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United States Patent	12392953
Kind Code	B2
Date of Patent	August 19, 2025
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Illumination device including a sheet having light blocking portions and light transmitting portions and display device including the same

Abstract

An illumination device is provided with a first light source, a first light guide plate including a second main surface, a second light source, a second light guide plate including a fourth main surface, a third light source, an optical member, and a first sheet. The main surfaces of the first light guide plate and the second light guide plate overlap each other and the first light guide plate and the second light guide plate are disposed on the opposite side of the first sheet from the optical member. The first sheet includes two first light blocking portions and a first light-transmitting portion. The first light reflection portion is selectively provided in a first region in the first opposite main surface, and the second light reflection portion is provided at least in a fourth region in the second opposite main surface.

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Appl. No.: **18/766705**

Filed: **July 09, 2024**

Prior Publication Data

Document Identifier	Publication Date
US 20250067922 A1	Feb. 27, 2025

Foreign Application Priority Data

JP	2023-135294	Aug. 23, 2023

Publication Classification

Int. Cl.: **F21V8/00** (20060101); **G02F1/13** (20060101); **G02F1/1335** (20060101); **G02F1/13357** (20060101)

U.S. Cl.:

CPC **G02B6/0053** (20130101); **G02B6/002** (20130101); **G02B6/0038** (20130101); **G02B6/0068** (20130101); **G02B6/0076** (20130101); **G02F1/1323** (20130101); **G02F1/133512** (20130101); **G02F1/133524** (20130101); **G02F1/133615** (20130101); G02F1/133607 (20210101)

Field of Classification Search

CPC: G02B (6/002); G02B (6/0053); G02B (6/0076); G02F (1/1323); G02F (1/133607); G02F (1/133615)

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS
(1) This application claims the benefit of priority to Japanese Patent Application Number 2023-135294 filed on Aug. 23, 2023. The entire contents of the above-identified application are hereby incorporated by reference.
BACKGROUND
Technical Field
(2) The techniques disclosed in the present specification relate to an illumination device and a display device.
(3) An illumination device described in US 2017/0069236 A is known as an example of an illumination device in the related art. The illumination device described in US 2017/0069236 A

operates in at least two operation modes, that is, a free viewing mode and a restricted viewing mode. The illumination device includes a backlight system. A light guide plate is disposed at the front of the backlight system, and a light source is disposed along a side surface of the light guide plate. The light guide plate includes diffusion particles formed of a polymer in a dispersed and mixed manner in a resin base material, and has a light transmittance of at least 80%. In the free viewing mode, the backlight system is turned on, and the light source is turned off. In the restricted viewing mode, the light source is turned on, and the backlight system is turned off.

SUMMARY

(4) In the illumination device described in US 2017/0069236 A, an emission angle range of all the emission light is limited in the restricted viewing mode, and the emission angle range of all the emission light is not limited in the free viewing mode. However, in the specification of US 2017/0069236 A, there is a problem that it is not possible to cope with a case in which it is necessary to restrict the emission angle range for some of the emission light and to not restrict the emission angle range of the remaining emission light.

(5) The techniques described in the present specification have been made based on the circumstances described above, and an object of the present specification is to restrict an emission angle range of some of emission light. (1) An illumination device according to the techniques described in the present specification includes a first light source, and a first light guide plate, at least a part of an outer peripheral end surface of the first light guide plate being a first end surface facing the first light source and on which light is incident, one of main surfaces of the first light guide plate being a first main surface configured to emit light, and the other of the main surfaces being a second main surface. The illumination device includes a second light source, and a second light guide plate, at least a part of an outer peripheral end surface of the second light guide plate being a second end surface facing the second light source and on which light is incident, one of main surfaces of the second light guide plate being a third main surface configured to emit light, and the other of the main surfaces being a fourth main surface. The illumination device includes a third light source, and an optical member including a light incident surface facing the third light source and on which light is incident, and a fifth main surface configured to emit light. The illumination device includes a first sheet, one of main surfaces of the first sheet being a sixth main surface, and the other of the main surfaces being a seventh main surface facing the fifth main surface. The main surfaces of the first light guide plate and the second light guide plate overlap each other and the first light guide plate and the second light guide plate are disposed on the opposite side from the optical member with respect to the first sheet. The first sheet at least includes two first light blocking portions disposed with an interval therebetween in a first direction and configured to block light, the first direction including a direction from the first light source toward the first light guide plate, and a first light-transmitting portion disposed between the two light blocking portions and configured to transmit light. A first light reflection portion is provided at the second main surface, the first light reflection portion reflecting light and promoting light emission from the first main surface. A second light reflection portion is provided at the fourth main surface, the second light reflection portion reflecting light and promoting light emission from the third main surface. When the second main surface is divided into a first region, and a second region adjacent to the first region in the first direction, the first light reflection portion is selectively provided in the first region in the second main surface. When the fourth main surface is divided into a third region overlapping the first region, and a fourth region overlapping the second region, the second light reflection portion is provided at least in the fourth region in the fourth main surface. (2) Further, in addition to (1) described above, in the illumination device, the second light reflection portion may be is provided over the third region and the fourth region in the fourth main surface. (3) Further, in addition to (2) described above, in the illumination device, the first light reflection portion may be constituted by a plurality of first lenses arranged side by side in the first direction in the second main surface, the second light reflection portion may be constituted by a

plurality of second lenses arranged side by side in the first direction in the fourth main surface, and, of the plurality of second lenses, the second lens disposed at least in the fourth region may include a first inclined surface with an inclination gradually upward from the opposite side to the second light source toward the second light source side in the first direction. (4) Further, in addition to (3) described above, in the illumination device, of the plurality of second lenses, the second lens disposed in the third region may include a second inclined surface with an inclination gradually upward from the opposite side to the second light source toward the second light source side in the first direction. (5) Further, in addition to (4) described above, in the illumination device, the first inclined surface and the second inclined surface may have the same inclination angle with respect to the first direction. (6) Further, in addition to any one of (3) to (5) described above, in the illumination device, a positional relationship of the first light source with respect to the first light guide plate in the first direction may be the same as a positional relationship of the second light source with respect to the second light guide plate in the first direction, and each of the plurality of first lenses may include a third inclined surface with an inclination gradually upward from the side opposite to the first light source toward the first light source side in the first direction. (7) Further, in addition to any one of (2) to (6) described above, the illumination device may include a light source control unit configured to control driving of the first light source, the second light source, and the third light source. Based on input of a switching signal, the light source control unit switches between control in a first mode and control in a second mode, the first light source and the third light source being turned on and the second light source being turned off in the first mode, and the second light source and the third light source being turned on and the first light source being turned off in the second mode. (8) Further, in addition to any one of (2) to (7) described above, in the illumination device, the second light guide plate may be disposed with the first light guide plate being interposed between the second light guide plate and the first sheet. (9) Further, in addition to any one of (2) to (7) described above, in the illumination device, the first light guide plate may be disposed with the second light guide plate being interposed between the first light guide plate and the first sheet. (10) Further in addition to any one of (1) to (9) described above, in the illumination device, the optical member may be constituted by a third light guide plate, the light incident surface being constituted by at least a part of an outer peripheral end surface of the third light guide plate, and the third light guide plate being disposed with the light incident surface facing the third light source. (11) Further, in addition to (10) described above, the illumination device may include a light source control unit configured to control driving of the first light source, the second light source, and the third light source. The light incident surface may be constituted by a part of the outer peripheral end surface of the third light guide plate extending in the first direction. A plurality of the third light sources may be arranged side by side in the first direction. The plurality of third light sources may include a fourth light source disposed facing a portion, of the third light guide plate, overlapping the first region and the third region, and a fifth light source disposed facing a portion, of the third light guide plate, overlapping the second region and the fourth region. The light source control unit may cause a light emission amount per unit time of the fourth light source to be larger than a light emission amount per unit time of the fifth light source. (12) Further, in addition to any one of (1) to (9) described above, the illumination device may include a light source control unit configured to control driving of the first light source, the second light source, and the third light source. A plurality of the third light sources may be disposed in a planar manner overlapping the fifth main surface. The light incident surface of the optical member may be constituted by a main surface on the opposite side to the fifth main surface, and may be disposed facing the plurality of third light sources. (13) Further, in addition to (12) described above, in the illumination device, the plurality of third light sources may include a fourth light source disposed overlapping the first region and the third region, and a fifth light source disposed overlapping the second region and the fourth region. The light source control unit may cause a light emission amount per unit time of the fourth light source to be larger than a light emission amount

per unit time of the fifth light source. (14) Further, in addition to any one of (1) to (13) described above, the illumination device may include a second sheet, one of main surfaces of the second sheet being an eighth main surface and the other of the main surfaces being a ninth main surface disposed facing the first main surface. The second sheet may at least include two second light blocking portions disposed with an interval therebetween in the first direction and configured to block light, and a second light-transmitting portion disposed between the two second light blocking portions and configured to transmit light. (15) A display device according to the techniques described in the present specification includes the illumination device according to any of (1) to (14) described above, and a display panel configured to perform display using light from the illumination device.
(6) According to the techniques described in the present specification, an emission angle range of some of emission light can be restricted.

Description

BRIEF DESCRIPTION OF DRAWINGS
(1) The disclosure will be described with reference to the accompanying drawings, wherein like numbers reference like elements.
(2) FIG. **1** is a side cross-sectional view of a liquid crystal display device according to a first embodiment.
(3) FIG. **2** is a cross-sectional view of the liquid crystal display device according to the first embodiment taken along a line ii-ii in FIG. **1**.
(4) FIG. **3** is a plan view of a backlight device provided in the liquid crystal display device according to the first embodiment.
(5) FIG. **4** is a cross-sectional view, taken at the same cutting position as that in FIG. **2**, in the backlight device according to the first embodiment.
(6) FIG. **5** is a cross-sectional view, taken at the same cutting position as that in FIG. **1**, in the backlight device according to the first embodiment.
(7) FIG. **6** is a perspective view when a third light guide plate constituting the backlight device according to the first embodiment is viewed from a third opposite main surface side.
(8) FIG. **7** is a bottom view illustrating a configuration of the third opposite main surface of the third light guide plate according to the first embodiment.
(9) FIG. **8** is a side cross-sectional view of a second light guide plate constituting the backlight device according to the first embodiment.
(10) FIG. **9** is a bottom view illustrating a configuration of a second opposite main surface of the second light guide plate according to the first embodiment.
(11) FIG. **10** is a cross-sectional view of the liquid crystal display device according to the first embodiment taken along a line x-x in FIG. **1**.
(12) FIG. **11** is a cross-sectional view, taken at the same cutting position as that in FIG. **10**, in the backlight device according to the first embodiment.
(13) FIG. **12** is a block diagram illustrating an electrical configuration of the liquid crystal display device according to the first embodiment.
(14) FIG. **13** is a graph showing experiment results of a Demonstration Experiment 1 according to the first embodiment, showing light distribution in a second display mode, and light distribution of emission light from a portion, of the backlight device, overlapping a first region and a third region in a first display mode.
(15) FIG. **14** is a graph showing experiment results of Demonstration Experiment 1 according to the first embodiment, showing a light distribution of emission light from a portion, of the backlight device, overlapping a second region and a fourth region in the first display mode.

(16) FIG. **15** is a diagram illustrating light blocking ranges and viewing ranges of a first display portion and a second display portion in the liquid crystal display device installed in a passenger vehicle according to the first embodiment.
(17) FIG. **16** is a diagram relating to brightness distribution, which is an experiment result, in Demonstration Experiment 2 according to the first embodiment, when the brightness of light emitted at an angle of 0° from the backlight device in the second display mode is measured.
(18) FIG. **17** is a graph relating to the brightness distribution which is the experiment result, in Demonstration Experiment 2 according to the first embodiment, when the brightness of the light emitted from the backlight device at the angle of 0° in the second display mode is measured.
(19) FIG. **18** is a diagram relating to brightness distribution, which is an experiment result, in Demonstration Experiment 2 according to the first embodiment, when the brightness of light emitted at an angle of −45° from the backlight device in the second display mode is measured.
(20) FIG. **19** is a graph relating to the brightness distribution which is the experiment result, in Demonstration Experiment 2 according to the first embodiment, when the brightness of the light emitted from the backlight device at the angle of −45° in the second display mode is measured.
(21) FIG. **20** is a diagram relating to brightness distribution, which is an experiment result, in a Demonstration Experiment 2 according to the first embodiment, when the brightness of light emitted at an angle of 0° from the backlight device in the first display mode is measured.
(22) FIG. **21** is a graph relating to the brightness distribution which is the experiment result, in Demonstration Experiment 2 according to the first embodiment, when the brightness of the light emitted from the backlight device at the angle of 0° in the first display mode is measured.
(23) FIG. **22** is a diagram relating to brightness distribution, which is an experiment result, in Demonstration Experiment 2 according to the first embodiment, when the brightness of light emitted at an angle of −45° from the backlight device in the first display mode is measured.
(24) FIG. **23** is a graph relating to the brightness distribution which is the experiment result, in Demonstration Experiment 2 according to the first embodiment, when the brightness of the light emitted from the backlight device at the angle of −45° in the first display mode is measured.
(25) FIG. **24** is a cross-sectional view of the liquid crystal display device according to a second embodiment, taken at the same cutting position as that in FIG. **1**.
(26) FIG. **25** is a cross-sectional view of the backlight device according to the second embodiment, taken at the same cutting position as that in FIG. **1**.
(27) FIG. **26** is a cross-sectional view of the liquid crystal display device according to a third embodiment, taken at the same cutting position as that in FIG. **1**.
(28) FIG. **27** is a plan view illustrating an LED substrate constituting the backlight device according to the third embodiment.
(29) FIG. **28** is a cross-sectional view of the liquid crystal display device according to a fourth embodiment, taken at the same cutting position as that in FIG. **1**.
(30) FIG. **29** is a cross-sectional view of a liquid crystal display device according to a fifth embodiment, taken at the same cutting position as that in FIG. **1**.
(31) FIG. **30** is a side cross-sectional view of the liquid crystal display device according to a sixth embodiment.
(32) FIG. **31** is a cross-sectional view of the backlight device according to the sixth embodiment, taken at the same cutting position as that in FIG. **30**.
(33) FIG. **32** is a cross-sectional view of the liquid crystal display device according to another embodiment, taken at the same cutting position as that in FIG. **1**.

DESCRIPTION OF EMBODIMENTS

First Embodiment

(34) A first embodiment will be described with reference to FIGS. **1** to **23**. In the present embodiment, a liquid crystal display device (display device) **10** is exemplified. Note that some drawings show an X-axis, a Y-axis, and a Z-axis, and directions of these axes are drawn so as to be

common in all the drawings. Further, FIGS. **1**, **2**, **4**, **5**, **8**, **10**, and **11** are used as a reference for an up-down direction, an upper side in the same drawings is a front side, and a lower side in the same drawings is a back side.

(35) In the present embodiment, the liquid crystal display device **10** for vehicle use is exemplified, as illustrated in FIG. **1**. For example, the liquid crystal display device **10** for vehicle use is mounted in a car navigation system displaying a map and the like as an image, a multi-function display displaying an operation state and the like of equipment, such as an air conditioner, in addition to a map and the like as an image, an instrument panel displaying meters, alerts, and the like as an image, and an infotainment system displaying television images, audio information, and the like in addition to a map and the like as an image. The liquid crystal display device **10** according to the present embodiment has a length similar to the vehicle width in the vehicle cabin, from in front of the front passenger seat to in front of the driver's seat. Note that a passenger vehicle in which the liquid crystal display device **10** according to the present embodiment is mounted has a configuration in which the driver's seat is located on the left side of FIG. **1** and the front passenger seat is located on the right side of FIG. **1**, that is, the passenger vehicle is a left-hand drive vehicle. Further, in the present embodiment, the liquid crystal display device **10** is installed in a posture in which the X-axis direction substantially matches the horizontal direction and the Y-axis direction is parallel to a vertical direction.

(36) The liquid crystal display device **10** has a long shape that is laterally long as a whole, and, as illustrated in FIGS. **1** to **3**, a short side direction thereof coincides with the Y-axis direction, a long side direction thereof coincides with the X-axis direction, and a plate thickness direction thereof coincides with the Z-axis direction, respectively. As illustrated in FIGS. **1** and **2**, the liquid crystal display device **10** includes a liquid crystal panel (display panel) **11** that displays an image, and a backlight device (illumination device) **12** that is disposed on the back side of the liquid crystal panel **11** and irradiates light to be used for display toward the liquid crystal panel **11**. First, a configuration of the liquid crystal panel **11** will be described. The liquid crystal panel **11** has a plate shape in which a main surface is parallel to the X-axis direction and the Y-axis direction, and a normal direction (the thickness direction) of the main surface coincides with the Z-axis direction. In the liquid crystal panel **11**, a center side section of the main surface is a display region AA that can display an image, and an outer circumferential end side portion surrounding the display region AA and having a frame shape is a non-display region NAA. As illustrated in FIG. **1**, the display region AA is divided into a first display portion AA**1** located on one side (the left side in FIG. **1**) in the X-axis direction (the long side direction of the liquid crystal panel **11**) and a second display portion AA**2** located on the other side (the right side in FIG. **1**) in the X-axis direction. The first display portion AA**1** is located in front of the driver's seat in the vehicle cabin. The second display portion AA**2** is located in front of the front passenger seat in the vehicle cabin. An area ratio between the first display portion AA**1** and the second display portion AA**2** is 1:1, for example.

(37) In a similar manner to the liquid crystal display device **10**, the liquid crystal panel **11** has a long shape that is laterally long as a whole, and includes a pair of substrates and a liquid crystal layer sealed between the pair of substrates. Of the pair of substrates constituting the liquid crystal panel **11**, the substrate arranged on the front side is a CF substrate (counter substrate), and the substrate arranged on the back side is an array substrate (TFT substrate). Color filters that exhibit red (R), green (G), blue (B), and the like, a light blocking portion (black matrix) that partitions the adjacent color filters, and the like are provided on the CF substrate. The array substrate (TFT substrate) is provided with at least a gate wiring line and a source wiring line that are orthogonal to each other, a switching element (for example, a TFT) connected to the gate wiring line and the source wiring line, and a pixel electrode connected to the switching element and constituting a pixel. Note that alignment films are respectively provided on each of inner surfaces of the array substrate and the CF substrate constituting the liquid crystal panel **11**. Furthermore, a polarizer is attached to each of outer surfaces of the array substrate and the CF substrate constituting the liquid

crystal panel **11**.

(38) As described above, the liquid crystal display device **10** for vehicle use according to the present embodiment has the length close to that of the vehicle width, and in line with this, the display region AA of the liquid crystal panel **11** includes the first display portion AA**1** located in front of the driver's seat and the second display portion AA**2** located in front of the front passenger seat. Thus, for example, while the passenger vehicle is traveling, it may be required to restrict a viewing angle such that, while a display image of the first display portion AA**1** and the second display portion AA**2** can be viewed from the front passenger seat, from the driver's seat, the display image of the second display portion AA**2** cannot be viewed while the display image of the first display portion AA**1** can be viewed. On the other hand, for example, when the passenger vehicle is stopped, it may be required to not restrict the viewing angle, such that the display image of the first display portion AA**1** and the second display portion AA**2** can be viewed from both the front passenger seat and the driver's seat.

(39) In order to meet such a demand, as illustrated in FIGS. **1** and **2**, the backlight device **12** according to the present embodiment includes a diffuser sheet **12**S, a second backlight unit **12**U**2** disposed on the back side of the diffuser sheet **12**S, a first backlight unit **12**U**1** disposed on the back side of the second backlight unit **12**U**2**, and a third backlight unit **12**U**3** disposed on the back side of the first backlight unit **12**U**1**. The diffuser sheet **12**S is located on a light emission side (the side closest to the liquid crystal panel **11**) in the backlight device **12**. The diffuser sheet **12**S applies a diffusion action to light incident from the back side and emits the light toward the liquid crystal panel **11**. In the present embodiment, each of the first backlight unit **12**U**1**, the second backlight unit **12**U**2**, and the third backlight unit **12**U**3** is a so-called edge light type backlight unit. Note that, in a similar manner to the liquid crystal display device **10**, the backlight device **12** has a long shape that is laterally long as a whole.

(40) First, a configuration of the third backlight unit **12**U**3** will be described. As illustrated in FIGS. **1** and **2**, the third backlight unit **12**U**3** includes at least a third LED (third light source) **13**, a third light guide plate (optical member) **14** that guides light from the third LED **13**, a reflection sheet **15** disposed on the back side (opposite to the light emission side) of the third light guide plate **14**, a first prism sheet **16** disposed on the front side (light emission side) of the third light guide plate **14**, a second prism sheet **17** disposed on the front side of the first prism sheet **16**, and a first louver (first sheet) **18** disposed on the front side of the second prism sheet **17**.

(41) As illustrated in FIG. **2**, the third LED **13** has a substantially block shape, and one surface of a pair of surfaces along the X-axis direction and the Z-axis direction is a third light-emitting surface **13**A that emits light. As illustrated in FIG. **3**, a plurality of the third LEDs **13** are arranged side by side with intervals therebetween along the X-axis direction (a first direction to be described below). The third LED **13** is mounted on an LED substrate. The third LED **13** has a configuration in which an LED chip is sealed with a sealing material on a substrate portion mounted on the LED substrate. The LED chip provided in the third LED **13** emits light of a single color, such as blue light, for example. A phosphor is dispersed and mixed in the sealing material provided in the third LED **13**. The phosphor contained in the sealing material includes a yellow phosphor, a green phosphor, a red phosphor, and the like. The third LED **13** including such an LED chip and sealing material emits white light as a whole.

