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Display panel and display device

Abstract

Provided are a display panel and display device. The display panel includes a first organic forbidden area and a first organic baffle wall disposed around a display area. The display area includes multiple light emitting units arranged in an array, and each light emitting unit includes a first electrode and a second electrode. The display panel further includes a substrate and a first metal layer and a second metal layer located at a side of the substrate, the second metal layer is configured to provide a first power supply for the second electrode through the first metal layer, and the first metal layer covers at least part of the first organic forbidden area and at least part of the first organic baffle wall. The display panel further includes an organic protective layer which covers at least a side wall of an edge of the first metal layer.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION

(1) This application claims priority to Chinese Patent Application No. 202011520255.2 filed Dec. 21, 2020, the disclosure of which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

(2) The present disclosure relates to a display technology field and in particular, to a display panel and a display device.

BACKGROUND

(3) With the continuous renewal of display technologies, narrow bezel design and bezel-less design have become hot topics in recent years. Since the volume of the display screen adopting the narrow bezel design can be compressed maximally and the visual area of the display screen is wider at the same time, the narrow bezel design becomes the development trend and direction of the future display screen.

(4) However, as the bezel of the display screen becomes more and more narrow, the sealing quality of the display screen is often affected, resulting in that the display screen's performance in blocking water vapor is deteriorated and the external water vapor can easily reach the display area through the bezel, thereby leading to poor display and reducing the reliability of the display screen.

SUMMARY

(5) The present disclosure provides a display panel and a display device to improve the problem of water vapor invasion and improve the reliability of the display panel.

(6) In one aspect, embodiments of the present disclosure provide a display panel. The display panel includes: a display area. The display area includes multiple light emitting units arranged in an array, and each of the multiple light emitting units includes a first electrode and a second electrode.

(7) The display area includes multiple light emitting units arranged in an array and the light emitting units include a first electrode and a second electrode.
(8) The display panel further includes a substrate, and a first metal layer and a second metal layer which are located at a side of the substrate. The first metal layer is disposed in a same layer as the first electrode, and the first metal layer is located at a side of the second metal layer facing away from the substrate.
(9) The second electrode is connected to the first metal layer, the first metal layer is connected to the second metal layer. The second metal layer is configured to provide a first power supply for the second electrode through the first metal layer.
(10) The first metal layer covers at least part of the first organic forbidden area and at least part of the first organic baffle wall.
(11) The display panel includes an organic protective layer. The organic protective layer covers at least a side wall of an edge of the first metal layer, and the organic protective layer is connected to the first organic baffle wall.
(12) The edge of the first metal layer includes a first edge segment, and the first edge segment overlaps the first organic forbidden area in a direction perpendicular to the substrate.
(13) A length of the first edge segment is larger than a length of the first organic forbidden area in a first direction. The first direction is a direction in which the display area points to the first organic forbidden area.
(14) In another aspect, embodiments of the present disclosure further provide a display device including the display panel described in the first aspect.

Description

BRIEF DESCRIPTION OF DRAWINGS
(1) FIG. **1** is a structural view of a display panel provided by an embodiment of the present disclosure;
(2) FIG. **2** is a sectional view taken along a line A-A′ of FIG. **1**;
(3) FIG. **3** is a sectional view taken along a line B-B′ of FIG. **1**;
(4) FIG. **4** is an enlarged structural view of an area C of FIG. **1**;
(5) FIG. **5** is a sectional view taken along a line D-D′ of FIG. **4**;
(6) FIG. **6** is a partial structural view of a display panel provided by an embodiment of the present disclosure;
(7) FIG. **7** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(8) FIG. **8** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(9) FIG. **9** is a partial structural view of a display panel provided by an embodiment of the present disclosure;
(10) FIG. **10** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(11) FIG. **11** is a partial sectional view of a display panel provided by an embodiment of the present disclosure;
(12) FIG. **12** is a partial sectional view of another display panel provided by an embodiment of the present disclosure;
(13) FIG. **13** is a partial sectional view of another display panel provided by an embodiment of the present disclosure;
(14) FIG. **14** is a partial sectional view of another display panel provided by an embodiment of the present disclosure;

(15) FIG. **15** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(16) FIG. **16** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(17) FIG. **17** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(18) FIG. **18** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(19) FIG. **19** is a partial structural view of another display panel provided by an embodiment of the present disclosure;
(20) FIG. **20** is a partial sectional view of another display panel provided by an embodiment of the present disclosure; and
(21) FIG. **21** is a structural diagram of a display device provided by an embodiment of the present disclosure.

