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(54) COLOR FILTER PANEL, AND LIQUID CRYSTAL DISPLAY INCLUDING COLOR FILTER PANEL

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(57) **ABSTRACT**

A liquid crystal display is provided, which includes: a color filter panel having a first insulating substrate, a reflector having a window and formed on the first insulating substrate, a plurality of color filters formed on the reflector, a light blocking member defining a display area by being formed at the circumference of the first insulating substrate and including a layer disposed on the same layer as the color filters, and a common electrode formed on the color filters; a thin film transistor array panel having a second insulating substrate facing the first insulating substrate, a plurality of gate and data lines formed on the second insulating substrate being insulated from and intersecting with each other, a plurality of thin film transistors connected to the gate and data lines, and a plurality of pixel electrodes connected to the thin film transistors and disposed on the pixel area enclosed by the gate and data lines; and a liquid crystal layer formed between the color filter panel and the thin film transistor array panel.

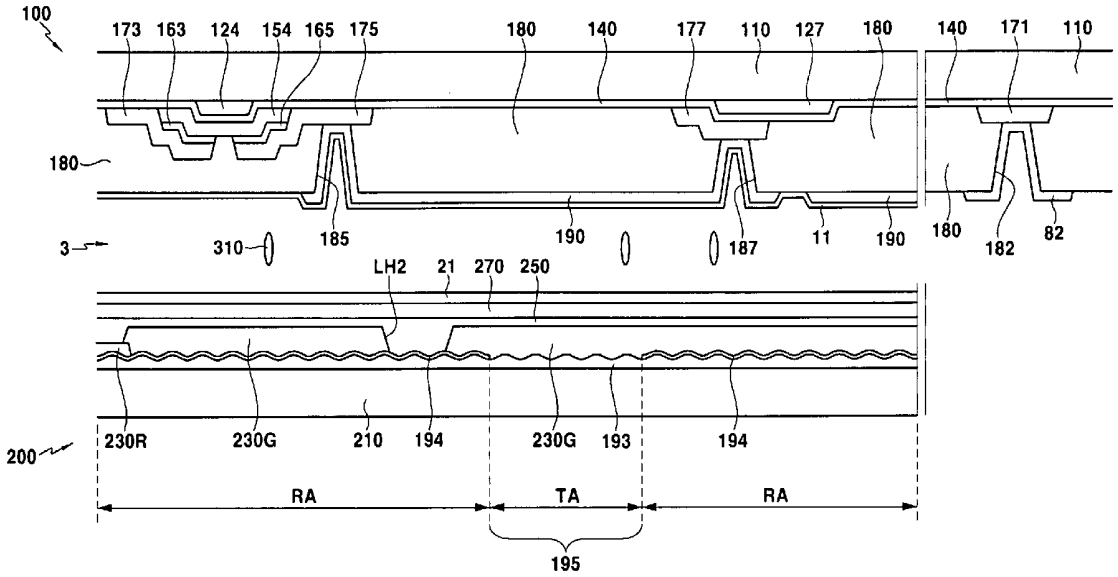


FIG.1

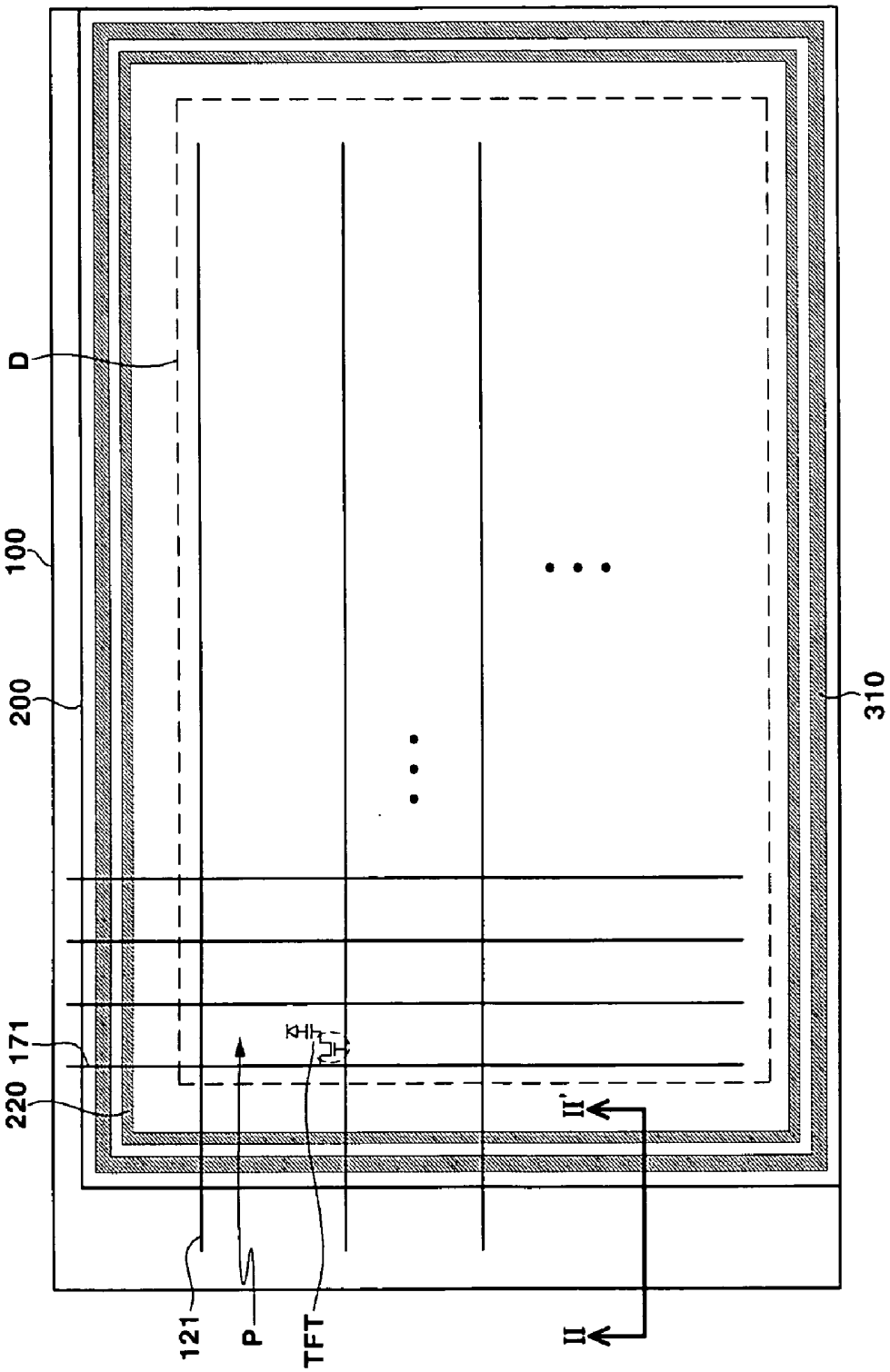


FIG.2

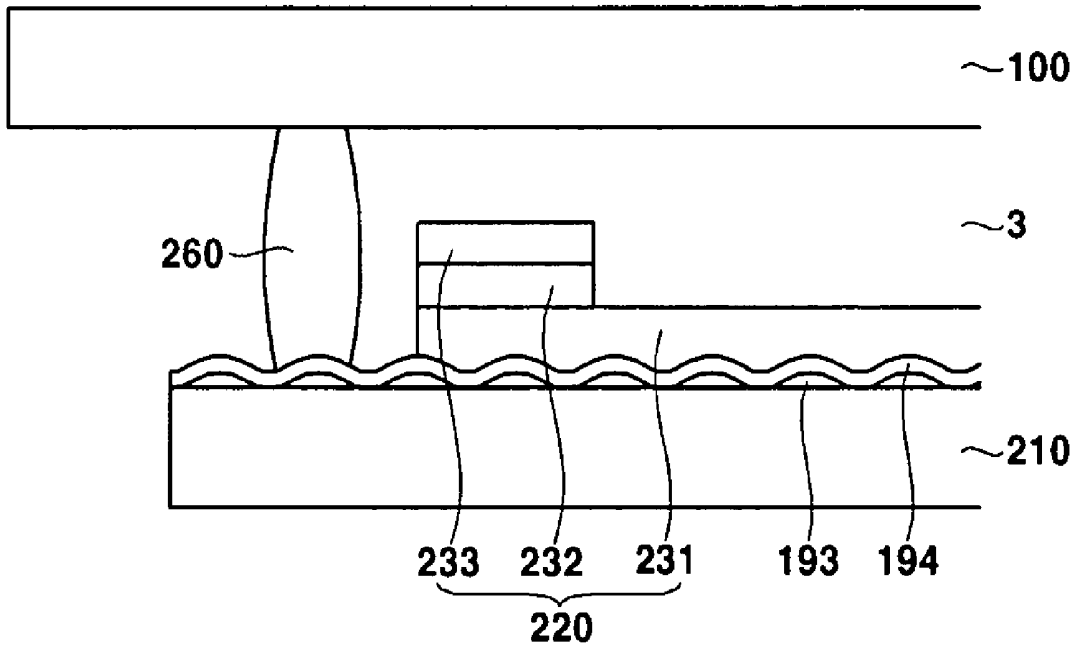


FIG.3

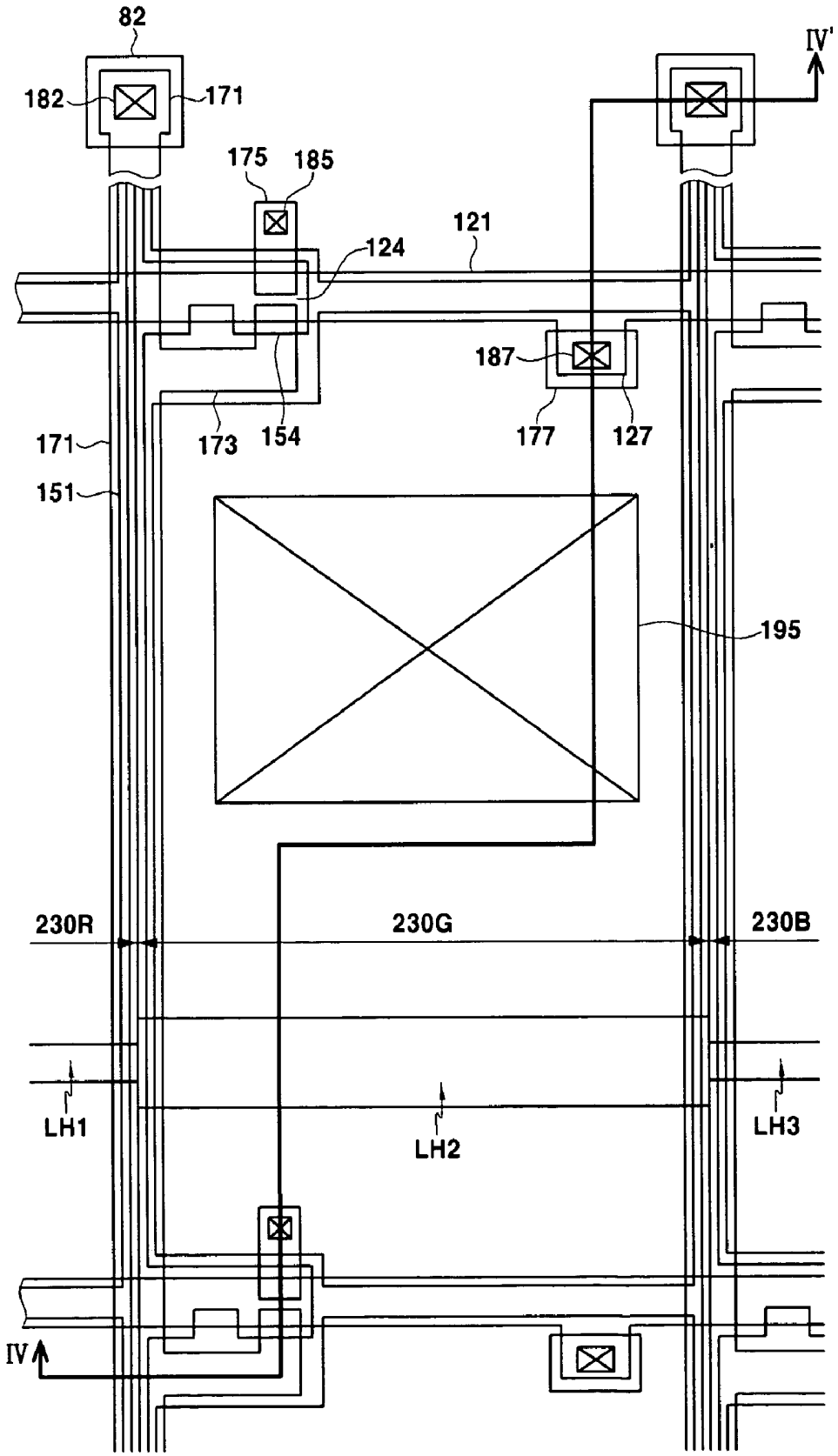
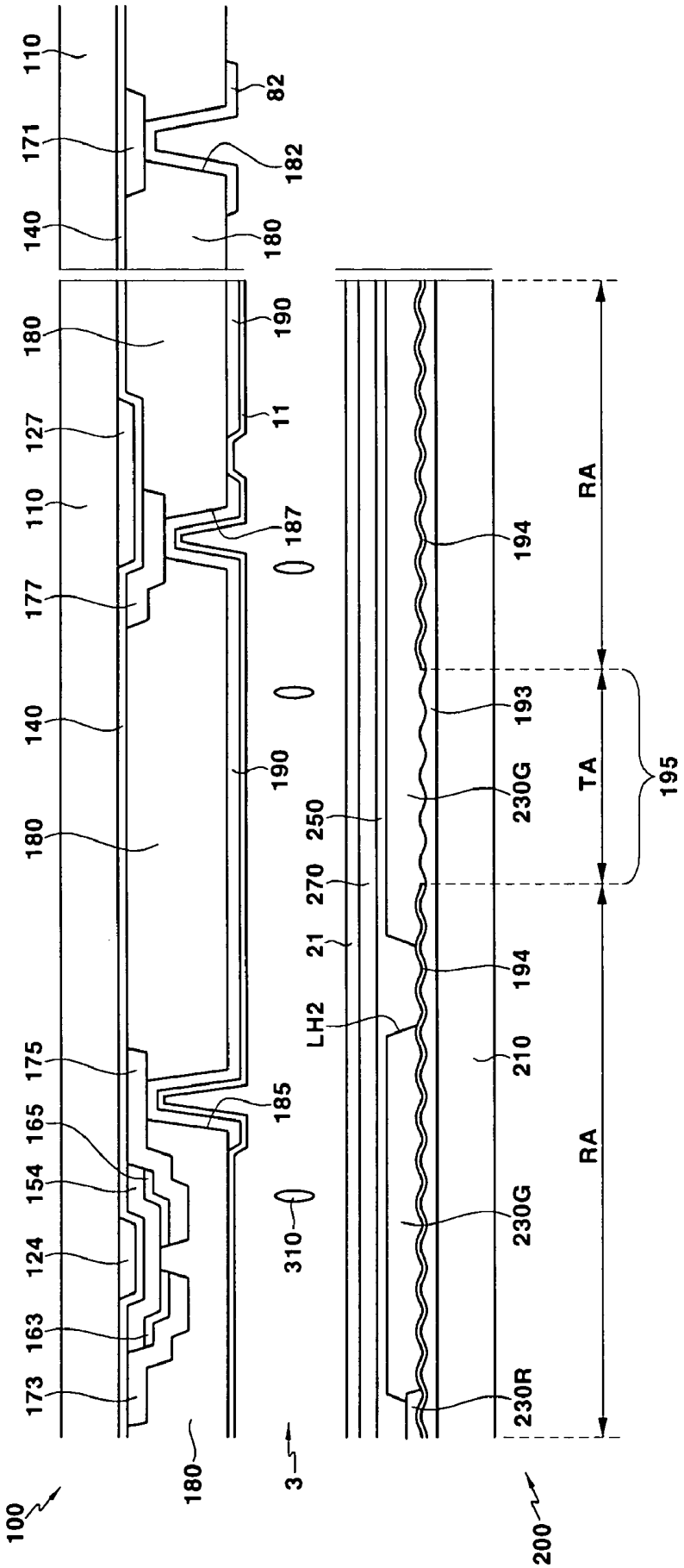