(42) The third light guide plate **14** is formed of a synthetic resin material (an acrylic resin such as PMMA, or the like, for example) that has a sufficiently higher refractive index than that of air and that is substantially transparent. As illustrated in FIGS. **1** and **2**, the third light guide plate **14** has a plate shape, and a main surface of the third light guide plate **14** is parallel to the main surface of the liquid crystal panel **11**. Note that the main surface of the third light guide plate **14** is parallel to the X-axis direction and the Y-axis direction, and a normal direction (the thickness direction) of the main surface coincides with the Z-axis direction. The third light guide plate **14** is disposed so as to overlap at least the entire display region AA in a plan view. The third light guide plate **14** is

arranged in the Y-axis direction with respect to the third LED **13**, and is also arranged side by side in the Z-axis direction with the liquid crystal panel **11** and each of the prism sheets **16** and **17**, and the like. As illustrated in FIGS. **2** and **3**, the third light guide plate **14** is disposed on one side (the upper side in FIG. **3**) of the third LED **13** in the Y-axis direction. Of the third light guide plate **14**, one end surface (section), of an outer peripheral end surface, extending in the X-axis direction (the first direction) is a third light incident end surface (light incident surface) **14**A facing the third light-emitting surface **13**A of the third LED **13**. The third light incident end surface **14**A is a surface parallel to the third light-emitting surface **13**A of the third LED **13**, and light emitted from the third light-emitting surface **13**A is incident on the third light incident end surface **14**A. As described above, the third LED **13** is disposed only on one side in the Y-axis direction of the third light guide plate **14**. Thus, the third backlight unit **12**U**3** is a one-side light incident edge light type.
(43) Of a pair of main surfaces of the third light guide plate **14**, as illustrated in FIG. **2**, the main surface on the front side facing the first prism sheet **16** is a third light guide plate-light emission main surface (fifth main surface) **14**B that emits internally guided light. Of the pair of main surfaces of the third light guide plate **14**, the main surface on the back side facing the reflection sheet **15** is a third opposite main surface (second main surface) **14**C located on the side opposite to the third light guide plate-light emission main surface **14**B. Then, the third light guide plate **14** has a function of guiding, from the third light incident end surface **14**A, light emitted from the third LED **13** toward the third light guide plate **14**, propagating the light internally and then emitting the light while raising the light along the Z-axis direction such that the light is directed toward the front side (the light emission side). A detailed structure of the third light guide plate **14** will be described later. Note that the normal direction of the third light incident end surface **14**A coincides with the Y-axis direction (the direction in which the third LED **13** and the third light guide plate **14** are arranged).
(44) As illustrated in FIGS. **1** and **2**, the main surface of the reflection sheet **15** is parallel to each of the main surfaces of the liquid crystal panel **11** and the third light guide plate **14**, and the reflection sheet **15** is also disposed so as to cover the third opposite main surface **14**C of the third light guide plate **14**. The reflection sheet **15** has excellent light reflectivity, and can efficiently cause light that has leaked from the third opposite main surface **14**C of the third light guide plate **14** to rise toward the front side, that is, toward the third light guide plate-light emission main surface **14**B. The reflection sheet **15** has an outer shape slightly larger than that of the third light guide plate **14**, and is disposed so as to overlap substantially the whole region of the third opposite main surface **14**C.
(45) As illustrated in FIGS. **1** and **2**, the first prism sheet **16** and the second prism sheet **17** have a sheet shape, and each of the main surfaces thereof is parallel to and overlaps each of the main surfaces of the liquid crystal panel **11**, the third light guide plate **14**, and the like. Note that the main surfaces of the first prism sheet **16** and the second prism sheet **17** are parallel to the X-axis direction and the Y-axis direction, and a normal direction (the thickness direction) of the main surfaces coincides with the Z-axis direction. The first prism sheet **16** and the second prism sheet **17** are layered on the front side of the third light guide plate **14**, and have a function of imparting a predetermined optical action to light emitted from the third light guide plate-light emission main surface **14**B of the third light guide plate **14** to emit the light, and the like. The first prism sheet **16** and the second prism sheet **17** are disposed so as to overlap at least the entire display region AA in a plan view.
(46) As illustrated in FIG. **2**, the first prism sheet **16** includes a first base material **16**A having a sheet shape, and a first prism **16**B provided on a main surface (light emission main surface) on the front side (light emission side) of the first base material **16**A. The first base material **16**A is formed of a substantially transparent synthetic resin, and specifically, is formed of, for example, a crystalline transparent resin material such as polyethylene terephthalate (PET). The first base material **16**A is formed into a sheet shape by stretching the crystalline transparent resin material serving as a raw material in a biaxial stretching process in manufacturing, which is suitable for

reducing manufacturing costs. The first prism **16**B is formed of an ultraviolet-curing resin material that is substantially transparent and is a type of photo-curable resin material. In manufacturing the first prism sheet **16**, for example, an uncured ultraviolet-curing resin material is filled into a mold for molding, and the first base material **16**A is also applied to an opening end of the mold to dispose the uncured ultraviolet-curing resin material so as to contact the main surface on the front side In this state, when the ultraviolet-curing resin material is irradiated with ultraviolet rays through the first base material **16**A, the ultraviolet-curing resin material is cured, and the first prism **16**B is integrally provided with the first base material **16**A. The ultraviolet-curing resin material constituting the first prism **16**B is an acrylic resin such as PMMA, for example. A refractive index of the ultraviolet-curing resin material constituting the first prism **16**B is preferably set in a range from 1.49 to 1.52, and is most preferably set to 1.49.

(47) As illustrated in FIG. **4**, the first prism **16**B is provided so as to protrude from the main surface of the first base material **16**A toward the front side (the side opposite to the third light guide plate **14** side) in the Z-axis direction. The first prism **16**B has a substantially triangular shape (is substantially mountain shaped) in a cross section taken along the Y-axis direction (a second direction orthogonal to the first direction) and extends linearly in the X-axis direction. A plurality of the first prisms **16**B are continuously arranged side by side with substantially no interval therebetween in the Y-axis direction on the main surface of the first base material **16**A. The first prism **16**B includes a pair of inclined surfaces **16**B**1** and **16**B**2**. Of the pair of inclined surfaces **16**B**1** and **16**B**2** in the first prism **16**B, the inclined surface on the third LED **13** side in the Y-axis direction is the first prism inclined surface **16**B**1**, and the inclined surface on the opposite side is the second prism inclined surface **16**B**2**. The first prism inclined surface **16**B**1** has an inclination gradually upward from the third LED **13** side (the left side in FIG. **4**) toward an opposite side (the right side in FIG. **4**) thereto in the Y-axis direction in the first prism sheet **16**. Of light incident on the first prism **16**B, mainly the light traveling, in the Y-axis direction, in the direction approaching the third LED **13** is incident on the first prism inclined surface **16**B**1**, and is refracted. The second prism inclined surface **16**B**2** has an inclination gradually upward from the side opposite to the third LED **13** (the right side in FIG. **4**) toward the third LED **13** side (the left side in FIG. **4**) in the Y-axis direction in the first prism sheet **16**. Of the light incident on the first prism **16**B, mainly the light traveling, in the Y-axis direction, in the direction away from the third LED **13** is incident on the second prism inclined surface **16**B**2**, and is refracted. Most of the light refracted by the pair of inclined surfaces **16**B**1** and **16**B**2** in the first prism **16**B is selectively raised and condensed in the Y-axis direction.

(48) Then, as illustrated in FIG. **4**, in the first prism **16**B, when comparing an inclination angle θ**1** formed by the first prism inclined surface **16**B**1** with respect to the Y-axis direction, and an inclination angle θ**2** formed by the second prism inclined surface **16**B**2** with respect to the Y-axis direction, the former is larger than the latter. In other words, the first prism **16**B has an asymmetrical cross-sectional shape, which is a scalene triangle. Specifically, the inclination angle θ**1** of the first prism inclined surface **16**B**1** with respect to the Y-axis direction is preferably set within a range from 50° to 60°, and is most preferably set to 55°. In contrast, the inclination angle θ**2** of the second prism inclined surface **16**B**2** with respect to the Y-axis direction is preferably set within a range from 35° to 50°, and is most preferably set to 45°. Further, an angle θ**3** formed between the pair of inclined surfaces **16**B**1** and **16**B**2** in the first prism **16**B is preferably set within a range from 70° to 95°, and is most preferably set to 80°. Note that all the plurality of first prisms **16**B arranged in the Y-axis direction have substantially the same height dimension, substantially the same width dimension, substantially the same inclination angle of each of the inclined surfaces **16**B**1** and **16**B**2** with respect to the Y-axis direction, and the like, and are also arrayed such that array intervals between the adjacent first prisms **16**B are substantially constant and equal.

(49) As illustrated in FIG. **2**, the second prism sheet **17** includes a second base material **17**A having a sheet shape, and a second prism **17**B provided on a main surface (light emission main surface) on

the front side (light emission side) of the second base material **17**A. The second base material **17**A is formed of a substantially transparent synthetic resin, and specifically, is formed of, for example, a crystalline transparent resin material such as PET, which is the same as that of the first base material **16**A. The second prism **17**B is formed of an ultraviolet-curing resin material that is substantially transparent and is a type of photo-curable resin material. A manufacturing method of the second prism sheet **17** is similar to the manufacturing method of the first prism sheet **16** described above. The ultraviolet-curing resin material constituting the second prism **17**B is, for example, an acrylic resin such as PMMA. A refractive index of the ultraviolet-curing resin material is set to be higher than the refractive index of the material of the first prism **16**B, and is set to approximately 1.61, for example.

(50) As illustrated in FIG. **4**, the second prism **17**B is provided so as to protrude from the main surface of the second base material **17**A toward the front side (the side opposite to the first prism sheet **16** side) in the Z-axis direction. The second prism **17**B has a substantially triangular shape (is substantially mountain shaped) in a cross section taken along the Y-axis direction and extends linearly in the X-axis direction. A plurality of the second prisms **17**B are continuously arranged side by side with substantially no interval therebetween in the Y-axis direction on the main surface of the second base material **17**A. The second prism **17**B includes a pair of inclined surfaces **17**B**1** and **17**B**2**. Of the pair of inclined surfaces **17**B**1** and **17**B**2** in the second prism **17**B, the inclined surface on the third LED **13** side in the Y-axis direction is the third prism inclined surface (fifth inclined surface) **17**B**1**, and the inclined surface on a side opposite to the third prism inclined surface **17**B**1** is the fourth prism inclined surface (sixth inclined surface) **17**B**2**. The third prism inclined surface **17**B**1** has an inclination gradually upward from the third LED **13** side (the left side in FIG. **4**) toward an opposite side (the right side in FIG. **4**) thereto in the Y-axis direction in the second prism sheet **17**. Of light incident on the second prism **17**B, mainly the light traveling, in the Y-axis direction, in the direction approaching the third LED **13** is incident on the third prism inclined surface **17**B**1**, and is refracted. The fourth prism inclined surface **17**B**2** has an inclination gradually upward from the side opposite the third LED **13** side (the right side in FIG. **4**) to the third LED **13** side (the left side in FIG. **4**) in the Y-axis direction in the second prism sheet **17**. Of the light incident on the second prism **17**B, mainly the light traveling, in the Y-axis direction, in the direction away from the third LED **13** is incident on the fourth prism inclined surface **17**B**2**, and is refracted. Most of the light refracted by the pair of inclined surfaces **17**B**1** and **17**B**2** in the second prism **17**B is selectively raised and condensed in the Y-axis direction.

(51) Then, as illustrated in FIG. **4**, in the second prism **17**B, an inclination angle θ**4** formed by the third prism inclined surface **17**B**1** with respect to the Y-axis direction, and an inclination angle θ**5** formed by the fourth prism inclined surface **17**B**2** with respect to the Y-axis direction are the same. In other words, the second prism **17**B has a symmetric cross-sectional shape, which is an isosceles triangle. Moreover, each of the inclination angles θ**4** and **05** of the third prism inclined surface **17**B**1** and the fourth prism inclined surface **17**B**2** with respect to the Y-axis direction is smaller than the inclination angle θ**1** of the first prism inclined surface **16**B**1** with respect to the Y-axis direction. Specifically, each of the inclination angles θ**4** and **05** of the third prism inclined surface **17**B**1** and the fourth prism inclined surface **17**B**2** with respect to the Y-axis direction is preferably set within a range from 40° to 50°, and is most preferably set to 45°. In contrast, an angle θ**6** formed between the pair of inclined surfaces **17**B**1** and **17**B**2** in the second prism **17**B is preferably set within a range from 80° to 100°, and is most preferably set to 90°, that is, a right angle. Note that all the plurality of second prisms **17**B arranged along the Y-axis direction have substantially the same height dimension, substantially the same width dimension, substantially the same inclination angle of each of the surfaces **17**B**1** and **17**B**2** with respect to the Y-axis direction, and the like, and are also arrayed such that array intervals between the adjacent second prisms **17**B are substantially constant and equal. In addition, it is preferable that the height dimension and the array interval in the second prism **17**B differ from the height dimension and the array interval in the first prism **16**B,

respectively, in terms of suppressing an occurrence of interference fringes called moire.
(52) The first prism sheet **16** and the second prism sheet **17** having the configurations described above can obtain the following actions and effects. Specifically, most of the light emitted from the third light guide plate-light emission main surface **14**B of the third light guide plate **14** and incident on the first prism sheet **16** is incident on the second prism inclined surface **16**B**2** of the first prism **16**B and refracted, is then emitting while rising, or is directed to the first prism inclined surface **16**B**1**. Here, the inclination angle θ**1** formed by the first prism **16**B with respect to the Y-axis direction is larger than the inclination angle θ**2** formed by the second prism **17**B with respect to the Y-axis direction. Thus, compared to a case in which the angles are the same or a magnitude relationship between the angles is reversed, the light incident on the first prism sheet **16** is less likely to be incident on the first prism inclined surface **16**B**1**. When the incident light on the first prism sheet **16** is incident on the first prism inclined surface **16**B**1** of the first prism **16**B, the light is not raised when the light is emitted from the first prism **16**B, and tends to be more likely to be emitted as side lobe light (stray light). Thus, when it is made difficult for the incident light on the first prism sheet **16** to be directly incident on the first prism inclined surface **16**B**1** of the first prism **16**B, an occurrence of side lobe light is suppressed, and, as a result, usage efficiency of light is improved.
(53) Most of the light emitted from the first prism sheet **16** and incident on the second prism sheet **17** is incident on the fourth prism inclined surface **17**B**2** of the second prism **17**B and refracted, and then, is raised and emitted, or is directed to the third prism inclined surface **17**B**1**. Here, the inclination angle θ**2** formed by the second prism **17**B with respect to the Y-axis direction is smaller than the inclination angle θ**1** formed by the first prism **16**B with respect to the Y-axis direction. Thus, compared to a case in which the angles are the same or the magnitude relationship between the angles is reversed, light refracted by the fourth prism inclined surface **17**B**2** and directed to the third prism inclined surface **17**B**1** is more likely to be returned to the first prism sheet **16** side by the third prism inclined surface **17**B**1**. As a result, the amount of the light (hereinafter referred to as recursive light) returned from the second prism sheet **17** to the first prism sheet **16** side is increased. This recursive light reaches the second prism sheet **17** again by being reflected or the like inside the backlight device **12**, and is raised and emitted by either of the pair of inclined surfaces **17**B**1** and **17**B**2** in the second prism **17**B, and thus the usage efficiency of the light is improved. Since an optical path of the recursive light up to being emitted from the second prism sheet **17** is complex, rise angles of the recursive light provided by the second prism **17**B are also diversified, thereby improving viewing angle characteristics. As described above, viewing angle characteristics and brightness can be improved.
(54) Next, a detailed structure of the third light guide plate **14** will be described. As illustrated in FIGS. **4** and **5**, a first light guide plate lens **32**, a second light guide plate lens **33**, and a third light guide plate lens **34** are provided on the third light guide plate **14**. As illustrated in FIG. **5**, the first light guide plate lens **32** is provided on the third light guide plate-light emission main surface **14**B of the third light guide plate **14**. The first light guide plate lens **32** extends in the Y-axis direction, and a plurality of the first light guide plate lenses **32** are arranged side by side in the X-axis direction. In the present embodiment, the first light guide plate lens **32** is a so-called lenticular lens. The first light guide plate lens **32** has a convex shape protruding to the front side from the third light guide plate-light emission main surface **14**B. Specifically, the first light guide plate lens **32** has a semi-circular shape in a cross section taken along the X-axis direction, and a semi-cylindrical shape extending linearly in the Y-axis direction. A front surface of the first light guide plate lens **32** is a first circular arc-shaped surface **32**A. When an angle formed by a tangent line of a base end portion of the first circular arc-shaped surface **32**A with respect to the X-axis direction is defined as a “contact angle”, the contact angle of the first light guide plate lens **32** is approximately 62°, for example. All of the plurality of first light guide plate lenses **32** arranged side by side in the X-axis direction have substantially the same contact angle, substantially the same width dimension

(substantially the same array interval), and substantially the same height dimension. In order to provide the first light guide plate lens **32** having such a configuration integrally with the third light guide plate **14**, for example, the third light guide plate **14** may be manufactured by injection molding, and a transfer shape for transferring the first light guide plate lens **32** may be formed in advance on a molding face of a forming mold of the third light guide plate **14** for molding the third light guide plate-light emission main surface **14**B.

(55) As illustrated in FIG. **5**, the second light guide plate lens **33** is provided on the third opposite main surface **14**C of the third light guide plate **14**. The second light guide plate lens **33** extends in the Y-axis direction, and a plurality of the second light guide plate lenses **33** are arranged side by side in the X-axis direction. In the present embodiment, the second light guide plate lens **33** is a convex shaped prism protruding to the back side from the third opposite main surface **14**C. Specifically, the second light guide plate lens **33** has a substantially triangular shape (is substantially mountain shaped) in a cross section taken along the X-axis direction, and extends linearly in the Y-axis direction. A width dimension (dimension in the X-axis direction) of the second light guide plate lens **33** is set to be constant over the entire length in the Y-axis direction. The second light guide plate lens **33** has an approximately isosceles triangle cross-sectional shape and includes a pair of first light guide plate inclined surfaces **33**A. An apex angle of the second light guide plate lens **33** is preferably set to an obtuse angle (an angle greater than 90°), specifically, within a range from 1000 to 150°, and is most preferably set to 140°. All of the plurality of second light guide plate lenses **33** arranged side by side in the X-axis direction have substantially the same apex angle, substantially the same width dimension (substantially the same array interval), and substantially the same height dimension. In the present embodiment, the array interval of the second light guide plate lenses **33** is greater than the array interval of the first light guide plate lenses **32**. In order to provide the second light guide plate lens **33** having such a configuration integrally with the third light guide plate **14**, for example, the third light guide plate **14** may be manufactured by injection molding, and a transfer shape for transferring the second light guide plate lens **33** may be formed in advance on a molding face of the forming mold of the third light guide plate **14** for molding the third light guide plate-light emission main surface **14**B.

(56) According to the third light guide plate **14** having such a configuration, as illustrated in FIG. **5**, light propagating inside the third light guide plate **14** is repeatedly reflected as a result of being incident on the first circular arc-shaped surface **32**A of each of the first light guide plate lenses **32** on the third light guide plate-light emission main surface **14**B side in the Z-axis direction, and travels in a zigzag manner substantially in the X-axis direction. On the other hand, light propagating inside the third light guide plate **14** is repeatedly reflected as a result of being incident on the pair of first light guide plate inclined surfaces **33**A of each of the second light guide plate lenses **33** on the third opposite main surface **14**C side in the Z-axis direction, and travels in a zigzag manner substantially in the Y-axis direction. In this way, the light propagating inside the third light guide plate **14** is restricted from spreading in the X-axis direction, and thus unevenness of brightness and darkness is less likely to occur between a vicinity of the third LED **13** and the surroundings thereof in the X-axis direction.

(57) As illustrated in FIG. **4**, the third light guide plate lens **34** is provided on the third opposite main surface **14**C of the third light guide plate **14**. A plurality of the third light guide plate lenses **34** are arranged side by side at intervals in the Y-axis direction. The third light guide plate lens **34** protrudes to the back side from the third opposite main surface **14**C in the Z-axis direction. The third light guide plate lens **34** includes a second light guide plate inclined surface **34**A disposed on the side (the right side in FIG. **4**) opposite to the third LED **13** in the Y-axis direction, a third light guide plate inclined surface **34**B disposed on the side of the third LED **13** (the left side in FIG. **4**) in the Y-axis direction, and a fourth light guide plate inclined surface **34**C located between the second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B. The second light guide plate inclined surface **34**A has an inclination gradually upward from the side of

the third LED **13** (the left side in FIG. **4**) toward the side opposite to the third LED **13** (the right side in FIG. **4**) in the Y-axis direction in the third light guide plate **14**. The third light guide plate inclined surface **34**B has an inclination gradually upward from the side (the right side in FIG. **4**) opposite to the third LED **13** toward the side of the third LED **13** (the left side in FIG. **4**) in the Y-axis direction in the third light guide plate **14**. The fourth light guide plate inclined surface **34**C has an inclination gradually upward from the side of the third LED **13** (the left side in FIG. **4**) toward the side (the right side in FIG. **4**) opposite to the third LED **13** in the Y-axis direction in the third light guide plate **14**.

(58) As illustrated in FIG. **4**, the second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B reflect light propagating inside the third light guide plate **14**, and raise the light toward the front side so as to be at an angle close to the Z-axis direction. The second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B can thus promote emission from the third light guide plate-light emission main surface **14**B. Thus, it can be said that the plurality of third light guide plate lenses **34** having the second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B constitute a “third light reflection portion **37**”, which reflects the light present in the third light guide plate **14** to promote light emission. Specifically, the second light guide plate inclined surface **34**A mainly functions to reflect and raise light traveling away from the third LED **13** in the Y-axis direction. On the other hand, the third light guide plate inclined surface **34**B mainly functions to reflect and raise light traveling toward the third LED **13** in the Y-axis direction. The second light guide plate inclined surface **34**A has a gradient such that, the further from the third LED **13** in the Y-axis direction, the smaller the distance thereto from the third light guide plate-light emission main surface **14**B (a portion at which the third light guide plate lens **34** is not installed). The second light guide plate inclined surface **34**A has an inclination angle of approximately 8° with respect to the Y-axis direction, for example. The third light guide plate inclined surface **34**B has a gradient such that, the further from the third LED **13** in the Y-axis direction, the larger the distance thereto from the third light guide plate-light emission main surface **14**B, that is, has a gradient that is the reverse of that of the second light guide plate inclined surface **34**A. The third light guide plate inclined surface **34**B has a steep, near-vertical gradient at an inclination angle of approximately 80° with respect to the Y-axis direction, for example, and the inclination angle is greater than the inclination angle of the second light guide plate inclined surface **34**A.

(59) Further, as illustrated in FIGS. **4**, **6**, and **7**, the plurality of third light guide plate lenses **34** arranged side by side in the Y-axis direction are designed such that a height dimension (the dimension in the Z-axis direction) and a length dimension (the dimension in the Y-axis direction) each increase the farther the third light guide plate lens **34** is from the third LED **13** in the Y-axis direction. More specifically, when comparing the third light guide plate lens **34** closer to the third LED **13** in the Y-axis direction with the third light guide plate lens **34** farther from the third LED **13** in the Y-axis direction, respective areas of the second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B are larger in the latter than in the former. In this way, on a side closer to the third LED **13** in the Y-axis direction, light is less likely to be incident on the second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B of the third light guide plate lens **34** and light emission is suppressed, while on a side farther from the third LED **13** in the Y-axis direction, light is more likely to be incident on the second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B of the third light guide plate lens **34**, and light emission is promoted. As a result, the amount of light emitted from the third light guide plate-light emission main surface **14**B is made uniform between the third LED **13** side and the side opposite to the third LED **13** side in the Y-axis direction.