DETAILED DESCRIPTION

(22) Hereinafter, the present disclosure will be further described in detail in conjunction with drawings and embodiments. It is to be understood that the embodiments set forth herein are intended to explain the present disclosure and not to limit the present disclosure. Additionally, it is to be noted that for ease of description, merely part, not all, of the structures related to the present disclosure are illustrated in the drawings.

(23) FIG. **1** is a structural view of a display panel provided by an embodiment of the present disclosure. FIG. **2** is a sectional view taken along a line A-A′ of FIG. **1**. FIG. **3** is a sectional view taken along a line B-B′ of FIG. **1**. FIG. **4** is an enlarged structural view of area C of FIG. **1**. FIG. **5** is a sectional view taken along a line D-D′ of FIG. **4**. As shown in FIGS. **1** to **5**, the display panel provided by the embodiment of the present disclosure includes a display area **10**, and a first organic forbidden area **12** and a first organic baffle wall **11** which are disposed around the display area **10**. The display area **10** includes multiple light emitting units **20** arranged in an array, and each light emitting unit **20** includes a first electrode **201** and a second electrode **202**. The display panel further includes a substrate **30**, and a first metal layer **31** and a second metal layer **32** which are located at a side of the substrate **30**. The first metal layer **31** is disposed in a same layer as the first electrode **201**, and the first metal layer **31** is located at a side of the second metal layer **32** facing away from the substrate **30**. The second electrode **202** is connected to the first metal layer **31**, the first metal layer **31** is connected to the second metal layer **32**, the second metal layer **32** is configured to provide a first power supply for the second electrode **202** through the first metal layer **31**, and the first metal layer **31** covers at least part of the first organic forbidden area **12** and at least part of the first organic baffle wall **11**. The display panel further includes an organic protective layer **33**. The organic protective layer **33** covers at least a side wall of an edge of the first metal layer **31**, and the organic protective layer **33** is connected to the first organic baffle wall **11**. The edge of the first metal layer **31** includes a first edge segment **311**, and the first edge segment **311** overlaps the first organic forbidden area **12** in a direction perpendicular to the substrate **30**. A length of the first edge segment **311** is larger than a length of the first organic forbidden area **12** in a first direction X. The first direction X is a direction in which the display area **10** points to the first organic forbidden area **12**.

(24) Specifically, as shown in FIGS. **1** to **5**, the display area **10** includes multiple light emitting units **20** arranged in an array; each light emitting unit **20** includes a first electrode **201**, a second electrode **202**, and a light emitting functional layer **203** between the first electrode **201** and the second electrode **202**. The first electrode **201** may be an anode, the second electrode **202** may be a cathode, and the light emitting functional layer **203** may emit light through carrier injection and recombination under the driving of an electric field between the first electrode **201** and the second electrode **202**, thereby achieving a display function.

(25) Further referring to FIGS. **1** to **5**, the display panel further includes the substrate **30**, and the first metal layer **31** and the second metal layer **32** which are located at a side of the substrate **30**. The first metal layer **31** is located at the side of the second metal layer **32** facing away from the substrate **30**. The second electrode **202** is connected to the first metal layer **31**, the first metal layer **31** is connected to the second metal layer **32**, so that the second metal layer **32** is configured to provide a first power supply for the second electrode **202** through the first metal layer **31**. Compared with the case where the second metal layer **32** is directly electrically connected to the second electrode **202**, in this embodiment, drilling a deeper through hole to make the second metal layer **32** be directly connected to the second electrode **202** can be avoided, so that the problem of poor contact between the second metal layer **32** and the second electrode **202** caused by drilling the deeper through hole can be solved, which facilitates improving the reliability of the display panel. The second metal layer **32** may be connected to the drive chip **40**, and the first power supply may be a PVEE power supply provided by the drive chip **40**. The PVEE power supply passes through the second metal layer **32** and the first metal layer **31** sequentially to reach the second electrode **202**, thereby driving the light emitting functional layer **203** to emit light.