82
182
171
175
185
121
124
187
171
173
154
177
127
151
195
230R
230G
230B
LH1
LH2
LH3
IV
IV'

FIG. 4


110
171
140
82
182
180
180
127
110
177
140
180
190
11
187
190
175
165
154
124
163
173
185
310
180
3
100
250
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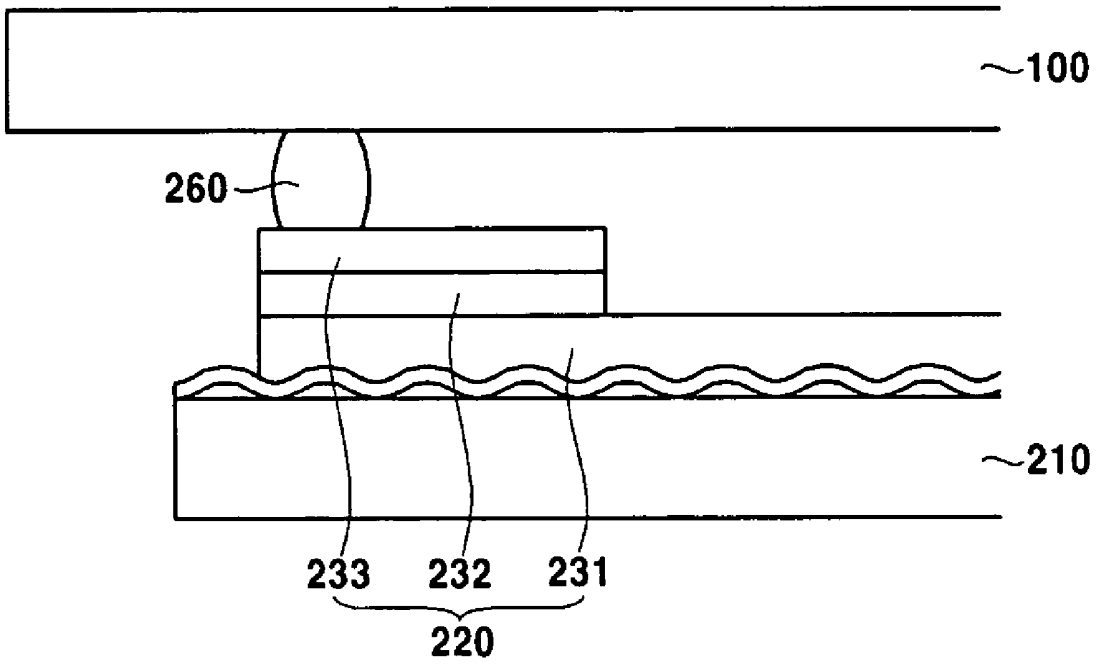
LH2
194
193
230G
194
210
230G
230R
RA
TA
RA
195
200

FIG.5



COLOR FILTER PANEL, AND LIQUID CRYSTAL DISPLAY INCLUDING COLOR FILTER PANEL

BACKGROUND OF THE INVENTION

[0001] (a) Field of the Invention

[0002] The present invention relates to a color filter panel and a liquid crystal display, and especially to a transflective liquid crystal display including a color filter panel.

[0003] (b) Description of Related Art

[0004] A liquid crystal display ("LCD") is one of the most prevalent flat panel displays, and it includes two panels having field-generating electrodes and a liquid crystal layer interposed therebetween. It controls the transmittance of light passing through the liquid crystal layer by adjusting voltages applied to the electrodes to re-arrange liquid crystal molecules in the liquid crystal layer.

[0005] One of the most popular of these LCDs has electrodes on the respective panels and a plurality of thin film transistors ("TFTs") for switching the voltages applied to the electrodes. Generally, the TFTs are provided on one of the two panels.

[0006] Such LCDs can be classified into three types, one of which is a transmissive type, which displays images by transmitting light from a light source called a backlight through the liquid crystal layer. A second type is the reflective type, which displays images by reflecting external light such as natural light into the liquid crystal layer using a reflector included in LCD. The third type of LCD is the transflective type, which is capable of operating in both a transmissive mode and a reflective mode.

[0007] In the transflective type of LCD, the reflector may be disposed along with color filters, and a portion of the reflector includes a black matrix for preventing light leakage, such that a manufacturing process thereof may be simplified by omitting the black matrix.

[0008] However, the reflector, which is disposed at the edge of the LCD, reflects external light into the display area, such that the light leakage is generated at the edge of the LCD.

SUMMARY OF THE INVENTION

[0009] A liquid crystal display is provided, which includes: a color filter panel having a first insulating substrate, a reflector having a window and formed on the first insulating substrate, a plurality of color filters formed on the reflector, a light blocking member defining a display area by being formed at the circumference of the first insulating substrate and including a layer disposed on the same layer as the color filters, and a common electrode formed on the color filters; a thin film transistor array panel having a second insulating substrate facing the first insulating substrate, a plurality of gate and data lines formed on the second insulating substrate and insulated from and intersecting with each other, a plurality of thin film transistors connected to the gate and the data lines, and a plurality of pixel electrodes connected to the thin film transistors and disposed on the pixel area enclosed by the gate and the data lines; and a liquid crystal layer formed between the color filter panel and the thin film transistor array panel.

