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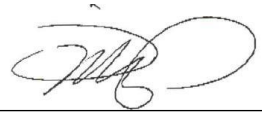
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Executed this 13th day of June 2026 in Contra Costa County, State of California.

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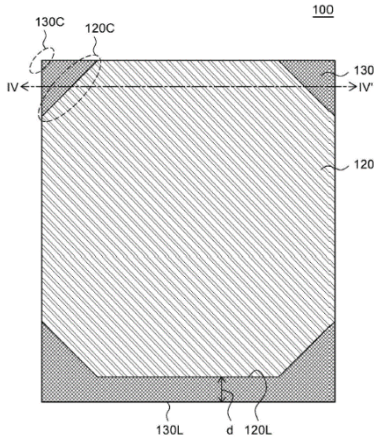
Total number of claims: 28 claims

(54) Title of the Invention: **POLARIZER AND ORGANIC LIGHT-EMITTING DISPLAY DEVICE EQUIPPED THEREWITH**

## *(57) Abstract*

The present invention relates to a polarizer and an organic light-emitting display device equipped therewith. The polarizer according to an embodiment of the present invention comprises a polarizing layer, a first adhesive layer disposed on the upper surface of the polarizing layer, and a second adhesive layer disposed on the lower surface of the polarizing layer, wherein the edges of the first adhesive layer are disposed inward of the edges of the polarizing layer. Consequently, securing a certain clearance between the plurality of edges of the first adhesive layer and the cover glass can prevent damage resulting from interference between the first adhesive layer and the cover glass.

***REPRESENTATIVE DRAWING*** - FIG. 3



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## *SPECIFICATION*

## *WHAT IS CLAIMED IS:*

**Claim 1**

A polarizer comprising: a polarizing layer; a first adhesive layer disposed on the upper surface of the polarizing layer; and a second adhesive layer disposed on the lower surface of the polarizing layer, wherein the edges of the first adhesive layer are disposed inward of the edges of the polarizing layer

**Claim 2**

The polarizer of claim 1, wherein the corners of the first adhesive layer are diagonal to each side of the first adhesive layer.

**Claim 3**

The polarizer of claim 1, wherein the corners of the first adhesive layer are rounded.

**Claim 4**

The polarizer of claim 1, wherein the corners of the polarizing layer are closer to the center of the polarizer than the corners of the first adhesive layer.

**Claim 5**

The polarizer of claim 4, wherein it further comprises a plurality of step compensation portions disposed on the same planar surface as the first adhesive layer on the polarizing layer, and disposed farther from the center of the polarizer than the plurality of corners of the first adhesive layer.

**Claim 6**

The polarizer of claim 5, wherein the plurality of step compensation portions are spaced apart from the first adhesive layer.

**Claim 7**

The polarizer of claim 5, wherein the vertical compressive modulus of the plurality of step compensation portions is 1/10 to 10 times the vertical compressive modulus of the first adhesive layer.

**Claim 8**

The polarizer of claim 5, wherein the plurality of step compensation portions are composed of one of polyurethane, polyolefin, acrylic, and polypropylene.

**Claim 9**

The polarizer of claim 1, wherein the area of the polarizing layer is larger than the area of the first adhesive layer.

**Claim 10**

The polarizer of claim 1, wherein one of the plurality of edges of the polarizing layer is disposed outward of a corresponding one of the plurality of edges of the first adhesive layer.

**Claim 11**

The polarizer of claim 10, wherein the remaining side(s) of the polarizing layer overlap with the corresponding side(s) of the first adhesive layer.

**Claim 12**

The polarizer of claim 1, further comprising a first protective film disposed on the upper surface of the first adhesive layer; and a second protective film disposed on the lower surface of the second adhesive layer.

**Claim 13**

The polarizer of claim 12, wherein the edges of the first protective film are in contact with the polarizing layer.

**Claim 14**

The polarizer of claim 12, wherein the plurality of sides of the first protective film, the polarizing layer, and the second protective film are aligned with one another.

**Claim 15**

A mother glass polarizer comprising: a mother glass polarizing layer composed of a plurality of cells; a first mother glass adhesive layer disposed on the upper surface of the mother glass polarizing layer and comprising a plurality of first holes and a plurality of second holes; and a second mother glass adhesive layer disposed on the lower surface of the mother glass polarizing layer, wherein the plurality of first holes and the plurality of second holes are alternately disposed in the column direction, wherein the plurality of first holes exposes the edges of cells among the plurality of cells whose vertices are in contact with each other, and the plurality of second holes exposes the boundaries of two adjacent columns among the plurality of cells.

**Claim 16**

The mother glass polarizer of claim 15, wherein each of the plurality of second holes comprises a first portion that exposes the boundary between two adjacent columns and a plurality of second portions that extend in the row direction from the first portion and expose a portion of the boundary between two adjacent rows among the plurality of cells.

**Claim 17**

The mother glass polarizer of claim 15, wherein each of the plurality of first holes has a polygonal shape with sides that are straight or curved.

**Claim 18**

The mother glass polarizer of claim 17, wherein it further comprises a first mother glass protective film disposed on the upper surface of the first mother glass adhesive layer; and a second mother glass protective film disposed on the lower surface of the second mother glass adhesive layer.

**Claim 19**

The mother glass polarizer of claim 18, wherein it further comprises a plurality of step compensation portions disposed in the plurality of first holes and the plurality of second holes; and a plurality of auxiliary adhesive layers disposed between the plurality of step compensation portions and the first mother glass protective film.

**Claim 20**

The mother glass polarizer of claim 19, wherein the vertical compressive modulus of the plurality of step compensation portions is between 1/10 and 10 times the vertical compressive modulus of the first mother glass adhesive layer, and the vertical compressive modulus of the plurality of auxiliary adhesive layers is the same as the vertical compressive modulus of the first mother glass adhesive layer.

**Claim 21**

The mother glass polarizer of claim 19, wherein the sum of the thicknesses of the plurality of step compensation portions and the plurality of auxiliary adhesive layers is equal to the thickness of the first mother glass adhesive layer.

**Claim 22**

The mother glass polarizer of claim 15, wherein the number of the plurality of first holes is greater than the number of the plurality of second holes.

**Claim 23**

The mother glass polarizer of claim 15, wherein the mother glass polarizing layer includes a dummy portion surrounding both sides of the plurality of cells.

**Claim 24**

An organic light-emitting display device comprising: an organic light-emitting display panel; a polarizer comprising a second adhesive layer disposed on the organic light-emitting display panel, a polarizing layer on the second adhesive layer, and a first adhesive layer on the polarizing layer; and a cover glass comprising a planar portion located on the first adhesive layer and a curved portion extending from the planar portion, wherein the first adhesive layer is patterned in areas corresponding to a plurality of corners of the polarizing layer such that the first adhesive layer is spaced apart from a plurality of corners of the curved portion.

**Claim 25**

The organic light-emitting display device of claim 24, wherein the plurality of corners of the curved portion are rounded in shape on a planar surface.

**Claim 26**

The organic light-emitting display device of claim 24, wherein the spacing between the first adhesive layer is greater than the spacing between the edges of the polarizing layer and the curved portion.

**Claim 27**

The organic light-emitting display device of claim 24, wherein at least one of the sides of the plurality of sides of the first adhesive layer aligns with the upper surface of the polarizing layer.

**Claim 28**

The organic light-emitting display device of claim 24, wherein it further comprises a touch film disposed between the first adhesive layer and the planar surface portion; and a third adhesive layer disposed between the touch film and the planar surface portion.

## *DESCRIPTION OF THE INVENTION*

### *FIELD OF TECHNOLOGY*

[0001] The present invention relates to a polarizer and an organic light-emitting display device equipped therewith; more specifically, it relates to a polarizer and an organic light-emitting display device equipped therewith, in which the structure of the polarizer is improved to simplify the manufacturing process and reduce damage to the polarizer and the organic light-emitting display panel.

### *BACKGROUND TECHNOLOGY*

[0002] Recently, with the advent of the full-fledged information age, the display field—which visually represents electrical information signals—has developed rapidly. In response, various display devices with better performance, in terms of thinness, light weight, and low power consumption, are being developed.

[0003] Display devices include liquid crystal displays (LCD), organic light-emitting displays (OLED), electrophoretic displays (EPD, Electric Paper Display), plasma display panels (PDP), field emission displays (FED), electroluminescent displays (ELD), electro-wetting displays (EWD), and the like.

[0004] One such display device, the organic light-emitting display (OLED), is a self-emissive device. Since it does not require a separate light source, unlike non-emissive devices such as liquid crystal displays (LCDs), it can be made lightweight and thin. Furthermore, compared to liquid crystal displays, it offers superior viewing angles and contrast ratios, is more energy-efficient, can be driven by low-voltage direct current, has a fast response time, is resistant to external impacts due to its solid internal components, and has an advantage of wide operating temperature range as well.

[0005] Meanwhile, an organic light-emitting display device incorporates an organic light-emitting display panel so that the panel does not come into direct contact with the outside environment. As organic light-emitting display devices become lighter and thinner, technologies are being employed to minimize the bezel in order to provide users with a wider display area. Furthermore, to minimize the bezel and add design elements, technologies are being employed to form the edge of the cover glass into a rounded shape and to create a curved surface along the outer perimeter of the cover glass. However, depending on the shape of the cover glass, the required spacing between the cover glass and the polarizer placed on the organic light-emitting display panel may not be secured, resulting in cases where part of the polarizer cracks, causing the organic light-emitting display device to malfunction.

## *SUMMARY OF THE INVENTION*

### *PROBLEM TO BE SOLVED*

[0006] The inventors of the present invention recognized that, as described above, sufficient spacing must be secured between the cover glass, the organic light-emitting display panel, and the polarizer, depending on the shape of the cover glass. If such clearance is not secured, impacts applied to the organic light-emitting display device cause the organic light-emitting display panel and the polarizer—particularly the adhesive layer disposed on the polarizing layer of the polarizer—to vibrate, resulting in interference with the cover glass. In this case, the plurality of edges of the adhesive layer primarily interfere with the cover glass, causing cracks to form, which can lead to malfunction in the organic light-emitting display device. Accordingly, the inventors of the present invention recognized that sufficient clearance must be maintained between the cover glass and the

plurality of edges of the adhesive layer of the polarizer.

[0007] Accordingly, the inventors of the present invention recognized that by fabricating the adhesive layer disposed on the polarizing layer of the polarizer to be smaller in size than the polarizing layer, and by attaching the adhesive layer and the polarizing layer separately, it is possible to secure clearance between the adhesive layer and the cover glass. However, the inventors of the present invention recognized that adding the process of separately attaching the adhesive layer and the polarizing layer, as described above, would require new equipment and could lead to new flaws during the adhesive layer attachment process, ultimately resulting in a decrease in overall yield.

[0008] Furthermore, the adhesive layer serves to secure the polarizing layer to the cover glass or other components disposed on the polarizer while reducing vibration of the polarizing layer; consequently, portions of the polarizing layer where the first adhesive layer is not applied may vibrate due to movement or impact of the organic light-emitting display device. As the polarizing layer vibrates, it interferes with the cover glass, and the likelihood of malfunction in the polarizing layer or the organic light-emitting display panel may also increase. Therefore, the inventors of the present invention have invented a polarizer with a new structure in which the adhesive layer secures the polarizing layer as much as possible while maintaining clearance with the cover glass, and an organic light-emitting display device comprising the same, without requiring additional processes in the manufacture of the polarizer.

[0009] Accordingly, the object of the present invention is to provide a polarizer capable of securing clearance between the adhesive layer of the polarizer and the cover glass even when the process is simplified, and an organic light-emitting display device equipped with such a polarizer.

[0010] Another problem that the present invention seeks to solve is to provide a polarizer and an organic light-emitting display device equipped therewith that can secure clearance between the adhesive layer and the cover glass while simultaneously reducing vibration of the polarizing layer.

[0011] Another objective of the present invention is to provide a polarizer capable of preventing phenomena such as bending that may occur during the process of laminating the polarizer to an organic light-emitting display panel, as well as an organic light-emitting display device equipped with such a polarizer.

[0012] The problems described in this specification are not limited to those mentioned above, and other problems not mentioned herein will be clearly understood by those skilled in the art from the following description.

## *MEANS TO SOLVE THE PROBLEM*

[0013] To solve the problems, the polarizer according to an embodiment of the present invention comprises a polarizing layer, a first adhesive layer disposed on the upper surface of the polarizing layer, and a second adhesive layer disposed on the lower surface of the polarizing layer, wherein the plurality of edges of the first adhesive layer are disposed inward of the plurality of edges of the polarizing layer. Consequently, the spacing between the plurality of edges of the first adhesive layer and the cover glass can be made larger than the spacing between the plurality of edges of the polarizing layer and the cover glass.

[0014] The mother glass polarizer according to an embodiment of the present invention comprises a mother glass polarizing layer composed of a plurality of cells, a first mother glass adhesive layer disposed on the upper surface of the mother glass polarizing layer and including a plurality of first holes and a plurality of second holes, and a second mother glass adhesive layer disposed on the lower surface of the mother glass polarizing layer; wherein the plurality of first holes and the plurality of second holes are alternately disposed in the column direction, wherein the plurality of first holes expose the edges of cells among the plurality of cells whose vertices are in contact with each other, and the plurality of second holes fully expose the boundaries of both adjacent columns among the plurality of cells. Consequently, since the plurality of edges of the first adhesive layer can be formed in a shape different from that of the plurality of edges of the polarizing layer, the polarizer can be manufactured on a per-mother-glass basis, thereby simplifying the process.

[0015] An organic light-emitting display device according to an embodiment of the present invention comprises an organic light-emitting display panel, a second adhesive layer disposed on the organic light-emitting display panel, a polarizer comprising a polarizing layer on the second adhesive layer and a first adhesive layer on the polarizing layer, and a cover glass comprising a planar surface portion located on the first adhesive layer and a curved surface portion extending from the planar surface portion, wherein the first adhesive layer is patterned in areas corresponding to a plurality of edges of the polarizing layer, such that the first adhesive layer is spaced apart from a plurality of edges of the curved surface portion. Consequently, by securing sufficient clearance between the first adhesive layer of the polarizer and the curved surface portion of the cover glass, interference between the first adhesive layer and the cover glass can be prevented, thereby reducing malfunction in the organic light-emitting display device.