(26) In addition, the first metal layer **31** and the first electrode **201** may be disposed in the same layer, thereby reducing a configuration of one metal layer, which facilitates reducing the production cost and the thickness of the display panel. Meanwhile, the first metal layer **31** and the first electrode **201** can be prepared in the same process, thereby shortening the preparation time of the display panel.

(27) Further referring to FIGS. **1** to **5**, the display panel further includes a thin film package layer **41** and a first organic baffle wall **11** disposed around the display area **10**. The thin film package layer **41** is located on the side of the second electrode **202** facing away from the substrate **30**, and may include a first inorganic package layer **411**, an organic package layer **412**, and a second inorganic package layer **413**. The thin film package layer **41** has advantages of lightness, thinness, flexibility and the like while isolating the water vapor, thereby protecting the display panel from the water and oxygen. The first organic baffle wall **11** is used for defining a boundary of the organic package layer **412**, which helps the thin film package layer **41** to better block the water and oxygen.

(28) Referring to FIGS. **1** to **5**, the display panel further includes a first organic forbidden area **12** disposed around the display area **10**, and no organic layer is disposed in the first organic forbidden area **12**. Such first organic forbidden area **12** plays a role of isolating the water vapor, thus preventing the water vapor on a side of the first organic forbidden area **12** facing away from the display area **10** from invading the display area **10** along the organic layer.

(29) Exemplarily, as shown in FIGS. **1** to **5**, the display panel further includes an organic planarization layer **34**, a pixel defining layer **35**, and an organic support pillar **36**. The organic planarization layer **34** is located on the side of the first metal layer **31** facing towards the substrate **30**. In a direction perpendicular to the substrate **30** is located, the pixel defining layer **35** is located on a side of the first metal layer **31** facing away from the substrate **30**, the pixel defining layer **35** includes multiple opening structures in each of which a respective one of the multiple light emitting units **20** is located. The organic support pillar **36** is located on the side of the first metal layer **31** facing away from the substrate **30**. The first organic baffle wall **11** can be prepared by selecting any one or more of the organic planarization layer **34**, the pixel defining layer **35** and the organic support pillar **36**. For example, as shown in FIGS. **2** and **5**, the first organic baffle wall **11** includes a first organic baffle wall sub-segment **111**, a second organic baffle wall sub-segment **112** and the organic support pillar **36**. The first organic baffle wall sub-segment **111** is disposed in a same layer as the organic planarization layer **34**, so that the first organic baffle wall sub-segment **111** can be prepared in a same process as the organic planarization layer **34**. The second organic baffle wall sub-segment **112** is disposed in a same layer as the pixel defining layer **35**, so that the second organic baffle wall sub-segment **112** can be prepared in a same process as the pixel defining layer

35. The organic planarization layer **34** and the pixel defining layer **35** are both organic layers, and the water vapor may invade into the display area **10** from the first organic baffle wall **11** along at least one of the organic planarization layer **34** or the pixel defining layer **35**. Therefore, in the embodiment of the present disclosure, the first organic forbidden area **12** is disposed on the side of the first organic baffle wall **11** facing towards the display area **10**, and is not provided with organic layers such as the organic planarization layer **34** and the pixel defining layer **35**, thereby blocking a water vapor path at the first organic forbidden area **12**, preventing the water vapor at the first organic baffle wall **11** from invading the display area **10** along the organic layer, and improving the reliability of the display panel.

