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(54) **BACKLIGHT ASSEMBLY OF LIQUID CRYSTAL DISPLAY**

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(57) **ABSTRACT**

A backlight assembly of a liquid crystal display is provided. The backlight assembly of a liquid crystal display include a lamp for generating light; a light guide plate disposed at a side of the lamp to guide the light; a diffusion sheet disposed on the light guide plate to scatter the light that is incident from the light guide plate, thereby making brightness distribution of light uniform; and a prism sheet including a body part into which a light diffused from the diffusion sheet is introduced and a plurality of protrusion parts arranged in a specific direction, in which each protrusion part is shaped in a scalene triangle prism form and has both base angles different from each other.

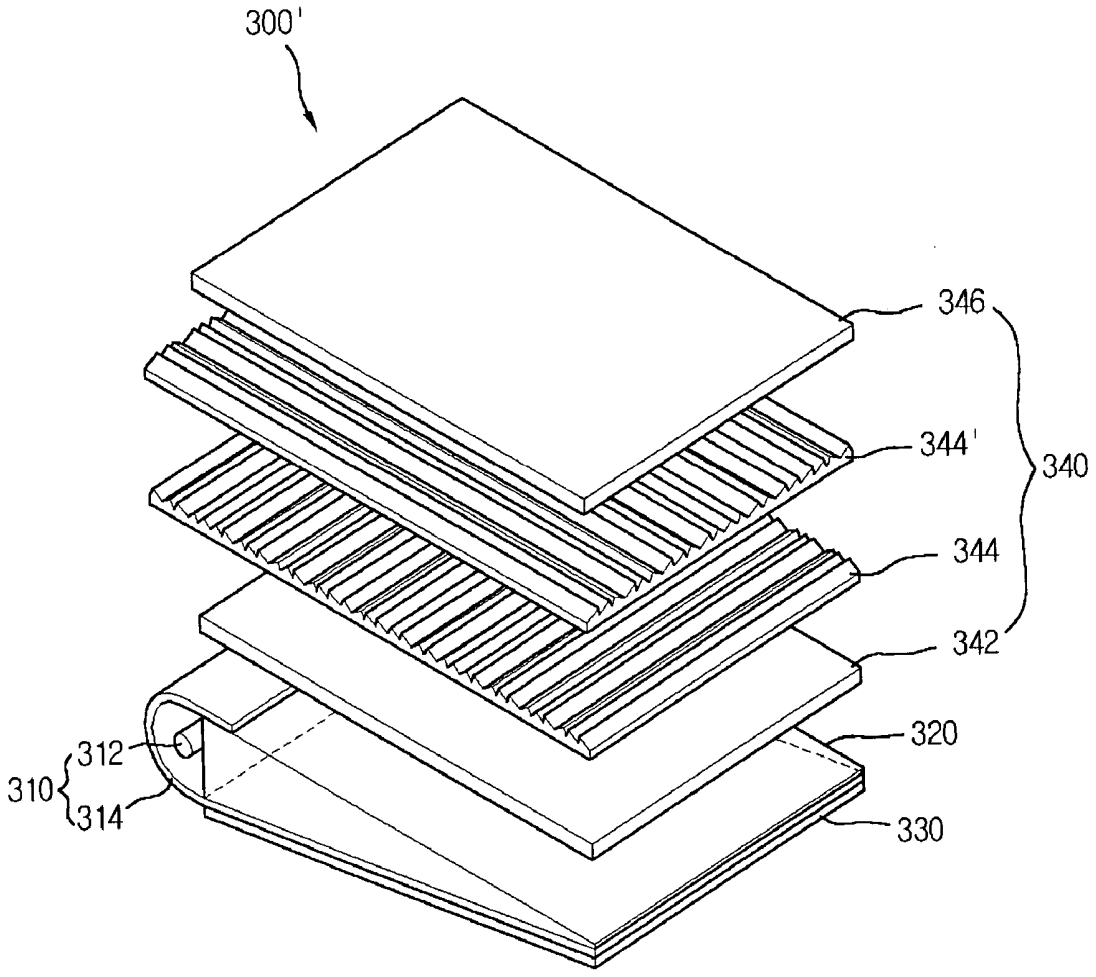


Fig.1
Related Art

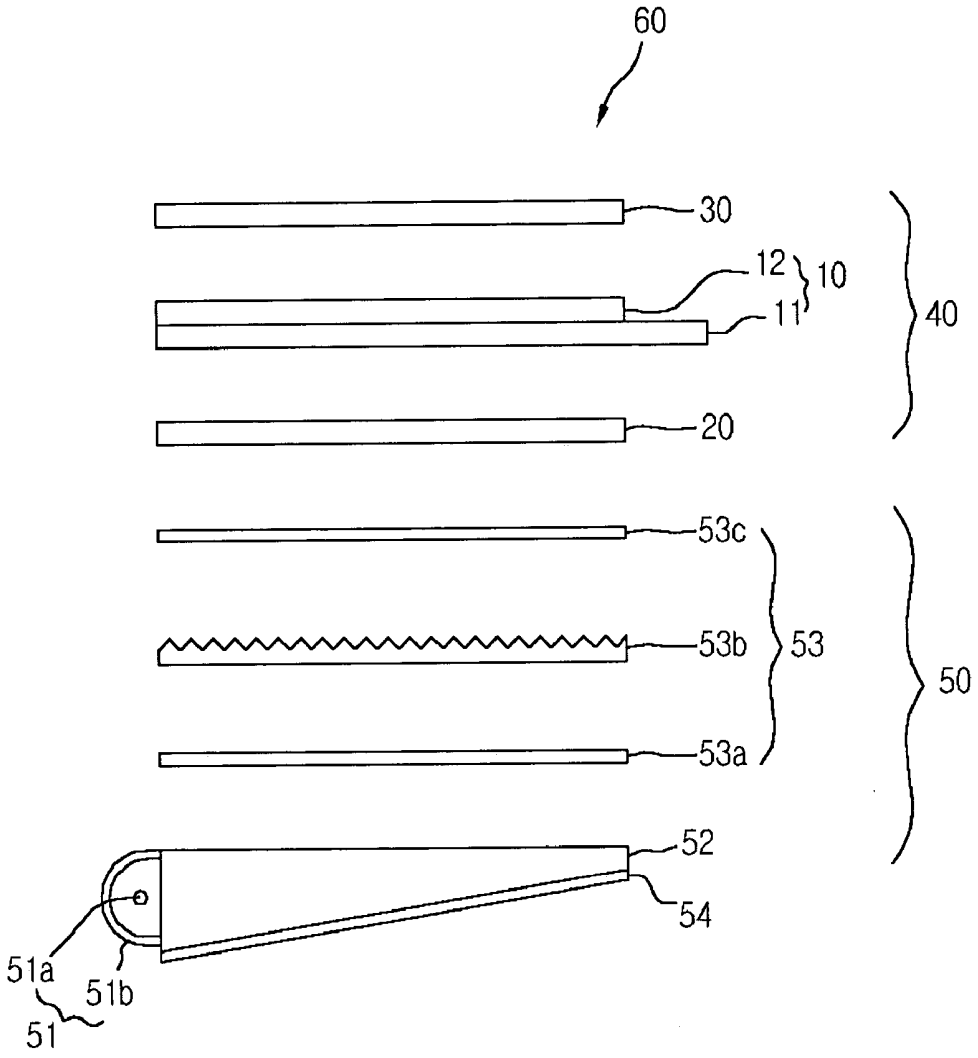