[0016] Specific details of other embodiments are included in the detailed description and drawings.

## *EFFECT OF THE INVENTION*

[0017] The present invention secures clearance between the polarizer and the cover glass, thereby enabling the implementation of a narrow bezel even on the lower surface.

[0018] The present invention can reduce malfunction in organic light-emitting display devices by reducing the vibration of the polarizer.

[0019] The present invention allows the polarizer to be manufactured in mother glass units, thereby simplifying the manufacturing process.

[0020] The present invention ensures that the polarizer is uniformly attached to the entire area of the organic light-emitting display panel during the lamination process of the polarizer and the organic light-emitting display panel.


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[0021] The effects of the present invention are not limited to those illustrated above, and a wider variety of effects are included within the scope of the present invention.

## *A BRIEF DESCRIPTION OF THE DRAWINGS*

[0022] FIG. 1 is a plan view of a mother glass polarizer according to an embodiment of the present invention.

FIG. 2 is a cross-sectional view along line II-II' in FIG. 1.

FIG. 3 is a plan view of a polarizer according to an embodiment of the present invention.

FIG. 4 is a cross-sectional view along line IV-IV' in FIG. 3.

FIG. 5 is a plan view of a mother glass polarizer according to another embodiment of the present invention.

FIG. 6 is a plan view of a polarizer according to another embodiment of the present invention.

FIG. 7 is a plan view of a mother glass polarizer according to another embodiment of the present invention.

FIG. 8 is a cross-sectional view along line VIII-VIII' in FIG. 7.

FIG. 9 is a plan view of a polarizer according to another embodiment of the present invention.

FIG. 10 is a cross-sectional view along line X-X' in FIG. 9.

FIG. 11 is a plan view of an organic light-emitting display device according to an embodiment of the present invention.

FIG. 12 is a cross-sectional view along line VIII-VIII' in FIG. 11.

FIG. 13 is a cross-sectional view along line IX-IX' in FIG. 11.

FIG. 14 is a cross-sectional view along line X-X' in FIG. 11.

## *DETAILED DESCRIPTION OF EMBODIMENTS*

[0023] The advantages and features of the present invention, as well as the methods for achieving them, will become clear from the detailed descriptions of the embodiments provided below, together with the accompanying drawings. However, the present invention is not limited to the embodiments disclosed below but may be implemented in various different forms; these embodiments below are provided merely to ensure a complete disclosure of the invention and to fully inform a person skilled in the art of the scope of the invention, and the present invention is defined solely by the scope of claims.

[0024] The shapes, sizes, proportions, angles, and numbers disclosed in the drawings illustrating the embodiments of the present invention are merely exemplary, and hence the present invention is not limited to the matters depicted therein. Throughout the specification, the same reference numerals denote the same components. Furthermore, in describing the present invention, detailed descriptions of related prior art are omitted if it is determined that such descriptions would unnecessarily obscure the essence of the present invention. When terms such as “includes,” “has,” or “consists of” are used in the present invention, other elements may be added unless the term “only” is used. Unless otherwise explicitly stated, a component described in the singular includes cases where it comprises a plurality.

[0025] In interpreting the components, they shall be construed as including a margin of error even if not explicitly stated.

[0026] In the case of descriptions of positional relationships, for example, when the positional relationship between two parts is described using terms such as "on," "above," "below," or "next to," unless the terms "immediately" or "directly" are used, one or more other parts may be located between the two parts.

[0027] The term "on" a different element or layer refers to both cases where the element is directly above the other element and cases where another layer or element is interposed between them.

[0028] Furthermore, terms such as “first” and “second” are used to describe various components, but these components are not limited by these terms. These terms are used merely to distinguish one component from another. Therefore, a “first” component mentioned hereinafter may also be a “second” component within the technical concept of the present invention.

[0029] Throughout the specification, the same reference numerals denote the same components.

[0030] The dimensions and thicknesses of the various components shown in the drawings are provided for the convenience of description, and the present invention is not necessarily limited to the dimensions and thicknesses of the illustrated components.

[0031] The respective features of the various embodiments of the present invention may be partially or fully combined or integrated with one another, and various technical interlockings and operations are possible; furthermore, each embodiment may be implemented independently of the others or may be implemented together in an interrelated manner.

[0032] The present invention will now be described with reference to the drawings.

[0033] FIG. 1 is a plan view of a mother glass polarizer according to an embodiment of the present invention. FIG. 2 is a cross-sectional view along line II-II' in FIG. 1. Referring to FIG. 1 and FIG. 2, the mother glass polarizer (10) according to an embodiment of the present invention comprises a first mother glass protective film (11), a first mother glass adhesive layer (12), a mother glass polarizing layer (13), a second mother glass adhesive layer (14), and a second mother glass protective film (15). In FIG. 1, for the sake of simplicity, only the first mother glass adhesive layer (12) and the mother glass polarizing layer (13) among the components of the mother glass polarizer (10) are shown.

[0034] Referring to FIG. 1, the mother glass polarizer (10) comprises a plurality of cells (CE). The mother glass polarizer (10) according to an embodiment of the present invention is used to manufacture polarizers in units of a plurality of cells (CE), and is a polarizer for forming a plurality of polarizers in units of mother glass. That is, as shown in FIG. 1, after manufacturing the mother glass polarizer (10), it can be cut into individual cells (CE), and polarizers such as those shown in FIG. 3 and FIG. 4 can be manufactured.

[0035] The mother glass polarizing layer (13) is a layer for polarizing light incident on the mother glass polarizing layer (13). The mother glass polarizing layer (13) may be composed of a plurality of layers to selectively transmit light, that is, to polarize light. The mother glass polarizing layer (13) may, for example, be a multilayer structure comprising PVA (polyvinyl alcohol) with polarizing properties obtained through a stretching process and TAC (triacetate cellulose) disposed on both sides of the PVA; however, it is not limited thereto and may be formed using various layers and structures capable of polarization.

[0036] The mother glass polarizing layer (13) of the mother glass polarizer (10) may be a circularly polarizing layer. The organic light-emitting display panel of the organic light-emitting display device includes various metal materials applied to thin-film transistors, organic light-emitting devices, and wiring, which have high reflectivity. Consequently, ambient light incident from outside the organic light-emitting display panel may be reflected by these metallic materials, and the visibility of the organic light-emitting display device may be reduced due to this reflection. However, by attaching a polarizing layer to the lower surface of the organic light-emitting display device, the polarizing layer can prevent the reflection of external light through circular polarization, thereby improving the outdoor visibility of the organic light-emitting display device.

[0037] Referring to FIG. 1, the first mother glass adhesive layer (12) is disposed on the upper surface of the mother glass polarizing layer (13) and is used to bond the mother glass polarizing layer (13) to other components. The first mother glass adhesive layer (12) may consist of an adhesive material, such as OCA (Optical Clear Adhesive). Since the first mother glass adhesive layer (12) must transmit light incident on the mother glass polarizing layer (13), it requires excellent transparency and adhesive strength. Accordingly, the first mother glass adhesive layer (12) may be composed of an adhesive material with excellent transparency, such as OCA, but is not limited thereto. When the first mother glass adhesive layer (12) is composed of OCA, the thickness of the first mother glass adhesive layer (12) may be approximately 100 to 150 μm.

[0038] The first mother glass adhesive layer (12) includes a plurality of first holes (H1) and a plurality of second holes (H2). As will be described later in relation to the polarizer and the organic light-emitting display device, the plurality of first holes (H1) and the plurality of second holes (H2) are provided by cutting the plurality of edges of the first adhesive layer to secure a certain clearance between the plurality of edges of the first adhesive layer and the cover glass. Furthermore, by securing a certain clearance between the plurality of edges of the first adhesive layer and the cover glass, damage to the organic light-emitting display device caused by interference between the first adhesive layer and the cover glass can be prevented. This will be described in detail later with reference to FIGS. 11 through 14.

[0039] Referring to FIG. 1, the lower surface, the plurality of first holes (H1) expose the edges of cells (CE) among the plurality of cells (CE) whose vertices are adjacent to one another. For example, as shown in FIG. 1, if there are four cells (CE) sharing a single vertex, each of the plurality of first holes (H1) may be formed to expose the edges of the four cells (CE). That is, the plurality of first holes (H1) are formed on both edges of one side of the plurality of cells (CE).

[0040] Each of the plurality of first holes (H1) may have a polygonal shape with straight sides. For example, as shown in FIG. 1, when the plurality of first holes (H1) expose the edges of four cells (CE), each of the plurality of first holes (H1) may have a rectangular shape with straight sides. However, the shape of the plurality of first holes is not limited to this, and a single side may consist of plurality of straight lines. Therefore, when the mother glass polarizer (10) is cut along the cutting line passing through the plurality of first holes (H1), the first mother glass adhesive layer (12) are cut, and the plurality of edges of the cut first adhesive layer are formed diagonally on each side of the polarizing layer, exposing the plurality of edges of the polarizing layer. The polarizer formed by cutting the mother glass polarizer (10) will be described in detail later with reference to FIG. 3 and FIG. 4.

[0041] The plurality of second holes (H2) expose the boundaries of two adjacent columns among the plurality of cells (CE). For example, referring to FIG. 1, the plurality of second holes (H2) expose the boundaries of the cells (CE) in the first column and the cells (CE) in the second column. Accordingly, the first mother glass adhesive layer (12) may be spaced a distance (d) from the boundaries of the two adjacent columns at the locations where the plurality of second holes (H2) are disposed. Since the plurality of second holes (H2) expose the boundaries of two adjacent columns among the plurality of cells (CE), a module process can be performed in which a COF (Chip On Film) or the like is attached to the portion of the first adhesive layer exposed by the plurality of second holes (H2) in the organic light-emitting display device to which a polarizer is subsequently attached. This will be described in detail later with reference to FIG. 11 through FIG. 14.

[0042] The plurality of second holes (H2) includes a first portion (P1) that exposes the boundary between two adjacent columns, and a plurality of second portions (P2) that extend in the row direction from the first portion (P1) and expose a portion of the boundary between two adjacent rows among the plurality of cells (CE). In FIG. 1, the row direction is defined as the horizontal direction and the column direction as the vertical direction; however, this is not limiting. Therefore, when the mother glass polarizer (10) is cut along a cutting line passing through the plurality of second holes (H2), one side of the polarizing layer that does not overlap with the cut first adhesive layer, and a portion of that area are exposed, and the plurality of edges of the first adhesive layer may also be formed diagonally on each side of the first adhesive layer.

[0043] The first portion (P1) of the plurality of second holes (H2) is a portion for performing the module process of the organic light-emitting display device, as described above. The second portion (P2) of the plurality of second holes (H2) is a portion for exposing the plurality of edges of the polarizing layer. For example, the first portion (P1) of the plurality of second holes (H2) exposes the boundary between two adjacent columns, and the second portion (P2) of the plurality of second holes (H2) partially exposes the boundary between two adjacent rows. That is, the first portion (P1) of the plurality of second holes (H2) can expose one side of the polarizing layer so that it is disposed outside one side of the first adhesive layer corresponding to that side of the polarizing layer. Furthermore, the second portions (P2) of the plurality of second holes (H2) can be configured such that the edges of the first adhesive layer form a diagonal shape, similar to the plurality of first holes (H1).

[0044] Referring to FIG. 1, a plurality of first holes (H1) are formed at points where the vertices of the plurality of cells (CE) are in contact with each other, and a plurality of second holes (H2) expose both boundaries of two adjacent columns among the plurality of cells (CE). Therefore, the number of first holes (H1) may be greater than the number of second holes (H2).

[0045] A plurality of first holes (H1) and a plurality of second holes (H2) are disposed alternately in the column direction. For example, as shown in FIG. 1, if a second hole (H2) is disposed between the cells (CE) disposed in the first column and the cells (CE) disposed in the second column, a first hole (H1) may be disposed between the cells (CE) disposed in the second column and the cells (CE) disposed in the third column, and this arrangement may be repeated.

[0046] The mother glass polarizing layer (13) includes a dummy portion (12D) that surrounds both sides of the plurality of cells (CE). The dummy portion (12D) connects portions of the first mother glass adhesive layer (12) disposed in each column of the plurality of cells (CE), thereby enabling the polarizer to be formed as a single mother glass unit. The dummy portion (12D) can be cut and removed during the polarizer manufacturing process.

[0047] Referring to FIG. 2, the second mother glass adhesive layer (14) is disposed on the lower surface of the mother glass polarizing layer (13) and is used to bond the mother glass polarizing layer (13) to other components. The second mother glass adhesive layer (14) may consist of an adhesive material, such as a PSA (Pressure Sensitive Adhesive), but is not limited thereto. Furthermore, if the second mother glass adhesive layer (14) consists of a PSA, the thickness of the second mother glass adhesive layer (14) may be approximately 5 to 15 μm.

[0048] To protect the mother glass polarizing layer (13), to which the first mother glass adhesive layer (12) and the second mother glass adhesive layer (14) are attached, a first mother glass protective film (11) is disposed on the upper surface of the first mother glass adhesive layer (12), and a second mother glass protective film (15) is disposed on the lower surface of the second mother glass adhesive layer (14). The mother glass polarizer (10), manufactured as a single mother glass unit, can be moved from the location where it was manufactured to a location where it is attached to other components, such as an organic light-emitting display panel. During the process of moving the mother glass polarizer (10) in this manner, the first mother glass adhesive layer (12), the second mother glass adhesive layer (14), and the mother glass polarizing layer (13) may be damaged by external impact, and foreign matter may adhere to the first mother glass adhesive layer (12) and the second mother glass adhesive layer (14). Accordingly, the mother glass polarizer (10) according to an embodiment of the present invention may include a first mother glass protective film (11) disposed on the upper surface of the first mother glass adhesive layer (12) and a second mother glass protective film (15) disposed on the lower surface of the second mother glass adhesive layer (14). The first mother glass protective film (11) and the second mother glass protective film (15) may be removed when the polarizer, which has been subsequently cut into cell (CE) units, is attached to other components, such as an organic light-emitting display panel or cover glass of an organic light-emitting display device.

[0049] As described above, since the first mother glass adhesive layer (12) includes a plurality of first holes (H1) and a plurality of second holes (H2), the first mother glass protective film (11) can come into contact with the mother glass polarizing layer (13).