(60) As illustrated in FIG. **4**, of the fourth light guide plate inclined surface **34**C, an end portion on the side (the right side in FIG. **4**) opposite to the third LED **13** in the Y-axis direction is continuous with the second light guide plate inclined surface **34**A, and an end portion on the side of the third

LED **13** (the left side in FIG. **4**) in the Y-axis direction is continuous with the third light guide plate inclined surface **34**B. The fourth light guide plate inclined surface **34**C has a gradient such that, the further from the third LED **13** in the Y-axis direction, the larger the distance thereto from the third light guide plate-light emission main surface **14**B (the portion at which the third light guide plate lens **34** is not installed). That is, the fourth light guide plate inclined surface **34**C has the gradient similar to that of the third light guide plate inclined surface **34**B. The fourth light guide plate inclined surface **34**C has an inclination angle of approximately 1.4° with respect to the Y-axis direction, for example, and the inclination angle is smaller than the inclination angle of each of the second light guide plate inclined surface **34**A and the third light guide plate inclined surface **34**B. The fourth light guide plate inclined surface **34**C having such a configuration reflects light traveling away from the third LED **13** inside the third light guide plate **14**, and thus, that light is directed to the third light guide plate-light emission main surface **14**B side. However, an angle of incidence of the light with respect to the third light guide plate-light emission main surface **14**B does not exceed a critical angle. Thus, that light is totally reflected by the third light guide plate-light emission main surface **14**B, and is guided so as to travel farther away from the third LED **13**. In this way, emission light from the third light guide plate-light emission main surface **14**B is less likely to be biased toward the third LED **13** side in the Y-axis direction. As described above, the third light guide plate **14** is configured such that the inclination angles with respect to the Y-axis direction increase in the order of the fourth light guide plate inclined surface **34**C, the second light guide plate inclined surface **34**A, and the third light guide plate inclined surface **34**B. Further, a plurality of the fourth light guide plate inclined surfaces **34**C arranged side by side in the Y-axis direction are designed such that the length dimension thereof decreases the farther the fourth light guide plate inclined surface **34**C is from the third LED **13** in the Y-axis direction. The reason for this is that the length dimension of the third light guide plate lens **34** increases the further from the third LED **13** in the Y-axis direction, and a range occupied by the third light guide plate lens **34** increases.

(61) As illustrated in FIGS. **4**, **6**, and **7**, the third light guide plate lens **34** having the configuration described above is disposed so as to be sandwiched between the two second light guide plate lenses **33** adjacent to each other in the X-axis direction. Thus, the third light guide plate lenses **34** are repeatedly arranged alternating with the second light guide plate lenses **33** in the X-axis direction. In the third light guide plate lens **34**, a maximum value of a protrusion dimension (height dimension) from the third opposite main surface **14**C is set to be smaller than the same protrusion dimension of the second light guide plate lens **33**. Thus, even the third light guide plate lens **34** located on the farthest side from the third LED **13** in the Y-axis direction does not protrude farther toward the back side than the second light guide plate lens **33**.

(62) Next, a configuration of the first louver **18** will be described. As illustrated in FIG. **1**, the first louver **18** includes a main surface having a sheet shape parallel to each of the main surfaces of the liquid crystal panel **11**, the third light guide plate **14**, and the like. Note that the main surface of the first louver **18** is parallel to the X-axis direction and the Y-axis direction, and a normal direction (thickness direction) of the main surface coincides with the Z-axis direction. The first louver **18** has a function of restricting an emission angle range of light in the X-axis direction. The first louver **18** has approximately the same size in a plan view as the third light guide plate **14**, the first prism sheet **16**, and the second prism sheet **17**, and is disposed so as to overlap at least the entire display region AA in a plan view. The first louver **18** includes a first louver light incident main surface (seventh main surface) **18**A on the back side, and a first louver light emission main surface (sixth main surface) **18**B on the front side. The first louver light incident main surface **18**A is disposed to be oriented toward the third light guide plate-light emission main surface **14**B of the third light guide plate **14**, and faces the main surface on the front side (light emission side) of the second prism sheet **17**. The first louver light emission main surface **18**B faces a first light guide plate opposite main surface **27**C of a first light guide plate **27** to be described later.

(63) As illustrated in FIG. **5**, the first louver **18** includes a first light blocking portion **18**C that blocks light, and a first light-transmitting portion **18**D that transmits light. The first light blocking portion **18**C is formed of, for example, a light blocking resin material (light blocking material) that exhibits a black color and blocks light. The first light blocking portion **18**C has a layer shape extending in the Y-axis direction and the Z-axis direction, and a plurality of the first light blocking portions **18**C are arranged side by side at intervals in the X-axis direction. The first light-transmitting portion **18**D is formed of a light-transmissive resin material (light-transmissive material) that is substantially transparent and transmits light. The first light-transmitting portion **18**D has a layer shape extending in the Y-axis direction and the Z-axis direction, and a plurality of the first light-transmitting portions **18**D are arranged side by side at intervals in the X-axis direction. The plurality of first light blocking portions **18**C and the plurality of first light-transmitting portions **18**D are repeatedly and alternately arranged side by side in the X-axis direction. Thus, the first light-transmitting portion **18**D is interposed between two of the first light blocking portions **18**C that are adjacent to each other at the interval in the X-axis direction, and the first light blocking portion **18**C is interposed between two of the first light-transmitting portions **18**D that are adjacent to each other at the interval in the X-axis direction. Light incident on the first louver light incident main surface **18**A of the first louver **18** is transmitted through the first light-transmitting portion **18**D disposed between the two first light blocking portions **18**C that are adjacent to each other in the X-axis direction, and is emitted from the first louver light emission main surface **18**B. An emission angle, in the X-axis direction, of emission light from the first louver light emission main surface **18**B is restricted by the two first light blocking portions **18**C that are adjacent to each other in the X-axis direction. Note that emission light from the first louver light emission main surface **18**B has an emission angle that is not restricted by the first louver **18** in the Y-axis direction. The emission angle range of emission light from the first louver light emission main surface **18**B in the X-axis direction is defined by two straight lines that diagonally connect each of end portions in the Z-axis direction of the two first light blocking portions **18**C that sandwich the first light-transmitting portion **18**D. An emission angle range, in the X-axis direction, of transmitted light of the first light-transmitting portion **18**D changes according to a ratio between a width W**1** and a height H**1** of the first light-transmitting portion **18**D. Further, the first louver **18** includes a pair of sheet carriers that sandwich and carry the plurality of first light blocking portions **18**C and the plurality of first light-transmitting portions **18**D from the front side and the back side. The sheet carrier is formed of a light-transmissive resin material that is substantially transparent and transmits light. The sheet carrier extends over the entire first louver **18**, and collectively carries the plurality of first light blocking portions **18**C and the plurality of first light-transmitting portions **18**D.

(64) Specifically, as illustrated in FIG. **5**, in the first louver **18**, a ratio acquired by dividing the width W**1** of the first light-transmitting portion **18**D by the height H**1** is equal to “tan 10°”. In this way, a maximum absolute value of an angle formed by light transmitted through the first light-transmitting portion **18**D with respect to the Z-axis direction is 10°. An emission angle range of the emission light of the backlight device **12** is sufficiently narrowed, compared to a case in which the ratio acquired by dividing the width of the first light-transmitting portion **18**D by the height is greater than “tan 10°”, for example. Accordingly, this is preferable in terms of limiting the viewing angle, such that the display image of the second display portion AA**2** located in front of the front passenger seat in the display region AA is not visible from at least the driver's seat. Further, the amount of light blocked by the first light blocking portion **18**C decreases, and usage efficiency of light is improved, compared to a case in which the ratio acquired by dividing the width of the first light-transmitting portion **18**D by the height is smaller than “tan 10°”.

(65) Next, a configuration of the second backlight unit **12**U**2** will be described. As illustrated in FIGS. **1** and **2**, the second backlight unit **12**U**2** includes at least a second LED (second light source) **20** and a second light guide plate **21** that guides light from the second LED **20**.

(66) As illustrated in FIG. **1**, the second LED **20** has a substantially block shape, and one surface of a pair of surfaces along the Y-axis direction and the Z-axis direction is a second light-emitting surface **20**A that emits light. As illustrated in FIG. **3**, a plurality of the second LEDs **20** are arranged side by side at intervals in the Y-axis direction. The second LED **20** is mounted on an LED substrate. The second LED **20** has a configuration in which an LED chip is sealed with a sealing material on a substrate portion mounted on the LED substrate. The LED chip provided in the second LED **20** emits light of a single color, such as blue light, for example. A phosphor is dispersed and mixed in the sealing material provided in the second LED **20**. The phosphor contained in the sealing material includes a yellow phosphor, a green phosphor, a red phosphor, and the like. The second LED **20** including such an LED chip and such a sealing material emits white light as a whole.

(67) The second light guide plate **21** is formed of a synthetic resin material (for example, acrylic resin such as PMMA or the like) that has a sufficiently higher refractive index than that of the air and that is substantially transparent. As illustrated in FIG. **1**, the second light guide plate **21** has a plate shape, and a main surface of the second light guide plate **21** is parallel to and overlaps the main surface of the liquid crystal panel **11** and the like. Note that the main surface of the second light guide plate **21** is parallel to the X-axis direction and the Y-axis direction, and a normal direction (thickness direction) of the main surface coincides with the Z-axis direction. The second light guide plate **21** is disposed so as to overlap at least the entire display region AA in a plan view. The second light guide plate **21** is arranged alongside the second LED **20** in the X-axis direction (first direction), and is also arranged side by side with the liquid crystal panel **11**, the third light guide plate **14**, the first louver **18**, and the like in the Z-axis direction. The second light guide plate **21** is arranged on the other side (the left side in FIG. **1**) of the second LED **20** in the X-axis direction. In other words, as illustrated in FIG. **3**, the positional relationship (the positional relationship in the X-axis direction) between the second light guide plate **21** and the second LED **20** is orthogonal to the positional relationship (the positional relationship in the Y-axis direction) between the third light guide plate **14** and the third LED **13**. In this way, the third LEDs **13** and the second LEDs **20** are disposed in a dispersed manner in a plan view, and thus, even when both the third LEDs **13** and the second LEDs **20** are turned on, heat is less likely to accumulate.

(68) As illustrated in FIG. **1**, of an outer peripheral end surface of the second light guide plate **21**, one end surface is a second light incident end surface (second end surface) **21**A facing the second light-emitting surface **20**A of the second LED **20**. The second light incident end surface **21**A is a surface parallel to the second light-emitting surface **20**A of the second LED **20**, and light emitted from the second light-emitting surface **20**A is incident on the second light incident end surface **21**A. As described above, the second light guide plate **21** is provided with the first second LED **20** only on one side in the X-axis direction. Thus, the second backlight unit **12**U**2** is a one-side light incident edge light type. Of the pair of main surfaces of the second light guide plate **21**, the main surface on the front side facing the diffuser sheet **12**S is a second light guide plate-light emission main surface (third main surface) **21**B that emits internally guided light. Of the pair of main surfaces of the second light guide plate **21**, the main surface on the back side facing a first light guide plate-light emission main surface **27**B of the first light guide plate **27** to be described later is a second opposite main surface (fourth main surface) **21**C located on the opposite side to the second light guide plate-light emission main surface **21**B. In the second light guide plate **21**, the second opposite main surface **21**C is disposed so as to face the first light guide plate **27** in the Z-axis direction. Then, the second light guide plate **21** can introduce, from the second light incident end surface **21**A, light emitted from the second LED **20** toward the second light guide plate **21**A, can propagate the light therein, and subsequently, can emit the light from the second light guide plate-light emission main surface **21**B while causing the light to rise along the Z-axis direction such that the light is directed toward (onto the light emission side of) the diffuser sheet **12**S (the liquid crystal panel **11**). In addition, the second light guide plate **21** can introduce, from the second

opposite main surface **21**C, emission light from the first light guide plate **27**, and can also emit the light from the second light guide plate-light emission main surface **21**B toward the diffuser sheet **12**S on the front side. Note that a normal direction of the second light incident end surface **21**A coincides with the X-axis direction (the direction in which the second LED **20** and the second light guide plate **21** are arranged).
(69) As illustrated in FIGS. **4** and **5**, a fourth light guide plate lens **22**, a fifth light guide plate lens **23**, and a sixth light guide plate lens (second lens) **24** are provided on the second light guide plate **21**. As illustrated in FIG. **4**, the fourth light guide plate lens **22** is provided on the second light guide plate-light emission main surface **21**B of the second light guide plate **21**. The fourth light guide plate lens **22** extends in the X-axis direction, and a plurality of the fourth light guide plate lenses **22** are arranged side by side in the Y-axis direction. In the present embodiment, the fourth light guide plate lens **22** is a so-called lenticular lens. The fourth light guide plate lens **22** has a convex shape protruding from the second light guide plate-light emission main surface **21**B to the front side. Specifically, the fourth light guide plate lens **22** has a semi-circular shape in a cross section taken along the Y-axis direction and a semi-cylindrical shape linearly extending in the X-axis direction, and a front surface of the fourth light guide plate lens **22** is a second circular arc-shaped surface **22**A. When an angle formed by a tangent line of a base end portion of the second circular arc-shaped surface **22**A with respect to the Y-axis direction is defined as a "contact angle", a contact angle θc**1** of the fourth light guide plate lens **22** is approximately 30°, for example. All of the plurality of fourth light guide plate lenses **22** arranged in side by side the Y-axis direction have substantially the same contact angle θc**1**, substantially the same width dimension (substantially the same array interval), and substantially the same height dimension. In order to provide the fourth light guide plate lens **22** having such a configuration integrally with the second light guide plate **21**, for example, the second light guide plate **21** may be manufactured by injection molding, and a transfer shape for transferring the fourth light guide plate lens **22** may be formed in advance on a molding face of a forming mold of the second light guide plate **21** for molding the second light guide plate-light emission main surface **21**B.
(70) As illustrated in FIG. **4**, the fifth light guide plate lens **23** is provided on the second opposite main surface **21**C of the second light guide plate **21**. The fifth light guide plate lens **23** extends in the X-axis direction, and a plurality of the fifth light guide plate lenses **23** are arranged side by side in the Y-axis direction. In the present embodiment, the fifth light guide plate lens **23** is a convex-shaped prism protruding from the second opposite main surface **21**C to the back side. Specifically, the fifth light guide plate lens **23** has a substantially triangular shape (is substantially mountain shaped) in a cross section taken along the Y-axis direction, and also extends linearly in the X-axis direction. A width dimension (dimension in the Y-axis direction) of the fifth light guide plate lens **23** is set to be constant over the entire length thereof in the X-axis direction. The fifth light guide plate lens **23** has an approximately isosceles triangle shape in a cross section, and includes a pair of fifth light guide plate inclined surfaces **23**A. An apex angle θ**7** of the fifth light guide plate lens **23** is preferably set to an obtuse angle (an angle greater than 90°), specifically, within a range from 1000 to 150°, and is most preferably set to 140°. All of the plurality of fifth light guide plate lenses **23** arranged side by side in the Y-axis direction have substantially the same apex angle θ**7**, substantially the same width dimension (substantially the same array interval), and substantially the same height dimension. In the present embodiment, the array interval of the fifth light guide plate lenses **23** is greater than the array interval of the fourth light guide plate lenses **22**. In order to provide the fifth light guide plate lens **23** having such a configuration integrally with the second light guide plate **21**, for example, the second light guide plate **21** may be manufactured by injection molding, and a transfer shape for transferring the fifth light guide plate lens **23** may be formed in advance on a molding face of the forming mold of the second light guide plate **21** for molding the second opposite main surface **21**C.
(71) As illustrated in FIG. **5**, the sixth light guide plate lens **24** is provided on the second opposite

main surface 21C of the second light guide plate 21. A plurality of the sixth light guide plate lenses 24 are arranged side by side with intervals therebetween in the X-axis direction. The sixth light guide plate lens 24 protrudes from the second opposite main surface 21C toward the back side in the Z-axis direction. The sixth light guide plate lens 24 includes a sixth light guide plate inclined surface 24A disposed on a side opposite (the left side in FIG. 5) to the second LED 20 side in the X-axis direction, a seventh light guide plate inclined surface 24B disposed on the second LED 20 side (the right side in FIG. 5) in the X-axis direction, and a first plane 24C located between the sixth light guide plate inclined surface 24A and the seventh light guide plate inclined surface 24B. The sixth light guide plate inclined surface 24A has an inclination gradually upward from the second LED 20 side (the right side in FIG. 5) toward the opposite side (the left side in FIG. 5) in the X-axis direction in the second light guide plate 21. The seventh light guide plate inclined surface 24B has an inclination gradually upward from the side (the left side in FIG. 5) opposite to the second LED 20 toward the side of the second LED 20 (the right side in FIG. 5) in the X-axis direction in the second light guide plate 21. The first plane 24C is a surface parallel to the X-axis direction and the Y-axis direction. Further, a second plane 25 is provided between two of the sixth light guide plate lenses 24 that are adjacent to each other in the X-axis direction. Thus, the sixth light guide plate lenses 24 and the second planes 25 are repeatedly and alternately arranged side by side in the X-axis direction.

(72) As illustrated in FIG. 5, the sixth light guide plate inclined surface 24A reflects light propagating inside the second light guide plate 21 and raises the light toward the front side, and can thus promote emission from the second light guide plate-light emission main surface 21B. Thus, it can be said that the plurality of sixth light guide plate lenses 24 including the sixth light guide plate inclined surface 24A constitute a “second light reflection portion 36” that reflects light present in the second light guide plate 21 and thus promotes light emission. Specifically, the sixth light guide plate inclined surface 24A mainly functions to reflect and raise light traveling away from the second LED 20 in the X-axis direction inside the second light guide plate 21. Specifically, as illustrated in FIG. 8, an inclination angle (angle) 08 of the sixth light guide plate inclined surface 24A with respect to the X-axis direction is set to be equal to or less than 40°, for example, and is preferably set to approximately 27°. When the inclination angle θ8 of the sixth light guide plate inclined surface 24A with respect to the X-axis direction is set to be equal to or less than 40°, light can be raised in a direction inclined to the opposite side to the second LED 20 in the X-axis direction, with respect to the front direction. Thus, in the emission light from the second light guide plate-light emission main surface 21B, with respect to the Z-axis direction (the normal direction of the second light guide plate-light emission main surface 21B), there is more light traveling toward the side opposite to the second LED 20 in the X-axis direction than there is light traveling toward the second LED 20 side in the X-axis direction. Thus, when the second LED 20 is turned on, it is possible to supply the emission light of a brightness angle distribution in which a peak brightness of the emission light is biased toward the side opposite to the second LED 20 side in the X-axis direction. In the liquid crystal display device 10 for vehicle use according to the present embodiment, the second LED 20 is preferably disposed on a side opposite to the driver seat side in the X-axis direction, that is, on the side of the front passenger seat.

(73) On the other hand, as illustrated in FIG. 5, the seventh light guide plate inclined surface 24B can reflect and raise light traveling toward the second LED 20 in the X-axis direction, and can reflect light traveling away from the second LED 20 in the X-axis direction inside the second light guide plate 21 so as to guide the light farther away from the second LED 20. Specifically, as illustrated in FIG. 8, an inclination angle (angle) 09 of the seventh light guide plate inclined surface 24B with respect to the X-axis direction is set to be within a range from 3° to 10°, for example, and is preferably set to be approximately 3°. The inclination angle θ9 of the seventh light guide plate inclined surface 24B is smaller than the inclination angle θ8 of the sixth light guide plate inclined surface 24A. According to the seventh light guide plate inclined surface 24B having such a

configuration, when the light traveling toward the second LED **20** in the X-axis direction inside the second light guide plate **21** is incident on the seventh light guide plate inclined surface **24**B and refracted, the light travels toward the side opposite to the second LED **20** side in the X-axis direction with respect to a front direction. In this way, the brightness of the emission light in a direction inclined with respect to the front direction can be further improved. Further, when the light traveling away from the second LED **20** in the X-axis direction inside the second light guide plate **21** is incident on the seventh light guide plate inclined surface **24**B and refracted, the light is guided so as to travel farther away from the second LED **20**. In this way, the emission light from the second light guide plate-light emission main surface **21**B is less likely to be biased toward the second LED **20** side in the X-axis direction.

(74) As illustrated in FIG. **5**, the first plane **24**C and the second plane **25** are parallel to the X-axis direction and the Y-axis direction, and the normal direction of the first plane **24**C and the second plane **25** coincides with the Z-axis direction. Light emitted from the first light guide plate **27** to be described later and incident on the second opposite main surface **21**C of the second light guide plate **21** travels while barely being refracted even when the light is incident on one of the first plane **24**C and the second plane **25**. Thus, compared to a case of a configuration in which, for example, the sixth light guide plate inclined surface **24**A and the seventh light guide plate inclined surface **24**B are directly connected without the first plane **24**C being interposed therebetween, and to a case of a configuration in which, for example, two of the sixth light guide plate lenses **24** that are adjacent to each other in the X-axis direction are directly connected to each other without the second plane **25** being interposed therebetween, it is possible to suppress the occurrence of side lobe light traveling in a direction inclined to the side opposite to the second LED **20** side in the X-axis direction with respect to the front direction.

(75) As illustrated in FIGS. **8** and **9**, the plurality of sixth light guide plate lenses **24** arranged side by side in the X-axis direction are designed such that a height dimension (a dimension in the Z-axis direction) thereof increases the farther the sixth light guide plate lens **24** is from the second LED **20** in the X-axis direction, while an array pitch (array interval) in the X-axis direction is constant. The farther the sixth light guide plate inclined surface **24**A is from the second LED **20** in the X-axis direction, the larger the width dimension (dimension in the X-axis direction) thereof, although the increase is slight. The farther the seventh light guide plate inclined surface **24**B is from the second LED **20** in the X-axis direction, the larger the width dimension (dimension in the X-axis direction) thereof, and a rate of increase in the width dimensions of the seventh light guide plate inclined surfaces **24**B is higher than a rate of increase of the wide dimensions of the sixth light guide plate inclined surfaces **24**A. The width dimension (dimension in the X-axis direction) of the first plane **24**C is set to be constant regardless of the position of the first plane **24**C in the X-axis direction. The farther the second plane **25** is from the second LED **20** in the X-axis direction, the smaller the width dimension (dimension in the X-axis direction) thereof. The array pitch of the sixth light guide plate lenses **24** in the X-axis direction is a sum of the width dimension of the sixth light guide plate inclined surface **24**A, the width dimension of the seventh light guide plate inclined surface **24**B, the width dimension of the first plane **24**C, and the width dimension of the second plane **25**.