Fig.2A
Related Art

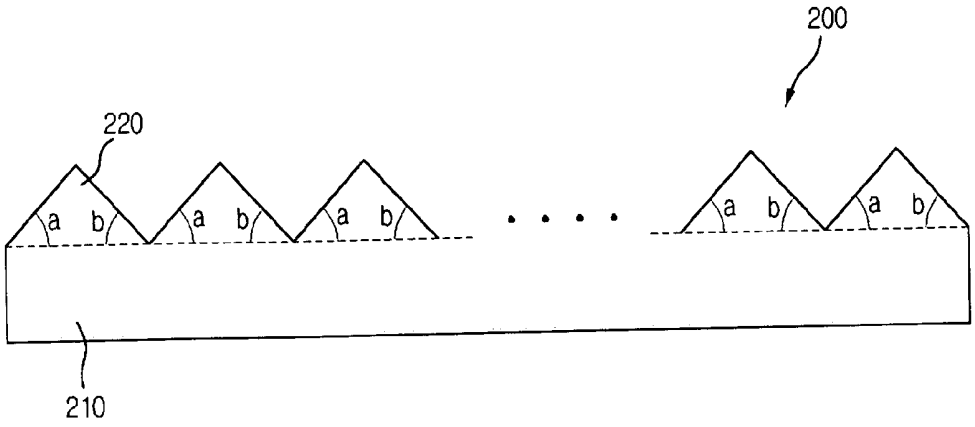


Fig.2B
Related Art

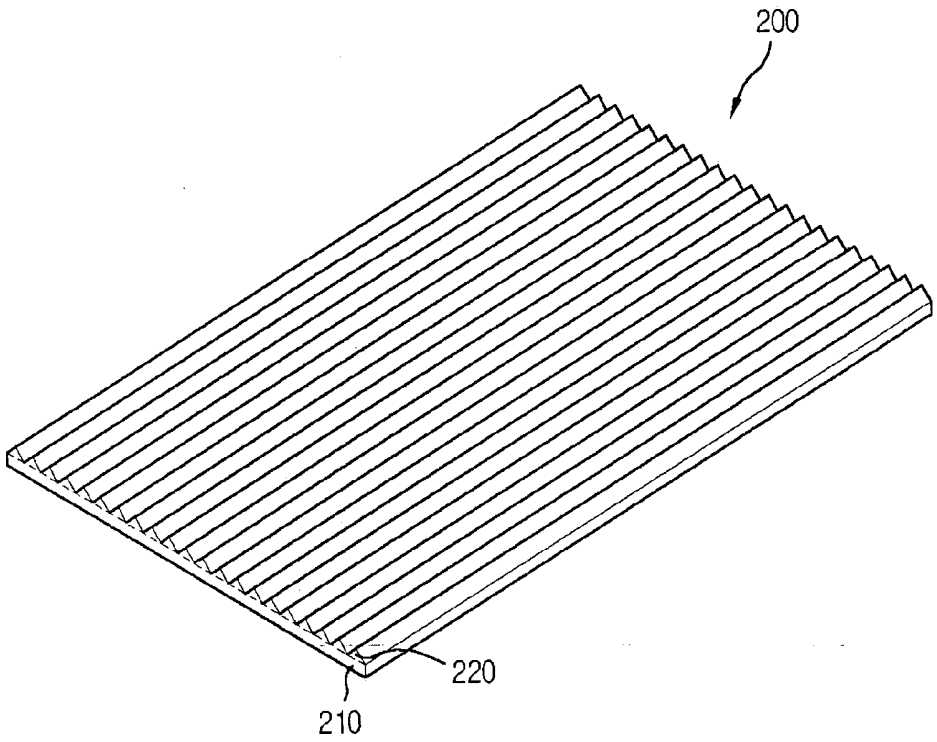


Fig.3

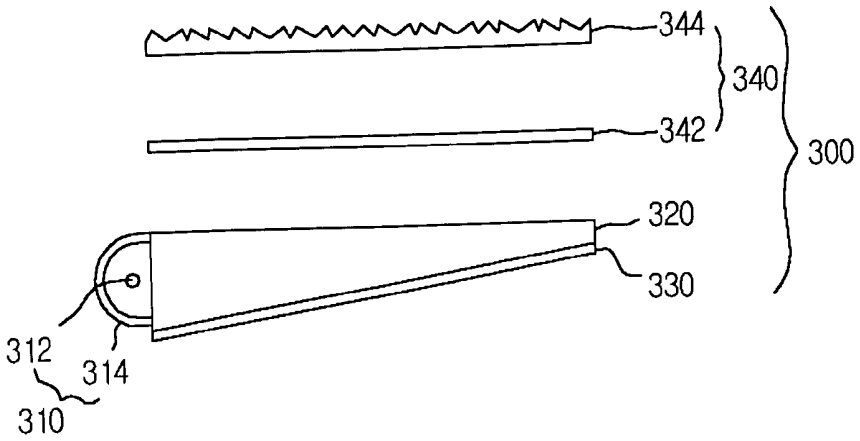

344
340
342
300
320
330
312
314
310

Fig.4

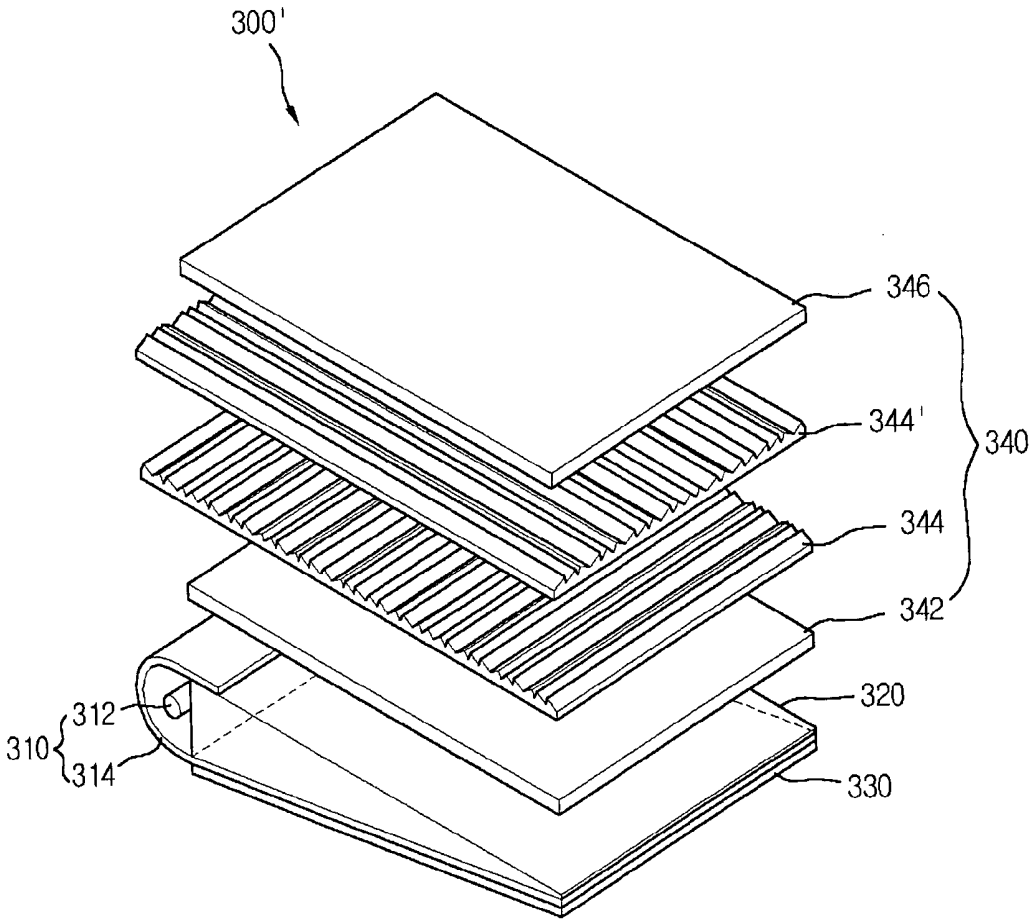

300'
346
344'
340
344
342
320
330
312
310
314

Fig.5A

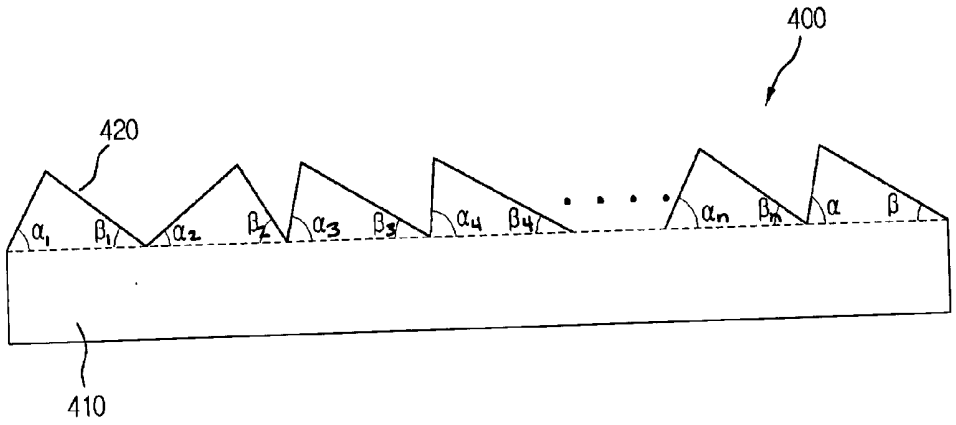

400
420
α_1
β_1
α_2
β_2
α_3
β_3
α_4
β_4
α_n
β_n
α
β
410

Fig.5B

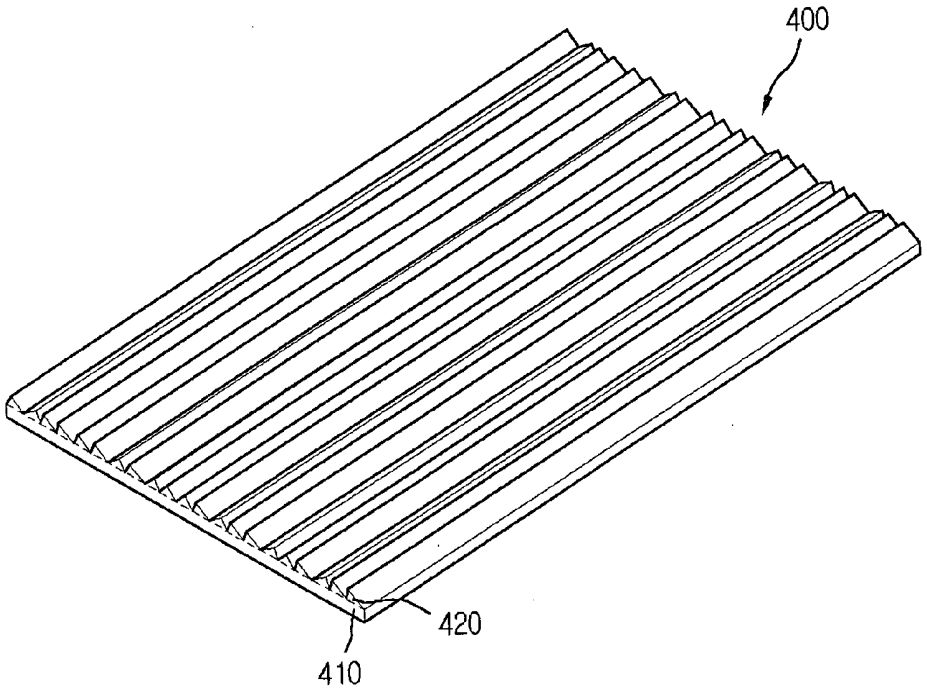