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Specifically, a portion of the mother glass polarizing layer (13) exposed through the plurality of first holes (H1) and the plurality of second holes (H2) formed in the first mother glass adhesive layer (12) may come into contact with the first mother glass protective film (11). In this case, as shown in FIG. 2, it may come into contact with the entire area of the mother glass polarizing layer (13) exposed by the plurality of first holes (H1) and the plurality of second holes (H2). The second mother glass protective film (15) may be disposed to contact the entire lower surface of the second mother glass adhesive layer (14).

[0050] Meanwhile, the first mother glass protective film (11) and the second mother glass protective film (15) may be formed from common polymeric materials, such as polyethylene terephthalate (PET) film, polytetrafluoroethylene (PTFE) film, polyethylene film, polybutene film, polybutadiene film, vinyl chloride copolymer film, ethylene-vinyl acetate film, ethylene-propylene copolymer film, ethylene-ethyl acrylate copolymer film, ethylene-methyl acrylate copolymer film, or polyimide film. Furthermore, if the first mother glass protective film (11) and the second mother glass protective film (15) are composed of polyethylene terephthalate (PET) film, the thickness of the first mother glass protective film (11) and the second mother glass protective film (15) may be 20 to 40 μm.

[0051] Hereinafter, with reference to FIG. 3 and FIG. 4, a single polarizer separated into cell (CE) units through a cutting process from the mother glass polarizer (10) will be described.

[0052] FIG. 3 is a plan view of a polarizer according to an embodiment of the present invention. FIG. 4 is a cross-sectional view along the IV-IV' line in FIG. 3. Referring to FIG. 3 and FIG. 4, the polarizer (100) comprises a first protective film (110), a first adhesive layer (120), a polarizing layer (130), a second adhesive layer (140), and a second protective film (150).

[0053] The polarizing layer (130) is a polarizing layer obtained by cutting the mother glass polarizing layer (13), as shown in FIG. 1 and FIG. 2, into individual cells (CE). Except for the fact that the polarizing layer (130) has been cut into individual cells (CE), the polarizing layer (130) is substantially identical to the mother glass polarizing layer (13); therefore, a detailed description is omitted.

[0054] Referring to FIG. 3, a first adhesive layer (120) is disposed on the upper surface of the polarizing layer (130). The first adhesive layer (120) is used to bond the polarizing layer (130) to the cover glass.

[0055] The plurality of edges (120C) of the first adhesive layer (120) are diagonal with respect to each side of the first adhesive layer (120). Accordingly, the plurality of edges (120C) of the first adhesive layer (120) are disposed inward of the plurality of edges (130C) of the polarizing layer (130), allowing the plurality of edges (120C) of the first adhesive layer (120) to be disposed closer to the center of the polarizer (100) than the plurality of edges (130C) of the polarizing layer (130).

[0056] The shape of the plurality of edges (120C) of the first adhesive layer (120) is determined by the plurality of first holes (H1) and the plurality of second holes (H2) disposed in the first mother glass adhesive layer (12), as described earlier with reference to FIG. 1 and FIG. 2. For example, the shape of the plurality of edges (120C) of the first adhesive layer (120) may be such that two edges (120C) are formed in a diagonal configuration by the plurality of first holes (H1). Furthermore, the remaining two edges (120C) may be formed in a diagonal configuration by the first portion (P1) of the plurality of second holes (H2).

[0057] One side (130L) of the plurality of sides of the polarizing layer (130) is disposed outward of a corresponding side (120L) of the plurality of sides of the first adhesive layer (120). That is, one side (120L) of the first adhesive layer (120) is disposed closer to the center of the polarizer (100) by a distance (d) than the corresponding side (130L) of the polarizing layer (130). Therefore, a portion of the polarizing layer (130) and its side (130L) disposed on the lower surface of the first adhesive layer (120) can be exposed without overlapping with the first adhesive layer (120). In this case, the exposed side (130L) of the polarizing layer (130) may be formed by the second portion (P2) of the plurality of second holes (H2), as described earlier with reference to FIG. 1 and FIG. 2.

[0058] Except for one side (130L) of the polarizing layer (130), the remaining sides overlap with the corresponding sides of the first adhesive layer (120). Therefore, the first adhesive layer (120) has no area, side, or edge (120C) extending beyond the outer side of the polarizing layer (130), and the polarizing layer (130) has a larger area than the first adhesive layer (120). In the polarizer (100) according to an embodiment of the present invention, the remaining sides of the first adhesive layer (120), excluding the removed portion, overlap with the corresponding sides of the polarizing layer. That is, as shown in FIG. 3, the three sides of the first adhesive layer (120) overlap with the three sides of the polarizing layer (130), and their ends align with each other. Consequently, since the first adhesive layer (120) remains intact along the three sides of the polarizer (100), the high rigidity of the polarizer (100) can be maintained.

[0059] In the polarizer according to an embodiment of the present invention, a plurality of edges (120C) of the first adhesive layer (120) are formed in a diagonal pattern, thereby ensuring a certain clearance between the first adhesive layer (120) and the cover glass, and a module process for attaching COF or the like to a portion of the exposed polarizing layer (130) can be performed. This will be described in detail later with reference to FIG. 11 through FIG. 14.


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[0060] Except for the above-mentioned points, the first adhesive layer (130) is substantially identical to the first mother glass adhesive layer (13), so a detailed description is omitted to avoid redundancy.

[0061] The second adhesive layer (140) is disposed on the lower surface of the polarizing layer (130) and is used to bond the polarizing layer (130) to other components. The second adhesive layer (140) is a unit second adhesive layer (140) cut on a cell (CE) basis from the second mother glass adhesive layer (14) shown in FIG. 2. Except for the fact that the second adhesive layer (140) has been cut into individual cells (CE), the second adhesive layer (140) is substantially identical to the second mother glass adhesive layer (14); therefore, a detailed description is omitted to avoid redundancy.

[0062] Referring to FIG. 4, a first protective film (110) is disposed on the upper surface of the first adhesive layer (120), and a second protective film (150) is disposed on the lower surface of the second adhesive layer (140). The first protective film (110) and the second protective film (150) are unit first protective films (110) and unit second protective films (150) that have been cut into cell (CE) units from the first mother glass protective film (11) and the second mother glass protective film (15) shown in FIG. 2. The first protective film (110) and the second protective film (150) are each placed on the upper surface of the first adhesive layer (120) and the lower surface of the second adhesive layer (140), respectively, to protect the polarizing layer (130) to which the first adhesive layer (120) and the second adhesive layer (140) are attached. Furthermore, the first protective film (110) and the second protective film (150) can be removed when the polarizer (100) is subsequently attached to another component.

[0063] The first protective film (110) may be in contact with the polarizing layer (130). Specifically, a plurality of edges of the first protective film (110) may be in contact with a plurality of edges (130C) of the polarizing layer (130) that are not overlapped by the first adhesive layer (120). In this case, as shown in FIG. 4, the first protective film (110) may contact only a portion of the area of the polarizing layer (130) that is exposed and not overlapped by the first adhesive layer (120), or it may contact the entire area of the polarizing layer (130). Meanwhile, the second protective film (150), like the first protective film (110), does not directly contact the polarizing layer (130) but may contact the entire lower surface of the second adhesive layer (140).

[0064] The sides of the first protective film (110), the polarizing layer (130), and the second protective film (150) correspond to one another. That is, the first protective film (110), the polarizing layer (130), and the second protective film (150) have the same shape and the same area, and are disposed so that their centers align with one another. Therefore, since the first protective film (110) and the second protective film (150) can completely cover the polarizing layer (130) and the first adhesive layer (120) and second adhesive layer (140) attached to the polarizing layer (130), the polarizing layer (130), the first adhesive layer (120), and the second adhesive layer (140) can be protected from external contaminants or impact.

[0065] A cutting process is required to form a plurality of edges (120C) of the first adhesive layer (120), which is disposed on the upper surface of the polarizing layer (130), diagonally on each side. Accordingly, with the first mother glass adhesive layer (12) and the mother glass polarizing layer (13) already bonded, forming a plurality of first holes (H1) and a plurality of second holes (H2) in the first mother glass adhesive layer (12) and then performing the cutting process allows for the manufacture of a polarizer (100) in which the plurality of edges (120C) of the first adhesive layer (120) are diagonal on each side. However, if a plurality of first holes (H1) and a plurality of second holes (H2) are formed in the first adhesive layer (120) after the first adhesive layer (120) and the polarizing layer (130) have been bonded, the polarizing layer (130) disposed on the lower surface of the first adhesive layer (120) may also be cut or scratched, resulting in damage.

[0066] Accordingly, the mother glass polarizer (10) according to an embodiment of the present invention first forms a plurality of first holes (H1) and a plurality of second holes (H2) in the first mother glass adhesive layer (12), and then allowing the first mother glass adhesive layer (12) to be bonded to the mother glass polarizing layer (13), thereby preventing damage to the polarizing layer (130) of the polarizer (100). In other words, the mother glass polarizer (10) and the polarizer (100) according to an embodiment of the present invention can prevent damage to the polarizing layer (130) during the process of machining the edge (120C) of the first adhesive layer (120) disposed on the polarizing layer (130) so that it forms a diagonal on each side. Furthermore, since a plurality of polarizers (100) can be manufactured using a mother glass polarizer (10) in mother glass units, the manufacturing process can also be simplified.

[0067] Furthermore, in the mother glass polarizer (10) according to an embodiment of the present invention, the first mother glass adhesive layer (12) includes a plurality of first holes (H1) and a plurality of second holes (H2), and the first mother glass protective film (11) may be in contact with the mother glass polarizing layer (13) through the plurality of first holes (H1) and the plurality of second holes(H2), the first mother glass protective film (11) may come into contact with the mother glass polarizing layer (13). Specifically, a portion of the mother glass polarizing layer (13) exposed through the plurality of first holes (H1) and the plurality of second holes (H2) formed in the first mother glass adhesive layer (12) may be in contact with the first mother glass protective film (11). Accordingly, in the polarizer (100) according to an embodiment of the present invention, the plurality of edges of the first protective film (110) may come into contact with the plurality of edges (130C) of the polarizing layer (130) that are not overlapped by the first adhesive layer (120). Consequently, phenomena such as bending that may occur due to the separation of the polarizing layer (130) and the first protective film (110) during the process of laminating the polarizer (100) to a display panel, such as an organic light-emitting display panel—for example, in a roll-to-roll process—can be minimized. Consequently, in the lamination process of the polarizer (100) and the display panel according to an embodiment of the present invention, the polarizer (100) can be uniformly attached to the entire area of the display panel.

[0068] FIG. 5 is a plan view of a mother glass polarizer according to another embodiment of the present invention. FIG. 6 is a plan view of a polarizer according to another embodiment of the present invention. Referring to FIG. 5 and FIG. 6, the mother glass polarizer (20) and polarizer (200) according to another embodiment of the present invention, as compared to the mother glass polarizer (10) and polarizer (100) of FIG. 1 to FIG. 4, are substantially identical, except that the shapes of the plurality


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of first holes (H1) and the plurality of second holes (H2) in the first mother glass adhesive layer (22) are different, and consequently, the shape of the first adhesive layer (220) is different; therefore, redundant descriptions are omitted.

[0069] Referring to FIG. 5, the first mother glass adhesive layer (22) of the mother glass polarizer (20) according to another embodiment of the present invention includes a plurality of first holes (H1) and a plurality of second holes (H2). The plurality of first holes (H1) expose the edges of cells (CE) among the plurality of cells (CE) whose vertices are in contact with one another. Furthermore, each of the plurality of first holes (H1) has a polygonal shape with curved sides. Therefore, when the mother glass polarizer (20) is cut along the cutting lines passing through the plurality of first holes (H1), as shown in FIG. 6, the plurality of edges (220C) of the first adhesive layer (220) have a rounded shape.

[0070] Each of the plurality of first holes (H1) may have a polygonal shape with curved sides. For example, as shown in FIG. 5, when the plurality of first holes (H1) expose the edges of four cells (CE), each of the plurality of first holes (H1) may have a rectangular shape with sides that are convex curves toward the center. However, the shape of the plurality of first holes (H1) may be a rectangular shape having sides that are concave curves toward the center, and is not limited thereto. Therefore, the mother glass polarizer (20) is cut along the cutting line passing through the plurality of first holes (H1) to form a lower surface, the plurality of edges (220C) of the first adhesive layer (220) formed by cutting the first mother glass adhesive layer (22) are formed in a rounded shape on each side of the polarizing layer (130), and the plurality of edges (130C) of the polarizing layer (130) may be exposed.

[0071] The plurality of second holes (H2) comprises a first portion (P1) and a second portion (P2), and exposes the boundaries of two adjacent columns among the plurality of cells (CE). The first portion (P1) of the plurality of second holes (H2) exposes the boundaries of two adjacent columns, and the second portion (P2) of the plurality of second holes (H2) partially exposes the boundaries of two adjacent rows. The first portion (P1) of the plurality of second holes (H2) is identical to that described earlier with reference to FIG. 1 and FIG. 2; therefore, a detailed description is omitted.

[0072] Meanwhile, the second portions (P2) of the plurality of second holes (H2) may be configured such that some of the edges (220C) of the plurality of first adhesive layers (220) have a rounded shape, similar to the plurality of first holes (H1). Therefore, when the mother glass polarizer (20) is cut along the cutting line passing through the plurality of second holes (H2), as shown in FIG. 6, the plurality of edges (220C) of the first adhesive layer (220) have a rounded shape, exposing the side (130L) and a portion of the polarizing layer (130).

[0073] In another embodiment of the present invention, the mother glass polarizer (20) may first form a plurality of first holes (H1) and a plurality of second holes (H2) in the first mother glass adhesive layer (22), and then bond the first mother glass adhesive layer (22) to the mother glass polarizing layer (13). Therefore, to prevent damage to the polarizing layer (130), the plurality of edges (220C) of the first adhesive layer (220) can be made to have a rounded shape. Furthermore, since a single polarizer (200) can be manufactured through a cutting process after attaching the first mother glass adhesive layer (22) and the mother glass polarizing layer (13), which are configured in a plurality of rows, the process can be simplified.