(76) When a length dimension (dimension in the X-axis direction) of the second light guide plate **21** is set to be 300 mm, for example, the array pitch of the sixth light guide plate lenses **24** in the X-axis direction is set to be constant at approximately 0.114 mm, for example, and the width dimension of the first plane **24**C is set to be constant at approximately 0.017 mm, for example. When the length dimension of the second light guide plate **21** is set to be 300 mm, for example, the width dimensions of the sixth light guide plate inclined surfaces **24**A change over a range from 0.002 mm to 0.005 mm, for example, depending on the position of the sixth light guide plate lens **24** in the X-axis direction in the second light guide plate **21**. When the length dimension of the second light guide plate **21** is set to 300 mm, for example, the width dimensions of the seventh light guide plate inclined surfaces **24**B change over a range from 0.032 mm to 0.005 mm, for

example, depending on the position of the sixth light guide plate lens **24** in the X-axis direction in the second light guide plate **21**. When the length of the second light guide plate **21** is set to be 300 mm, for example, the width dimensions of the second planes **25** change over a range from 0.038 mm to 0.063 mm, for example, depending on the position of the sixth light guide plate lens **24** in the X-axis direction in the second light guide plate **21**. A minimum value of the height dimension of the sixth light guide plate lens **24** is secured to be approximately 0.002 mm (2 m), for example. In this way, sufficient ease of manufacturing can be secured when the second light guide plate **21** is manufactured by resin molding. In order to secure the minimum value of the height dimension of the sixth light guide plate lens **24** to be approximately 0.002 mm, the inclination angle θ**9** formed by the seventh light guide plate inclined surface **24**B with respect to the X-axis direction is preferably set to be equal to or greater than 3°. Note that each of the inclination angle θ**8** of the sixth light guide plate inclined surface **24**A with respect to the X-axis direction and the inclination angle θ**9** of the seventh light guide plate inclined surface **24**B with respect to the X-axis direction is set to be constant regardless of the position of the second light guide plate **21** in the X-axis direction.

(77) As illustrated in FIGS. **4** and **9**, the sixth light guide plate lens **24** having the configuration described above is sandwiched and disposed between two of the fifth light guide plate lenses **23** that are adjacent to each other in the Y-axis direction. Thus, the sixth light guide plate lenses **24** are repeatedly disposed in an alternating manner with the fifth light guide plate lenses **23** in the Y-axis direction. In the sixth light guide plate lens **24**, a maximum value of the height dimension (protrusion dimension from the second opposite main surface **21**C) is set to be smaller than the height dimension of the fifth light guide plate lens **23**. Therefore, even the sixth light guide plate lens **24** located on a farthest side from the second LED **20** in the X-axis direction does not protrude farther toward the back side than the fifth light guide plate lens **23**.

(78) Next, the configuration of the first backlight unit **12**U**1** will be described. As illustrated in FIGS. **1** and **2**, the first backlight unit **12**U**1** includes at least a first LED (first light source) **26** and a first light guide plate **27** that guides light from the first LED **26**.

(79) As illustrated in FIG. **1**, the first LED **26** has a substantially block shape, and one surface of a pair of surfaces along the Y-axis direction and the Z-axis direction is a first light-emitting surface **26**A that emits light. As illustrated in FIG. **3**, a plurality of the first LEDs **26** are arranged side by side at intervals in the Y-axis direction. The first LED **26** is mounted on an LED substrate. The first LED **26** has a configuration in which an LED chip is sealed with a sealing material on a substrate portion mounted on the LED substrate. The LED chip provided in the first LED **26** emits light of a single color, such as blue light, for example. A phosphor is dispersed and mixed in the sealing material provided in the first LED **26**. The phosphor contained in the sealing material includes a yellow phosphor, a green phosphor, a red phosphor, and the like. The first LED **26** including such an LED chip and such a sealing material emits white light as a whole.

(80) The first light guide plate **27** is formed of a synthetic resin material (for example, acrylic resin such as PMMA or the like) that has a sufficiently higher refractive index than that of the air and that is substantially transparent. As illustrated in FIG. **1**, the first light guide plate **27** has a plate shape, and a main surface of the first light guide plate **27** is parallel to and overlaps the main surface of the liquid crystal panel **11** and the like. Note that the main surface of the first light guide plate **27** is parallel to the X-axis direction and the Y-axis direction, and a normal direction (thickness direction) of the main surface coincides with the Z-axis direction. The first light guide plate **27** is disposed so as to overlap at least the entire display region AA in a plan view. The main surfaces of the first light guide plate **27** and the second light guide plate **21** overlap each other. The first light guide plate **27** and the second light guide plate **21** overlapping each other are disposed on the opposite side (front side) to the third light guide plate **14** side with respect to the first louver **18**. The first light guide plate **27** is arranged alongside the first LED **26** in the X-axis direction (first direction), and is also arranged side by side with the liquid crystal panel **11**, the third light guide

plate **14**, the first louver **18**, and the like in the Z-axis direction. The first light guide plate **27** is arranged on the other side (the left side in FIG. **1**) of the first LED **26** in the X-axis direction. In other words, as illustrated in FIG. **3**, the positional relationship (the positional relationship in the X-axis direction) between the first light guide plate **27** and the first LED **26** is the same as the positional relationship (the positional relationship in the X-axis direction) between the second light guide plate **21** and the second LED **20**, and is orthogonal to the positional relationship (the positional relationship in the Y-axis direction) between the third first light guide plate **14** and the third LED **13**. In this way, the third LEDs **13** and the first LEDs **26** are disposed in a dispersed manner in a plan view, and thus, even when both the third LEDs **13** and the first LEDs **26** are turned on, heat is less likely to accumulate.

(81) As illustrated in FIG. **1**, an end surface of an outer peripheral end surface of the first light guide plate **27** is a first light incident end surface (first end surface) **27**A facing the first light-emitting surface **26**A of the first LED **26**. The first light incident end surface **27**A is a surface parallel to the first light-emitting surface **26**A of the first LED **26**, and light emitted from the first light-emitting surface **26**A is incident on the first light incident end surface **27**A. As described above, the first light guide plate **27** is provided with the first LED **26** only on one side in the X-axis direction. Thus, the first backlight unit **12**U**1** is a one-side light incident edge light type. Of the pair of main surfaces of the first light guide plate **27**, the main surface on the front side facing the second light guide plate **21** is a first light guide plate-light emission main surface (first main surface) **27**B that emits internally guided light. Of the pair of main surfaces of the first light guide plate **27**, the main surface on the back side facing the first louver **18** is a first opposite main surface (second main surface) **27**C located on the opposite side to the first light guide plate-light emission main surface **27**B. In the first light guide plate **27**, the first opposite main surface **27**C is disposed so as to face the first louver light emission main surface **18**B of the first louver **18** in the Z-axis direction. Then, the first light guide plate **27** can introduce, from the first light incident end surface **27**A, light emitted from the first LED **26** toward the first light guide plate **27**, can propagate the light therein, and subsequently, can emit the light from the first light guide plate-light emission main surface **27**B while causing the light to rise along the Z-axis direction toward the second light guide plate **21** (the liquid crystal panel **11**) on the front side (the light emission side). In addition, the first light guide plate **27** can introduce, from the first opposite main surface **27**C, emission light from the first louver **18**, and can also emit the light from the first light guide plate-light emission main surface **27**B toward the second light guide plate **21** on the front side. Note that a normal direction of the first light incident end surface **27**A coincides with the X-axis direction (the direction in which the first LED **26** and the first light guide plate **27** are arranged).

(82) As illustrated in FIGS. **4** and **5**, a seventh light guide plate lens **28**, an eighth light guide plate lens **29**, and a ninth light guide plate lens (first lens) **30** are provided on the first light guide plate **27**. As illustrated in FIG. **4**, the seventh light guide plate lens **28** is provided on the first light guide plate-light emission main surface **27**B of the first light guide plate **27**. The seventh light guide plate lens **28** extends along the X-axis direction, and a plurality of the seventh light guide plate lenses **28** are disposed side by side in the Y-axis direction. In the present embodiment, the seventh light guide plate lens **28** is a so-called lenticular lens. The seventh light guide plate lens **28** has a convex shape protruding from the first light guide plate-light emission main surface **27**B to the front side. Specifically, the seventh light guide plate lens **28** has a semi-circular shape in a cross section taken along the Y-axis direction and a semi-cylindrical shape linearly extending in the X-axis direction, and a front surface of the seventh light guide plate lens **28** is a third circular arc-shaped surface **28**A. When an angle formed by a tangent line of a base end portion of the third circular arc-shaped surface **28**A with respect to the Y-axis direction is defined as a “contact angle”, a contact angle θc**2** of the seventh light guide plate lens **28** is approximately 30°, for example. All of the plurality of seventh light guide plate lenses **28** arranged side by side in the Y-axis direction have substantially the same contact angle θc**2**, substantially the same width dimension (substantially the same array

interval), and substantially the same height dimension. In order to provide the seventh light guide plate lens **28** having such a configuration integrally with the first light guide plate **27**, for example, the first light guide plate **27** may be manufactured by injection molding, and a transfer shape for transferring the seventh light guide plate lens **28** may be formed in advance on a molding face of a forming mold of the first light guide plate **27** for molding the first light guide plate-light emission main surface **27**B.

(83) As illustrated in FIG. **4**, the eighth light guide plate lens **29** is provided on the first opposite main surface **27**C of the first light guide plate **27**. The eighth light guide plate lens **29** extends in the X-axis direction, and a plurality of the eighth light guide plate lenses **29** are arranged side by side in the Y-axis direction. In the present embodiment, the eighth light guide plate lens **29** is a convex-shaped prism protruding from the first opposite main surface **27**C to the back side. Specifically, the eighth light guide plate lens **29** has a substantially triangular shape (is substantially mountain shaped) in a cross section taken along the Y-axis direction, and also extends linearly in the X-axis direction. A width dimension (dimension in the Y-axis direction) of the eighth light guide plate lens **29** is set to be constant over the entire length thereof in the X-axis direction. The eighth light guide plate lens **29** has an approximately isosceles triangle shape in a cross section, and includes a pair of eighth light guide plate inclined surfaces **29**A. An apex angle θ**10** of the eighth light guide plate lens **29** is preferably set to an obtuse angle (an angle greater than 90°), specifically, within a range from 1000 to 150°, and is most preferably set to 140°. All of the plurality of eighth light guide plate lenses **29** arranged side by side in the Y-axis direction have substantially the same apex angle θ**10**, substantially the same width dimension (substantially the same array interval), and substantially the same height dimension. In the present embodiment, the array interval of the eighth light guide plate lenses **29** is greater than the array interval of the seventh light guide plate lenses **28**. In order to provide the eighth light guide plate lens **29** having such a configuration integrally with the first light guide plate **27**, for example, the first light guide plate **27** may be manufactured by injection molding, and a transfer shape for transferring the eighth light guide plate lens **29** may be formed in advance on a molding face of the forming mold of the first light guide plate **27** for molding the first opposite main surface **27**C.

(84) As illustrated in FIG. **5**, the ninth light guide plate lens **30** is provided on the first opposite main surface **27**C of the first light guide plate **27**. A plurality of the ninth light guide plate lenses **30** are arranged side by side with intervals therebetween in the X-axis direction. The ninth light guide plate lens **30** protrudes from the first opposite main surface **27**C toward the back side in the Z-axis direction. The ninth light guide plate lens **30** includes a ninth light guide plate inclined surface (third inclined surface) **30**A disposed on a side opposite (the left side in FIG. **5**) to the first LED **26** side in the X-axis direction, a tenth light guide plate inclined surface **30**B disposed on the first LED **26** side (the right side in FIG. **5**) in the X-axis direction, and a third plane **30**C located between the ninth light guide plate inclined surface **30**A and the tenth light guide plate inclined surface **30**B. The ninth light guide plate inclined surface **30**A has an inclination gradually upward from the first LED **26** side (the right side in FIG. **5**) toward the side opposite (the left side in FIG. **5**) to the first LED **26** in the X-axis direction in the first light guide plate **27**. The tenth light guide plate inclined surface **30**B has an inclination gradually upward from the side (the left side in FIG. **5**) opposite to the first LED **26** side toward the side of the first LED **26** (the right side in FIG. **5**) in the X-axis direction in the first light guide plate **27**. The third plane **30**C is a surface parallel to the X-axis direction and the Y-axis direction. Further, a fourth plane **31** is provided between two of the ninth light guide plate lenses **30** that are adjacent to each other in the X-axis direction. Thus, the ninth light guide plate lenses **30** and the fourth planes **31** are repeatedly and alternately arranged side by side in the X-axis direction.

(85) As illustrated in FIG. **5**, the ninth light guide plate inclined surface **30**A reflects light propagating inside the first light guide plate **27** and raises the light toward the front side, and can thus promote emission from the first light guide plate-light emission main surface **27**B. Thus, it can

be said that the plurality of ninth light guide plate lenses **30** including the ninth light guide plate inclined surface **30**A constitute a “first light reflection portion **35**” that reflects light present in the first light guide plate **27** and thus promotes light emission. Specifically, the ninth light guide plate inclined surface **30**A mainly functions to reflect and raise light traveling away from the first LED **26** in the X-axis direction inside the first light guide plate **27**. Specifically, an inclination angle (angle) **011** of the ninth light guide plate inclined surface **30**A with respect to the X-axis direction is set to be equal to or less than 40°, for example, and is preferably set to approximately 27°. When the inclination angle θ**11** of the ninth light guide plate inclined surface **30**A with respect to the X-axis direction is set to be equal to or less than 40°, light can be raised in a direction inclined to the opposite side to the first LED **26** in the X-axis direction, with respect to the front direction. Thus, in the emission light from the first light guide plate-light emission main surface **27**B, with respect to the Z-axis direction (the normal direction of the first light guide plate-light emission main surface **27**B), there is more light traveling toward the side opposite to the first LED **26** in the X-axis direction than there is light traveling toward the first LED **26** side in the X-axis direction. Thus, when the first LED **26** is turned on, it is possible to supply the emission light of a brightness angle distribution in which a peak brightness of the emission light is biased toward the side opposite to the first LED **26** side in the X-axis direction. The inclination angle θ**11** of the ninth light guide plate inclined surface **30**A with respect to the X-axis direction is equal to the inclination angle θ**8** of the sixth light guide plate inclined surface **24**A with respect to the X-axis direction. In the liquid crystal display device **10** for vehicle use according to the present embodiment, the first LED **26** is preferably disposed on a side opposite to the driver seat side in the X-axis direction, that is, on the side of the front passenger seat.

(86) On the other hand, as illustrated in FIG. **5**, the tenth light guide plate inclined surface **30**B can reflect and raise light traveling toward the first LED **26** in the X-axis direction, and can reflect light traveling away from the first LED **26** in the X-axis direction inside the first light guide plate **27** so as to guide the light farther away from the first LED **26**. Specifically, an inclination angle (angle) **012** of the tenth light guide plate inclined surface **30**B with respect to the X-axis direction is set to be within a range from 3° to 10°, for example, and is preferably set to be approximately 3°. The inclination angle θ**12** of the tenth light guide plate inclined surface **30**B is smaller than the inclination angle θ**11** of the ninth light guide plate inclined surface **30**A. According to the tenth light guide plate inclined surface **30**B having such a configuration, when the light traveling toward the first LED **26** in the X-axis direction inside the first light guide plate **27** is incident on the tenth light guide plate inclined surface **30**B and refracted, the light travels toward the side opposite to the first LED **26** side in the X-axis direction with respect to the front direction. In this way, the brightness of the emission light in a direction inclined with respect to the front direction can be further improved. Further, when the light traveling away from the first LED **26** in the X-axis direction inside the first light guide plate **27** is incident on the tenth light guide plate inclined surface **30**B and refracted, the light is guided so as to travel farther away from the first LED **26**. In this way, the emission light from the first light guide plate-light emission main surface **27**B is less likely to be biased toward the first LED **26** side in the X-axis direction. The inclination angle θ**12** of the tenth light guide plate inclined surface **30**B with respect to the X-axis direction is equal to the inclination angle θ**9** of the seventh light guide plate inclined surface **24**B with respect to the X-axis direction.

(87) As illustrated in FIG. **5**, the third plane **30**C and the fourth plane **31** are parallel to the X-axis direction and the Y-axis direction, and the normal direction of the third plane **30**C and the fourth plane **31** coincides with the Z-axis direction. Light emitted from the first louver **18** and incident on the first opposite main surface **27**C of the first light guide plate **27** travels while barely being refracted even when the light is incident on one of the third plane **30**C and the fourth plane **31**. Thus, compared to a case of a configuration in which, for example, the ninth light guide plate inclined surface **30**A and the tenth light guide plate inclined surface **30**B are directly connected

without the third plane **30**C being interposed therebetween, and to a case of a configuration in which, for example, two of the ninth light guide plate lenses **30** that are adjacent to each other in the X-axis direction are directly connected to each other without the fourth plane **31** being interposed therebetween, it is possible to suppress the occurrence of side lobe light traveling in a direction inclined to the side opposite to the first LED **26** side in the X-axis direction with respect to the front direction.

(88) As illustrated in FIG. **5**, the plurality of ninth light guide plate lenses **30** arranged side by side in the X-axis direction are designed such that a height dimension (a dimension in the Z-axis direction) thereof increases the farther the ninth light guide plate lens **30** is from the first LED **26** in the X-axis direction, while an array pitch (array interval) in the X-axis direction is constant. Note that the configuration of the ninth light guide plate lens **30** is substantially the same as the configuration of the sixth light guide plate lens **24** illustrated in FIGS. **8** and **9**. The farther the ninth light guide plate inclined surface **30**A is from the first LED **26** in the X-axis direction, the larger the width dimension (dimension in the X-axis direction) thereof, although the increase is slight. The farther the tenth light guide plate inclined surface **30**B is from the first LED **26** in the X-axis direction, the larger the width dimension (dimension in the X-axis direction) thereof, and a rate of increase in the width dimensions of the tenth light guide plate inclined surfaces **30**B is higher than a rate of increase of the wide dimensions of the ninth light guide plate inclined surfaces **30**A. The width dimension (dimension in the X-axis direction) of each of the third planes **30**C is set to be constant regardless of the position of the third plane **30**C in the X-axis direction. The farther the fourth plane **31** is from the first LED **26** in the X-axis direction, the smaller the width dimension (dimension in the X-axis direction) thereof. The array pitch of the ninth light guide plate lenses **30** in the X-axis direction is a sum of the width dimension of the ninth light guide plate inclined surface **30**A, the width dimension of the tenth light guide plate inclined surface **30**B, the width dimension of the third plane **30**C, and the width dimension of the fourth plane **31**.

(89) When a length dimension (dimension in the X-axis direction) of the first light guide plate **27** is set to be 300 mm, for example, the array pitch of the ninth light guide plate lenses **30** in the X-axis direction is set to be constant at approximately 0.114 mm, for example, and the width dimension of the third plane **30**C is set to be constant at approximately 0.017 mm, for example. When the length dimension of the first light guide plate **27** is set to be 300 mm, for example, the width dimensions of the ninth light guide plate inclined surfaces **30**A change over a range from 0.002 mm to 0.005 mm, for example, depending on the position of the ninth light guide plate lens **30** in the X-axis direction in the first light guide plate **27**. When the length dimension of the first light guide plate **27** is set to 300 mm, for example, the width dimensions of the tenth light guide plate inclined surfaces **30**B change over a range from 0.032 mm to 0.005 mm, for example, depending on the position of the ninth light guide plate lens **30** in the X-axis direction in the first light guide plate **27**. When the length of the first light guide plate **27** is set to be 300 mm, for example, the width dimensions of the fourth planes **31** change over a range from 0.038 mm to 0.063 mm, for example, depending on the position of the ninth light guide plate lens **30** in the X-axis direction in the first light guide plate **27**. A minimum value of the height dimension of the ninth light guide plate lens **30** is secured to be approximately 0.002 mm (2 m), for example. In this way, sufficient ease of manufacturing can be secured when the first light guide plate **27** is manufactured by resin molding. In order to secure the minimum value of the height dimension of the ninth light guide plate lens **30** to be approximately 0.002 mm, the inclination angle θ**12** formed by the tenth light guide plate inclined surface **30**B with respect to the X-axis direction is preferably set to be equal to or greater than 3°. Note that the inclination angle θ**11** of the ninth light guide plate inclined surface **30**A with respect to the X-axis direction and the inclination angle θ**12** of the tenth light guide plate inclined surface **30**B with respect to the X-axis direction are both set to be constant regardless of the position thereof in the X-axis direction in the first light guide plate **27**.

(90) As illustrated in FIG. **4**, the ninth light guide plate lens **30** having the configuration described

above is sandwiched and disposed between two of the eighth light guide plate lenses **29** that are adjacent to each other in the Y-axis direction. Thus, the ninth light guide plate lenses **30** are repeatedly disposed in an alternating manner with the eighth light guide plate lenses **29** in the Y-axis direction. In the ninth light guide plate lens **30**, a maximum value of the height dimension (protrusion dimension from the first opposite main surface **27**C) is set to be smaller than the height dimension of the eighth light guide plate lens **29**. Therefore, even the ninth light guide plate lens **30** located on a farthest side from the first LED **26** in the X-axis direction does not protrude farther toward the back side than the eighth light guide plate lens **29**.

(91) As illustrated in FIGS. **1**, **2**, and **10**, in the first light guide plate **27** and the second light guide plate **21** according to the present embodiment, formation ranges of the first light reflection portion **35** and the second light reflection portion **36** are set as follows. That is, when the first opposite main surface **27**C is divided into a first region A**1** overlapping the first display portion AA**1** of the display region AA and a second region A**2** overlapping the second display portion AA**2** of the display region AA and adjacent to the first region A**1** in the X-axis direction, the first light reflection portion **35** is selectively provided in the first region A**1** in the first opposite main surface **27**C. That is, the first light reflection portion **35** is selectively not formed in the second region A**2** of the first opposite main surface **27**C (particularly, see FIGS. **1** and **10**). On the other hand, when the second opposite main surface **21**C is divided into a third region A**3** overlapping the first region A**1** (the first display portion AA**1**) and a fourth region A**4** overlapping the second region A**2** (the second display portion AA**2**), the second light reflection portion **36** is provided at least in the fourth region A**4** in the second opposite main surface **21**C. Specifically, the second light reflection portion **36** is provided over the third region A**3** and the fourth region A**4** in the second opposite main surface **21**C, and is provided over substantially the entire region of the second opposite main surface **21**C. Further, an area ratio between the first region A**1** (the third region A**3**) and the second region A**2** (the fourth region A**4**) is 1:1, for example.