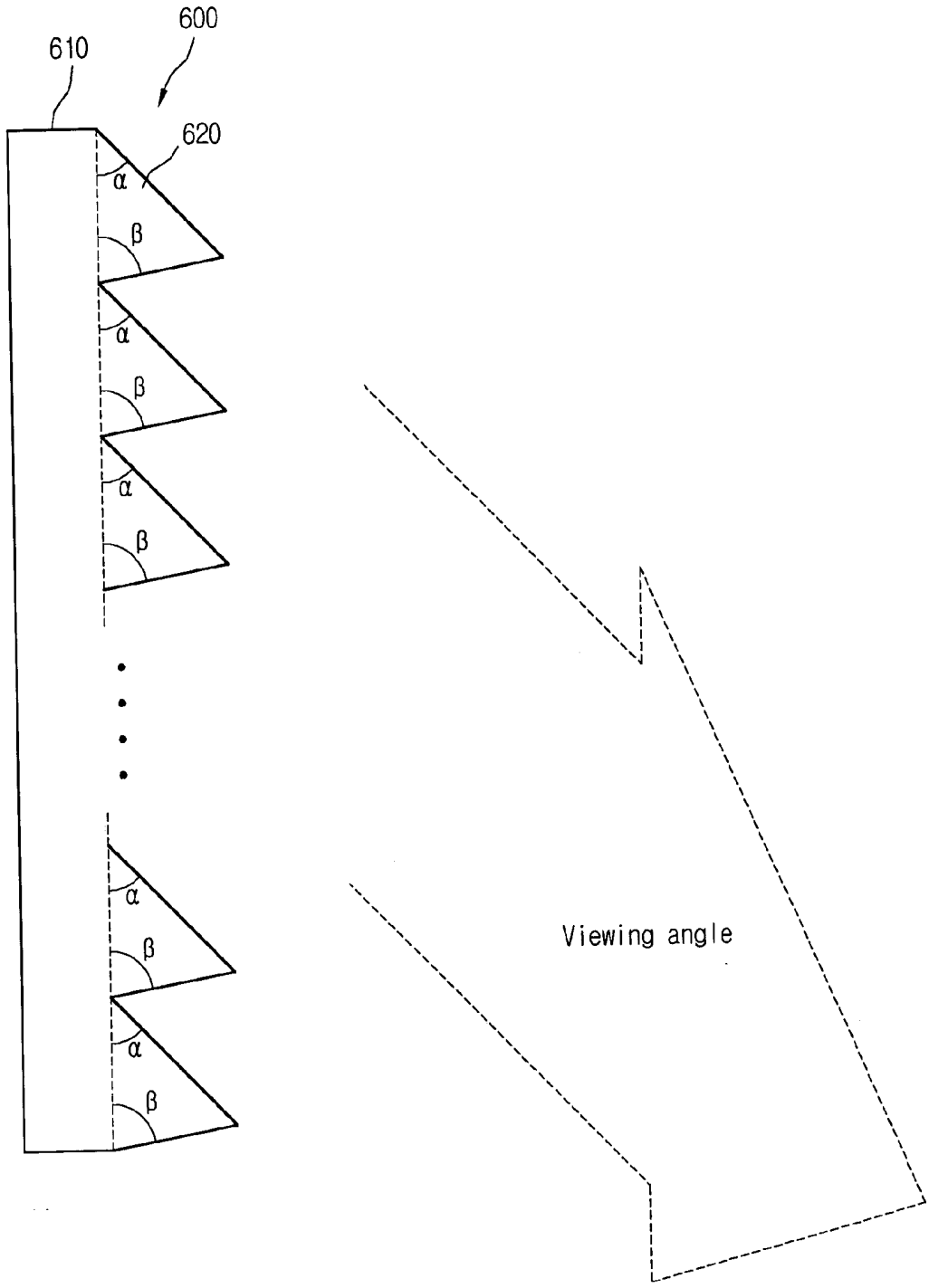

400
420
410

Fig.6



BACKLIGHT ASSEMBLY OF LIQUID CRYSTAL DISPLAY

[0001] This application claims the benefit of Korean Patent Application No. 2003-79739, filed in Korea on Nov. 12, 2003, which is hereby incorporated by reference for all purposes as if fully set forth herein.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a non-luminous flat display device, and more particularly, to an optical sheet of a backlight assembly in a liquid crystal display.