[0074] Therefore, the mother glass polarizer (20) and polarizer (200) according to an embodiment of the present invention can prevent damage to the polarizing layer (130) during the process of processing the first adhesive layer (220) so that its edge (220C), which is disposed on the polarizing layer (130), forms a diagonal on each side. Furthermore, since the first mother glass adhesive layer (22) and the mother glass polarizing layer (13), which are composed of a plurality of cells (CE), can be bonded in a single bonding process without bonding the first adhesive layer (220) and the polarizing layer (130) separately, the bonding process can also be simplified.

[0075] Furthermore, in the mother glass polarizer (10) according to an embodiment of the present invention, a portion of the mother glass polarizing layer (13) exposed through the plurality of first holes (H1) and the plurality of second holes (H2) formed in the first mother glass adhesive layer (12) may be in contact with the first mother glass protective film (11). In this regard, in the polarizer (100) according to an embodiment of the present invention, the plurality of edges of the first protective film (110) may come into contact with the plurality of edges (130C) of the polarizing layer (130) that do not overlap with the first adhesive layer (120). Consequently, in processes such as roll-to-roll processing for laminating the polarizer (100) onto a display panel, such as an organic light-emitting display panel, phenomena such as bending that may occur due to the separation of the polarizing layer (130) and the first protective film (110) are minimized, and the polarizer (100) can be uniformly attached to the entire area of the display panel.

[0076] FIG. 7 is a plan view of a mother glass polarizer according to another embodiment of the present invention. FIG. 8 is a cross-sectional view along line VIII-VIII' in FIG. 7. Referring to FIG. 7 and FIG. 8, the mother glass polarizer (30) according to another embodiment of the present invention has a lower surface that differs in shape from the mother glass polarizer (10) shown in FIG. 1 and FIG. 2, the mother glass polarizer (30) according to another embodiment of the present invention has a different shape of the first mother glass protective film (31) and, except for the addition of step compensation portions (36) and an auxiliary adhesive layer (37), is substantially identical in terms of the lower surface; therefore, redundant descriptions are omitted. In FIG. 7, for the sake of simplicity, only the first mother glass adhesive layer (12), the mother glass polarizing layer (13), and the step compensation portions (36) among the components of the mother glass polarizer (30) are shown.

[0077] Referring to FIG. 7 and FIG. 8, the plurality of step compensation portions (36) are disposed in the plurality of first holes (H1) and the plurality of second holes (H2) of the first mother glass adhesive layer (12). The plurality of step compensation portions (36) are configured to compensate for the step between the first mother glass protective film (31) and the mother glass polarizing layer (13) at positions corresponding to the plurality of first holes (H1) and the plurality of second holes (H2). In other words, the plurality of step compensation portions (36) can fill the space between the first mother glass protective film (31) and the mother glass polarizing layer (13) together with the plurality of auxiliary adhesive layers (37).


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[0078] Referring to FIG. 7 and FIG. 8, the plurality of step compensation portions (36) are disposed on the same planer surface as the first mother glass adhesive layer (12) at the plurality of first holes (H1) and the plurality of second holes (H2). Furthermore, the plurality of step compensation portions (36) are disposed at a distance from the first mother glass adhesive layer (12). As will be described later, since the plurality of step compensation portions (36) are components that are removed in the final product, they must not come into contact with the first mother glass adhesive layer (12); therefore, the plurality of step compensation portions (36) are disposed at a distance from the first mother glass adhesive layer (12).

[0079] As the plurality of step compensation portions (36) are disposed in the plurality of first holes (H1) and the plurality of second holes (H2), the first mother glass protective film (31) is formed into a planar shape. That is, as shown in FIG. 8, the first mother glass protective film (31) can be formed into a planar film without including any separate protrusions.

[0080] Referring to FIG. 8, a plurality of auxiliary adhesive layers (37) is disposed between the lower surface and the first mother glass protective film (31) and the plurality of step compensation portions (36). The plurality of auxiliary adhesive layers (37) are adhesive layers for attaching the plurality of step compensation portions (36) to the first mother glass protective film (31). The plurality of auxiliary adhesive layers (37) may have the same shape as the plurality of step compensation portions (36) on a planar surface. The plurality of auxiliary adhesive layers (37) may be formed with a minimum thickness necessary to attach the plurality of step compensation portions (36) to the first mother glass protective film (31).

[0081] The plurality of auxiliary adhesive layers (37) may be composed of the same material as the first mother glass adhesive layer (12). For example, the plurality of auxiliary adhesive layers (37) may be composed of OCA. However, since the plurality of auxiliary adhesive layers (37) is a component that is subsequently removed from the display device and therefore does not necessarily need to be transparent, the plurality of auxiliary adhesive layers (37) may also be composed of a material different from that of the first mother glass adhesive layer (12).

[0082] Since the plurality of auxiliary adhesive layers (37) are composed of the same material as the first mother glass adhesive layer (12), the vertical compressive modulus of the plurality of auxiliary adhesive layers (37) may be the same as that of the first mother glass adhesive layer (12). Here, the vertical compressive modulus refers to the modulus when a specific object is pressed in the vertical direction, i.e., when a specific object is compressed in the vertical direction; it is defined differently from the tensile modulus (modulus of tensile strength) and the shear modulus (modulus of shear strength). For example, if the plurality of auxiliary adhesive layers (37) and the first mother glass adhesive layer (12) are composed of OCA, the vertical compressive modulus of the plurality of auxiliary adhesive layers (37) and the first mother glass adhesive layer (12) may be 0.140 MPa.

[0083] The sum of the thicknesses of the plurality of step compensation portions (36) and the plurality of auxiliary adhesive layers (37) may be equal to the thickness of the first mother glass adhesive layer (12). If the plurality of step compensation portions (36) and the plurality of auxiliary adhesive layers (37) are not disposed in the plurality of first holes (H1) and the plurality of second holes (H2), a gap may occur between the first mother glass protective film (31) and the polarizing layer (13) at the plurality of first holes (H1) and the plurality of second holes (H2). Here, the gap refers to the empty space that may form due to the separation between the first mother glass protective film (31) and the polarizing layer (13) at the plurality of first holes (H1) and the plurality of second holes (H2). In this case, during the process of laminating the polarizer, which has been cut into cells from the mother glass polarizer (30), onto a display panel such as an organic light-emitting display panel, phenomena such as bending, etc., may occur due to the gap, and the polarizer may not be uniformly attached to the display panel.

[0084] Accordingly, in the mother glass polarizer (10) according to another embodiment of the present invention, the sum of the thicknesses of the plurality of step compensation portions (36) and the plurality of auxiliary adhesive layers (37) is made equal to the thickness of the first mother glass adhesive layer (12), thereby minimizing the gap. However, since the plurality of auxiliary adhesive layers (37) are formed with the minimum thickness necessary to bond the plurality of step compensation portions (36) and the first mother glass protective film (31), the thickness of the plurality of auxiliary adhesive layers (37) is negligible, and it may be defined that the thicknesses of the plurality of step compensation portions (36) and the first mother glass adhesive layer (12) are essentially the same.

[0085] The vertical compressive modulus of the plurality of step compensation portions (36) may be similar to that of the first mother glass adhesive layer (12). As described above, even if the sum of the thicknesses of the plurality of step compensation portions (36) and the plurality of auxiliary adhesive layers (37) is the same as the thickness of the first mother glass adhesive layer (12), if the deviation between the vertical compressive modulus of the plurality of step compensation portions (36) and the plurality of auxiliary adhesive layers (37) and the vertical compressive modulus of the first mother glass adhesive layer (12) is large, phenomena such as bending may still occur during the process of laminating the polarizer to a display panel, such as an organic light-emitting display panel, via roll-to-roll processing, and the polarizer may not be uniformly attached to the display panel. In this case, since roll-to-roll processing is a process that laminates the polarizer to the display panel using rollers disposed above the polarizer and below the display panel, the vertical compressive modulus of the plurality of step compensation portions (36) and the plurality of auxiliary adhesive layers (37) must be similar to that of the first mother glass adhesive layer (12). However, since the plurality of auxiliary adhesive layers (37) may be composed of the same material as the first mother glass adhesive layer (12), and since the thickness of the plurality of auxiliary adhesive layers (37) is very thin and may be negligible, in practice, the vertical compressive modulus of the plurality of step compensation portions (36) may be similar to that of the first mother glass adhesive layer (12).


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[0086] In this case, the vertical compressive modulus of the plurality of step compensation portions (36) may be 1/10 to 10 times that of the first mother glass adhesive layer (12). For example, if the first mother glass adhesive layer (12) is made of OCA, the vertical compressive modulus of the plurality of step compensation portions (36) may be 0.014 MPa to 1.4 MPa, which is 1/10 to 10 times the vertical compressive modulus of the first mother glass adhesive layer (12). If the vertical compressive modulus of the plurality of step compensation portions (36) is less than one-tenth of the vertical compressive modulus of the first mother glass adhesive layer (12)—that is, if it is less than 0.014 MPa—the vertical compressive modulus of the plurality of step compensation portions (36) becomes excessively small, it will be as if no material were attached to the plurality of first holes (H1) and the plurality of second holes (H2), and phenomena such as bending may still occur during the process of laminating the polarizer to a display panel, such as an organic light-emitting display panel, via roll-to-roll processing, and the polarizer may not be uniformly attached to the display panel. Furthermore, if the vertical compressive modulus of the plurality of step compensation portions (36) is greater than 10 times that of the first mother glass adhesive layer (12), i.e., greater than 1.4 MPa, the vertical compressive modulus of the plurality of step compensation portions (36) becomes excessively high. Consequently, during the process of laminating a polarizer to a display panel, such as an organic light-emitting display panel, via roll-to-roll processing, the display panel may crumple as if foreign matter were present, causing interference. For example, in the case of polyethylene terephthalate, which is primarily used as the first mother glass protective film (31), its vertical compressive modulus is approximately 4,500 MPa, which is excessively high compared to that of the first mother glass adhesive layer (12). Therefore, if the plurality of step compensation portions (36) are formed from the same material as the first mother glass protective film (31), the display panel may become distorted. Accordingly, the vertical compressive modulus of the plurality of step compensation portions (36) may be between one-tenth and ten times that of the first mother glass adhesive layer (12), and the plurality of step compensation portions (36) may be composed of, for example, one of polyurethane, polyolefin, acrylic, and polypropylene.

[0087] Hereinafter, with reference to FIG. 9 and FIG. 10, a single polarizer separated into cell (CE) units through a cutting process from the mother glass polarizer (30) will be described.

[0088] FIG. 9 is a plan view of a polarizer according to another embodiment of the present invention. FIG. 10 is a cross-sectional view along line X-X' in FIG. 9. The polarizer (300) shown in FIG. 9 and FIG. 10 is substantially identical to the polarizer (100) shown in FIG. 3 and FIG. 4, except that the shape of the first protective film (310) is different and step compensation portions (360) and an auxiliary adhesive layer (370) are added; therefore, redundant descriptions are omitted. In FIG. 9, for the sake of simplicity, only the first adhesive layer (120), the mother glass polarizing layer (130), and the step compensation portions (360) among the components of the polarizer (300) are shown.

[0089] Referring to FIG. 9 and FIG. 10, the polarizer (300) comprises a first protective film (310), a first adhesive layer (120), a polarizing layer (130), a second adhesive layer (140), a second protective film (150), a plurality of step compensation portions (360), and a plurality of auxiliary adhesive layers (370).

[0090] Referring to FIG. 9, the plurality of edges (120C) of the first adhesive layer (120) are diagonal with respect to each side of the first adhesive layer (120). Accordingly, the plurality of edges (120C) of the first adhesive layer (120) are disposed inward of the plurality of edges (130C) of the polarizing layer (130), allowing the plurality of edges (120C) of the first adhesive layer (120) to be disposed closer to the center of the polarizer (300) than the plurality of edges (130C) of the polarizing layer (130). Furthermore, one of the plurality of sides (130L) of the polarizing layer (130) is disposed outward of a corresponding one of the plurality of sides (120L) of the first adhesive layer (120).

[0091] Accordingly, a plurality of step compensation portions (360) may be disposed on the upper surface of the polarizing layer (130) in areas that do not overlap with the first adhesive layer (120). That is, as shown in FIG. 9 and FIG. 10, the plurality of step compensation portions (360) may be disposed in the space between the first protective film (310) and the polarizing layer (130) to compensate for the step between the first protective film (310) and the polarizing layer (130).

[0092] Referring to FIG. 9 and FIG. 10, the plurality of step compensation portions (360) are disposed on the same planer surface as the first adhesive layer (120). Furthermore, the plurality of step compensation portions (360) are disposed in a spaced-apart manner from the first adhesive layer (120). That is, since the plurality of step compensation portions (360) are components that are removed from the final product, they must not come into contact with the first adhesive layer (120); therefore, the plurality of step compensation portions (360) are disposed in a spaced-apart manner from the first adhesive layer (120).

[0093] The plurality of step compensation portions (360) are disposed on the polarizing layer (130) on the same planer surface as the first adhesive layer (120) and are disposed farther from the center of the polarizer (300) than the plurality of edges of the first adhesive layer (130). That is, since the plurality of step compensation portions (360) are disposed in an area where the polarizing layer (130) and the first adhesive layer (120) do not overlap, as shown in FIG. 9, they are disposed in the outer peripheral region of the polarizing layer (130) and can be disposed farther from the center of the polarizer (300) than the plurality of edges of the first adhesive layer (130).

[0094] Furthermore, since the plurality of step compensation portions (360) are disposed on the same planer surface as the first adhesive layer (120), the first protective film (310) is formed in a planar configuration. That is, as shown in FIG. 10, the first protective film (310) does not include any separate protrusions and can be formed as a planar film.

[0095] Referring to FIG. 10, a plurality of auxiliary adhesive layers (370) are disposed between the lower surface, the plurality of step compensation portions (360), and the first protective film (310). The plurality of auxiliary adhesive layers (370) are


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adhesive layers for attaching the plurality of step compensation portions (360) to the first protective film (310). The plurality of auxiliary adhesive layers (370) may have the same shape as the plurality of step compensation portions (360) in a planar view. The plurality of auxiliary adhesive layers (370) may be formed with a minimum thickness sufficient to attach the plurality of step compensation portions (360) to the first protective film (310).

[0096] The plurality of auxiliary adhesive layers (370) may be composed of the same material as the first adhesive layer (120). For example, the plurality of auxiliary adhesive layers (370) may be composed of OCA. However, since the plurality of auxiliary adhesive layers (370) is configured to be removed together with the first protective film (310) and does not necessarily need to be transparent, the plurality of auxiliary adhesive layers (370) may also be composed of a material different from that of the first adhesive layer (120).