(92) In this way, since the first light reflection portion **35** is selectively provided in the first region A**1** of the first opposite main surface **27**C, when the first LED **26** is turned on, as illustrated in FIGS. **5** and **11**, light is emitted from a portion of the first light guide plate-light emission main surface **27**B overlapping the first region A**1**, but light is not emitted from a portion of the first light guide plate-light emission main surface **27**B overlapping the second region A**2**. On the other hand, since the second light reflection portion **36** is provided over the third region A**3** and the fourth region A**4** in the second opposite main surface **21**C, when the second LED **20** is turned on, as illustrated in FIGS. **4** and **5**, light is emitted from portions of the second light guide plate-light emission main surface **21**B overlapping the third region A**3** and the fourth region A**4**, that is, light is emitted from substantially the entire region. Further, with respect to the third backlight unit **12**U**3**, when the third LED **13** is turned on, as illustrated in FIG. **5**, the angle range of the light emitted from the third light guide plate **14** is restricted in the X-axis direction by the first light blocking portions **18**C of the first louver **18** when the light is emitted from the first louver light emission main surface **18**B.

(93) Thus, for example, when the first LED **26** and the third LED **13** are turned on and the second LED **20** is turned off, the emission light of the backlight device **12** includes light emitted over a restricted angle range from the first louver light emission main surface **18**B of the first louver **18**, and light selectively emitted from the portion, in the first light guide plate-light emission main surface **27**B of the first light guide plate **27**, overlapping the first region A**1**. As a result, in this case, of the backlight device **12**, the emission angle range of the light emitted from the portions overlapping the first region A**1** and the third region A**3** is not restricted in the X-axis direction, while, of the backlight device **12**, the emission angle range of the light emitted from the portions overlapping the second region A**2** and the fourth region A**4** is restricted in the X-axis direction. Here, in the present embodiment, the first region A**1** and the third region A**3** overlap the first display portion AA**1** of the display region AA, and the second region A**2** and the fourth region A**4**

overlap the second display portion AA**2** of the display region AA. Thus, for example, during a period in which the passenger vehicle is traveling, the first LEDs **26** and the third LEDs **13** are turned on, while the second LEDs **20** are not turned on. In this way, since the emission angle range of the light emitted from the portions, of the backlight device **12**, overlapping the second region A**2** and the fourth region A**4** is limited in the X-axis direction, the image displayed on the second display portion AA**2** in front of the front passenger seat can be viewed from the front passenger seat but cannot be viewed from the driver's seat. On the other hand, since the emission angle range of the light emitted from the portions, of the backlight device **12**, overlapping the first region A**1** and the third region A**3** is not limited in the X-axis direction, the image displayed on the first display portion AA**1** in front of the driver's seat can be viewed from both the driver's seat and the front passenger seat.

(94) On the other hand, for example, when the second LEDs **20** and the third LEDs **13** are turned on and the first LEDs **26** are turned off, the emission light of the backlight device **12** includes the light emitted over the restricted angle range from the first louver light emission main surface **18**B of the first louver **18**, and the light emitted from the second light guide plate-light emission main surface **21**B of the second light guide plate **21** over the portions overlapping the third region A**3** and the fourth region A**4**. As a result, in this case, the emission angle range of the light emitted from the backlight device **12** is not limited in the X-axis direction. Here, if, for example, the second light reflection portion **36** is selectively provided in the fourth region A**4** in the second opposite main surface **21**C, in order to obtain light whose emission angle range is not limited in the X-axis direction, it is necessary to turn on both the first LEDs **26** and the second LEDs **20**. However, in this case, there is a possibility that a dark portion may be seen between the light emitted from the portion of the first light guide plate-light emission main surface **27**B overlapping the first region A**1** and the light emitted from the portion of the second light guide plate-light emission main surface **21**B overlapping the fourth region A**4**. In this regard, since it is sufficient to turn on the second LED **20** while turning off the first LED **26** in order to obtain the light whose emission angle range is not limited in the X-axis direction, the dark portion described above is less likely to be seen. Further, in the present embodiment, the first region A**1** and the third region A**3** overlap the first display portion AA**1** of the display region AA, and the second region A**2** and the fourth region A**4** overlap the second display portion AA**2** of the display region AA. Thus, during a period in which the passenger vehicle is stopped, the second LEDs **20** and the third LEDs **13** are turned on and the first LEDs **26** are turned off. In this way, since the emission angle range of the emission light of the backlight device **12** is not restricted in the X-axis direction over substantially the entire region, both the image displayed on the first display portion AA**1** in front of the driver's seat and the image displayed on the second display portion AA**2** in front of the front passenger seat can be visually recognized from both the driver's seat and the front passenger seat.

(95) Further, in the present embodiment, as illustrated in FIG. **1**, the second light guide plate **27** is disposed such that the first light guide plate **21** is interposed between the second light guide plate **27** and the first louver **18**. Here, for example, if the second region A**2** of the first opposite main surface **27**C of the first light guide plate **27** is scratched or the like, there is a concern that the light propagating in the first light guide plate **27** may be emitted from a portion of the first light guide plate-light emission main surface **27**B overlapping the second region A**2**, due to the scratch or the like. Even in this case, since the second opposite main surface **21**C of the second light guide plate **21** is disposed facing the first light guide plate-light emission main surface **27**B of the first light guide plate **27**, the light emitted from the portion of the first light guide plate-light emission main surface **27**B overlapping the second region A**2** can be caused to be less likely to be emitted from the second opposite main surface **21**C, as a result of being reflected or the like by the second light guide plate **21**. In particular, in the present embodiment, since the fourth light guide plate lens **22**, which is the lenticular lens, is provided on the second light guide plate-light emission main surface **21**B of the second light guide plate **21**, the light emitted from the portion of the first light guide

plate-light emission main surface **27**B overlapping the second region A**2** can be favorably reflected toward the back side by the fourth light guide plate lens **22**. Accordingly, when the first LEDs **26** and the third LEDs **13** are turned on and the second LEDs **20** are turned off, it is possible to prevent the light emitted from the first LEDs **26** from being unintentionally supplied to the second display portion AA**2** of the display region AA.
(96) As illustrated in FIG. **5**, the plurality of sixth light guide plate lenses **24** constituting the second light reflection portion **36** are provided in a plurality thereof in both the third region A**3** and the fourth region A**4** in the second opposite main surface **21**C. In the following description, when a distinction is made with respect to the sixth light guide plate lenses **24** and the sixth light guide plate inclined surfaces **24**A, a suffix "α" is appended to the reference sign of those disposed in the fourth region A**4**, and a suffix "β" is appended to the reference sign of those disposed in the third region A**3**. When the sixth light guide plate lenses **24** and the sixth light guide plate inclined surfaces **24**A are collectively referred to without distinction, a suffix is not appended to the reference sign. Among the plurality of sixth light guide plate lenses **24** constituting the second light reflection portion **36**, the sixth light guide plate lens **24**α disposed in the fourth region A**4** includes the sixth light guide plate inclined surface (first inclined surface) **24**Aα with an inclination gradually upward from the side opposite to the second LED **20** side toward the second LED **20** in the X-axis direction. On the other hand, among the plurality of sixth light guide plate lenses **24**, the sixth light guide plate lens **24**β disposed in the third region A**3** includes the sixth light guide plate inclined surface (second inclined surface) **24**Aβ with an inclination gradually upward from the side opposite to the second LED **20** toward the second LED **20** side in the X-axis direction. Since the sixth light guide plate lenses **24**α and **24**β have the same structure, the inclination angles θ**8** formed by the sixth light guide plate inclined surfaces **24**Aα and **24**Aβ with respect to the X-axis direction are equal to each other.
(97) According to such a configuration, when the second LED **20** is turned on, light that has entered into the second light guide plate **21** is incident on the sixth light guide plate inclined surface **24**Aα of the sixth light guide plate lens **24***a* in the fourth region A**4** of the second opposite main surface **21**C, and is incident on the sixth light guide plate inclined surface **24**Aβ of the sixth light guide plate lens **24**β in the third region A**3**. The light incident on the sixth light guide plate inclined surface **24**Aα is reflected, and is emitted from the portion of the second light guide plate-light emission main surface **21**B overlapping the fourth region A**4**. This emission light includes a greater amount of light traveling toward the opposite side to the second LED **20** side in the X-axis direction with respect to the front direction than light traveling toward the second LED **20** side in the X-axis direction. The light incident on the sixth light guide plate inclined surface **24**Aβ is reflected, and is emitted from the portion of the second light guide plate-light emission main surface **21**B overlapping the third region A**3**. This emission light includes a greater amount of light traveling toward the opposite side to the second LED **20** side in the X-axis direction with respect to the front direction than light traveling toward the second LED **20** side in the X-axis direction. Thus, it is possible to supply the emission light of a brightness angle distribution in which the peak brightness of the emission light from the portion of the second light guide plate-light emission main surface **21**B overlapping the fourth region A**4** and the peak brightness of the emission light from the portion overlapping the third region A**3** are both biased toward the side opposite to the second LED **20** side in the X-axis direction. In this way, it is possible to sufficiently secure the brightness of the emission light that is inclined, with respect to the front direction, to the side opposite to the second LED **20** side in the X-axis direction.
(98) Moreover, as illustrated in FIG. **5**, the sixth light guide plate inclined surface **24**Aβ has the same inclination as the sixth light guide plate inclined surface **24**Aα. Thus, when the second LED **20** is turned on, the brightness angle distribution of the light emitted from the second light guide plate-light emission main surface **21**B has the same inclination. Accordingly, a local dark portion is less likely to occur in the vicinity of the boundary between the portion of the second light guide

plate-light emission main surface **21**B overlapping the third region A**3** and the portion overlapping the fourth region A**4**. Further, since the inclination angles θ**8** of the sixth light guide plate inclined surface **24**Aα and the sixth light guide plate inclined surface **24**Aβ with respect to the X-axis direction are equal to each other, the evenness of the brightness angle distribution relating to the light emitted from the second light guide plate-light emission main surface **21**B when the second LED **20** is turned on is improved. Accordingly, a local dark portion is less likely to occur in the vicinity of the boundary between the portion of the second light guide plate-light emission main surface **21**B overlapping the third region A**3** and the portion of the second light guide plate-light emission main surface **21**B overlapping the fourth region A**4**.

(99) Further, as illustrated in FIG. **5**, each of the plurality of ninth light guide plate lenses **30** constituting the first light reflection portion **35** includes the ninth light guide plate inclined surface (third inclined surface) **30**A with an inclination gradually upward from the opposite side to the first LED **26** toward the first LED **26** side in the X-axis direction. In this manner, the ninth light guide plate inclined surface **30**A has the same inclination as that of the sixth light guide plate inclined surface **24**Aα and the sixth light guide plate inclined surface **24**Aβ. Thus, when the second LED **20** is turned off and the first LED **26** is turned on, the brightness angle distribution relating to the light emitted from the first light guide plate-light emission main surface **27**B has the same inclination as the brightness angle distribution relating to the light emitted from the second light guide plate-light emission main surface **21**B when the first LED **26** is turned off and the second LED **20** is turned on. As a result, a sense of incongruity is less likely to occur in the appearance of the light emitted from the backlight device **12** between the case in which the second LED **20** is turned off and the first LED **26** is turned on, and the case in which the first LED **26** is turned off and the second LED **20** is turned on.

(100) Next, a circuit configuration for controlling the driving of the liquid crystal panel **11** and the backlight device **12** described above will be described with reference to a block diagram illustrated in FIG. **12**. As illustrated in FIG. **12**, the liquid crystal display device **10** includes a control unit **50** that controls the driving of the liquid crystal panel **11** and the backlight device **12**. The control unit **50** includes an image signal processing circuit **51**, a panel control circuit **52**, and a backlight control circuit (light source control unit) **53**. The image signal processing circuit **51** processes an image signal supplied from an external host system, and outputs a processed image signal. The panel control circuit **52** writes, to the liquid crystal panel **11**, an image based on the processed image signal output from the image signal processing circuit **51**. When the liquid crystal display device **10** includes a gate driver and a source driver for writing the image to the liquid crystal panel **11**, the panel control circuit **52** controls the driving of the gate driver and the source driver. The backlight control circuit **53** controls the first LED **26**, the second LED **20**, and the third LED **13** to adjust the light emission amounts and the like of the first LED **26**, the second LED **20**, and the third LED **13**. In order to control the first LED **26**, the second LED **20**, and the third LED **13**, the backlight control circuit **53** can perform, for example, pulse width modulation (PWM) light adjustment and the like. When the liquid crystal display device **10** includes an LED driver that drives the first LED **26**, the second LED **20**, and the third LED **13**, the backlight control circuit **53** controls the driving of the LED driver.

(101) As illustrated in FIG. **12**, based on a display mode switching signal supplied from the external host system, the control unit **50** according to the present embodiment can switch between display in a first display mode (first mode) and display in a second display mode (a second mode). In the first display mode, the display image of the first display portion AA**1** in the display region AA is allowed to be viewed from both the driver's seat and the front passenger seat, while the display image of the second display portion AA**2** in the display region AA is allowed to be viewed from the front passenger seat but is restricted from being viewed from the driver's seat. Thus, the first display mode can be referred to as a “partial privacy mode”. In the second display mode, the display image of the first display portion AA**1** and the display image of the second display portion

AA**2** in the display region AA are both allowed to be viewed from both the driver's seat and the front passenger seat. Thus, the second display mode can be referred to as a “full screen public mode.” A traveling speed of the passenger vehicle in which the liquid crystal display device **10** is mounted can be used as a trigger for the input of the display mode switching signal. For example, the external host system can supply the display mode switching signal to the control unit **50** at each of a timing at which the traveling speed of the passenger vehicle exceeds a threshold value and a timing at which the traveling speed falls below the threshold value.
(102) Specifically, at the timing at which the traveling speed of the passenger vehicle exceeds the threshold value, the control unit **50** performs display in the first display mode, based on the display mode switching signal supplied from the external host system. When performing the display in the first display mode, the backlight control circuit **53** included in the control unit **50** performs control to turn on the first LED **26** and the third LED **13** and turn off the second LED **20**, as illustrated in FIGS. **1** and **5**. With this configuration, of the backlight device **12**, the emission angle range of the light emitted from the portions overlapping the first region A**1** and the third region A**3** is not restricted in the X-axis direction. Accordingly, the image displayed on the first display portion AA**1** that is in front of the driver's seat and overlaps the first region A**1** and the third region A**3** can be visually recognized from both the driver's seat and the front passenger seat. Of the backlight device **12**, the emission angle range of light emitted from the portions overlapping the second region A**2** and the fourth region A**4** is restricted in the X-axis direction. Thus, the image displayed on the second display portion AA**2** that is in front of the front passenger seat and overlaps the second region A**2** and the fourth region A**4** can be viewed from the front passenger seat but cannot be viewed from the driver's seat.
(103) On the other hand, at the timing at which the traveling speed of the passenger vehicle falls below the threshold value, the control unit **50** performs the display in the second display mode, based on the display mode switching signal supplied from the external host system. When performing display in the second display mode, the backlight control circuit **53** included in the control unit **50** performs control to turn on the second LED **20** and the third LED **13** and turn off the first LED **26**. With this configuration, the emission angle range of the emission light of the backlight device **12** is not restricted over substantially the entire region in the X-axis direction. Accordingly, both the image displayed on the first display portion AA**1** that is in front of the driver's seat and overlaps the first region A**1** and the third region A**3** and the image displayed on the second display portion AA**2** that is in front of the front passenger seat and overlaps the second region A**2** and the fourth region A**4** can be viewed from both the driver's seat and the front passenger seat.
(104) In both the first display mode and the second display mode, the backlight control circuit **53** included in the control unit **50** divides the plurality of third LEDs **13** into the following two groups and drives the third LEDs **13**. Specifically, as illustrated in FIGS. **1** and **3**, the plurality of third LEDs **13** arranged in the X-axis direction (first direction) are grouped into a plurality of fourth LEDs (fourth light sources) **13**α arranged facing portions of the third light guide plate **14** overlapping the first region A**1** and the third region A**3**, and a plurality of fifth LEDs (fifth light sources) **130** arranged facing portions of the third light guide plate **14** overlapping the second region A**2** and the fourth region A**4**. In the following description, when a distinction is made with respect to the third LEDs **13**, the suffix “a” is appended to the reference sign of the “fourth LEDs”, and the suffix “0” is appended to the reference sign of the “fifth LEDs”. When the third LEDs **13** are collectively referred to without distinction, the suffix is not appended to the reference sign.
(105) As illustrated in FIGS. **1**, **3**, and **12**, even when the display gray scale in the first display portion AA**1** and the display gray scale in the second display portion AA**2** are the same, the backlight control circuit **53** performs control such that a light emission amount per unit time of the fourth LED **13**α is larger than the light emission amount per unit time of the fifth LED **130**. Here, the “display gray scale in the first display portion AA**1**” has the same meaning as the light emission

amount from the portions of the backlight device **12** overlapping the first region A**1** and the third region A**3**. Similarly, here, the "display gray scale in the second display portion AA**2**" has the same meaning as the light emission amount from the portions of the backlight device **12** overlapping the second region A**2** and the fourth region A**4**. Note that, when the display gray scale in the second display portion AA**2** is lower than the display gray scale in the first display portion AA**1**, the backlight control circuit **53** may perform control such that the light emission amount per unit time of the fourth LED **13**α and the light emission amount per unit time of the fifth LED **130** are equal to each other.

(106) As illustrated in FIGS. **1** and **3**, when the light emitted from the plurality of third LEDs **13** is emitted from the third light guide plate-light emission main surface **14**B of the third light guide plate **14**, the light is transmitted through the first light guide plate **27** and the second light guide plate **21** and is emitted to the outside. Here, there is a possibility that the light emitted from the portions of the third light guide plate-light emission main surface **14**B overlapping the second region A**2** and the fourth region A**4** may be refracted by the second light reflection portion **36** when the light is incident on the fourth region A**4** of the second opposite main surface **21**C of the second light guide plate **21**. Here, when the emission light described above is incident on the second region A**2** of the first opposite main surface **27**C of the first light guide plate **27**, the light is hardly refracted because the first light reflection portion **35** is not formed in the second region A**2** and the second region A**2** is substantially flat. On the other hand, there is a possibility that the light emitted from the portions of the third light guide plate-light emission main surface **14**B overlapping the first region A**1** and the third region A**3** may be refracted by the first light reflection portion **35** when the light is incident on the second region A**2** of the first opposite main surface **27**C of the first light guide plate **27**, and may be refracted by the second light reflection portion **36** when the light is incident on the fourth region A**4** of the second opposite main surface **21**C of the second light guide plate **21**. Thus, the light emitted from the portions of the third light guide plate-light emission main surface **14**B overlapping the first region A**1** and the third region A**3** tends to be diffused more easily than the light emitted from the portions overlapping the second region A**2** and the fourth region A**4**, and, of the backlight device **12**, the amount of emission light from the portions overlapping the first region A**1** and the third region A**3** tends to be smaller than the amount of emission light from the portions overlapping the second region A**2** and the fourth region A**4**. In this regard, even when the display gray scale of the first display portion AA**1** and the gray scale of the second display portion AA**2** are the same, the backlight control circuit **53** causes the light emission amount per unit time of the fourth LED **13**α that supplies the light to the portions of the third light guide plate-light emission main surface **14**B overlapping the first region A**1** and the third region A**3** to be the same as the light emission amount per unit time of the fifth LED **130** that supplies the light to the portions of the third light guide plate-light emission main surface **14**B overlapping the second region A**2** and the fourth region A**4**. In this way, of the backlight device **12**, a difference is less likely to occur between the amount of emission light from the portions overlapping the first region A**1** and the third region A**3** and the amount of emission light from the portions overlapping the second region A**2** and the fourth region A**4**.