[0010] The liquid crystal display may further include a sealant sealing the liquid crystal layer and formed at the circumference of the display area, and the light blocking member may be disposed interior to the sealant.

[0011] The liquid crystal display may further include a sealant sealing the liquid crystal layer and formed at the circumference of the display area, and the sealant may be disposed on the light blocking member.

[0012] The color filters may include color filters of red, green, and blue colors, and the layer of the light blocking member may be made of the same layer as one of the color filters of red, green, and blue.

[0013] The color filters may include color filters of red and blue.

[0014] The portion of the light blocking member may overlap the reflector.

[0015] The window may be occupied in the portion of the pixel area.

[0016] The reflector may have unevenness.

[0017] The color filter panel may further include an insulating layer having unevenness and formed on the first insulating substrate.

[0018] The color filter panel may further include an overcoat covering the color filters.

[0019] A color filter panel is provided, which includes: an insulating substrate; a reflector having a window and being formed on the insulating substrate; a plurality of color filters formed on the reflector; a light blocking member defining a display area by being formed at the circumference of the insulating substrate and including a layer disposed on the same layer as the color filters; and a common electrode formed on the color filters.

[0020] The color filters may include color filters of red, green, and blue colors, and the layer of the light blocking member may be made of the same layer as one of the color filters of red, green, and blue.

[0021] The color filters may include color filters of red and blue.

[0022] The portion of the light blocking member may overlap the reflector.

[0023] The reflector may have unevenness.

[0024] The color filter panel may further include an insulating layer having unevenness and formed on the insulating substrate.

[0025] The color filter panel may further include an overcoat covering the color filters.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] The above and other advantages of the present invention will become more apparent in light of the preferred embodiments which are described below in detail with reference to the accompanying drawings, in which:

[0027] **FIG. 1** is a layout view of a transflective LCD according to an embodiment of the present invention;

[0028] **FIG. 2** is a sectional view of the LCD taken along the line II-II';

[0029] **FIG. 3** shows a layout view of a pixel and a contact portion of the transflective LCD shown in **FIG. 1**;

[0030] **FIG. 4** is a sectional view of the LCD shown in **FIG. 3**, taken along the line IV-IV'; and

[0031] **FIG. 5** is a sectional view of an LCD according to another embodiment of the present invention, taken along the line II-II'.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0032] The present invention is described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. In the drawings, the thickness of layers and regions are exaggerated for clarity. Like numerals refer to like elements throughout. It will be understood that when an element such as a layer, film, region, substrate, or panel is referred to as being "on" another element, it can be directly on the other element or intervening elements may also be present. In contrast, when an element is referred to as being "directly on" another element, there are no intervening elements present.

[0033] Now, a color filter panel, a transflective liquid crystal display, and a manufacturing method thereof according to embodiments of the present invention will be described with reference to the drawings.

[0034] First, a structure of an LCD according to an embodiment of the present invention is described in detail with reference to **FIGS. 1 and 2**.

[0035] **FIG. 1** is a layout view of a transflective LCD according to an embodiment of the present invention, and **FIG. 2** is a sectional view of the LCD taken along the line II-II'.

[0036] As shown in **FIGS. 1 and 2**, an LCD according to an embodiment of the present invention includes a color filter panel **200** and a thin film transistor array panel **100** facing each other with a liquid crystal layer **3** interposed therebetween. At this time, a reflector **194** is formed on the color filter panel **200**, which is disposed under the thin film transistor array panel **100**, the image display being displayed on the thin film transistor array panel **100**.

[0037] A plurality of gate lines **121** and a plurality of data lines **171**, which intersect each other to define a plurality of pixel areas P arranged in a matrix, are formed on the thin film transistor array panel **100**. In each pixel area P, a TFT connected to the gate and the data lines **121** and **171** and a pixel electrode electrically connected to the TFT are provided. The plurality of pixels P form a display area D.

[0038] The end portions of the gate and the data lines **121** and **171** extend outside of the display area D, and they approach each other group by group like a fan and then become parallel again farther away from the display area D. Such an area except for the display area D is referred to as a peripheral area. The end portions of the signal lines **121** and **171** are contact portions to connect to the external circuit.

[0039] An insulating layer **193**, which has a varying thickness, and a reflector **195** are formed on the color filter panel **200**. Because the surface of the insulating layer **193** is not flat, the surface of the reflector **194** is also not flat, thus exhibiting a wave-shaped appearance as viewed in **FIG. 2**. A light blocking member **220** (indicated by a hatched area) for blocking light leakage to the exterior to the display area D is disposed around the display area D.

[0040] The light blocking member **220** includes at least one color filter which represents one of the primary colors such as red, green, and blue colors in the display area D, and has a multi-layered structure including three layers **231**, **232**, and **233** of color filters. It is preferable that the light blocking member **220** is made by overlapping the color filters of red and green colors, or the color filters of red, green, and blue colors.

[0041] In the LCD according to the present invention, because the light blocking member **220** is made of color filters **231**, **232**, and **233**, the light incident on the reflector **194** may be minimized, and the portion of light incident on the reflector **194** transmits through the light blocking member **220** which blocks the light reflected by the reflector **194**. Accordingly, the light blocking member **220** may completely block light leakage to the exterior of the display area D.

[0042] Because the light blocking member **220** is made of color filters **231**, **232**, and **233**, the additional process for forming the light blocking member **220** may be omitted.