[0097] Since the plurality of auxiliary adhesive layers (370) are composed of the same material as the first adhesive layer (120), the vertical compressive modulus of the plurality of auxiliary adhesive layers (370) may be the same as that of the first mother glass adhesive layer (120). For example, if the plurality of auxiliary adhesive layers (370) and the first adhesive layer (120) are composed of OCA, the vertical compressive modulus of the plurality of auxiliary adhesive layers (370) and the first adhesive layer (120) may be 0.140 MPa.

[0098] The sum of the thicknesses of the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) may be equal to the thickness of the first adhesive layer (120). If the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) are not provided, a gap may form between the first protective film (310) and the polarizing layer (130). In the process of laminating the polarizer (300) to a display panel, such as an organic light-emitting display panel, the gap may cause phenomena such as bending, etc., and the polarizer (300) may not attach uniformly to the display panel. Accordingly, in the polarizer (300) according to another embodiment of the present invention, the sum of the thicknesses of the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) is made equal to the thickness of the first adhesive layer (120), thereby minimizing the gap. However, since the plurality of auxiliary adhesive layers (370) are formed with the minimum thickness necessary to bond the plurality of step compensation portions (360) to the first protective film (310), the thickness of the plurality of auxiliary adhesive layers (370) is negligible, and the thickness of the plurality of step compensation portions (360) and the first adhesive layer (120) may effectively be defined as being the same.

[0099] The vertical compressive modulus of the plurality of step compensation portions (360) may be similar to that of the first adhesive layer (120). As described above, even if the sum of the thicknesses of the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) is equal to the thickness of the first adhesive layer (120), if the deviation between the vertical compressive modulus of the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) and the vertical compressive modulus of the first adhesive layer(120) is large, phenomena such as bending may still occur during the process of laminating the polarizer (300) to a display panel, such as an organic light-emitting display panel, via roll-to-roll processing, and the polarizer (300) may not be uniformly attached to the display panel. In this case, since roll-to-roll processing is a process of laminating the polarizer (300) and the display panel using rollers disposed on the polarizer (300) and beneath the display panel; therefore, the vertical compressive modulus of the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) must be similar to that of the first adhesive layer (120). However, since the plurality of auxiliary adhesive layers (370) may be composed of the same material as the first adhesive layer (120), and since the thickness of the plurality of auxiliary adhesive layers (370) is very thin and may be negligible, in practice, the vertical compressive modulus of the plurality of step compensation portions (360) may be similar to that of the first adhesive layer (120).

[0100] In this case, the vertical compressive modulus of the plurality of step compensation portions (360) may be 1/10 to 10 times that of the first adhesive layer (120). For example, if the first adhesive layer (120) is made of OCA, the vertical compressive modulus of the plurality of step compensation portions (360) may be 0.014 MPa to 1.4 MPa, which is 1/10 to 10 times the vertical compressive modulus of the first adhesive layer (120). If the vertical compressive modulus of the plurality of step compensation portions (360) is less than one-tenth of the vertical compressive modulus of the first adhesive layer (120)—that is, less than 0.014 MPa—the vertical compressive modulus of the plurality of step compensation portions (360) becomes excessively small, effectively making it appear as if no material is attached at all. Consequently, during the process of laminating the polarizer (300) to a display panel, such as an organic light-emitting display panel, via roll-to-roll processing, phenomena such as bending may still occur, and the polarizer (300) may not be uniformly attached to the display panel. Furthermore, if the vertical compressive modulus of the plurality of step compensation portions (360) is greater than 10 times that of the first adhesive layer (120), i.e., greater than 1.4 MPa, the vertical compressive modulus of the plurality of step compensation portions (360) becomes excessively high. Consequently, during the process of laminating the polarizer (300) to a display panel, such as an organic light-emitting display panel, via roll-to-roll processing, the display panel may crumple as if foreign matter were present, causing interference. For example, in the case of polyethylene terephthalate (PET), which is primarily used as the first protective film (310), its vertical compressive modulus is approximately 4500 MPa, which is excessively high compared to that of the first adhesive layer (120). Therefore, if the plurality of step compensation portions (360) are formed from the same material as the first protective film (310), the display panel may crumple. Accordingly, the vertical compressive modulus of the plurality of step compensation portions (360) may be 1/10 to 10 times that of the first adhesive layer (120), and the plurality of step compensation portions (360) may be composed of, for example, one of polyurethane, polyolefin, acrylic, and polypropylene.


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[0101] Furthermore, in the mother glass polarizer (30) according to another embodiment of the present invention, the first mother glass adhesive layer (12) includes a plurality of first holes (H1) and a plurality of second holes (H2), and a plurality of step compensation portions (36) and a plurality of auxiliary adhesive layers (37) may be disposed between the first mother glass protective film (11) and the mother glass polarizing layer(13). Accordingly, in the polarizer (300) according to another embodiment of the present invention, the sum of the thicknesses of the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) may be equal to the thickness of the first adhesive layer (120). Accordingly, the plurality of step compensation portions (360) and the plurality of auxiliary adhesive layers (370) can fill the gap between the first protective film (310) and the polarizing layer (130). Consequently, phenomena such as bending that may occur due to the separation of the polarizing layer (130) and the first protective film (310) during the process of laminating the polarizer (300) to a display panel, such as an organic light-emitting display panel—for example, in roll-to-roll processing—can be minimized. Consequently, in the lamination process of the polarizer (300) and the display panel according to another embodiment of the present invention, the polarizer (300) can be uniformly attached to the entire area of the display panel.

[0102] Furthermore, in the polarizer (300) according to another embodiment of the present invention, the vertical compressive modulus of the plurality of step compensation portions (360) may be similar to that of the first adhesive layer (120); for example, the vertical compressive modulus of the plurality of step compensation portions (360) may be 1/10 to 10 times that of the first adhesive layer (120). Consequently, phenomena such as bending that may occur during the process of laminating the polarizer (300) onto a display panel, such as an organic light-emitting display panel, when the vertical compressive modulus of the plurality of step compensation portions (360) is excessively small are minimized, and the polarizer (300) can be uniformly attached to the display panel. Furthermore, if the vertical compressive modulus of the plurality of step compensation portions (360) is excessively large, the phenomenon of the display panel wrinkling during the process of laminating the polarizer (300) to a display panel, such as an organic light-emitting display panel, via roll-to-roll processing can be reduced.

[0103] FIG. 11 is a plan view of an organic light-emitting display device according to an embodiment of the present invention. Referring to FIG. 11, the organic light-emitting display device (1000) according to an embodiment of the present invention comprises a cover glass (400), a polarizer (100), and an organic light-emitting display panel (500). In FIG. 11, the polarizer (100) is shown as the polarizer (100) depicted in FIG. 3 and FIG. 4; however, this is not limiting, and the polarizer (200) shown in FIG. 6, as well as the polarizer (300) shown in FIG. 9 and FIG. 10, may also be applied to the organic light-emitting display device (1000).

[0104] The cover glass (400) can protect the organic light-emitting display panel (500) from external moisture, air, and impact. The cover glass (400) includes a planar surface portion (420) and a curved surface portion (410) extending from the planar surface portion (420). The cover glass (400) may be formed of glass and may be shaped to correspond to the configuration of the organic light-emitting display panel (500). For example, the overall shape of the cover glass (400) may be dome-like so as to cover the polarizer (100) and the organic light-emitting display panel (500).

[0105] Meanwhile, the planar surface portion (420) of the cover glass (400) is disposed on the polarizer (100), and the curved surface portion (410) is disposed so as to be spaced apart from the sides of the polarizer (100) and the organic light-emitting display panel (500). The plurality of edges of the cover glass (400) have a rounded shape in the plane. The fact that the plurality of edges of the cover glass (400) have a rounded shape reduces the bezel, thereby providing the user with a wider display area—that is, the area where the image is displayed. Additionally, this may convey an aesthetic appeal to the user.

[0106] The polarizer (100) and the organic light-emitting display panel (500) are disposed inside the cover glass (400). Hereinafter, the polarizer (100) and the organic light-emitting display panel (500) will be described in detail with reference to FIG. 12 through FIG. 14.

[0107] FIG. 12 is a cross-sectional view along the VIII-VIII' line in FIG. 11. FIG. 12 is a cross-sectional view of the bent portion of the organic light-emitting display panel (500) within the organic light-emitting display device (1000).

[0108] Referring to FIG. 12, the polarizer (100) is disposed beneath the planar surface portion (420) of the cover glass (400). The polarizer (100) comprises a first adhesive layer (120), a polarizing layer (130), and a second adhesive layer (140). That is, since the polarizer (100) is attached to the organic light-emitting display panel (500) and the cover glass (400), the first protective film (110) and the second protective film (120), which were described with reference to FIG. 3 and FIG. 4, have been removed. As described with reference to FIG. 3 and FIG. 4, the polarizer (100) is a layer designed to prevent external light reflection from the organic light-emitting display panel (500) and thereby improve the visibility of the organic light-emitting display device (1000).

[0109] The first adhesive layer (120) of the polarizer (100) may be bonded to the lower surface of the planar surface portion (420) of the cover glass (400). In other words, the first adhesive layer (120) of the polarizer (100) may secure the cover glass (400) and the polarizer (100) together. Furthermore, the second adhesive layer (140) of the polarizer (100) may be bonded to the upper surface of the organic light-emitting display panel (500). Therefore, the cover glass (400), the polarizer (100), and the organic light-emitting display panel (500) can be fixed as a single unit via the first adhesive layer (120) and the second adhesive layer (140) of the polarizer (100). In FIG. 12, the first adhesive layer (120) of the polarizer is shown to be bonded directly to the lower surface of the planar surface portion (420) of the cover glass (400); however, in an organic light- -emitting display device (1000), a touch film for receiving user touch input is disposed between the first adhesive layer (120) and the planar surface portion (420), A third adhesive layer may also be disposed between the touch film and the planar surface portion (420) to bond the touch film to the planar surface portion (420).


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[0110] The organic light-emitting display panel (500) can reproduce actual images using organic light-emitting devices. The organic light-emitting display panel (500) includes a substrate (510) with a bent portion, a first back plate (520), a foam tape (530), a second back plate (540), a driving unit (550), and a coating layer (560). However, without being limited thereto, the organic light-emitting display panel (500) may be configured in various ways.

[0111] The substrate (510) of the organic light-emitting display panel (500) is a substrate (510) for supporting various components of the organic light-emitting display device (1000). The substrate (510) includes a display area and a non-display area. The display area refers to the area where the actual image is displayed, and the non-display area refers to the area where no image is displayed; it may extend from one side of the display area, but is not limited to this and may extend from a plurality of sides.

[0112] A drive unit (550) for driving the organic light-emitting display device (1000) is disposed in the non-display area. The drive unit (550) may include various ICs, such as a gate driver IC or a data driver IC, as well as drive circuits. The drive unit (550) may be connected to the substrate (510) using methods such as TP (Tape Carrier Package) or COF (Chip on Film), etc.

[0113] Meanwhile, at least a portion of the non-display area of the substrate (510) is bent to form a curved shape. Since the non-display area is not an area where an image is displayed, it does not need to be visible from the upper surface of the substrate (510). Therefore, the non-display area and the driving unit (550) disposed therein can be bent and disposed on the back surface of the substrate (510), thereby reducing the bezel of the organic light-emitting display device (1000).

[0114] Although not shown in FIG. 12, the display area of the substrate (510) may include organic light-emitting devices and various pixel circuits for driving the organic light-emitting devices. The organic light-emitting devices may include an anode, an organic light-emitting layer, and a cathode. Furthermore, the pixel circuits may comprise thin-film transistors, capacitors, and wiring.

[0115] The first back plate (520) is disposed on the lower surface of the substrate (510) corresponding to the display area of the substrate (510). The second back plate (540) is disposed on the lower surface of the substrate (510) corresponding to the non-display area and the drive unit (550) of the substrate (510), and when bent, is disposed below the first back plate (520). The first back plate (520) and the second back plate (540) can support the substrate (510), and foam tape (530) can be placed between them to secure the first back plate (520) and the second back plate (540) to each other. The first back plate (520) and the second back plate (540) may be made of a plastic material.

[0116] A coating layer (560) is disposed on the bent region of the substrate (510). The coating layer (560) is intended to prevent moisture penetration and wiring cracks, and may be disposed so as to cover at least the bent region. The coating layer (560) is composed of an insulating material and may, for example, be composed of an organic material. In this case, the coating layer (560) may be disposed between the polarizer (100) and the organic light-emitting display panel (500) or partially on the upper surface of the polarizer (100).

[0117] In an organic light-emitting display device (1000) according to an embodiment of the present invention, a coating layer (560) may be disposed on a portion of the upper surface of the polarizing layer (130) that does not overlap with the first adhesive layer (120). On another note, if the coating layer (560) is applied excessively so that it covers the polarizing layer (130) and the first adhesive layer (120), it may partially obscure the display panel (500). Therefore, in the polarizer (100), a step may be formed between the first adhesive layer (120) and the polarizing layer (130) in the area in contact with the coating layer (560) to prevent the coating layer (560) from overflowing.

[0118] FIG. 13 is a cross-sectional view along the IX-IX' line in FIG. 11. FIG. 13 is a cross-sectional view at the edge of the organic light-emitting display device (1000).

[0119] The curved surface portion (410) of the cover glass (400) is disposed such that it maintains a certain distance from the side surfaces of the polarizer (100) and the organic light-emitting display panel (500). The polarizer (100) and the organic light-emitting display panel (500) may vibrate due to movement of the organic light-emitting display device (1000) or impact from the outside. In this case, if certain clearance is not maintained between the curved surface portion (410) of the cover glass (400) and the polarizer (100) and organic light-emitting display panel (500), the polarizer (100) and organic light-emitting display panel (500) may vibrate and interfere with the cover glass (400), potentially causing damage.

[0120] In particular, when the plurality of edges of the curved surface portion (410) of the cover glass (400) have a rounded shape, the gap between the plurality of edges of the cover glass (400) and the polarizer (100) and the organic light-emitting display panel (500) becomes smaller than the gap between the side of the cover glass (400) and the polarizer (100) and the organic light-emitting display panel(500). In this case, the gap between the first adhesive layer (120) of the polarizer (100) and the curved surface portion (410) of the cover glass (400)(410) is the smallest, making this the location where damage to the organic light-emitting display device (1000) caused by the first adhesive layer (120) is most likely to occur.