[0004] 2. Description of the Related Art

[0005] Recently, a variety of flat panel displays have been developed to reduce weight and volume acting as drawbacks of cathode ray tubes (CRTs). Such flat panel displays include a liquid crystal display (LCD), a field emission display, a plasma display panel (PDP), an electro-luminescence (EL) and the like. Research for enhancing the display quality and increasing the screen size of the flat panel displays is being actively performed.

[0006] Among such flat panel displays, LCDs have several advantages including slimness, light weight, and low power consumption. In particular, the LCD displays information using electrical and optical properties of liquid crystal molecules. The LCD itself is a non-luminous device that displays images using a light source such as a lamp. In other words, unlike the CRT, the LCD essentially needs a separate unit for irradiating light, i.e., a backlight assembly because the liquid crystal molecules injected between a thin film transistor (TFT) substrate and a color filter substrate does not emit light on their own.

[0007] In general, a backlight assembly includes a mold frame having a receiving space, a reflector mounted on the lowest surface of the receiving space for reflecting light toward liquid crystal display panel, a light guide plate disposed on the reflector for guiding light, a lamp unit disposed between the light guide plate and a sidewall of the receiving space for emitting light, optical sheets stacked on the light guide plate for diffusing and focusing light, and a top chassis disposed on the mold frame and enclosing the liquid crystal display from a predetermined portion of the edge of the liquid crystal display panel to a side portion of the mold frame.

[0008] The optical sheets include a diffusion sheet for diffusing light, a prism sheet disposed on the diffusion sheet for focusing the diffused light and transferring the focused light to the liquid crystal display panel, and a protection sheet for protecting the diffusion sheet and the prism sheet.

[0009] **FIG. 1** is a sectional view of a related art LCD.

[0010] Referring to **FIG. 1**, the related art LCD includes a backlight assembly **50** for generating light, and a display unit **40**, which receives the light from the backlight assembly **50** and displays images. The backlight assembly **50** includes a lamp unit **51** for generating light and a light guide unit for guiding the light generated by the lamp unit **51** toward a liquid crystal display panel **10**.

[0011] The display unit **40** includes the liquid crystal display panel **10**, and an upper polarizer **30** and a lower polarizer **20** respectively disposed on an upper surface and a lower surface of the liquid crystal display panel **10**. The liquid crystal display panel **10** includes a TFT substrate **11** and a color filter substrate **12** each having an electrode formed thereon.

[0012] Specifically, the lamp unit **51** includes a lamp **51***a* for generating light and a lamp reflector **51***b* enclosing the lamp **51***a*. The light generated by the lamp **51***a* is incident into a light guide plate **52** to be described later. The lamp reflector **51***b* reflects the light generated by the lamp **51***a* toward the light guide plate **52**, thereby increasing amount of incident light toward the light guide plate **52**.

[0013] The light guide unit includes a reflection plate **54**, the light guide plate **52**, and optical sheets **53**. The light guide plate **52** is disposed at one end of the lamp unit **51** to guide the light emitted from the lamp unit **51** such that the light emitted from the lamp unit **51** is incident into the LCD panel **10**.

[0014] The reflection plate **54** is disposed beneath the light guide plate **52** and reflects light leaked from the light guide plate **52** toward the light guide plate **52** again.

[0015] The plurality of optical sheets **53** are disposed on the light guide plate **52** to enhance efficiency of the light passing through the light guide plate **52**. Specifically, the optical sheets **53** include a diffusion sheet **53***a*, a prism sheet **53***b* and a protection sheet **53***c*, and are orderly stacked on the light guide plate **52**.

[0016] The diffusion sheet **53***a* scatters the light that is incident from the light guide plate **52**, thereby making the brightness distribution of the light uniform. The prism sheet **53***b* includes a plurality of prisms formed repeatedly on an upper surface thereof and focuses the light diffused by the diffusion sheet **53***a* in a direction perpendicular to a plane of the LCD panel **10**. Accordingly, the light that has passed through the prism sheet **53***b* mostly advances in a direction perpendicular to the plane of the LCD panel **10**, thereby obtaining a uniform distribution.

[0017] The protection sheet **53***c* provided on the prism sheet **53***b* functions not only to protect the upper surface of the prism sheet **53***b*, but also to diffuse light so as to make the distribution of the light that is incident from the prism sheet **53***b* uniform.

[0018] **FIGS. 2A and 2B** are a sectional view and a perspective view of the prism sheet illustrated in **FIG. 1** respectively.

[0019] Referring to **FIGS. 2A and 2B**, the related art prism sheet **200** includes a body part **210**, through which the light diffused by the light guide plate and the diffusion sheet is initially introduced, and a protrusion part **220** shaped in a isosceles triangle prism, for maintaining path of the diffused light constantly. The protrusion part **220** has a plurality of isosceles triangle prisms linearly arranged in a stripe form.

[0020] In the protrusion part **220**, both base angles of the isosceles triangle prism are 45° and the light is diffused through the protrusion part **220** by the light guide plate and the diffusion sheet, thereby causing straightness of light and enhancing the brightness.

[0021] However, in case of such a structure, it is difficult to secure the viewing angle.

[0022] In the related art backlight assembly, the prism sheet is formed of ductile material. Therefore, a protection sheet must be provided on the prism sheet in order to protect the surface of the prism sheet.

[0023] In this case, some of light that is focused by the prism sheet is diffused by the protection sheet. Also, the light that is diffused by the protection sheet is incident into the liquid crystal panel and passes through liquid crystals. Therefore, a display characteristic of the LCD is degraded.

[0024] A compensation film having discotic layer may be further provided for enhancing the display characteristic of the LCD, such as the viewing angle. Even when such a compensation film is used, gray scale inversion is not improved, so that brightness decreases if a voltage increases.

[0025] Further, because of the protection sheet and/or the compensation film, the LCD is thicker as a whole, which contravenes the recent trends of lightweight, slimness, etc.