[0043] A sealant **260** is formed between the thin film transistor array panel **100** and the color filter panel **200**, and the liquid crystal layer **3** between the thin film transistor array panel **100** and the color filter panel **200** is sealed therein by the sealant **260**. At this time, the light blocking member **220** is surrounded by the sealant **260**, and is more enclosed by the display area D than the sealant **260**, as shown in **FIGS. 1 and 2**.

[0044] The LCD according to the embodiment further includes an alignment layer coated on the inside of the two panels **100** and **200**, a pair of polarizers provided on outer surfaces of the panels **100** and **200** such that their transmissive axes are crossed, retardation films interposed between the panels and the polarizers, and a backlight unit for providing light for the polarizers, the panels **100** and **200**, and the LC layer **3**.

[0045] Next, a pixel and a contact portion of an LCD according to an embodiment of the present invention are described in detail with reference to **FIGS. 3 and 4**.

[0046] **FIG. 3** shows a layout view of a pixel and a contact portion of the transflective LCD shown in **FIG. 1**, and **FIG. 4** is a sectional view of the LCD shown in **FIG. 3** taken along the line IV-IV'.

[0047] In a color filter panel **200**, as shown in **FIGS. 3 and 4**, an insulating layer **193** made of an organic material is formed on an insulating substrate **210**. The surface of the insulating layer **193** is uneven.

[0048] A reflector **194** made of a reflective conductor such as Ag, Al, and their alloys is formed on the insulating layer **193**, and the surface of the reflector **194** is also uneven depending on the unevenness of the insulating layer **193**. The unevenness of the reflector **195** may maximize reflection.

[0049] Reflector **194** is wholly formed within the perimeter of color filter panel **200**, and includes a plurality of transmitting windows **195** corresponding to each pixel P (referring to **FIG. 1**). An area occupied by a transmitting window **195** is referred to as a "transmissive area" TA, while the remaining area of the pixel P is referred to as a "reflective area" RA hereinafter.

[0050] A plurality of color filters **230**R, **230**G, and **230**B are formed on the reflector **194** and they are disposed substantially in each pixel. The color filters **230**R, **230**G, and **230**B extend substantially along the longitudinal direction along the pixel row. The color filters **230**R, **230**G, and **230**B each represent one of the primary colors such as red, green, and blue colors, and the boundaries of the color filters **230**R, **230**G, and **230**B are located on signal lines such as a gate and data lines.

[0051] A light blocking member **220** (as shown in **FIG. 1**) for blocking light leakage exterior to the display area D is disposed around the display area D. The light blocking member **220** is made of the same material as the color filters **230**R, **230**G, and **230**B, and includes at least two color filters among the color filters **230**R, **230**G, and **230**B. The deposition order of color filters of the light blocking member **220** may vary depending on a desired formation sequence of the color filters **230**R, **230**G, and **230**B.

[0052] The color filters **230**R, **230**G, and **230**B respectively have a plurality of light holes LH**1**, LH**2**, and LH**3**, one of which is shown in **FIG. 4**. The transflective type of LCD shows non-uniform color reproducibility between the transmissive area TA and the reflective area RA since the number of times the light passes through the color filters is different, which results in deterioration of the display characteristics. That is, the light in the transmissive area passes through the liquid crystal layer **3** and the color filters **230**R, **230**B, and **230**B only once to reach a user's eye, while the light in the reflective area RA passes through the liquid crystal layer and the color filters **230**R, **230**G, and **230**B twice. Therefore, the impressions of the color in the two modes become different, and the light holes LH**1**, LH**2**, and LH**3** may enhance the color reproduction properties for the two areas TA and RA, thereby improving the display characteristic of the LCD.

[0053] Because the visibility of the color filter **230**G is higher than that of the color filters **230**B and **230**R, the light hole LH**2** of color filter **230**G is larger than the light holes LH**1** and LH**3**. In this embodiment, the light holes LH**1**, LH**2**, and LH**3** extend along the horizontal longitudinal direction across the pixel to form the light holes LH**1**, LH**2**, and LH**3**, and the areas of the light holes LH**1**, LH**2**, and LH**3** are varied by controlling the widths of the light holes LH**1**, LH**2**, and LH**3**. The number of light holes LH**1**, LH**2**, and LH**3** having the same areas may be varied to enhance the color reproduction characteristics.

[0054] As shown in **FIG. 4**, an overcoat **250** for preventing the color filters **230** from being exposed and for providing a flat surface is formed on the color filters **230**R, **230**G, and **230**B and the light blocking member **220**.

[0055] A common electrode **270** preferably made of a transparent conductive material such as ITO or IZO is formed on the overcoat **250**, and an alignment layer **21** is formed on the common electrode **270**.

[0056] Next, the structure of the thin film transistor array panel **100** facing the color filter panel **200** in the LCD according to the embodiment of the present invention is described in more detail.

[0057] The thin film transistor array panel **100** includes an insulating substrate **110**. A plurality of gate lines **121** for transmitting gate signals are formed on the insulating substrate **110**.

[0058] Each gate line **121** extends substantially in a transverse direction, and a plurality of portions of each gate line **121** form a plurality of gate electrodes **124**. Each gate line **121** includes a plurality of expansions **127** protruding downward. The gate lines **121** may include an end portion (not shown) having a large area for connection with an external driving circuit.

[0059] The gate lines **121** are preferably made of low resistivity material including an Al-containing metal such as Al and an Al alloy (e.g. Al—Nd). The gate lines **121** may have a multi-layered structure including two films having different physical characteristics. One of the two films is preferably made of a low resistivity metal including an Al-containing metal for reducing signal delay or voltage drop in the gate lines **121**. The other film is preferably made of a material such as Cr, Mo, a Mo alloy, Ta, or Ti, which has good physical, chemical, and electrical contact characteristics with other materials such as indium tin oxide (ITO) or indium zinc oxide (IZO). Good examples of the combination of the two films are a lower Cr film and an upper Al—Nd alloy film, and a lower Al film and an upper Mo film.