(107) Subsequently, in the liquid crystal display device **10** having the above-described configuration, in order to obtain knowledge about how the light distribution of the backlight device **12** changes between the display performed in the first display mode and the display performed in the second display mode, a Demonstration Experiment 1 was performed. In Demonstration Experiment 1, using the liquid crystal display device **10** described before this paragraph, the brightness of the light emitted from the backlight device **12** was measured in each of a case in which the backlight control circuit **53** turned on the first LED **26** and the third LED **13** and turned off the second LED **20** to perform display in the first display mode, and a case in which the backlight control circuit **53** turned on the second LED **20** and the third LED **13** and turned off the first LED **26** to perform display in the second display mode. A graph of the light distribution

(brightness angle distribution) in the X-axis direction was created. The measurement of the brightness was performed on each of the portions of the backlight device **12** overlapping the first region A**1** and the third region A**3** and the portions of the backlight device **12** overlapping the second region A**2** and the fourth region A**4**.
(108) Experiment results relating to the light distribution in Demonstration Experiment 1 are as illustrated in FIGS. **13** and **14**. In graphs relating to the light distribution illustrated in FIGS. **13** and **14**, the horizontal axis is an angle (in units of "°") in the X-axis direction with respect to the front direction (Z-axis direction), and the vertical axis is brightness (in units of "cd/m.sup.2"). Of positive and negative symbols assigned to the angles of the horizontal axis in FIGS. **13** and **14**, "−(negative)" refers to the left side in the X-axis direction with respect to 0° (the front direction) that is a reference when the backlight device **12** is viewed from the front, and "+(positive)" refers to the right side in the X-axis direction with respect to 0° (the front direction) that is the reference when the backlight device **12** is viewed from the front. FIG. **13** shows the light distribution when the first LED **26** and the third LED **13** are turned on and the second LED **20** is turned off (the second display mode). Further, FIG. **13** also shows the light distribution of the emission light from the portions of the backlight device **12** overlapping the first region A**1** and the third region A**3** when the second LED **20** and the third LED **13** are turned on and the first LED **26** is turned off (the first display mode). FIG. **14** shows the light distribution of the emission light from the portions of the backlight device **12** overlapping the second region A**2** and the fourth region A**4** when the second LED **20** and the third LED **13** are turned on and the first LED **26** is turned off (the first display mode).
(109) The experiment results of Demonstration Experiment 1 will be described. In FIG. **13**, the peak brightness is approximately 0°, and it can be said that the light distribution of the emission light is asymmetric in the left-right direction with a greater amount of the emission light being biased to the "−" side. Specifically, the light distribution of the emission light in FIG. **13** is biased toward the left side in the X-axis direction, that is, toward the side opposite to the second LED **20** side, and the emission angle range is approximately −80° to +20°. In FIG. **14**, the peak brightness is approximately 0°, and it can be said that the light distribution is substantially symmetrical in the left-right direction. Specifically, the light distribution shown in FIG. **14** has an emission angle range of approximately ±10°. It can be said that these results reflect the fact that the emission angle range of the light emitted from the third light guide plate **14** as a result of turning on the third LED **13** is restricted to approximately ±10° by the first louver **18**. In FIG. **14**, the emission angle range is extremely narrowly restricted, compared with FIG. **13**. In FIG. **13**, the emission angle range is relatively wide compared with FIG. **14**, and it can be said that the emission angle range is not so restricted.
(110) Viewing angle characteristics in the first display portion AA**1** and the second display portion AA**2** of the display region AA of the liquid crystal display device **10** will be described with reference to FIG. **15**. FIG. **15** illustrates viewing ranges and light blocking ranges based on the light emission angle range in each of the first display portion AA**1** and the second display portion AA**2**. In the first display portion AA**1**, the viewing range is approximately −80° to +20° in both the first display mode and the second display mode, which matches the light distribution shown in FIG. **13**. In the second display portion AA**2**, the viewing range is approximately −80° to +20° in the second display mode, which matches the light distribution shown in FIG. **13**, and is approximately −10° to +10° in the first display mode, which matches the light distribution shown in FIG. **14**. Thus, when the display is performed in the second display mode in the liquid crystal display device **10**, the image displayed on the first display portion AA**1** and the image displayed on the second display portion AA**2** can both be viewed from both the driver's seat and the front passenger seat. On the other hand, when the display is performed in the liquid crystal display device **10** in the first display mode, the image displayed on the first display portion AA**1** and the image displayed on the second display portion AA**2** can be viewed from the front passenger seat, while the image displayed on the

first display portion AA**1** can be viewed from the driver seat, but the image displayed on the second display portion AA**2** is barely visible.
(111) Subsequently, in the liquid crystal display device **10** having the above-described configuration, in order to obtain knowledge relating to how the brightness distribution of the backlight device **12** changes between the display performed in the first display mode and the display performed in the second display mode, a Demonstration Experiment 2 was performed. In Demonstration Experiment 2, using the liquid crystal display device **10** described in the paragraphs preceding Demonstration Experiment 1, the brightness of the light emitted from the backlight device **12** was measured in each of a case in which the backlight control circuit **53** turned on the first LED **26** and the third LED **13** and turned off the second LED **20** to perform the display in the first display mode, and a case in which the backlight control circuit **53** turned on the second LED **20** and the third LED **13** and turned off the first LED **26** to perform the display in the second display mode. Specifically, the brightness measurement was performed at each of predetermined distances from a left end position in the X-axis direction of the backlight device **12** to a right end position thereof via a central position, and, at each of the positions, the brightness of the light emitted from the backlight device **12** at the angle of 0° (the front direction) and the brightness of the light emitted from the backlight device **12** at an angle of −45° (a diagonally left side in the X-axis direction) were measured. Based on the measurement results, a graph was created showing, using shading, the respective brightness distributions in the X-axis direction of the brightness distribution of the light emitted from the backlight device **12** at the angle of 0° and the brightness of the light emitted from the backlight device **12** at the angle of −45°, thus creating a graph showing the brightness distribution in the X-axis direction.
(112) Experiment results of Demonstration Experiment 2 are as illustrated in FIGS. **16** to **23**. FIGS. **16**, **18**, **20**, and **22** illustrate diagrams relating to the brightness distribution. In FIGS. **16**, **18**, **20**, and **22**, the level of the brightness is represented by shading, and a legend is illustrated relating to the shading of the brightness (the higher up in the legend, the higher the brightness, and the lower down in the legend, the lower the brightness). FIGS. **17**, **19**, **21**, and **23** show graphs relating to the brightness distribution. In FIGS. **17**, **19**, **21**, and **23**, the horizontal axis is a position in the X-axis direction (in units of “mm”), and the vertical axis is the brightness (in units of “cd/m.sup.2”). The “position in the X-axis direction” on the horizontal axis in FIGS. **17**, **19**, **21**, and **23** uses the central position in the X-axis direction in the backlight device **12** as a reference position (0 mm). Of the positive and negative symbols assigned to the “position in the X-axis direction” of the horizontal axis in FIGS. **17**, **19**, **21**, and **23**, “− (negative)” refers to the left side in the X-axis direction with respect to the above-described reference position, that is, the first display portion AA**1**, and “+ (positive)” refers to the right side in the X-axis direction with respect to the above-described reference position, that is, the second display portion AA**2**. In the horizontal axes of FIGS. **17**, **19**, **21**, and **23**, the position of “−150 mm” coincides with the left end position in the X-axis direction, and the position of “+150 mm” coincides with the right end position in the X-axis direction.
(113) FIGS. **16** to **19** illustrate the experiment results when the second LED **20** and the third LED **13** are turned on and the first LED **26** is turned off (the second display mode). Of these, FIGS. **16** and **17** illustrate the experiment results when the brightness of the light emitted from the backlight device **12** at the angle of 0° is measured, and FIGS. **18** and **19** illustrate the experiment results when the brightness of the light emitted from the backlight device **12** at the angle of −45° is measured. FIGS. **20** to **23** illustrate the experiment results when the first LED **26** and the third LED **13** are turned on and the second LED **20** is turned off (the first display mode). FIGS. **20** and **21** illustrate the experiment results when the brightness of the light emitted from the backlight device **12** at the angle of 0° is measured, and FIGS. **22** and **23** illustrate the experiment results when the brightness of the light emitted from the backlight device **12** at the angle of −45° is measured.
(114) The experimental result of Demonstration Experiment 2 will be described. According to FIGS. **16** to **19**, when the display is performed in the second display mode, there is a substantially

high evenness of brightness between both the brightness distribution of the light emitted from the backlight device **12** at the angle of 0° and the brightness distribution of the light emitted from the backlight device **12** at the angle of −45°. Thus, when the display is performed in the second display mode, it can be said that both the image displayed on the first display portion AA**1** and the image displayed on the second display portion AA**2** can be viewed from the driver's seat with a sufficiently high brightness, and the image displayed on the second display portion AA**2** can be viewed from the front passenger seat with a sufficiently high brightness.

(115) According to FIGS. **20** and **21**, it can be seen that the brightness distribution of the light emitted from the backlight device **12** at the angle of 0° when the display is performed in the first display mode has a high brightness uniformity that is approximately equal to that when the display is performed in the second display mode. On the other hand, according to FIGS. **22** and **23**, it can be seen that the brightness distribution of the light emitted from the backlight device **12** at the angle of −45° is biased when the display is performed in the first display mode. Thus, when the display is performed in the first display mode, the image displayed on the first display portion AA**1** can be viewed from the driver's seat with a sufficiently high brightness, and the image displayed on the second display portion AA**2** can be viewed from the front passenger seat with a sufficiently high brightness, but the image displayed on the second display portion AA**2** is barely visible from the driver's seat side.

(116) As described above, the backlight device (illumination device) **12** according to the present embodiment is provided with the first LED (first light source) **26** and with the first light guide plate **27**. At least part of the peripheral end surface of the first light guide plate **27** is the first light incident end surface (first end surface) **27**A facing the first LED **26** and on which light is incident, one of the main surfaces of the first light guide plate **27** is the first light guide plate-light emission main surface (first main surface) **27**B, and the other of the main surfaces is the first opposite main surface (second main surface) **27**C. The backlight device **12** is provided with the second LED (second light source) **20** and with the second light guide plate **21**. At least part of the peripheral end surface of the second light guide plate **21** is the second light incident end surface (second end surface) **21**A facing the second LED **20** and on which light is incident, one of the main surfaces of the second light guide plate **21** is the second light guide plate-light emission main surface (third main surface) **21**B, and the other of the main surfaces is the second opposite main surface (fourth main surface) **21**C. The backlight device **12** is provided with the third LED (third light source) **13** and with the third light guide plate (optical member) **14** including the third light incident end surface (light incident surface) **14**A facing the third LED **13** and on which light is incident, and the third light guide plate-light emission main surface (fifth main surface) **14**B that emits the light. The backlight device **12** is provided with the first louver (first sheet) **18**. One of the main surfaces of the first louver **18** is the first louver light emission main surface (sixth main surface) **18**B, and the other of the main surfaces is the first louver light incident main surface (seventh main surface) **18**A disposed facing the third light guide plate-light emission main surface **14**B. The first light guide plate **27** and the second light guide plate **21** are overlaid such that the main surfaces thereof overlap each other, and are disposed on the opposite side from the side of the third light guide plate **14** with respect to the first louver **18**. The first louver **18** at least includes two of the light blocking portions **18**C and the light-transmitting portion **18**D. The light blocking portions **18**C block the light and are arranged with intervals therebetween in the first direction, which includes a direction from the first LED **26** toward the first light guide plate **27**. The light-transmitting portion **18**D is disposed between the two light blocking portions **18**C and transmits the light. The first light reflection portion **35**, which reflects the light and promotes the light emission from the first light guide plate-light emission main surface **27**B, is provided on the first opposite main surface **27**C. The second light reflection portion **36**, which reflects the light and promotes the light emission from the second light guide plate-light emission main surface **21**B, is provided on the second opposite main surface **21**C. When the first opposite main surface **27**C is divided into the first region A**1**, and the second

region A**2** disposed adjacent to the first region A**1** in the first direction, the first light reflection portion **35** is selectively provided in the first region A**1** in the first opposite main surface **27**C. When the second opposite main surface **21**C is divided into the third region A**3** overlapping the first region A**1**, and the fourth region A**4** overlapping the second region A**2**, the second light reflection portion **36** is provided in at least the fourth region A**4** in the second opposite main surface **21**C.

(117) The light emitted from the first LED **26** and incident on the first light incident end surface **27**A of the first light guide plate **27** propagates through the first light guide plate **27** and, as a result of being reflected by the first light reflection portion **35** provided on the first opposite main surface **27**C, is emitted from the first light guide plate-light emission main surface **27**B. Since the first light reflection portion **35** is selectively provided in the first region A**1** in the first opposite main surface **27**C, the light emitted from the first LED **26** is emitted from the portion of the first light guide plate-light emission main surface **27**B overlapping the first region A**1**, but is not emitted from the portion overlapping the second region A**2**.

(118) The light emitted from the second LED **20** and incident on the second light incident end surface **21**A of the second light guide plate **21** propagates through the second light guide plate **21** and, as a result of being reflected by the second light reflection portion **36** provided on the second opposite main surface **21**C, is emitted from the second light guide plate-light emission main surface **21**B. Since the second light reflection portion **36** is provided in at least the fourth region A**4** in the second opposite main surface **21**C, the light emitted from the second LED **20** is at least emitted from the portion of the second light guide plate-light emission main surface **21**B overlapping the fourth region A**4**.

(119) When the light emitted from the third LED **13** is incident on the third light incident end surface **14**A of the third light guide plate **14**, the light is emitted from the third light guide plate-light emission main surface **14**B, and is incident on the first louver light incident main surface **18**A of the first louver **18**. The light incident on the first louver light incident main surface **18**A of the first louver **18** is transmitted through the first light-transmitting portion **18**D disposed between the two first light blocking portions **18**C, and is emitted from the first louver light emission main surface **18**B. The emission angle of the emission light from the first louver light emission main surface **18**B is restricted by the two first light blocking portions **18**C. The light emitted from the first louver light emission main surface **18**B is transmitted through the first light guide plate **27** and the second light guide plate **21** whose main surfaces overlap each other. Since the angle range of the light emitted from the first louver light emission main surface **18**B is restricted by the first light blocking portion **18**C of the first louver **18**, the light is less likely to be emitted outside of the restricted angle range. In this way, when the third LED **13** is turned on, the light can be selectively emitted in the restricted angle range.

(120) For example, when the first LED **26** and the third LED **13** are turned on and the second LED **20** is turned off, the light emitted from the backlight device **12** includes the light emitted from the first louver light emission main surface **18**B of the first louver **18** in the restricted angle range and the light selectively emitted from the portion of the first light guide plate-light emission main surface **27**B of the first light guide plate **27** overlapping the first region A**1**. As a result, in this case, although the emission angle range of the light emitted from the portions of the backlight device **12** overlapping the first region A**1** and the third region A**3** is not particularly restricted in the first direction, the emission angle range of the light emitted from the portion of the backlight device **12** overlapping the second region A**2** and the fourth region A**4** is restricted in the first direction.

(121) Further, the second light reflection portion **36** is provided over the third region A**3** and the fourth region A**4** in the second opposite main surface **21**C. The light emitted from the second LED **20** and incident on the second light incident end surface **21**A of the second light guide plate **21** propagates through the second light guide plate **21** and, as a result of being reflected by the second light reflection portion **36** provided on the second opposite main surface **21**C, is emitted from the

second light guide plate-light emission main surface **21**B. Since the second light reflection portion **36** is provided over the third region A**3** and the fourth region A**4** in the first direction on the second opposite main surface **21**C, the light emitted from the second LED **20** is emitted over the portion overlapping the third region A**3** and the portion overlapping the fourth region A**4** in the second light guide plate-light emission main surface **21**B. For example, when the second LED **20** and the third LED **13** are turned on and the first LED **26** is turned off, the light emitted from the backlight device **12** includes the light emitted from the first louver light emission main surface **18**B of the first louver **18** in the restricted angle range and the light emitted from both the portion of the second light guide plate-light emission main surface **21**B of the second light guide plate **21** overlapping the third region A**3** and the portion overlapping the fourth region A**4**. As a result, in this case, the emission angle range of the light emitted from the backlight device **12** is not so restricted in the first direction. Here, if, for example, the second light reflection portion **36** is selectively provided in the fourth region A**4** in the second opposite main surface **21**C, it is necessary to turn on both the first LED **26** and the second LED **20** in order to obtain the light whose emission angle range is not substantially restricted in the first direction. However, in this case, there is the possibility that the dark portion may be seen between the light emitted from the portion of the first light guide plate-light emission main surface **27**B overlapping the first region A**1** and the light emitted from the portion of the second light guide plate-light emission main surface **21**B overlapping the fourth region A**4**. In this regard, since it is sufficient to turn on the second LED **20** while turning off the first LED **26** in order to obtain the light whose emission angle range is not limited in the first direction, the dark portion described above is less likely to be seen.

(122) Further, the first light reflection portion **35** is constituted by the plurality of ninth light guide plate lenses (first lenses) **30** arranged side by side in the first direction in the first opposite main surface **27**C, and the second light reflection portion **36** is constituted by the plurality of sixth light guide plate lenses (second lenses) **24** arranged side by side in the first direction in the second opposite main surface **21**C. Of the plurality of sixth light guide plate lenses **24**, the sixth light guide plate lens **24**α disposed at least in the fourth region A**4** includes the sixth light guide plate inclined surface (first inclined surface) **24**Aα with an inclination gradually upward from the side opposite to the second LED **20** toward the second LED **20** side in the first direction. In the course of propagating inside the second light guide plate **21**, the light emitted from the second LED **20** and incident on the second light incident end surface **21**A of the second light guide plate **21** is incident on the sixth light guide plate inclined surface **24**Aα of the sixth light guide plate lens **24**α provided in at least the fourth region A**4** of the second opposite main surface **21**C. The light incident on the sixth light guide plate inclined surface **24**Aα having the inclination gradually upward from the side opposite to the second LED **20** in the first direction toward the second LED **20** side in the second light guide plate **21** is reflected, and is emitted from the portion of the second light guide plate-light emission main surface **21**B overlapping at least the fourth region A**4**. The emission light from at least the portion of second light guide plate-light emission main surface **21**B overlapping the fourth region A**4** includes a greater amount of light traveling toward the opposite side to the second LED **20** side in the first direction with respect to the normal direction of the second light guide plate-light emission main surface **21**B, namely, with respect to the front direction, than light traveling toward the second LED **20** side in the first direction. Thus, when the second LED **20** is turned on, it is possible to supply the emission light of a brightness angle distribution in which the peak brightness of the light emitted from the portion of the second light guide plate-light emission main surface **21**B overlapping at least the fourth region A**4** is biased toward the side opposite to the second LED **20** side in the first direction. In this way, the brightness of the emission light in a direction inclined with respect to the front direction can be further improved.

(123) Further, of the plurality of sixth light guide plate lenses **24**, the sixth light guide plate lens **24**β disposed in the third region A**3** includes the sixth light guide plate inclined surface (second inclined surface) **24**Aβ with an inclination gradually upward from the side opposite to the second

LED **20** toward the second LED **20** side in the first direction. Thus, the sixth light guide plate inclined surface **24**Aβ has the same inclination as that of the sixth light guide plate inclined surface **24**Aα. Thus, when the second LED **20** is turned on, the brightness angle distribution of the light emitted from the second light guide plate-light emission main surface **21**B has the same inclination. Accordingly, the local dark portion is less likely to occur in the vicinity of the boundary between the portion of the second light guide plate-light emission main surface **21**B overlapping the third region A**3** and the portion overlapping the fourth region A**4**.

(124) The inclination angles θ**8** of the sixth light guide plate inclined surface **24**Aα and the sixth light guide plate inclined surface **24**Aβ with respect to the first direction are equal to each other. The evenness of the brightness angle distribution relating to the light emitted from the second light guide plate-light emission main surface **21**B when the second LED **20** is turned on is improved. Accordingly, the local dark portion is less likely to occur in the vicinity of the boundary between the portion of the second light guide plate-light emission main surface **21**B overlapping the third region A**3** and the portion of the second light guide plate-light emission main surface **21**B overlapping the fourth region A**4**.

(125) Further, the positional relationship of the first LED **26** with respect to the first light guide plate **27** in the first direction is the same as the positional relationship of the second LED **20** with respect to the second light guide plate **21** in the first direction, and each of the plurality of ninth light guide plate lenses **30** includes the ninth light guide plate inclined surface (third inclined surface) **30**A with an inclination gradually upward from the side opposite to the first LED **26** toward the first LED **26** side in the first direction. Thus, the ninth light guide plate inclined surface **30**A has the same inclination as that of the sixth light guide plate inclined surface **24**Aα. Thus, when the second LED **20** is turned off and the first LED **26** is turned on, the brightness angle distribution relating to the light emitted from the first light guide plate-light emission main surface **27**B has the same inclination as the brightness angle distribution relating to the light emitted from the second light guide plate-light emission main surface **21**B when the first LED **26** is turned off and the second LED **20** is turned on. As a result, the sense of incongruity is less likely to occur in the appearance of the light emitted from the backlight device **12** between the case in which the second LED **20** is turned off and the first LED **26** is turned on, and the case in which the first LED **26** is turned off and the second LED **20** is turned on.

(126) Further, the backlight control circuit (light source control unit) **53** is provided that controls the driving of the first LED **26**, the second LED **20**, and the third LED **13**. Based on the input of the switching signal, the backlight control circuit **53** switches between control in the first mode in which the first LED **26** and the third LED **13** are turned on and the second LED **20** is turned off, and control in the second mode in which the second LED **20** and the third LED **13** are turned on and the first LED **26** is turned off. When the control in the first mode is performed by the backlight control circuit **53**, since the first LED **26** and the third LED **13** are turned on and the second LED **20** is turned off, while the emission angle range of the light emitted from the portion of the backlight device **12** overlapping the first region A**1** and the third region A**3** is not particularly restricted in the first direction, the emission angle range of the light emitted from the portion of the backlight device **12** overlapping the second region A**2** and the fourth region A**4** is restricted in the first direction. When the control in the second mode is performed by the backlight control circuit **53**, since the second LED **20** and the third LED **13** are turned on and the first LED **26** is turned off, the emission angle range of the emission light of the backlight device **12** is not particularly restricted in the first direction.

(127) Further, the second light guide plate **21** is disposed with the first light guide plate **27** interposed between the first louver **18** and the second light guide plate **21**. If the second region A**2** of the first opposite main surface **27**C of the first light guide plate **27** is scratched or the like, there is a concern that the light propagating in the first light guide plate **27** may be emitted from a portion of the first light guide plate-light emission main surface **27**B due to the scratch or the like. Even in

this case, since the second opposite main surface **21**C of the second light guide plate **21** is disposed facing the first light guide plate-light emission main surface **27**B of the first light guide plate **27**, the light emitted from the portion of the first light guide plate-light emission main surface **27**B overlapping the second region A**2** can be caused to be less likely to be emitted from the second opposite main surface **21**C, as a result of being reflected or the like by the second light guide plate **21**. In this way, unintentional light emission can be suppressed.

(128) Further, the optical member is constituted by the third light guide plate **14** in which the third light incident end surface **14**A is constituted by at least a part of the outer peripheral end surface, and the third light incident end surface **14**A is disposed facing the third LED **13**. The light emitted from the third LED **13** is incident on the third light incident end surface **14**A of the outer peripheral end surface of the third light guide plate **14**, propagates inside the third light guide plate **14**, and is subsequently emitted from the third light guide plate-light emission main surface **14**B.

(129) The backlight control circuit **53** is provided that controls the driving of the first LED **26**, the second LED **20**, and the third LED **13**. The third light incident end surface **14**A is constituted by a portion, of the outer peripheral end surface of the third light guide plate **14**, that extends in the first direction. The plurality of third LEDs **13** are arranged side by side in the first direction, and include the fourth LED (fourth light source) **13**α arranged facing the portion of the third light guide plate **14** overlapping the first region A**1** and the third region A**3**, and the fifth LED (fifth light source) **130** arranged facing the portion of the third light guide plate **14** overlapping the second region A**2** and the fourth region A**4**. The backlight control circuit **53** causes the light emission amount per unit time of the fourth LED **13**α to be larger than the light emission amount per unit time of the fifth LED **130**. When the light emitted from the plurality of third LEDs **13** is emitted from the third light guide plate-light emission main surface **14**B of the third light guide plate **14**, the light is transmitted through the first light guide plate **27** and the second light guide plate **21** and is emitted to the outside. Here, there is a possibility that the light emitted from the portion of the third light guide plate-light emission main surface **14**B overlapping the second region A**2** and the fourth region A**4** may be refracted by the second light reflection portion **36**. In contrast to this, there is a possibility that the light emitted from the portion of the third light guide plate-light emission main surface **14**B overlapping the first region A**1** and the third region A**3** may be refracted by both the first light reflection portion **35** and the second light reflection portion **36**, and thus tends to be diffused more easily than the light emitted from the portion overlapping the second region A**2** and the fourth region A**4**. In this regard, the backlight control circuit **53** causes the light emission amount per unit time of the fourth LED **13**α that supplies the light to the portion of the third light guide plate-light emission main surface **14**B overlapping the first region A**1** and the third region A**3** to be larger than the light emission amount per unit time of the fifth LED **130** that supplies the light to the portion of the third light guide plate-light emission main surface **14**B overlapping the second region A**2** and the fourth region A**4**. Thus, unevenness in the light emission amount of the backlight device **12** is less likely to occur.

(130) Further, the liquid crystal display device (display device) **10** according to the present embodiment includes the backlight device **12** described above, and the liquid crystal panel (display panel) **11** configured to perform the display by using the light from the backlight device **12**. According to the liquid crystal display device **10** having such a configuration, the emission angle range is restricted for some of the emission light in the backlight device **12**, and this is preferable in terms of achieving diversification of the display modes.

Second Embodiment

(131) A second embodiment will be described with reference to FIG. **24** or **25**. In the second embodiment, an arrangement of a first backlight unit **112**U**1** and a second backlight unit **112**U**2** in the Z-axis direction is switched. Further, repeated description of structures, actions, and effects similar to those of the first embodiment described above will be omitted.