[0121] Referring to FIG. 13, the lower surface, the polarizer (100), and the edge of the organic light-emitting display panel (500) are spaced apart from the curved surface portion (410) of the cover glass (400). In particular, the first adhesive layer (120) is


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spaced apart from the curved surface portion (410) by a distance d1, and the polarizing layer (130) is spaced apart from the curved surface portion (410) by a distance d2. In this case, the plurality of edges (120C) of the first adhesive layer (120) are patterned and are disposed inward of the plurality of edges (130C) of the polarizing layer (130), as described with reference to FIGS. 1 through 4. Therefore, the distance d1 between the plurality of edges (120C) of the first adhesive layer (120) and the curved surface portion (410) may be greater than the distance d2 between the plurality of edges (130C) of the polarizing layer (130) and the curved surface portion (410).

[0122] The polarizer (100) and the organic light-emitting display panel (500) may vibrate due to the movement of the organic light-emitting display device (1000) or impact from the outside. In this case, if certain clearance is not maintained between the curved surface portion (410) of the cover glass (400) and the polarizer (100) and the organic light-emitting display panel (500), the polarizer (100) and the organic light-emitting display panel (500) may vibrate and interfere with the cover glass (400), potentially causing damage. In particular, as shown in FIG. 11, since the plurality of edges of the cover glass (400) have a rounded shape, the gap between the plurality of edges of the cover glass (400) and the polarizer (100) and the organic light-emitting display panel (500) may be narrower than in other areas. In particular, since the distance between the point where the curved surface portion (410) of the cover glass (400) begins and the plurality of edges (120C) of the first adhesive layer (120) of the polarizer (100) disposed closest to that point and the curved surface portion (410) is the smallest, damage to the organic light-emitting display device (1000) caused by the first adhesive layer (120) may occur most frequently.

[0123] Accordingly, the organic light-emitting display device (1000) according to an embodiment of the present invention disposes the plurality of edges (120C) of the first adhesive layer (120) inward of the plurality of edges (130C) of the polarizing layer (130). Consequently, by securing a certain clearance between the plurality of edges (120C) of the first adhesive layer (120) and the curved surface portion (410) of the cover glass (400), damage caused by interference between the first adhesive layer (120) and the cover glass (400) can be minimized.

[0124] In FIG. 13, the gap d1 between the plurality of edges (120C) of the first adhesive layer (120) and the curved surface portion (410) is shown to be larger than the gap d2 between the plurality of edges (130C) of the polarizing layer (130) and the curved surface portion (410); however, this is not limiting, and if the first adhesive layer (120) has clearance sufficient to prevent interference with the cover glass (400), d1 may be smaller than d2.

[0125] FIG. 14 is a cross-sectional view along line X-X' in FIG. 11. FIG. 14 is a cross-sectional view of the organic light-emitting display device (1000) from one side.

[0126] Referring to FIG. 14, the lower surface, the polarizer (100), and the side of the organic light-emitting display panel (500) are spaced apart from the curved surface portion (410) of the cover glass (400). Specifically, one side of the first adhesive layer (120) is spaced apart from the curved surface portion (410) by a distance d3, and one side of the polarizing layer (130) is spaced apart from the curved surface portion (410) by a distance d4. In this case, on the sides other than the side where the organic light-emitting display panel (500) is bent, the sides of the polarizing layer (130) and the sides of the first adhesive layer (120) overlap. That is, on the sides other than the side where the organic light-emitting display panel (500) is bent, the ends of the first adhesive layer (120) and the polarizing layer (130) align. Therefore, the gap d3 between the first adhesive layer (120) and the curved surface portion (410) may be smaller than the gap d4 between the polarizing layer (130) and the curved surface portion (410).

[0127] Meanwhile, the polarizer (100) and the organic light-emitting display panel (500) may vibrate due to the movement of the organic light-emitting display device (1000) or impact from the outside. In this case, if certain clearance is not maintained between the curved surface portion (410) of the cover glass (400) and the polarizer (100) and the organic light-emitting display panel (500), the polarizer (100) and the organic light-emitting display panel (500) may vibrate and interfere with the cover glass (400), potentially causing damage. However, as shown in FIG. 11, the plurality of edges of the cover glass (400) have a rounded shape. Therefore, the gap between the plurality of edges of the cover glass (400) on the sides other than the side where the organic light-emitting display panel (500) is bent, and the polarizer (100) and the organic light-emitting display panel (500) may be greater than the gap between the cover glass (400), the polarizer (100), and the organic light-emitting display panel (500) at the edges of the cover glass (400). Therefore, on the sides other than the side where the organic light-emitting display panel (500) is bent, damage to the organic light-emitting display device (1000) caused by the first adhesive layer (120) may occur relatively less frequently.

[0128] Accordingly, in an embodiment of the present invention, the organic light-emitting display device (1000) is configured such that the side of the first adhesive layer (120) and the side of the polarizing layer (130) are superimposed on sides of the organic light-emitting display panel (500) other than the side where the panel bends, thereby aligning the ends of the first adhesive layer (120) and the polarizing layer (130). Consequently, the rigidity of the polarizer (100), which could be compromised if a portion of the first adhesive layer (120) were removed from the polarizing layer (130), can be maintained.

[0129] The polarizer according to embodiments of the present invention and the organic light-emitting display device equipped therewith can be described hereunder.

[0130] A polarizer according to an embodiment of the present invention comprises a polarizing layer, a first adhesive layer disposed on the upper surface of the polarizing layer, and a second adhesive layer disposed on the lower surface of the polarizing layer, wherein a plurality of edges of the first adhesive layer are positioned inward of a plurality of edges of the polarizing layer.

[0131] According to another feature of the present invention, the plurality of edges of the first adhesive layer may be diagonal to each side of the first adhesive layer.

[0132] According to another feature of the present invention, the plurality of edges of the first adhesive layer may be rounded.

[0133] According to another feature of the present invention, the plurality of edges of the polarizing layer may be closer to the center of the polarizer than the plurality of edges of the first adhesive layer.


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[0134] According to another feature of the present invention, the polarizer may further include a plurality of step compensation portions disposed on the polarizing layer on the same planer surface as the first adhesive layer, and disposed farther from the center of the polarizer than the plurality of edges of the first adhesive layer.

[0135] According to another feature of the present invention, the plurality of step compensation portions may be spaced apart from the first adhesive layer.

[0136] According to another feature of the present invention, the vertical compressive modulus of the plurality of step compensation portions may be 1/10 to 10 times that of the vertical compressive modulus of the first adhesive layer.

[0137] According to another feature of the present invention, the plurality of step compensation portions may be composed of one of polyurethane, polyolefin, acrylic, and polypropylene.

[0138] According to another feature of the present invention, the area of the polarizing layer may be larger than the area of the first adhesive layer.

[0139] According to another feature of the present invention, one of the plurality of sides of the polarizing layer may be disposed outward of a corresponding one of the plurality of sides of the first adhesive layer.

[0140] According to another feature of the present invention, the remaining side(s) of the plurality of sides of the polarizing layer may overlap with the corresponding side(s) of the plurality of sides of the first adhesive layer.

[0141] According to another feature of the present invention, the polarizer may further include a first protective film disposed on the upper surface of the first adhesive layer and a second protective film disposed on the lower surface of the second adhesive layer.

[0142] According to another feature of the present invention, a plurality of edges of the first protective film may be in contact with the polarizing layer.

[0143] According to another feature of the present invention, the plurality of sides of the first protective film, the polarizing layer, and the second protective film may correspond to one another.

[0144] The mother glass polarizer according to an embodiment of the present invention comprises a mother glass polarizing layer composed of a plurality of cells, a first mother glass adhesive layer disposed on the upper surface of the mother glass polarizing layer and including a plurality of first holes and a plurality of second holes, and a second mother glass adhesive layer disposed on the lower surface of the mother glass polarizing layer; wherein the plurality of first holes and the plurality of second holes are alternately disposed in the column direction, wherein the plurality of first holes expose the edges of cells among the plurality of cells whose vertices are in contact with each other, and the plurality of second holes fully expose the boundaries of both adjacent columns among the plurality of cells.

[0145] According to another feature of the present invention, each of the plurality of second holes may include a first portion that exposes the boundary between two adjacent columns, and a plurality of second portions that extend in the row direction from the first portion and expose a portion of the boundary between two adjacent rows among the plurality of cells.

[0146] According to another feature of the present invention, each of the plurality of first holes may have a polygonal shape with sides that are straight or curved.

[0147] According to another feature of the present invention, the mother glass polarizer may further include a first mother glass protective film disposed on the upper surface of the first mother glass adhesive layer and a second mother glass protective film disposed on the lower surface of the second mother glass adhesive layer.

[0148] According to another feature of the present invention, the mother glass polarizer may further include a plurality of step compensation portions disposed in a plurality of first holes and a plurality of second holes, and a plurality of auxiliary adhesive layers disposed between the step compensation portions and the first mother glass protective film.

[0149] According to another feature of the present invention, the vertical compressive modulus of the plurality of step compensation portions is 1/10 to 10 times that of the first mother glass adhesive layer, and the vertical compressive modulus of the plurality of auxiliary adhesive layers may be the same as that of the first mother glass adhesive layer.

[0150] According to another feature of the present invention, the sum of the thicknesses of the plurality of step compensation portions and the plurality of auxiliary adhesive layers may be equal to the thickness of the first mother glass adhesive layer.

[0151] According to another feature of the present invention, the number of first holes may be greater than the number of second holes.

[0152] According to another feature of the present invention, the mother glass polarizing layer may include a dummy portion surrounding both sides of the plurality of cells.

[0153] An organic light-emitting display device according to an embodiment of the present invention comprises an organic light-emitting display panel, a second adhesive layer disposed on the organic light-emitting display panel, a polarizer comprising a polarizing layer on the second adhesive layer and a first adhesive layer on the polarizing layer, and a cover glass comprising a planar surface portion located on the first adhesive layer and a curved surface portion extending from the planar surface portion, wherein the first adhesive layer is patterned in areas corresponding to a plurality of edges of the polarizing layer ( ), such that the first adhesive layer is spaced apart from a plurality of edges of the curved surface portion.

[0154] According to another feature of the present invention, the plurality of edges of the cover glass may have a rounded shape on a planar surface.


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[0155] According to another feature of the present invention, the gap between the plurality of edges of the first adhesive layer and the curved surface portion may be greater than the gap between the plurality of edges of the polarizing layer and the curved surface portion.

[0156] According to another feature of the present invention, at least one of the plurality of sides of the first adhesive layer may align with the upper surface of the polarizing layer.

[0157] According to another feature of the present invention, the organic light-emitting display device may further include a touch film disposed between the first adhesive layer and the planar surface portion, and a third adhesive layer disposed between the touch film and the planar surface portion.

[0158] Although the embodiments of the present invention have been described in further detail with reference to the accompanying drawings, the present invention is not necessarily limited to these embodiments and may be variously modified within the scope of the technical concept of the present invention. Therefore, the embodiments disclosed in the present invention are intended to illustrate, not to limit, the technical concept of the present invention, and the scope of the technical concept of the present invention is not limited by these embodiments. Therefore, the embodiments described above must be understood as exemplary in all respects and not as limiting. The scope of protection of the present invention should be interpreted in accordance with the scope of claims below, and all technical ideas falling within the scope equivalent thereto should be interpreted as falling within the scope of the rights of the present invention.

## *Description of Reference Numerals*

[0159] 10, 20, 30: mother glass polarizer

11, 31: first mother glass protective film

12, 22: first mother glass adhesive layer

13: mother glass polarizing layer

14: second mother glass adhesive layer

15: second mother glass protective film

36: step compensation portions

37: auxiliary adhesive layer

CE: cell

12D, 22D: dummy portion

H1: first hole

H2: second hole

P1: first portion

P2: second part

100, 200: polarizer

110, 310: first protective film

120: first adhesive layer

120C: edge of the first adhesive layer

120L: one side of the first adhesive layer

130: polarizing layer

130C: edge of the polarizing layer

130L: one side of the polarizing layer

140: second adhesive layer

150: second protective film


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360: step compensation portions