[0060] In addition, the lateral sides of the gate lines **121** are inclined relative to a surface of the substrate **110**, and a gate insulating layer **140** preferably made of silicon nitride (SiNx) or the like covers the gate lines **121**.

[0061] A plurality of semiconductor stripes **151** preferably made of hydrogenated amorphous silicon (abbreviated to "a-Si") or polysilicon are formed on the gate insulating layer **140**. Each semiconductor stripe **151** extends substantially in the longitudinal direction and has a plurality of projections **154** branched out toward the gate electrodes **124**. The semiconductor stripes **151** become wide near the gate lines **121** such that the semiconductor stripes **151** cover large areas of the gate lines **121**.

[0062] A plurality of ohmic contact stripes and islands **161** and **165** preferably made of silicide or n+ hydrogenated a-Si heavily doped with an N-type impurity such as phosphorous are formed on the semiconductor stripes **151**. Each ohmic contact stripe **161** has a plurality of projections **163**, and the projections **163** and the ohmic contact islands **165** are located in pairs on the projections **154** of the semiconductor stripes **151**.

[0063] The lateral sides of the semiconductor **151** and ohmic contact stripes and islands **161** and **165** are inclined relative to a surface of the substrate **110**.

[0064] A plurality of data lines **171**, a plurality of drain electrodes **175**, and a plurality of storage capacitor conductors **177** are formed on the ohmic contacts **161** and **165** and the gate insulating layer **140**.

[0065] The data lines **171** for transmitting data voltages extend substantially in the longitudinal direction and intersect the gate lines **121**. A plurality of branches of each data

line **171**, which project toward the drain electrodes **175**, form a plurality of source electrodes **173**. Each pair of the source electrodes **173** and the drain electrodes **175** are separated from each other and are opposite each other with respect to a gate electrode **124**.

[**0066**] A gate electrode **124**, a source electrode **173**, and a drain electrode **175** along with the projection **154** of a semiconductor stripe **151** form a TFT having a channel formed in the projection **154** disposed between the source electrode **173** and the drain electrode **175**.

[**0067**] The storage capacitor conductors **177** overlap the expansions **127** of the gate lines **121**.

[**0068**] The data lines **171**, the drain electrode **175**, and the storage conductors **177** are preferably made of a refractory metal including Cr, Mo, Ti, Ta, or alloys thereof. They may have a multi-layered structure preferably including a low resistivity film and a good contact film. A good example of the multi-layered structure includes a Mo lower film, an Al middle film, and a Mo upper film as well as the above-described combinations of a Cr lower film and an Al—Nd upper film and an Al lower film and a Mo upper film.

[**0069**] The ohmic contacts **161** and **165** are interposed only between the underlying semiconductor stripes **151** and the overlying data lines **171** and the overlying drain electrodes **175** thereon, and they reduce the contact resistance therebetween. The semiconductor stripes **151** include a plurality of exposed portions, which are not covered with the data lines **171** and the drain electrodes **175**, such as portions located between the source electrodes **173** and the drain electrodes **175**. Although the semiconductor stripes **151** are narrower than the data lines **171** at most places, the width of the semiconductor stripes **151** becomes large near the gate lines as described above, to enhance the insulation between the gate lines **121** and the data lines **171**.

[**0070**] A passivation layer **180** is formed on the data lines **171**, the drain electrodes **175**, the storage conductors **177**, and the exposed portions of the semiconductor stripes **151**. The passivation layer **180** is preferably made of a photosensitive organic material having a good flatness characteristic.

[**0071**] The passivation layer **180** may further include an insulating layer made of an inorganic material such as silicon nitride and silicon oxide to prevent the semiconductor **151** between the drain electrode **175** and the source electrode **173** from contacting the organic layer.

[**0072**] The passivation layer **180** is etched to provide a plurality of contact holes **185**, **187**, and **182** exposing the drain electrodes **175**, the storage conductors **177**, and end portions of the data lines **171**, respectively. The end portions have larger areas than those of the gate lines **121** and the data lines **171**.

[**0073**] A plurality of pixel electrodes **190**, and a plurality of contact assistants **82**, which are preferably made of at least one of transparent conductor such as ITO or IZO, are formed on the passivation layer **180**.

[**0074**] The pixel electrodes **190** are physically and electrically connected to the drain electrodes **175** through the contact holes **185** and to the storage capacitor conductors **177** through the contact holes **187** such that the pixel electrodes **190** receive the data voltages from the drain electrodes **175** and transmit the received data voltages to the storage capacitor conductors **177**.

[**0075**] Referring to **FIG. 4**, the pixel electrodes **190** which are supplied with the data voltages generate electric fields in cooperation with the common electrode **270** which is located on the color panel **200**, and this determines the orientation of liquid crystal molecules **310** in a liquid crystal layer **3**.

[**0076**] As described above, a pixel electrode **190** and a common electrode **70** form a liquid crystal capacitor, which stores applied voltages after turn-off of the TFT. An additional capacitor called a "storage capacitor," which is connected in parallel to the liquid crystal capacitor, is provided for enhancing the voltage storing capacity.