SUMMARY OF THE INVENTION

[0026] Accordingly, the present invention is directed to a liquid crystal display that substantially obviates one or more problems due to limitations and disadvantages of the related art.

[0027] An advantage of the present invention is to provide a backlight assembly of a liquid crystal display that is capable of simplifying a construction, securing a wide viewing angle and minimizing degradation of brightness. The backlight assembly includes a prism sheet. The prism sheet includes a protrusion part shaped in a triangle prism form. Both base angles of the protrusion part are different from each other and the prism sheet is formed of thermosetting polymer or ultraviolet hardening polymer and has a hardness equal to or more than a pencil hardness of 2H.

[0028] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0029] The objectives and other advantage of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0030] To achieve these and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, there is provided a backlight assembly of a liquid crystal display, comprising: a lamp for generating light; a light guide plate disposed at a side of the lamp to guide the light; a diffusion sheet disposed on the light guide plate to enhance an efficiency of the light that is emitted from the light guide plate, and a prism sheet, wherein the prism sheet comprises: a body part into which a light diffused from the diffusion sheet is introduced; and a plurality of protrusion parts each being shaped in a scalene triangle prism form, each protrusion having both base angles different from each other, the plurality of protrusion parts being linearly arranged on the body part.

[0031] The both base angles of the protrusion part are selected to have a specific value for adjusting a viewing angle of the liquid crystal display. The both base angles of the protrusion part ranges from 10° to 44° or 46° to 89°. A difference between the both base angles of the protrusion part is below 10°.

[0032] Also, the body part and the protrusion parts are integrally formed of thermosetting polymer or ultraviolet hardening polymer. The prism sheet has a hardness equal to or more than a pencil hardness of 2H.

[0033] Two prism sheets may be provided and angles between protrusion parts of the respective prism sheets are between 0° and 90°.

[0034] According to another embodiment of the present invention, there is provided a backlight assembly of a liquid crystal display, comprising: a lamp for generating light; a light guide plate disposed at a side of the lamp to guide the light; a diffusion sheet disposed on the light guide plate to scatter the light that is incident from the light guide plate, thereby making brightness distribution of light uniform; and a prism sheet including: a body part into which a light diffused from the diffusion sheet is introduced; and a plurality of protrusion parts arranged in a specific direction, each protrusion part being shaped in a scalene triangle prism form, each protrusion part having both base angles different from each other.

[0035] The both base angles of the protrusion part are selected to have a specific value for adjusting a viewing angle of the liquid crystal display. The specific direction of the protrusion parts is one of a vertical direction and a horizontal direction. The both base angles of the protrusion part ranges from 10° to 44° or 46° to 89°. A difference between the both base angles of the protrusion part is below 10° C.

[0036] The body part and the protrusion parts are integrally formed of thermosetting polymer or ultraviolet hardening polymer. The prism sheet has a hardness equal to or more than a pencil hardness of 2H.

[0037] Two prism sheets may be provided and angles between protrusion parts of the respective prism sheets being between 0° and 90°.

[0038] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

[0040] **FIG. 1** is a sectional view showing a construction of a related art LCD;

[0041] **FIGS. 2A and 2B** are a sectional view and a perspective view of the prism sheet illustrated in **FIG. 1**, respectively;

[0042] **FIG. 3** is a sectional view illustrating a construction of a backlight assembly of an LCD according to the present invention;

[0043] **FIG. 4** is a perspective view of a backlight assembly of an LCD according to an embodiment of the present invention;

[0044] **FIGS. 5A and 5B** are a sectional view and a perspective view of the prism sheet illustrated in **FIGS. 3 and 4**, respectively; and

[0045] **FIG. 6** is a sectional view of the prism sheet according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

[0046] Reference will now be made in detail to embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

[0047] **FIG. 3** is a sectional view illustrating a construction of a backlight assembly of an LCD according to the present invention. Referring to **FIG. 3**, a backlight assembly **300** according to the present invention includes a lamp unit **310** for generating light and a light guide unit for guiding the light toward a liquid crystal panel.

[0048] Meanwhile, optical sheets **340** of the light guide unit according to the present invention are provided only with a diffusion sheet **342** and a prism sheet **344**, because a protection sheet is removed. The prism sheet **344** includes a plurality of protrusion parts shaped in a triangle prism form, in which the triangle prisms have a scalene triangle cross-section or in which the triangle formed by the cross section of a protrusion part has at least two unequal angles formed between the sides of the triangle a base section. Adjacent ones of the plurality of protrusion parts need not have the same cross section. The prism sheet **344** is formed of thermosetting polymer or ultraviolet hardening polymer and has a hardness equal to or more than pencil hardness of 2H.

[0049] In the backlight assembly **300** of the present invention, the lamp unit **310** includes a lamp **312** for generating light and a lamp reflector **314** enclosing the lamp **312**. The light that is generated from the lamp **312** is incident into the light guide plate **320**. The lamp reflector **314** reflects the light toward the light guide plate **320**, thereby increasing an amount of light that is incident into the light guide plate **320**. Such a construction is equal to that of a general lamp unit.

[0050] The light guide unit includes a reflection plate **330**, a light guide plate **320**, and an optical sheet **340**. The light guide plate **320** is disposed at one end of or adjacent to the lamp unit **310** and guides the light that is generated from the lamp unit **310**. At this point, the light guide plate **320** changes light path emitted from the lamp unit toward the liquid crystal panel.

[0051] The reflection plate **330** may be disposed beneath the light guide plate **320** to reflect light leaked from the light guide plate **320** toward the light guide plate **320** again.

[0052] Meanwhile, the optical sheet is disposed on the light guide plate **320** to enhance efficiency of light that is emitted from the light guide plate **320**. The optical sheet **340** has a stacked structure of the diffusion sheet **342** and the prism sheet **344**.

[0053] According to the present invention, since the protection sheet is removed, the construction of the backlight assembly is simplified and its fabrication is easy.

[0054] Here, the diffusion sheet **342** scatters the light that is incident from the light guide plate **320**, thereby making the brightness distribution of the light uniform.