370: auxiliary adhesive layer

400: cover glass

410: curved surface portion

420: planar surface portion

500: organic light-emitting display panel

510: substrate

520: first back plate

530: foam tape

540: second back plate

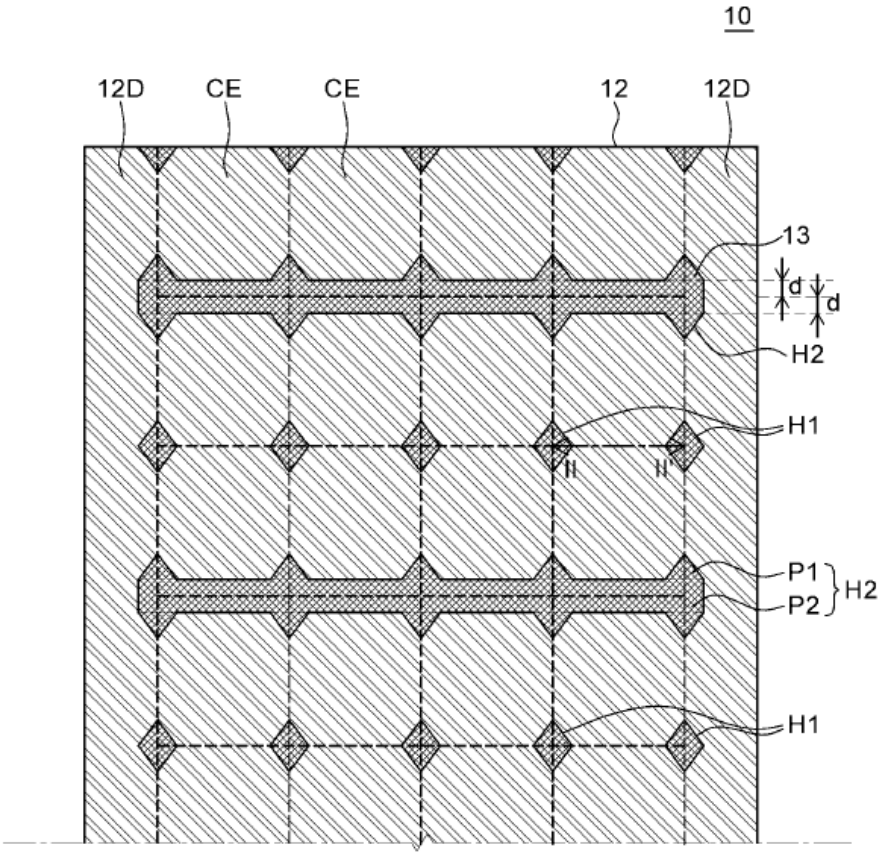
550: drive unit

560: coating layer

1000: organic light-emitting display device

## *DRAWINGS*

### *FIG. 1*





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*FIG. 2*

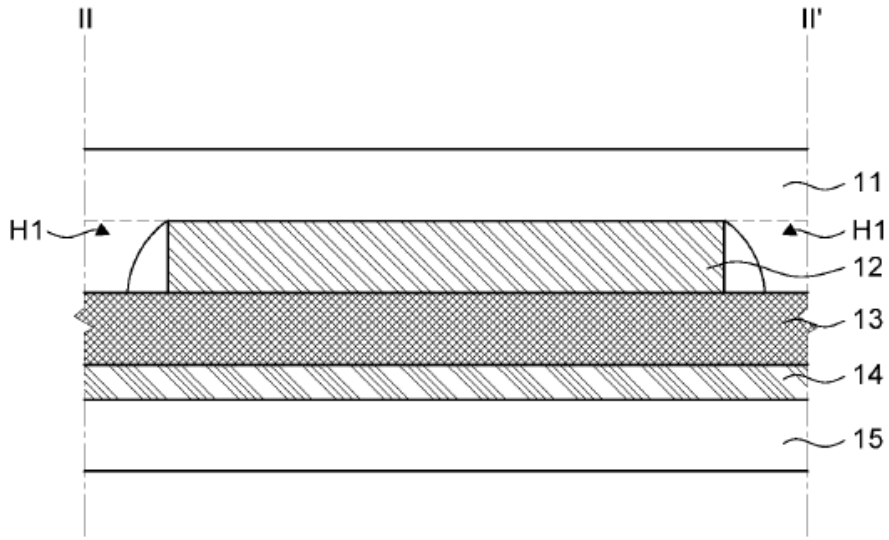
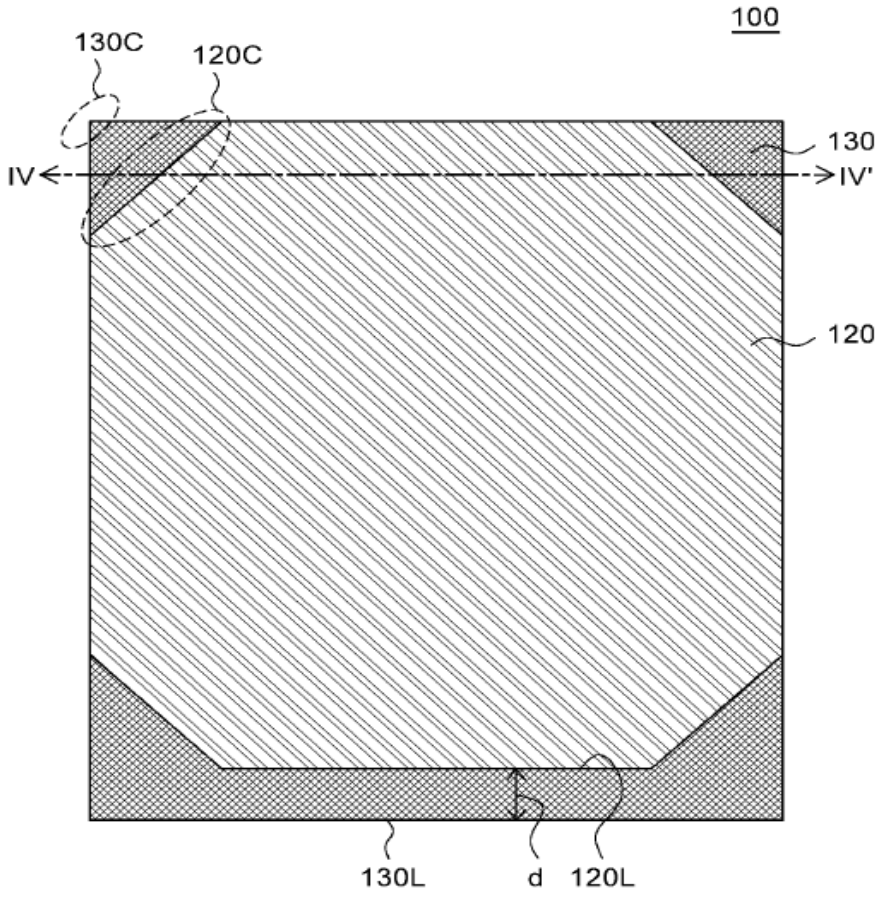



*FIG. 3*





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*FIG. 4*

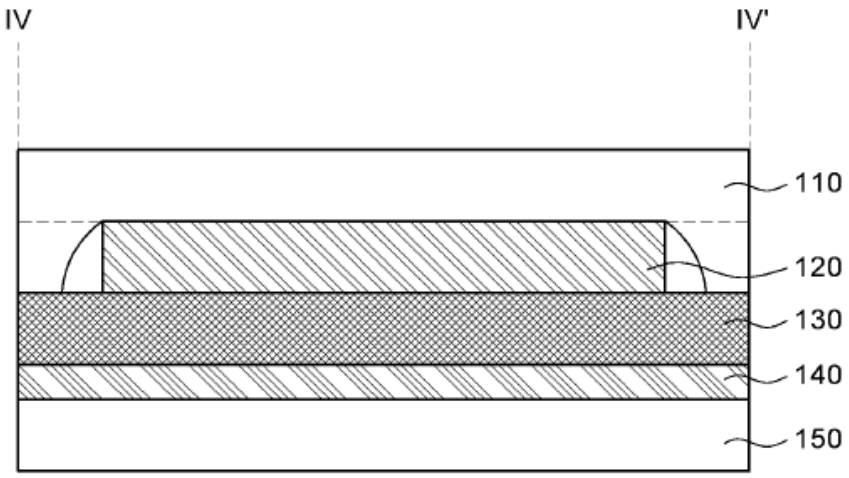
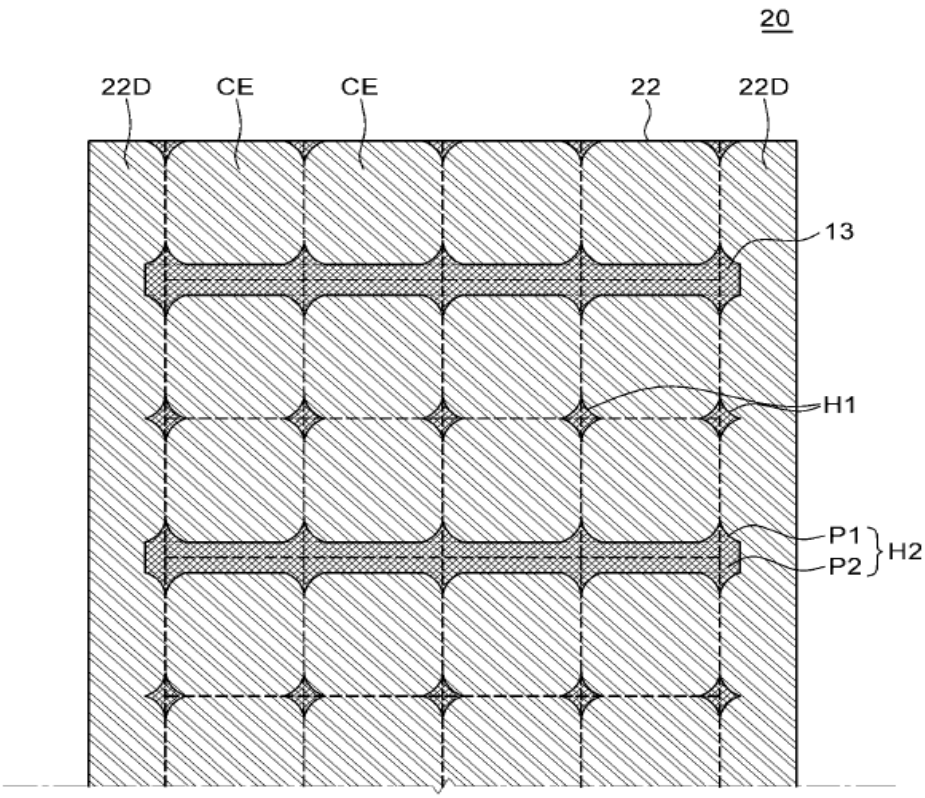



*FIG. 5*





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*FIG. 6*

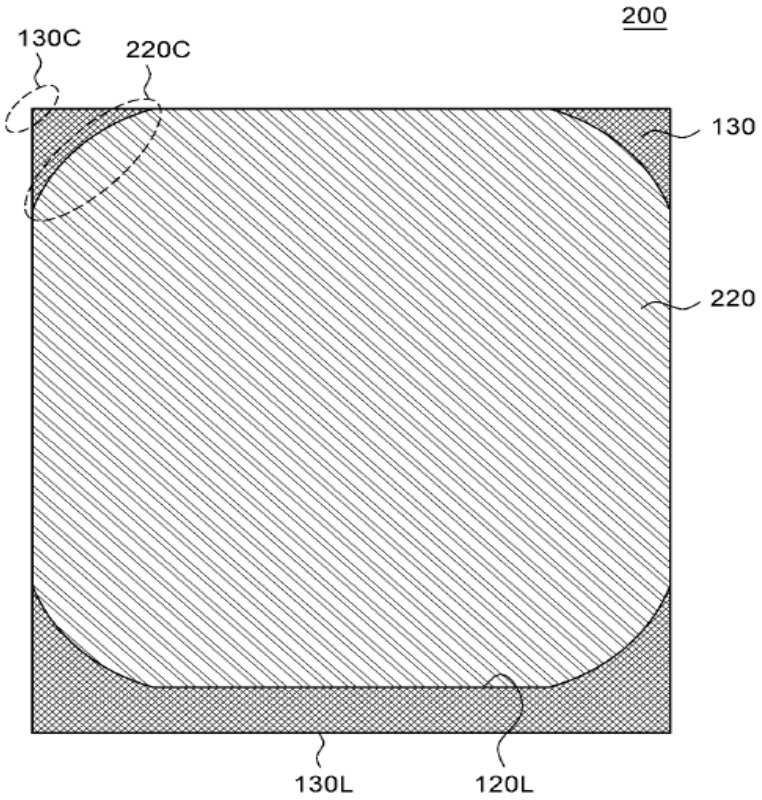
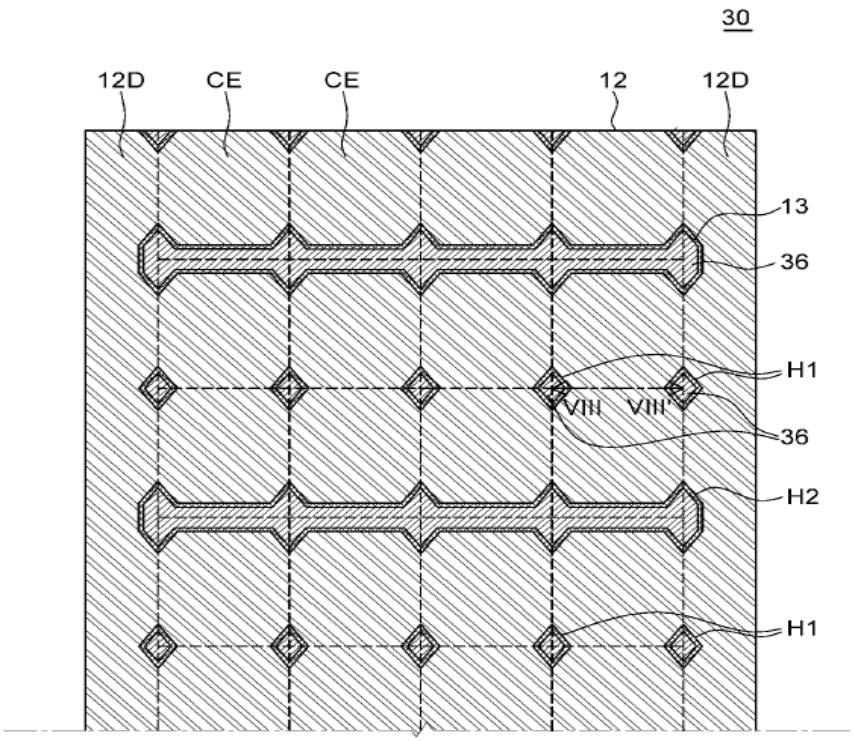



