module of claim **11**, further comprising a first light-transmitting member that is in contact with both of the first light source and the first light control member,

wherein the first recess is not on a first imaginary line that connects the first light source and an end of the first lateral surface in the second direction in a plan view,

wherein, in the second direction, the first recess is longer in length than the first light source.

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