[0055] Also, the prism sheet **344** includes a plurality of protrusion parts that are repeatedly formed on a body part in a scalene triangle prism form. The scalene triangle prism form means that base angles (α, β) of the protrusion part are different from each other. For reference, base angles α and β are illustrated in **FIG. 5A**.

[0056] In this embodiment, both base angles (α, β) of the protrusion part ranges from 10° to 44° or from 46° to 89°. A difference between both base angles of the protrusion part is below 10°. Such a structure makes it possible to solve the problem of the related art prism sheet, that is, the narrow viewing angle.

[0057] Both base angles (α, β) of the protrusion part are selected in order to adjust the viewing angle of the liquid crystal display. If the protrusion part is arranged in a specific direction, the viewing angle can be widened in the specific direction.

[0058] Also, since the prism sheet **344** is formed of thermosetting polymer or ultraviolet hardening polymer and is formed to have a hardness equal to or more than pencil hardness of 2H, an additional protection sheet is unnecessary.

[0059] **FIG. 4** is a perspective view illustrating a construction of a backlight assembly of an LCD according to an embodiment of the present invention. In **FIG. 4**, the same reference numbers as those of **FIG. 3** are used to refer to the same parts as those of **FIG. 3** and their descriptions will be omitted.

[0060] Referring to **FIG. 4**, a basic structure of a backlight assembly **300'** according to an embodiment of the present invention is the same in basic constitution as the backlight assembly **300** of **FIG. 3**. A difference is that two prism sheets **344** and **344'** are provided and an offset angle between protrusion parts of the prism sheets **344** and **344'** ranges from 0° to 90°.

[0061] This is to focus light that is diffused from the diffusion sheet **320** more effectively and enhance the brightness and viewing angle of the liquid crystal panel.

[0062] In addition, as described in **FIG. 3**, the two prism sheets **344** and **344'** include the protrusion parts that are repeatedly formed on the body part in the scalene triangle prism form. At this point, both base angles (α, β) of the protrusion part ranges from 10° to 44° or from 46° to 89°. A difference between both base angles of the protrusion part is below 10°.

[0063] In case of the backlight assembly **300'**, a protection sheet or compensation sheet **346** may be disposed on the prism sheet. Meanwhile, in case the prism sheets **344** and **344'** are formed of thermosetting polymer or ultraviolet

hardening polymer and has a hardness equal to or more than pencil hardness of 2H, the protection sheet or compensation sheet may be removed.

[0064] **FIGS. 5A and 5B** are a sectional view and a perspective view of the prism sheet shown in **FIGS. 3 and 4**, respectively. Referring to **FIGS. 5A and 5B**, the prism sheet **400** according to the present invention includes a body part **410** and a plurality of protrusion parts **420**. The light that is diffused by the light guide plate and the diffusion sheet is initially introduced into the body part **410**. The protrusion parts **420** are substantially triangular having a base portion along the body part **410** and having base angles (α, β) different from each other. The protrusion parts **420** are linearly arranged on the body part **410** in a stripe form. In other words, the protrusion parts **420** are formed in parallel with each other, extending from one end of the body part **410** to the other end.

[0065] The protrusion part **420** can be arranged in a specific direction, for example, in a vertical or horizontal direction. If patterns of the protrusion parts are formed in the specific direction, the viewing angle can be widened in the vertical or horizontal direction according to the size of both base angles of the patterns.

[0066] At this point, as described above, both base angles (α, β) of the protrusion part ranges from 10° to 44° or from 46° to 89°. A difference between both base angles of the protrusion part is below 10°. This is to minimize degradation in efficiency of light source, which is introduced from the backlight, and to obtain the wide viewing angle.

[0067] Both base angles (α, β) of the protrusion part are selected in order to adjust the viewing angle of the liquid crystal display. If the protrusion part is arranged in a specific direction, the viewing angle can be widened in the specific direction, which will be described later with reference to **FIG. 6**.

[0068] In addition, it is preferable that the protrusion parts **420** are formed integrally with the body part **410**. In other words, the prism sheet **400** is processed to have the protrusion parts **420** on one surface of a flat film.

[0069] The prism sheet **400** is formed of thermosetting polymer or ultraviolet hardening polymer and is formed to have hardness equal to or more than pencil hardness of 2H. In this manner, the protection sheet provided at the related art optical sheet can be removed.

[0070] **FIG. 6** is a sectional view of the prism sheet according to an embodiment of the present invention. In **FIG. 6**, only the prism sheet of the liquid crystal display is separately shown for explanation of the viewing angle.

[0071] If the liquid crystal display is used in an advertising board, the advertising board is mostly installed above a human's view. In this case, if both base angles (α, β) of the protrusion part are adjusted properly so that a plurality of protrusion parts **620** formed on the body part **610** of the prism sheet **600** can be arranged downward, the downward viewing angle of the liquid crystal display is enhanced. Therefore, persons who view the advertising board can easily obtain the viewing angle.

[0072] As illustrated in **FIG. 6**, the viewing angle of a specific direction can be secured by adjusting both base angles of each protrusion part in the prism sheet.

[0073] For example, when the backlight assembly of the present invention is used as a billboard, it is most preferable that the viewing angle is kept at a range of 30° to 45° in a downward direction centering on a horizontal plane. For this purpose, it is preferable that one (α) of both base angles forming the protrusion parts **620** of the prism sheet is kept at a range of 46° to 60°.

[0074] At this point, the other base angle (β) has a size corresponding to a range that an absolute difference between both base angles, namely, $|\alpha-\beta|$, is less than 10°.

[0075] In other words, when the base angles α and β of each of the plurality of protrusion parts **620** of the prism sheet **620** are formed at predetermined angles, a viewing angle ranging from 30° to 45° is maintained so that most efficient viewing angles for viewers can be secured.

[0076] According to the backlight assembly of the present invention, the construction of the backlight assembly is simplified and its fabrication is easy because the protection sheet among the optical sheets is removed.