(132) As illustrated in FIG. **24**, the first backlight unit **112**U**1** according to the present embodiment

is disposed on the back side of a diffuser sheet **112**S. In contrast to this, the second backlight unit **112**U**2** is disposed on the back side of the first backlight unit **112**U**1** and on the front side of a third backlight unit **112**U**3**. Thus, as illustrated in FIG. **25**, a first light guide plate **127** constituting the first backlight unit **112**U**1** is disposed so that a second light guide plate **121** constituting the second backlight unit **112**U**2** is interposed between the first light guide plate **127** and a louver **118** constituting the third backlight unit **112**U**3**. According to such a configuration, when a first LED **126** is turned off and a second LED **120** is turned on, light is selectively emitted from a portion, of a second light guide plate-light emission main surface **121**B of the second light guide plate **121**, overlapping the fourth region A**4**. Since the emitted light is emitted to the outside without being transmitted through the first light guide plate **127**, refraction or the like by the first light guide plate **127** is avoided.

(133) As described above, according to the present embodiment, the first light guide plate **127** is disposed such that the second light guide plate **121** is sandwiched between first light guide plate **127** and the louver **118**. When the first LED **126** is turned off and the second LED **120** is turned on, the light is selectively emitted from the portion of the second light guide plate-light emission main surface **121**B of the second light guide plate **121** overlapping the fourth region A**4**. Since the emitted light is emitted to the outside without being transmitted through the first light guide plate **127**, refraction or the like by the first light guide plate **127** is avoided.

Third Embodiment

(134) A third embodiment will be described with reference to FIG. **26** or FIG. **27**. In the third embodiment, a case will be described in which a configuration of a third backlight unit **212**U**3** is changed from that in the above-described first embodiment. Further, repeated description of structures, actions, and effects similar to those of the first embodiment described above will be omitted.

(135) As illustrated in FIG. **26**, the third backlight unit **212**U**3** according to the present embodiment is a so-called direct-lit type. In the same manner as the first embodiment, the third backlight unit **212**U**3** includes at least a louver **218**, a plurality of third LEDs (third light sources) **38**, an LED substrate (light source substrate) **39** on which the plurality of third LEDs **38** are mounted, and an optical member **40** that imparts an optical action onto light emitted from the third LEDs **38**.

(136) As illustrated in FIGS. **26** and **27**, each of the third LEDs **38** is a so-called top emitting type LED that is mounted on a front surface of the LED substrate **39** and including a third light-emitting surface **38**A facing the side (the front side, the side of the optical member **40**) opposite to the side of the LED substrate **39**. Main surfaces of the LED substrate **39** are parallel to and overlap each of main surfaces of a liquid crystal panel **211**, each of light guide plates **221** and **227**, and the like. Of the main surfaces of the LED substrate **39**, the plurality of third LEDs **38** are mounted on the main surface facing the front side, and this is a mounting surface. The plurality of third LEDs **38** are arranged side by side in a matrix at positions at intervals from each other in the X-axis direction and the Y-axis direction, within the main surface on the front side of the LED substrate **39**.

(137) As illustrated in FIG. **26**, the optical member **40** includes four optical members layered on each other in the Z-axis direction. Main surfaces of each of the plurality of optical members **40** are parallel to and overlap the main surfaces of the liquid crystal panel **211**, the light guide plates **221** and **227**, and the like. The four optical members **40** are, in order from the back side, a diffuser plate (optical member) **40**A, a diffuser sheet **40**B, and two prism sheets **40**C and **40**D.

(138) A substrate thickness of the diffuser plate **40**A is thicker than that of the other optical members **40**B to **40**D, as illustrated in FIG. **26**. The diffuser plate **40**A has a configuration in which a large number of diffusion particles are dispersed in a base material made of a substantially transparent resin, and has a function of diffusing transmitted light. The main surface on the back side of the diffuser plate **40**A faces the third light-emitting surface **38**A of the third LED **38**, and serves as a light incident surface **40**A**1** on which the light from the third LED **38** is incident. The main surface on the front side of the diffuser plate **40**A is a light exit surface (fifth main surface)

40A**2** that emits light incident from the light incident surface **40**A**1** toward the front side. It can be said that the plurality of third side third LEDs **38** are disposed in a planar manner so as to overlap with the light incident surface **40**A**1** and the light exit surface **40**A**2** which are the main surfaces of the diffuser plate **40**A. The light exit surface **40**A**2** of the diffuser plate **40**A is arranged to face the louver **218** via the other optical members **40**B to **40**D. When the light emitted from the third light-emitting surface **38**A of the third LED **38** is incident on the light incident surface **40**A**1** of the diffuser plate **40**A, a diffusion effect is imparted to the light by the diffusion particles and the light is emitted from the light exit surface **40**A**2** toward the front side.

(139) As illustrated in FIG. **26**, the diffuser sheet **40**B has a configuration in which a large number of diffusion particles for diffusing the light are dispersed and mixed in a substantially transparent synthetic resin substrate. The two prism sheets **40**C and **40**D each have a configuration in which prisms extending in the X-axis direction or the Y-axis direction at a main surface in a substantially transparent synthetic resin substrate are arranged side by side in a large number in the direction orthogonal to that extending direction (the Y-axis direction or the X-axis direction), and the prism sheets **40**C and **40**D selectively impart a condensing action on incident light in the arrangement direction of the prisms. The two prism sheets **40**C and **40**D are arranged such that the extending directions of the prisms (arrangement directions of the prisms) are orthogonal to each other.

(140) In the present embodiment, the backlight control circuit **53** (see FIG. **12**) drives the plurality of third LEDs **38** as follows. Specifically, the backlight control circuit **53** can control the light emission amount and the turning on and off of each of the plurality of third LEDs **38** illustrated in FIGS. **26** and **27** in accordance with the display gray scale of the image displayed in the display region AA of the liquid crystal panel **211**. In this way, so-called local dimming control can be realized, and a contrast performance and the like can be improved.

(141) Furthermore, in both the first display mode and the second display mode, the backlight control circuit **53** (see FIG. **12**) divides the plurality of third LEDs **38** into the following two groups and drives them. Specifically, as illustrated in FIGS. **26** and **27**, the plurality of third LEDs **38** arranged in the matrix are grouped into a plurality of fourth LEDs (fourth light sources) **38***a* arranged overlapping the first region A**1** and the third region A**3** and a plurality of fifth LEDs (fifth light sources) **380** arranged overlapping the second region A**2** and the fourth region A**4**. In the following description, when a distinction is made with respect to the third LEDs **38**, the suffix “a” is appended to the reference sign of the “fourth LEDs”, and the suffix R is appended to the “fifth LEDs”. When the third LEDs **38** are referred to without distinction, a suffix is not appended to the reference sign.

(142) As illustrated in FIGS. **26** and **27**, the backlight control circuit (see FIG. **12**) **53** controls the light emission amount per unit time of the fourth LED **38***a* to be larger than the light emission amount per unit time of the fifth LED **380** even when the display gray scale of the first display portion AA**1** is the same as the display gray scale of the second display portion AA**2**. Note that, when the display gray scale in the second display portion AA**2** is lower than the display gray scale in the first display portion AA**1**, the backlight control circuit **53** may perform control such that the light emission amount per unit time of the fourth LED **38***a* and the light emission amount per unit time of the fifth LED **380** are the same as each other.

(143) As illustrated in FIGS. **26** and **27**, when the light emitted from the plurality of third LEDs **38** is emitted from the light exit surface **40**A**2** of the diffuser plate **40**A, the light is transmitted through the first light guide plate **227** and the second light guide plate **221** and is emitted to the outside. Here, when the light emitted from the portion of the light exit surface **40**A**2** overlapping the second region A**2** and the fourth region A**4** is incident on the fourth region A**4** of a second opposite main surface **221**C of the second light guide plate **221**, the light may be refracted by a second light reflection portion **236**. Here, when the emitted light described above is incident on the second region A**2** of a first opposite main surface **227**C of the first light guide plate **227**, the light is barely refracted because a first light reflection portion **235** is not formed in the second region A**2** and the

second region A**2** is substantially flat. On the other hand, when the light emitted from the portion of the light exit surface **40**A**2** overlapping the first region A**1** and the third region A**3** is incident on the second region A**2** of the first opposite main surface **227**C of the first light guide plate **227**, the light may be refracted by the first light reflection portion **235**, and when the light is incident on the fourth region A**4** of the second opposite main surface **221**C of the second light guide plate **221**, the light may also be refracted by the second light reflection portion **236**. For this reason, the light emitted from the portion of the light exit surface **40**A**2** overlapping the first region A**1** and the third region A**3** tends to be diffused more easily than the light emitted from the portion overlapping the second region A**2** and the fourth region A**4**, and the amount of light emitted from the portion of the backlight device **212** overlapping the first region A**1** and the third region A**3** tends to be smaller than the amount of light emitted from the portion overlapping the second region A**2** and the fourth region A**4**. In this regard, even when the display gray scale of the first display portion AA**1** is the same as the display gray scale of the second display portion AA**2**, the backlight control circuit **53** sets the light emission amount per unit time of the fourth LED **38***a*, which supplies the light to the portion of the light exit surface **40**A**2** overlapping the first region A**1** and the third region A**3**, to be larger than the light emission amount per unit time of the fifth LED **380**, which supplies the light to the portion of the light exit surface **40**A**2** overlapping the second region A**2** and the fourth region A**4**. Accordingly, in the backlight device **212**, a difference is less likely to occur between the amount of light emitted from the portion overlapping the first region A**1** and the third region A**3** and the amount of light emitted from the portion overlapping the second region A**2** and the fourth region A**4**.

(144) As described above, according to the present embodiment, the backlight control circuit **53** is provided that controls the driving of the first LED **226**, the second LED **220**, and the third LED (third light source) **38**, and the plurality of third LEDs **38** are arranged in the planar manner so as to overlap the light exit surface (fifth main surface) **40**A**2** of the diffuser plate (optical member) **40**A. The light incident surface **40**A**1** of the diffuser plate **40**A is constituted by the main surface on the opposite side to the light exit surface **40**A**2**, and is arranged so as to face the plurality of third LEDs **38**. When the plurality of third LEDs **38** are turned on by the backlight control circuit **53**, the light is incident on the light incident surface **40**A**1** on the opposite side to the light exit surface **40**A**2** of the diffuser plate **40**A, the optical action is imparted to the light by the diffuser plate **40**A, and the light is then emitted from the light exit surface **40**A**2**. It is possible to realize the so-called local dimming control by the backlight control circuit **53** controlling the light emission amount and the turning on and off of each of the plurality of third LEDs **38** arranged in the planar manner overlapping the light exit surface **40**A**2**.

(145) Further, the plurality of third LEDs **38** include the fourth LED (fourth light source) **38***a* arranged overlapping the first region A**1** and the third region A**3** and the fifth LED (fifth light source) **380** arranged overlapping the second region A**2** and the fourth region A**4**, and the backlight control circuit **53** causes the light emission amount per unit time of the fourth LED **38***a* to be larger than the light emission amount per unit time of the fifth LED **380**. When the light emitted from the plurality of third LEDs **38** is emitted from the light exit surface **40**A**2** of the diffuser plate **40**A, the light is transmitted through the first light guide plate **227** and the second light guide plate **221** and is emitted to the outside. Here, the light emitted from the portion of the light exit surface **40**A**2** overlapping the second region A**2** and the fourth region A**4** may be refracted by the second light reflection portion **236**. On the other hand, the light emitted from the portion of the light exit surface **40**A**2** overlapping the first region A**1** and the third region A**3** may be refracted by both the first light reflection portion **235** and the second light reflection portion **236**, and thus tends to be diffused more easily than the light emitted from the portion overlapping the second region A**2** and the fourth region A**4**. In this regard, since the backlight control circuit **53** causes the light emission amount per unit time of the fourth LED **38***a*, which supplies the light to the portion of the light exit surface **40**A**2** overlapping the first region A**1** and the third region A**3**, to be larger than the light

emission amount per unit time of the fifth LED **380**, which supplies the light to the portion of the light exit surface **40**A**2** overlapping the second region A**2** and the fourth region A**4**, unevenness in the light emission amount of the backlight device **212** is less likely to occur.

Fourth Embodiment

(146) A fourth embodiment will be described with reference to FIG. **28**. In the fourth embodiment, a case will be described in which a configuration of a third backlight unit **312**U**3** is changed from that in the above-described first embodiment. Further, repeated description of structures, actions, and effects similar to those of the first embodiment described above will be omitted.

(147) As illustrated in FIG. **28**, the third backlight unit **312**U**3** according to the present embodiment has a configuration obtained by rotating the third backlight unit **12**U**3** (see FIG. **2**) described in the first embodiment by 90° around an axis along the Z-axis direction. To be specific, the third backlight unit **312**U**3** is configured such that an arrangement direction of a third LED **313** and a third light guide plate **314** coincides with the X-axis direction. The third LED **313** is disposed on the left side of the third light guide plate **314** in FIG. **28**. Thus, the positional relationship between the third LED **313** and the third light guide plate **314** in the X-axis direction is the reverse of the positional relationship between a first LED **326** and a first light guide plate **327** in the X-axis direction and of the positional relationship between a second LED **320** and a second light guide plate **321** in the X-axis direction. A first light guide plate lens **332** provided in the third light guide plate **314** extends in the X-axis direction, and a plurality of the first light guide plate lenses **332** are disposed side by side in the Y-axis direction. A second light guide plate lens **333** extends in the X-axis direction, and a plurality of the second light guide plate lenses **333** are disposed side by side in the Y-axis direction. A plurality of third light guide plate lenses **334** are disposed side by side at intervals in the X-axis direction.

(148) As illustrated in FIG. **28**, a first prism sheet **316** constituting the third backlight unit **312**U**3** includes a first prism **316**B that has a substantially triangular cross-sectional shape when cut along the X-axis direction and extends linearly in the Y-axis direction. A second prism sheet **317** constituting the third backlight unit **312**U**3** includes a second prism **317**B that has a substantially triangular cross-sectional shape when cut along the X-axis direction and extends linearly in the Y-axis direction. The first prism **316**B and the second prism **317**B can selectively impart a condensing action in the X-axis direction on light from the third light guide plate **314** side. On the other hand, the arrangement direction of first light blocking portions **318**C and first light-transmitting portions **318**D constituting a louver **318** coincides with the X-axis direction. Thus, it can be said that a light condensing direction by the first prism **316**B and the second prism **317**B coincides with the direction in which the louver **318** restricts the emission angle range of light. Accordingly, an amount of light (loss light amount) absorbed or the like by the first light blocking portion **316**B in the course of the light emitted from the first prism **317**B and the second prism **318**D being transmitted through the first light-transmitting portion **318**C of the louver **318** is reduced, and it is thus possible to improve usage efficiency of light.

Fifth Embodiment

(149) A fifth embodiment will be described with reference to FIG. **29**. In the fifth embodiment, a case will be described in which an arrangement of a first backlight unit **412**U**1** and a second backlight unit **412**U**2** is changed from that of the above-described first embodiment. Further, repeated description of structures, actions, and effects similar to those of the first embodiment described above will be omitted.

(150) As illustrated in FIG. **29**, the first backlight unit **412**U**1** and the second backlight unit **412**U**2** according to the present embodiment have a configuration in which the first backlight unit **412**U**1** and the second backlight unit **412**U**2** described in the above-described first embodiment (see FIG. **1**) are rotated by 180° around axes along the Z-axis direction. A first LED **426** is disposed on the left side of a first light guide plate **427** illustrated in FIG. **29**. A second LED **420** is disposed on the left side of a second light guide plate **421** illustrated in FIG. **29**.

(151) A passenger vehicle in which a liquid crystal display device **410** according to the present embodiment is mounted has a configuration in which the driver's seat is located on the right side in FIG. **29** and the passenger seat is located on the left side in FIG. **29**, that is, is a right-hand drive vehicle. Accordingly, the display region AA of a liquid crystal panel **411** is divided into the first display portion AA**1** located on the right side in FIG. **29** and in front of the driver's seat, and the second display portion AA**2** located on the left side in FIG. **29** and in front of the front passenger seat. A first opposite main surface **427**C of the first light guide plate **427** is divided into the first region A**1** located on the right side in FIG. **29** and overlapping the first display portion AA**1** and the second region A**2** located on the left side in FIG. **29** and overlapping the second display portion AA**2**. Similarly, a second opposite main surface **421**C of the second light guide plate **421** is divided into the third region A**3** located on the right side in FIG. **29** and overlapping the first region A**1** (first display portion AA**1**) and the fourth region A**4** located on the left side in FIG. **29** and overlapping the second region A**2** (second display portion AA**2**).
(152) Then, a first light reflection portion **435** is selectively provided in the first region A**1** located on the right side in FIG. **29** in the first opposite main surface **427**C, and is selectively not formed in the second region A**2** located on the left side in FIG. **29**. A light distribution relating to the light that is emitted from the first LED **426**, is propagated through the first light guide plate **427**, and then is raised and emitted by the first light reflection portion **435**, is left-right inverted with respect to the light distribution shown in FIG. **13**. A second light reflection portion **436** is provided over the third region A**3** and the fourth region A**4** in the second opposite main surface **421**C. A light distribution relating to the light that is emitted from the second LED **420**, is propagated through the second light guide plate **421**, and then is raised and emitted by the second light reflection portion **436**, is left-right inverted with respect to the light distribution shown in FIG. **13**. With such a configuration also, actions and effects similar to those of the above-described first embodiment can be obtained.
Sixth Embodiment
(153) A sixth embodiment will be described with reference to FIG. **30** or FIG. **31**. In the sixth embodiment, a case will be described in which a configuration of a first backlight unit **512**U**1** is changed from that of the above-described first embodiment. Further, repeated description of structures, actions, and effects similar to those of the first embodiment described above will be omitted.
(154) As illustrated in FIG. **30**, the first backlight unit **512**U**1** according to the present embodiment includes a second louver (second sheet) **19**, in addition to a first LED **526** and a first light guide plate **527**. The second louver **19** is disposed on the front side of the first light guide plate **527**. In other words, the second louver **19** is interposed between the first light guide plate **527** and a second light guide plate **521** in the Z-axis direction. A main surface of the second louver **19** is parallel to each of main surfaces of the first light guide plate **527** and the like, and the second louver **19** has a sheet shape. Note that the main surface of the second louver **19** is parallel to the X-axis direction and the Y-axis direction, and the normal direction (thickness direction) of the main surface coincides with the Z-axis direction. The second louver **19** has a function of restricting the emission angle range of the light in the X-axis direction. The second louver **19** has approximately the same size as that of the first light guide plate **527** in a plan view, and is disposed to overlap at least the entire display region AA in a plan view. The second louver **19** includes a second louver light incident main surface (ninth main surface) **19**A on the back side, and a second louver light emission main surface (eighth main surface) **19**B on the front side. The second louver light incident main surface **19**A is disposed so as to be oriented toward a first light guide plate-light emission main surface (first main surface) **527**B of the first light guide plate **527**, and faces the first light guide plate-light emission main surface **527**B. The second louver light emission main surface **19**B is arranged so as to be oriented toward a second light guide plate opposite main surface **521**C of the second light guide plate **521**, and faces the second light guide plate opposite main surface **521**C.
(155) As illustrated in FIG. **31**, the second louver **19** includes second light blocking portions **19**C

that block the light and second light-transmitting portions **19**D that transmit the light. The second light blocking portion **19**C is formed, for example, of a light blocking resin material (light blocking material) that exhibits a black color and blocks light. The second light blocking portion **19**C has a layer shape extending in the Y-axis direction and the Z-axis direction, and a plurality of the second light blocking portions **19**C are disposed side by side at intervals in the X-axis direction. The second light-transmitting portion **19**D is formed of a light-transmissive resin material (light-transmissive material) that is substantially transparent and transmits the light. The second light-transmitting portion **19**D has a layer shape extending in the Y-axis direction and the Z-axis direction, and a plurality of the second light-transmitting portions **19**D are arranged side by side at intervals in the X-axis direction. The plurality of second light blocking portions **19**C and the plurality of second light-transmitting portions **19**D are repeatedly and alternately arranged side by side in the X-axis direction. Thus, the second light-transmitting portion **19**D is interposed between two of the second light blocking portions **19**C that are adjacent to each other at the interval in the X-axis direction, and the second light blocking portion **19**C is interposed between two of the second light-transmitting portions **19**D that are adjacent to each other at the interval in the X-axis direction. Light incident on the second louver light incident main surface **19**A of the second louver **19** is transmitted through the second light-transmitting portion **19**D disposed between the two second light blocking portions **19**C that are adjacent to each other in the X-axis direction, and is emitted from the second louver light emission main surface **19**B. An emission angle, in the X-axis direction, of emission light from the second louver light emission main surface **19**B is restricted by the two second light blocking portions **19**C that are adjacent to each other in the X-axis direction. Note that emission light from the second louver light emission main surface **19**B has an emission angle that is not restricted by the second louver **19** in the Y-axis direction. The emission angle range of the emission light from the second louver light emission main surface **19**B in the X-axis direction is defined by two straight lines that diagonally connect each of end portions in the Z-axis direction of the two second light blocking portions **19**C that sandwich the second light-transmitting portion **19**D. The emission angle range, in the X-axis direction, of the transmitted light of the second light-transmitting portion **19**D changes according to a ratio between a width W**2** and a height H**2** of the second light-transmitting portion **19**D. Further, the second louver **19** includes a pair of sheet carriers that sandwich and carry the plurality of second light blocking portions **19**C and the plurality of second light-transmitting portions **19**D from the front side and the back side. The sheet carrier is formed of a light-transmissive resin material that is substantially transparent and transmits light. The sheet carrier extends over the entire second louver **19**, and collectively carries the plurality of second light blocking portions **19**C and the plurality of second light-transmitting portions **19**D.
(156) As illustrated in FIG. **31**, in the second louver **19**, a ratio acquired by dividing the width W**2** of the second light-transmitting portion **19**D by the height H**2** is equal to “tan 45°”. In other words, in the second light-transmitting portion **19**D, the width W**2** and the height H**2** have the same value, and a cross-sectional shape taken along the Z-axis direction and the X-axis direction has a substantially square shape. In this way, a maximum absolute value of an angle formed by light transmitted through the second light-transmitting portion **19**D with respect to the Z-axis direction is 45°. The ratio obtained by dividing the width W**2** by the height H**2** of the second light-transmitting portion **19**D (tan 45°) is greater than a ratio obtained by dividing the width W**1** by the height H**1** of a first light-transmitting portion **518**D (tan 10°) provided in a first louver **518**. Assuming that the Z-axis direction is 0°, the emission angle range of the light transmitted through the second light-transmitting portion **19**D and emitted from the second louver light emission main surface **19**B is ±45°, which is wider than an emission angle range (±10°) of the light transmitted through the first light-transmitting portion **518**D and emitted from a first louver light emission main surface **518**B.
(157) Here, for example, in a case in which the second region A**2** of a first opposite main surface **527**C of the first light guide plate **527** is scratched or the like, there is a concern that light

propagating in the first light guide plate **527** may be emitted from a portion, of the first light guide plate-light emission main surface **527**B, overlapping the second region A**2**, as a result of being scattered by the scratch or the like. Even in this case, since the second louver **19** is disposed on the front side of the first light guide plate-light emission main surface **527**B, the emission angle range of the light emitted from the portion of the first light guide plate-light emission main surface **527**B overlapping the second region A**2** can be restricted within the range of ±45°. Thus, when the first LED **526** and the third LED **13** (see FIG. **2**) are turned on and a second LED **520** is turned off, even if the light emitted from the first LED **526** and propagating through the first light guide plate **527** is emitted from the portion of the first opposite main surface **527**C overlapping the second region A**2**, due to the scratch or the like occurring in the second region A**2** of the first light guide plate-light emission main surface **527**B, it is possible to substantially prevent the light from being emitted in angle ranges as the absolute value exceeding 450 (+45° to +90°, −45° to −90°). Accordingly, when the first LED **526** and the third LED **13** (see FIG. **2**) are turned on and the second LED **520** is turned off, a situation in which the display image of the second display portion AA**2** located in front of the front passenger seat in the display region AA can be viewed from the driver's seat is less likely to occur, and thus the display performance in the “partial privacy mode” is improved. On the other hand, when the second LED **520** and the third LED **13** (see FIG. **2**) are turned on and the first LED **526** is turned off, the light emitted from the second light guide plate **521** does not pass through the second louver **19**, and thus the emission angle range is not restricted. In contrast to this, although the light emitted from the third backlight unit **512**U**3** is transmitted through the second light-transmitting portions **19**D of the second louver **19** and emitted to the outside, since the emission angle range restricted by the second louver **19** is wider than the emission angle range restricted by the first louver **518**, the light is barely absorbed by the second light blocking portions **19**C, and a brightness reduction caused by the second louver **19** can be substantially avoided.