[**0077**] The storage capacitors are implemented by overlapping the pixel electrodes **190** with the gate lines **121** adjacent thereto (called "previous gate lines"). The capacitances of the storage capacitors, i.e., the storage capacitances, are increased by providing the expansions **127** at the gate lines **121** for increasing overlapping areas and by providing the storage capacitor conductors **177**, which are connected to the pixel electrodes **190** and overlap the expansions **127**, under the pixel electrodes **190** for decreasing the distance between the terminals.

[**0078**] When forming the passivation layer **180** which has a low dielectric ratio, the pixel electrodes **190** overlap the gate lines **121** and the data lines **171** to increase the aperture ratio, but this is optional.

[**0079**] The contact assistants **82** are connected to the end portions of the data lines **171** through the contact holes **182**. The contact assistants **82** protect the end portions **179** and complement the adhesion of the end portions **179** and external devices.

[**0080**] An alignment layer **11** is formed on the pixel electrode **190**.

[**0081**] Now, an LCD according to another embodiment of the present invention will be described with reference of **FIG. 5**.

[**0082**] Another embodiment of the present invention is illustrated in **FIG. 5** which is a sectional view of an LCD according to another embodiment of the present invention taken along the line II-II'.

[**0083**] As shown in **FIG. 5**, a sealant **260** is disposed on a light blocking member **220**.

[**0084**] In the LCD according to the present invention, the light blocking member **220** may completely block light leakage exterior to the display area by forming the light blocking member using color filters without the additional process, thereby enhancing the characteristics of the LCD.

[**0085**] Although preferred embodiments of the present invention have been described in detail hereinabove, it should be clearly understood that many variations and/or modifications of the basic inventive concepts herein taught which may appear to those skilled in the present art will still fall within the spirit and scope of the present invention, as defined in the appended claims.

What is claimed is:

1. A liquid crystal display comprising:

a color filter panel comprising:

a first insulating substrate;

a reflector including a window formed on the first insulating substrate;

a plurality of color filters formed on the reflector;

a light blocking member defining a display area and being formed at a circumference of the first insulating substrate, wherein the light blocking member is constructed using a portion of a layer of one or more of the color filters;

and a common electrode formed on the color filters;

a thin film transistor array panel comprising:

a second insulating substrate;

a plurality of gate and data lines formed on the second insulating substrate and insulated from and intersecting each other;

a plurality of thin film transistors connected to the gate and the data lines;

and a plurality of pixel electrodes connected to the thin film transistors and disposed on the pixel area enclosed by the gate and the data lines; and,

a liquid crystal layer positioned between the color filter panel and the thin film transistor array panel.

2. The liquid crystal display of claim 1, further comprising:

a sealant interposed between the color filter panel and the thin film transistor array panel, the sealant being positioned at the circumference of the display area,

wherein the light blocking member is disposed interior to the sealant.

3. The liquid crystal display of claim 1, further comprising:

a sealant interposed between the color filter panel and the thin film transistor array panel, the sealant being positioned at the circumference of the display area,

the sealant being disposed on the light blocking member.

4. The liquid crystal display of claim 1, wherein the color filters include color filters of red and blue colors, and a layer of the light blocking member is made of the same layer as one of the color filters of red and blue.

5. The liquid crystal display of claim 4, wherein the color filters further include a green color filter.

6. The liquid crystal display of claim 1, wherein a portion of the light blocking member overlaps the reflector.

7. The liquid crystal display of claim 1, wherein the window is occupied in the portion of the pixel area.

8. The liquid crystal display of claim 1, wherein a surface of the reflector is wave-shaped.

9. The liquid crystal display of claim 4, wherein the color filter panel further includes an insulating layer having a varying thickness formed on the first insulating substrate.

10. The liquid crystal display of claim 4, wherein the color filter panel further includes an overcoat covering the color filters.

11. A color filter panel comprising:

an insulating substrate;

a reflector having a window and formed on the insulating substrate;

a plurality of color filters formed on the reflector;

a light blocking member defining a display area and being formed at a circumference of the insulating substrate, wherein the light blocking member is constructed using a portion of a layer of one or more of the color filters;

a common electrode formed on the color filters.

12. The color filter panel of claim 11, wherein the color filters include color filters of red and blue colors, and the layer of the light blocking member is made of the same layer as one of the color filters of red and blue.

13. The color filter panel of claim 12, wherein the color filters further include a green color filter.

14. The color filter panel of claim 11, wherein a portion of the light blocking member overlaps the reflector.

15. The color filter panel of claim 11, wherein a surface of the reflector is wave-shaped.

16. The color filter panel of claim 11, further comprising:

an insulating layer having a varying thickness formed on the insulating substrate.

17. The color filter panel of claim 11, further comprising:

an overcoat covering the color filters.

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专利名称(译)	滤色器面板和包括滤色器面板的液晶显示器		
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摘要(译)

提供一种液晶显示器，包括：滤色器面板，具有第一绝缘基板，具有窗口并形成在第一绝缘基板上的反射器，形成在反射器上的多个滤色器，限定显示器的光阻挡构件通过在第一绝缘基板的圆周上形成并包括与滤色器设置在同一层上的层，以及在滤色器上形成的公共电极;薄膜晶体管阵列面板，具有面向第一绝缘基板的第二绝缘基板，形成在第二绝缘基板上的多条栅极线和数据线彼此绝缘并相互交叉，多个薄膜晶体管连接到栅极和数据线和多个像素电极连接到薄膜晶体管并设置在由栅极线和数据线包围的像素区域上;以及在滤色器面板和薄膜晶体管阵列面板之间形成的液晶层。