*FIG. 7*





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*FIG. 8*

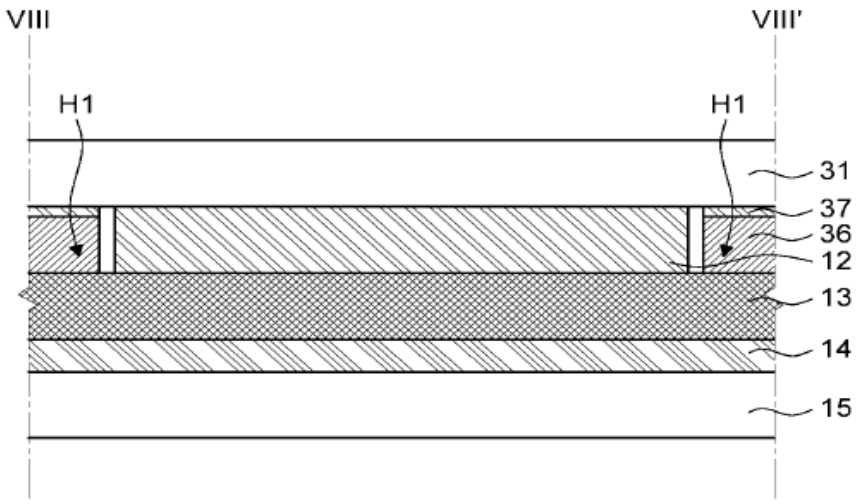
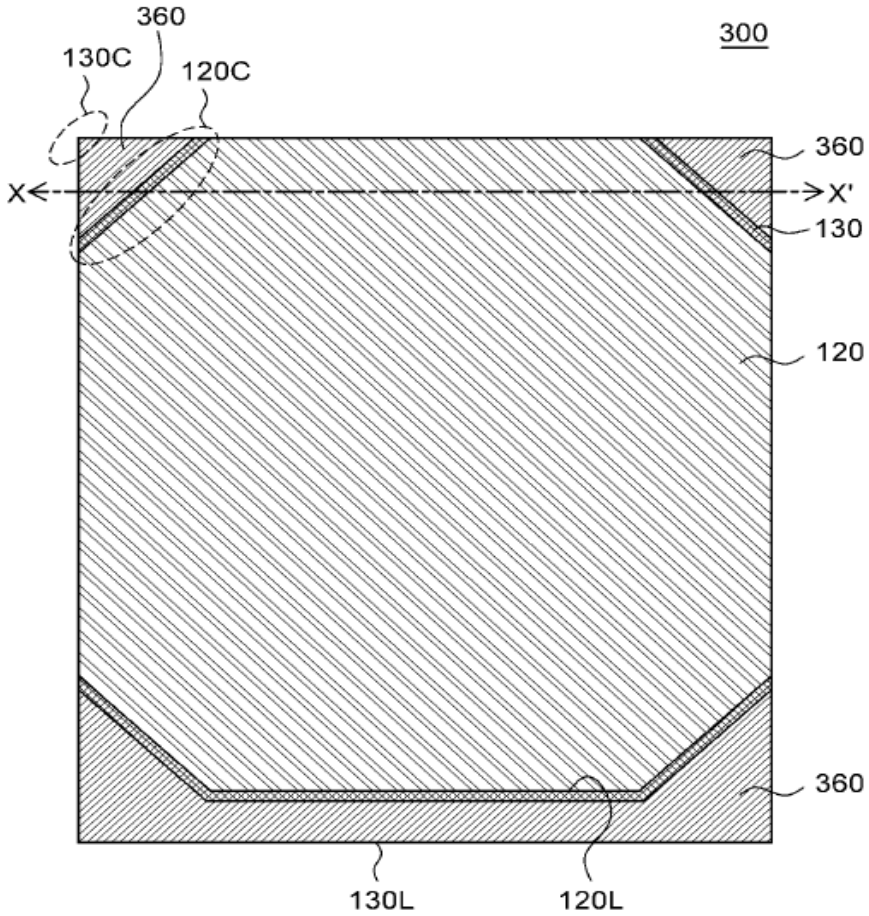



*FIG. 9*





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*FIG. 10*

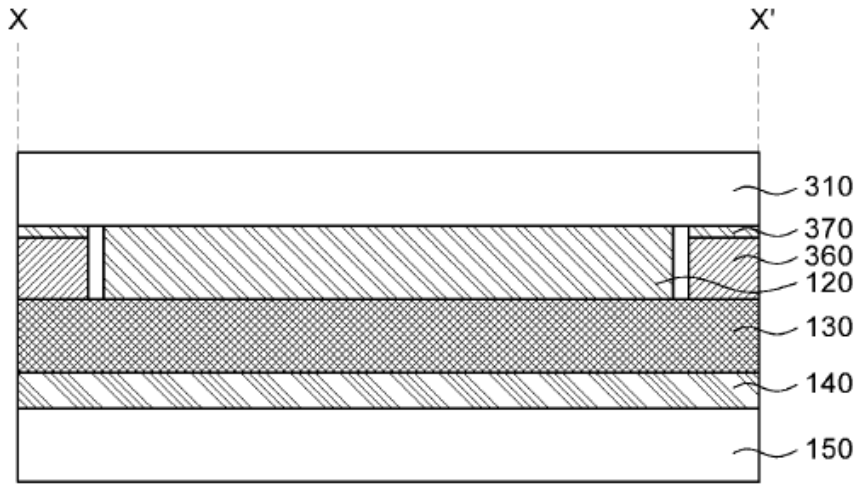
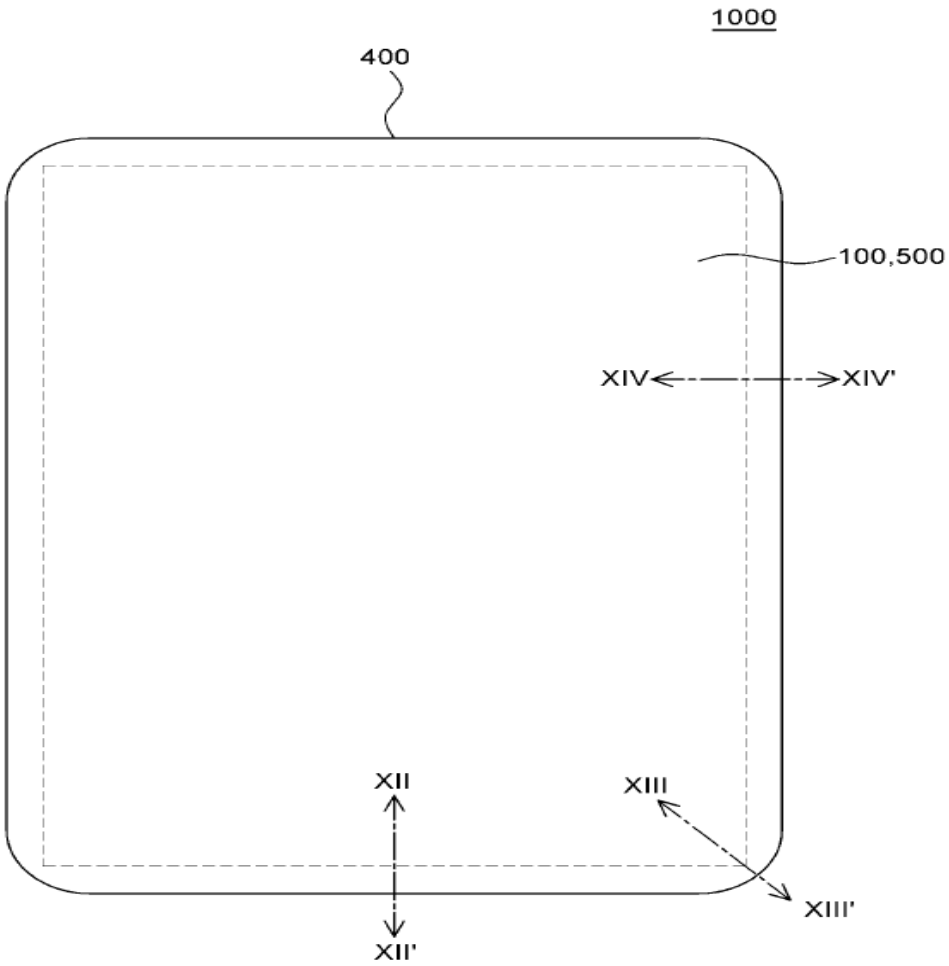



*FIG. 11*





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*FIG. 12*

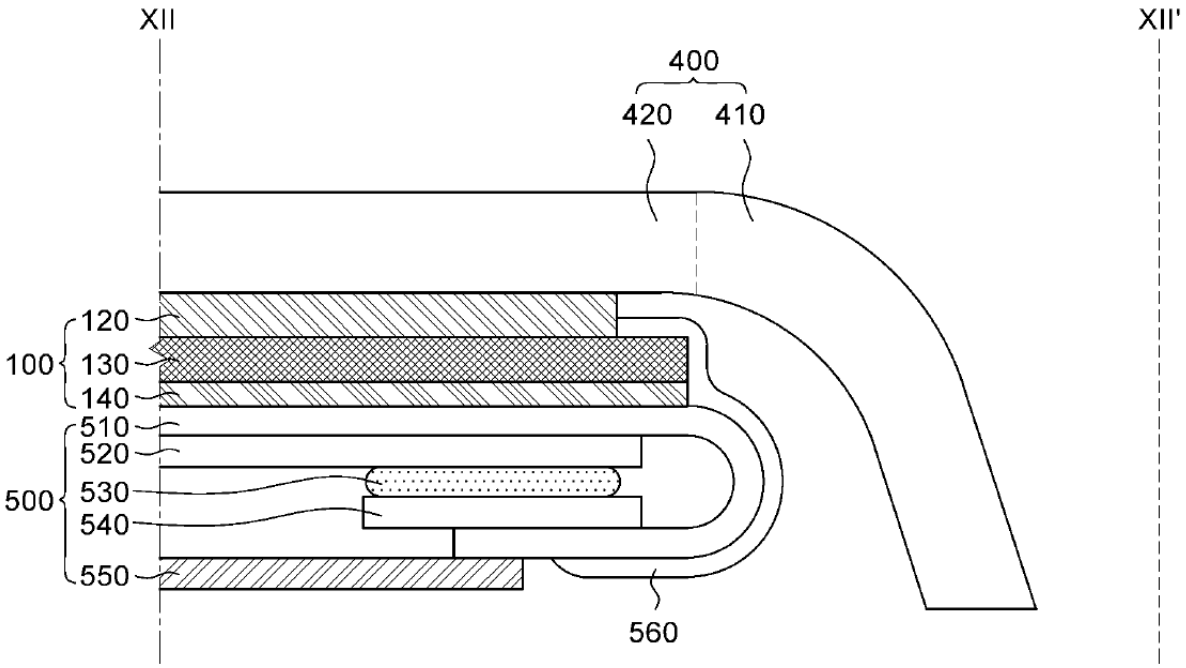
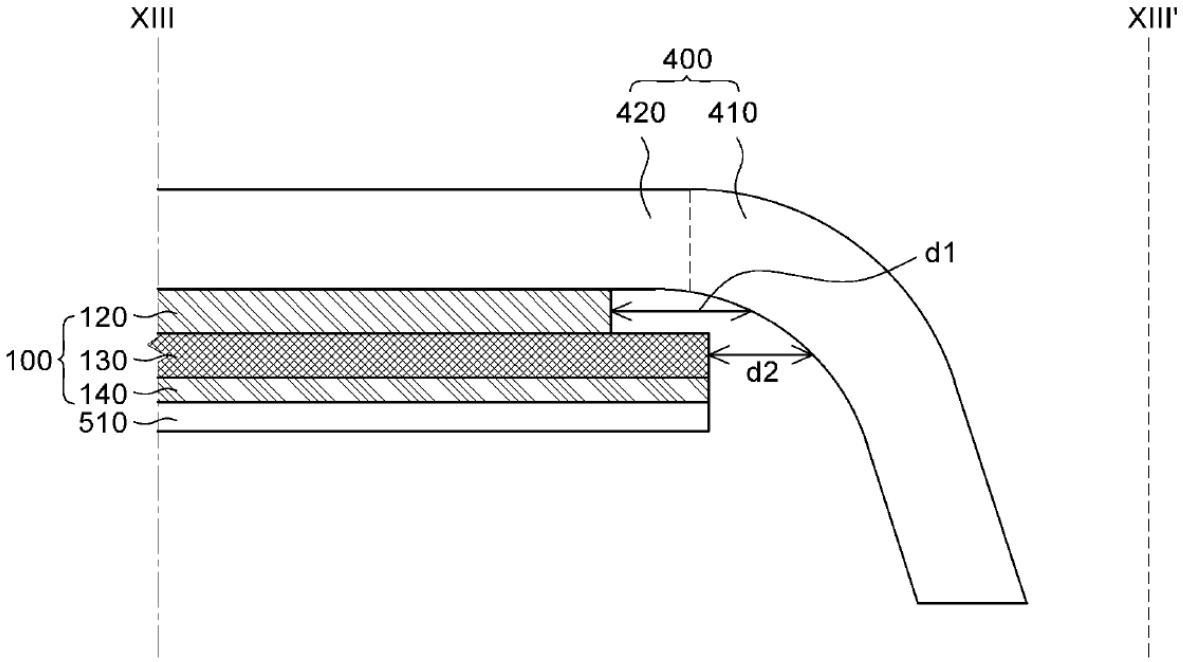


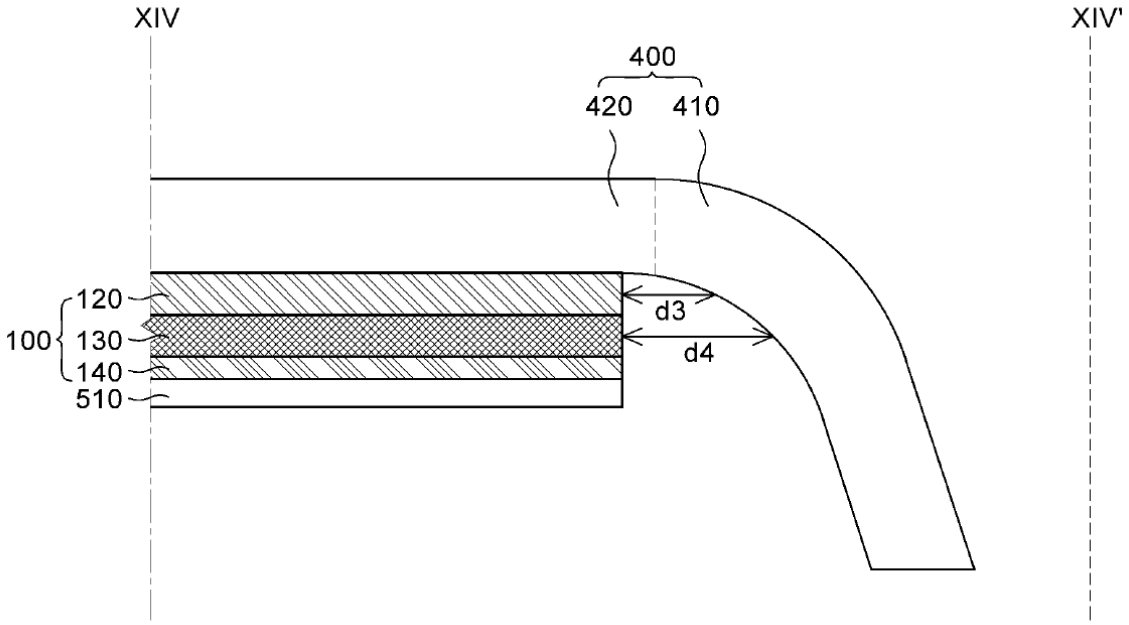

*FIG. 13*





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*FIG. 14*





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