(158) As described above, according to the present embodiment, the second louver (second sheet) **19** having the one main surface as the second louver light emission main surface (eighth main surface) **19**B and the other main surface as the second louver light-incident main surface (ninth main surface) **19**A facing the first light guide plate-light emission main surface **527**B is provided, and the second louver **19** at least includes two of the second light blocking portions **19**C arranged at an interval in the first direction to block the light and the second light-transmitting portion **19**C disposed between the two second light blocking portions **19**D to transmit the light. When the second region A**2** of the first opposite main surface **527**C of the first light guide plate **527** is scratched or the like, there is a concern that the light propagating through the first light guide plate **527** may be emitted from the first light guide plate-light emission main surface **527**B due to the scratch or the like. Even in this case, since the second louver **19** is disposed such that the second louver light incident main surface **19**A faces the first light guide plate-light emission main surface **527**B, a part of the light emitted from the portion of the first light guide plate-light emission main surface **527**B overlapping the second region A**2** is absorbed by the second light blocking portions **19**D in the process of being transmitted through the second light-transmitting portion **19**C of the second louver **19**. That is, even if the light is scattered by the scratch or the like that has occurred in the second region A**2** of the first opposite main surface **527**C, since the emission angle range is restricted by the second louver **19**, it is possible to suppress the unintentional emission of light.

Other Embodiments

(159) The techniques disclosed herein are not limited to the embodiments described above and illustrated in the drawings, and the following embodiments, for example, are also included within the technical scope. (1) A second light guide plate **21-1** may have a configuration illustrated in FIG. **32**. In the second light guide plate **21-1** illustrated in FIG. **32**, a second light reflection portion **36-1** is selectively provided in the fourth region A**4** of a second opposite main surface **21**C-**1**, and is selectively not formed in the third region A**3**. In such a configuration, when performing the display in the second display mode, the backlight control circuit **53** (see FIG. **12**) may perform the control

so as to turn on all of a first LED **26-1**, a second LED **20-1**, and the third LED **13** (see FIG. **3**). (2) A specific configuration of the sixth light guide plate lens **24** constituting the second light reflection portion **36**, **236**, and **436** can be changed as appropriate. For example, the sixth light guide plate inclined surfaces **24**Aα provided in the sixth light guide plate lenses **24**α disposed in the fourth region A**4** may include a plurality of types having different inclination angles with respect to the X-axis direction. Similarly, the sixth light guide plate inclined surfaces **24**Aβ included in the sixth light guide plate lenses **24***p* disposed in the third region A**3** may include a plurality of types having different inclination angles with respect to the X-axis direction. (3) When the configuration of the sixth light guide plate lens **24** is changed as described in (2) above, the light distribution relating to the light emitted from the second LED **20**, **120**, **220**, **320**, **420**, and **520**, propagated through the second light guide plate **21**, **121**, **221**, **321**, **421**, and **521**, and then raised and emitted by the second light reflection portion **36**, **236**, and **436** is different from the light distribution shown in FIG. **13** (left-right asymmetric light distribution), and may be, for example, a substantially left-right symmetric light distribution or may have an emission angle range different from −80° to +20°. (4) In addition to (2) described above, the inclination angle with respect to the X-axis direction may be different between the sixth light guide plate inclined surfaces **24**Aα included in the sixth light guide plate lenses **24**α disposed in the fourth region A**4** and the sixth light guide plate inclined surface **24**Aβ included in the sixth light guide plate lenses **24***p* disposed in the third region A**3**. Accordingly, the light distribution relating to the light emitted from the second LED **20**, **120**, **220**,**320**, **420**, and **520**, propagated through the second light guide plate **21**, **121**, **221**, **321**, **421**, and **521**, then raised and emitted by the second light reflection portion **36**, **236**, and **436** may be different between the third region A**3** and the fourth region A**4**. For example, while the light distribution relating to the light emitted from the fourth region A**4** is as shown in FIG. **13**, content of the light distribution relating to the light emitted from the third region A**3** may be obtained by left-right inverting the light distribution shown in FIG. **13**. (5) A specific configuration of the ninth light guide plate lens **30** constituting the first light reflection portion **35**, **235**, **435** can be changed as appropriate. For example, the ninth light guide plate inclined surfaces **30**A provided in the ninth light guide plate lenses **30** may include a plurality of types having different inclination angles with respect to the X-axis direction. (6) When the configuration of the ninth light guide plate lens **30** is changed as described in (5) above, the light distribution of the light emitted from the first LED **26**, **126**, **226**, **326**, **426**, **526**, propagated through the first light guide plate **27**, **127**, **227**, **327**, **427**, **527**, then raised and emitted by the first light reflection portion **35**, **235**, **435**, may be different from the light distribution shown in FIG. **13** (left-right asymmetric light distribution), and may be, for example, a substantially left-right symmetric light distribution or may have an emission angle range different from −80° to +20°. (7) The first light guide plate-light emission main surface **27**B, **527**B of the first light guide plate **27**, **127**, **227**, **327**, **427**, **527** may have a flat shape in which the seventh light guide plate lenses **28**, which are the lenticular lenses, are not formed. Similarly, the second light guide plate-light emission main surface **21**B, **121**B of the second light guide plate **21**, **121**, **221**, **321**, **421**, **521** may have a flat shape in which the fourth light guide plate lenses **22**, which are the lenticular lenses, are not formed. Further, the third light guide plate-light emission main surface **14**B of the third light guide plate **14**, **314** may have a flat shape in which the first light guide plate lenses **32**, **332**, which are the lenticular lenses, are not formed. (8) For example, a third louver may be provided instead of the diffuser sheet **12**S disposed on the frontmost side in the backlight device **12**, **212**. The third louver has a configuration obtained by rotating the above-described first louver **18**, **118**, **218**, **318**, **518** by 90° around the axis along the Z-axis direction, and has a configuration in which light blocking portions and light-transmitting portions are alternately and repeatedly arranged in the Y-axis direction. Since the third louver is disposed on the frontmost side in the backlight device **12**, **212**, it is possible to restrict the emission angle range in the Y-axis direction, and thus it is possible to prevent reflection on the windshield of the passenger vehicle. (9) The area ratio between the first display portion AA**1** (the first region A**1**, the third region A**3**) and the second display portion AA2 (the second region A2, the fourth region A4) is not limited to being 1:1, and can be changed to a ratio other than 1:1, as appropriate. (10) In the configurations described in the first, second, fourth, fifth, and sixth embodiments, other types of optical sheet can be used instead of the first prism sheet **16**, **316** and the second prism sheet **17**, **317** included in the third backlight unit **12**U**3**, **312**U**3**, **512**U**3**. Further, other types of optical sheet may be added to the third backlight unit **12**U**3**, **312**U**3**, **512**U**3**. (11) The configuration described in the second embodiment can be combined with the configurations described in any of the third, fourth, and fifth embodiments, as appropriate. (12) The number, layering order, type, and the like of the optical members described in the third embodiment can be changed as appropriate. (13) Three or more display modes may be set. For example, the backlight control circuit **53** may set a third display mode in which the third LED **13**, **313** is turned on and the first LED **26**, **126**, **226**, **326**, **426**, **526** and the second LED **20**, **120**, **220**, **320**, **420**, **520** are turned off. (14) Specific numerical values such as the contact angle θc**1** of the fourth light guide plate lens **22**, the contact angle θc**2** of the seventh light guide plate lens **28**, the apex angle of the second light guide plate lens **33**, **333**, the apex angle θ**7** of the fifth light guide plate lens **23**, the apex angle θ**10** of the eighth light guide plate lens **29**, and the like can be changed as appropriate. (15) The thickness of the first light guide plate **27**, **127**, **227**, **327**, **427**, **527** may be configured to be smaller the farther the distance away from the first LED **26**, **126**, **226**, **326**, **426**, **526**, and the first opposite main surface **27**C, **227**C, **427**C, **527**C may be configured to be inclined. Similarly, the thickness of the second light guide plate **21**, **121**, **221**, **321**, **421**, and **521** may be configured to be smaller the farther the distance away from the second LED **20**, **120**, **220**, **320**, **420**, **520**, and the second opposite main surface **21**C, **221**C, **421**C, **521**C may be configured to be inclined. Further, the thickness of each of the third light guide plates **14**, **314** may be configured to be smaller the farther the distance away from the third LEDs **13**, **313**, and the third opposite main surface **14**C may be configured to be inclined. (16) Specific numerical values, such as the inclination angle and the apex angle of each of the prism inclined surfaces **16**B**1**, **16**B**2**, **17**B**1**, **17**B**2** of each of the prisms **16**B, **17**B, **316**B, **317**B provided in each of the prism sheets **16**, **17**, **316**, **317** can be changed as appropriate. A specific material used in each of the base materials **16**A and **17**A of each of the prism sheets **16**, **17**, **316**, **317** can be changed as appropriate. Similarly, a specific material used in each of the prisms **16**B, **17**B, **316**B, **317**B can also be changed as appropriate. (17) A specific cross-sectional shape of each of the prisms **16**B, **17**B, **316**B, **317**B provided in each of the prism sheets **16**, **17**, **316**, **317** can be changed as appropriate. In that case, for example, any of the prism inclined surfaces **16**B**1**, **16**B**2**, **17**B**1**, **17**B**2** in each of the prisms **16**B, **17**B, **316**B, **317**B may have a bent shape so as to have a plurality of inclination angles. (18) In the first louver **18**, **118**, **218**, **318**, **518**, a specific numerical value of the ratio (tan 0) acquired by dividing the width W**1** of the first light-transmitting portion **18**D, **318**D, **518**D by the height H**1** thereof can be changed as appropriate in addition to tan 10°, and can be, for example, tan 12.5°, tan 15°, tan 17.5°, and the like. (19) Each of the LEDs **13**, **20**, **26**, **120**, **126**, **220**, **226**, **313**, **320**, **326**, **420**, **426**, **520**, **526** may be a side emitting type or a top emitting type. Further, in addition to the LED, an organic light-emitting diode (OLED) or the like may also be used as the light source. (20) In place of the first prism sheet **16**, **316** and the second prism sheet **17**, **317**, a prism sheet provided with a prism on the main surface on the back side (light incident main surface) thereof can also be used. (21) The disclosure can also be applied to the liquid crystal display devices **10** and **410** used for applications other than in the passenger vehicle. (22) In the second louver **19** described in the sixth embodiment, a specific numerical value of the ratio (tan 0) obtained by dividing the width W**2** of the second light-transmitting portion **19**D by the height H**2** can be changed as appropriate in addition to tan 450 and the like. In that case, the ratio obtained by dividing the width W**2** of the second light-transmitting portion **19**D by the height H**2** is preferably greater than the ratio obtained by dividing the width W**1** of each of the first light-transmitting portion **18**D, **318**D, **518**D by the height H**1**, but is not limited thereto. (23) The configuration described in the sixth embodiment (the second louver **19**) can be also combined with the

configurations described in the second to fifth embodiments as appropriate.
(160) While preferred embodiments of the present invention have been described above, it is to be understood that variations and modifications will be apparent to those skilled in the art without departing from the scope and spirit of the present invention. The scope of the present invention, therefore, is to be determined solely by the following claims.

Claims

1. An illumination device comprising: a first light source; a first light guide plate, at least a part of an outer peripheral end surface of the first light guide plate being a first end surface facing the first light source and on which light is incident, one of main surfaces of the first light guide plate being a first main surface configured to emit light, and another one of the main surfaces of the first light guide plate being a second main surface; a second light source; a second light guide plate, at least a part of an outer peripheral end surface of the second light guide plate being a second end surface facing the second light source and on which light is incident, one of main surfaces of the second light guide plate being a third main surface configured to emit light, and another one of the main surfaces of the second light guide plate being a fourth main surface; a third light source; an optical member including a light incident surface facing the third light source and on which light is incident, and a fifth main surface configured to emit light; and a first sheet, one of main surfaces of the first sheet being a sixth main surface, and another one of the main surfaces of the first sheet being a seventh main surface facing the fifth main surface, wherein the main surfaces of the first light guide plate and the second light guide plate overlap each other and the first light guide plate and the second light guide plate are disposed on a side of the first sheet opposite the optical member, the first sheet includes, at least: two first light blocking portions disposed with an interval therebetween in a first direction and configured to block light, the first direction comprising a direction from the first light source toward the first light guide plate, and a first light-transmitting portion disposed between the two light blocking portions and configured to transmit light, a first light reflection portion is provided at the second main surface, the first light reflection portion reflecting light and promoting light emission from the first main surface, a second light reflection portion is provided at the fourth main surface, the second light reflection portion reflecting light and promoting light emission from the third main surface, when the second main surface is divided into two regions near a middle of the first light guide plate in the first direction, the two regions comprising a first region and a second region adjacent to the first region in the first direction, the first light reflection portion is selectively provided only in the first region in the second main surface, and when the fourth main surface is divided into two regions near a middle of the second light guide plate in the first direction, the two regions comprising a third region overlapping the first region, and a fourth region overlapping the second region, the second light reflection portion is provided at least in the fourth region in the fourth main surface.
2. The illumination device according to claim 1, wherein the second light reflection portion is provided over the third region and the fourth region in the fourth main surface.
3. The illumination device according to claim 2, wherein the first light reflection portion comprises a plurality of first lenses arranged side by side in the first direction in the second main surface, the second light reflection portion comprises a plurality of second lenses arranged side by side in the first direction in the fourth main surface, and a second lens, of the plurality of second lenses, disposed at least in the fourth region, comprises a first inclined surface with an inclination gradually upward from a side of the second light guide plate opposite the second light source toward another side of the second light guide plate near the second light source in the first direction.
4. The illumination device according to claim 3, wherein another second lens, of the plurality of second lenses, disposed in the third region, comprises a second inclined surface with an inclination

gradually upward from the side of the second light guide plate opposite the second light source toward the other side of the second light guide plate near the second light source in the first direction.

5. The illumination device according to claim 4, wherein the first inclined surface and the second inclined surface have a same inclination angle with respect to the first direction.

6. The illumination device according to claim 3, wherein a positional relationship of the first light source with respect to the first light guide plate in the first direction is the same as a positional relationship of the second light source with respect to the second light guide plate in the first direction, and each of the plurality of first lenses includes a third inclined surface with an inclination gradually upward from a side of the first light guide plate opposite the first light source toward another side of the first light guide plate near the first light source in the first direction.

7. The illumination device according to claim 2, further comprising: a light source control unit configured to control driving of the first light source, the second light source, and the third light source, wherein, based on an input of a switching signal, the light source control unit switches between a first mode and a second mode, the first light source and the third light source being turned on and the second light source being turned off in the first mode, and the second light source and the third light source being turned on and the first light source being turned off in the second mode.

8. The illumination device according to claim 2, wherein the second light guide plate is disposed, such that the first light guide plate is interposed between the second light guide plate and the first sheet.

9. The illumination device according to claim 2, wherein the first light guide plate is disposed, such that the second light guide plate is interposed between the first light guide plate and the first sheet.

10. The illumination device according to claim 1, wherein the optical member further comprises a third light guide plate, the light incident surface comprising at least a part of an outer peripheral end surface of the third light guide plate, and the third light guide plate being disposed with the light incident surface facing the third light source.

11. The illumination device according to claim 10, further comprising: a light source control unit configured to control driving of the first light source, the second light source, and the third light source, wherein the light incident surface further comprises a part of the outer peripheral end surface of the third light guide plate, the part extending in the first direction, a plurality of third light sources, including the third light source, is arranged side by side in the first direction, the plurality of third light sources includes: a fourth light source disposed facing a portion of the third light guide plate overlapping the first region and the third region, and a fifth light source disposed facing a portion of the third light guide plate overlapping the second region and the fourth region, and the light source control unit causes a light emission amount per unit time of the fourth light source to be larger than a light emission amount per unit time of the fifth light source.

12. The illumination device according to claim 1, further comprising: a light source control unit configured to control driving of the first light source, the second light source, and the third light source, wherein a plurality of third light sources, including the third light source, is disposed in a planar manner overlapping the fifth main surface, and the light incident surface of the optical member comprises a main surface on a side opposite the fifth main surface, and is disposed facing the plurality of third light sources.

13. An illumination device comprising: a first light source; a first light guide plate, at least a part of an outer peripheral end surface of the first light guide plate being a first end surface facing the first light source and on which light is incident, one of main surfaces of the first light guide plate being a first main surface configured to emit light, and another one of the main surfaces of the first light guide plate being a second main surface; a second light source; a second light guide plate, at least a part of an outer peripheral end surface of the second light guide plate being a second end surface facing the second light source and on which light is incident, one of main surfaces of the second

light guide plate being a third main surface configured to emit light, and another one of the main surfaces of the second light guide plate being a fourth main surface; a third light source; an optical member including a light incident surface facing the third light source and on which light is incident, and a fifth main surface configured to emit light; a first sheet, one of main surfaces of the first sheet being a sixth main surface and another one of the main surfaces of the first sheet being a seventh main surface facing the fifth main surface; and a light source control unit configured to control driving of the first light source, the second light source, and the third light source, wherein the main surfaces of the first light guide plate and the second light guide plate overlap each other and the first light guide plate and the second light guide plate are disposed on a side of the first sheet opposite the optical member, the first sheet includes, at least: two first light blocking portions disposed with an interval therebetween in a first direction and configured to block light, the first direction comprising a direction from the first light source toward the first light guide plate, and a first light-transmitting portion disposed between the two light blocking portions and configured to transmit light, a first light reflection portion is provided at the second main surface, the first light reflection portion reflecting light and promoting light emission from the first main surface, a second light reflection portion is provided at the fourth main surface, the second light reflection portion reflecting light and promoting light emission from the third main surface, when the second main surface is divided into a first region and a second region adjacent to the first region in the first direction, the first light reflection portion is selectively provided only in the first region in the second main surface, when the fourth main surface is divided into a third region overlapping the first region and a fourth region overlapping the second region, the second light reflection portion is provided at least in the fourth region in the fourth main surface, a plurality of third light sources, including the third light source, is disposed in a planar manner overlapping the fifth main surface, the light incident surface of the optical member comprises a main surface on a side opposite the fifth main surface, and is disposed facing the plurality of third light sources, the plurality of third light sources includes a fourth light source disposed overlapping the first region and the third region, and a fifth light source disposed overlapping the second region and the fourth region, and the light source control unit causes a light emission amount per unit time of the fourth light source to be larger than a light emission amount per unit time of the fifth light source.

14. An illumination device comprising: a first light source; a first light guide plate, at least a part of an outer peripheral end surface of the first light guide plate being a first end surface facing the first light source and on which light is incident, one of main surfaces of the first light guide plate being a first main surface configured to emit light, and another one of the main surfaces of the first light guide plate being a second main surface; a second light source; a second light guide plate, at least a part of an outer peripheral end surface of the second light guide plate being a second end surface facing the second light source and on which light is incident, one of main surfaces of the second light guide plate being a third main surface configured to emit light, and another one of the main surfaces of the second light guide plate being a fourth main surface; a third light source; an optical member including a light incident surface facing the third light source and on which light is incident, and a fifth main surface configured to emit light; a first sheet, one of main surfaces of the first sheet being a sixth main surface and another one of the main surfaces of the first sheet being a seventh main surface facing the fifth main surface; and a second sheet, one of main surfaces of the second sheet being an eighth main surface and another one of the main surfaces of the second sheet being a ninth main surface disposed facing the first main surface, wherein the main surfaces of the first light guide plate and the second light guide plate overlap each other and the first light guide plate and the second light guide plate are disposed on a side of the first sheet opposite the optical member, the first sheet includes, at least: two first light blocking portions disposed with an interval therebetween in a first direction and configured to block light, the first direction comprising a direction from the first light source toward the first light guide plate; and a first light-transmitting portion disposed between the two light blocking portions and configured to transmit light, a first

light reflection portion is provided at the second main surface, the first light reflection portion reflecting light and promoting light emission from the first main surface, a second light reflection portion is provided at the fourth main surface, the second light reflection portion reflecting light and promoting light emission from the third main surface, when the second main surface is divided into a first region and a second region adjacent to the first region in the first direction, the first light reflection portion is selectively provided only in the first region in the second main surface, when the fourth main surface is divided into a third region overlapping the first region and a fourth region overlapping the second region, the second light reflection portion is provided at least in the fourth region in the fourth main surface, the second sheet includes, at least: two second light blocking portions disposed with an interval therebetween in the first direction and configured to block light; and a second light-transmitting portion disposed between the two second light blocking portions and configured to transmit light.

15. A display device, comprising: the illumination device according to claim 1; and a display panel configured to perform display using light from the illumination device.