[0077] Further, degradation in efficiency of the light source can be minimized and the wide viewing angle can be obtained by forming the protrusion parts of the prism sheet to have both base angles different from each other. Furthermore, the viewing angle can be widened in the vertical or horizontal direction by forming the patterns of the protrusion parts in a specific direction.

[0078] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

What is claimed is:

1. A backlight assembly of a liquid crystal display, the backlight assembly comprising:

a lamp for generating light;

a light guide plate disposed at a side of the lamp to guide the light;

a diffusion sheet disposed on the light guide plate to enhance an efficiency of the light that is emitted from the light guide plate; and

a prism sheet, wherein the prism sheet comprises:

a body part into which a light diffused from the diffusion sheet is introduced; and

a plurality of protrusion parts each being shaped in a scalene triangle prism form, each protrusion having both base angles different from each other, the plurality of protrusion parts being linearly arranged on the body part.

2. The backlight assembly according to claim 1, wherein the both base angles of the protrusion part are selected to have a specific value for adjusting a viewing angle of the liquid crystal display.

3. The backlight assembly according to claim 2, the both base angles of the protrusion part are selected such that one base angle is kept at a range of 46° to 60° and the other base angle ranges within a size where an absolute difference between the both base angles is less than 10°.

4. The backlight assembly according to claim 1, wherein the both base angles of the protrusion part ranges from 10° to 44° or 46° to 89°.

5. The backlight assembly according to claim 1, wherein a difference between the both base angles of the protrusion part is below 10°.

6. The backlight assembly according to claim 1, wherein the body part and the protrusion parts are integrally formed of thermosetting polymer or ultraviolet hardening polymer.

7. The backlight assembly according to claim 1, wherein the prism sheet has a hardness equal to or more than a pencil hardness of 2H.

8. The backlight assembly according to claim 1, wherein two prism sheets are provided, angles between protrusion parts of the respective prism sheets being between 0° and 90°.

9. A backlight assembly of a liquid crystal display, comprising:

a lamp for generating light;

a light guide plate disposed at a side of the lamp to guide the light;

a diffusion sheet disposed on the light guide plate to scatter the light that is incident from the light guide plate, thereby making brightness distribution of light uniform; and

a prism sheet including:

a body part into which a light diffused from the diffusion sheet is introduced; and

a plurality of protrusion parts arranged in a specific direction, each protrusion part being shaped in a scalene triangle prism form, each protrusion part having both base angles different from each other.

10. The backlight assembly according to claim 9, wherein the both base angles of the protrusion part are selected to have a specific value for adjusting a viewing angle of the liquid crystal display.

11. The backlight assembly according to claim 10, the both base angles of the protrusion part are selected such that one base angle is kept at a range of 46° to 60° and the other base angle ranges within a size where an absolute difference between the both base angles is less than 10°.

12. The backlight assembly according to claim 9, wherein the specific direction of the protrusion parts is one of a vertical direction and a horizontal direction.

13. The backlight assembly according to claim 9, wherein the both base angles of the protrusion part ranges from 10° to 44° or 46° to 89°.

14. The backlight assembly according to claim 9, wherein a difference between the both base angles of the protrusion part is below 10° C.

15. The backlight assembly according to claim 9, wherein he body part and the protrusion parts are integrally formed of thermosetting polymer or ultraviolet hardening polymer.

16. The backlight assembly according to claim 9, wherein the prism sheet has a hardness equal to or more than a pencil hardness of 2H.

17. The backlight assembly according to claim 9, wherein two prism sheets are provided, angles between protrusion parts of the respective prism sheets being between 0° and 90°.

18. A backlight assembly of a liquid crystal display, the backlight assembly comprising:

a lamp for generating light;

a light guide plate disposed adjacent the lamp to guide the light;

a diffusion sheet disposed on the light guide plate, and a prism sheet, wherein the prism sheet comprises:

a body part into which a light diffused from the diffusion sheet is introduced; and

a plurality of protrusion parts substantially linearly arranged on the body part, each being substantially triangular and having respective base angles between the body part and a side of the respective protrusion part different from each other.

19. The backlight assembly according to claim 18, wherein the both base angles of the protrusion part are selected to have a specific value for adjusting a viewing angle of the liquid crystal display.

20. The backlight assembly according to claim 19, the base angles of the protrusion parts are selected such that one base angle is kept at a range of 46° to 60° and the other base angle ranges within a size where an absolute difference between the both base angles is less than 10°.

21. The backlight assembly according to claim 18, wherein the base angles of the protrusion part range from 10° to 44° or 46° to 89°.

22. The backlight assembly according to claim 18, wherein a difference between the base angles of the protrusion part is below 10°.

23. The backlight assembly according to claim 18, wherein the body part and the protrusion parts are integrally formed of thermosetting polymer or ultraviolet hardening polymer.

24. The backlight assembly according to claim 18, wherein the prism sheet has a hardness equal to or more than a pencil hardness of 2H.

25. The backlight assembly according to claim 18, wherein two prism sheets are provided, angles between protrusion parts of the respective prism sheets being between 0° and 90°.

26. The backlight assembly of claim 18, wherein the plurality of protrusion parts include a first protrusion part with base angels α, and β_1, where $\alpha_1 \neq \beta_1$, and a second protrusion part with base angels α_2, and β_2, where $\alpha_2 \neq \beta_2$ and wherein $\alpha_1 \neq \alpha_2$ and $\beta_1 \approx \beta_2$.

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专利名称(译)	液晶显示器的背光组件		
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摘要(译)

提供一种液晶显示器的背光组件。液晶显示器的背光组件包括用于产生光的灯;导光板，设置在灯的一侧以引导光;扩散片设置在导光板上，以散射从导光板入射的光，从而使光的亮度分布均匀;棱镜片包括：主体部分，其中引入从漫射片漫射的光;以及多个突起部分，沿特定方向排列，其中每个突起部分成形为斜角三角形棱柱形状，并且具有不同的底角彼此。