(30) It is to be noted that since the first inorganic package layer **411** is provided between the organic package layer **412** in the thin film package layer **41** and the organic layers such as the organic planarization layer **34** and the pixel defining layer **35** to isolate the water vapor, the first organic forbidden area **12** may be provided with the organic package layer **412**. Moreover, the first organic forbidden area **12** may be disposed on the side of the first organic baffle wall **11** facing towards the display area **10**, and the first organic forbidden area **12** may also be disposed on the side of the first organic baffle wall **11** facing away from the display area **10**. In the embodiment of the present disclosure, only the first organic forbidden area **12** being located on the side of the first organic baffle wall **11** facing towards the display area **10** is taken as an example. In other embodiments, those skilled in the art may configure according to actual requirements.

(31) Referring to FIGS. **1** to **5**, to ensure that the display panel has a large screen-to-body ratio while reducing the loading of the first metal layer **31** and the second metal layer **32**, an edge of a side of the first metal layer **31** facing away from the display area **10** is disposed at the first organic baffle wall **11** or on a side of the first organic baffle wall **11** facing away from the display area **10** to increase a contact area between the first metal layer **31** and the second metal layer **32**, so that the influence of the resistance on the first power supply in the transmission process between the first metal layer **31** and the second metal layer **32** is reduced, thereby improving the uniformity of the current on the second electrode **202** and avoiding the occurrence of Mura. Therefore, the first metal layer **31** may cover at least part of the first organic forbidden area **12** and at least part of the first organic baffle wall **11**.

(32) If an edge cross section of the first metal layer **31** is exposed, the edge of the first metal layer **31** is easy to be oxidized and raised, thus forming a dark spot and influencing the display effect of the display panel. Therefore, as shown in FIGS. **1** to **5**, the display panel provided by the embodiment of the present disclosure further includes an organic protective layer **33**, which covers at least a side wall of the edge of the first metal layer **31**, thereby preventing the edge cross section of the first metal layer **31** from being exposed, also thereby preventing the edge of the first metal layer **31** from being oxidized to form the dark spots, and improving the display effect of the display panel.

(33) Referring to FIGS. **4** and **5**, using an example in which the first organic forbidden area **12** is located on the side of the first organic baffle wall **11** facing towards the display area **10**, since the first metal layer **31** extends to the first organic baffle wall **11**, the first metal layer **31** covers part of the first organic forbidden area **12** and part of the first organic baffle wall **11**. The organic protective layer **33** is communicated with the first organic barrier **11** and the organic layer on a side of the first organic forbidden area **12** facing towards the display area **10** along the edge of the first metal layer **31** separately. Therefore, the organic protective layer **33** forms a water vapor transmission path, and the water vapor may easily enter the organic layer on the side of the first organic forbidden area **12** facing towards the display area **10** from the first organic baffle wall **11** along the organic protective layer **33**, and further invades the display area **10**, thus affecting the package quality and reducing the service life and reliability of the display panel.

(34) Referring to FIGS. **4** and **5**, in the display panel provided by the embodiment of the present disclosure, the edge of the first metal layer **31** includes the first edge segment **311** overlapping the

first organic forbidden area **12**. A length of the first edge segment **311** is provided to be larger than a length of the first organic forbidden area **12** in a first direction X to prolong the water vapor transmission path formed by the organic protective layer **33**, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel. The first direction X is a direction in which the display area **10** points to the first organic forbidden area **12**.

(35) Exemplarily; as shown in FIGS. **4** and **5**, if the edge of the first metal layer **31** is provided to overlap the edge of the second metal layer **32**, the length of the first edge segment **311** is the same as a length d**2** of the first organic forbidden area **12** in the first direction X. In this case, the water vapor may easily enter the display area **10** from the first organic baffle wall **11** along the organic protective layer **33**, thereby affecting the package quality: In this embodiment, the length d**1** of the first edge segment **311** is provided to be larger than the length d**2** of the first organic forbidden area **12** in the first direction X to prolong the water vapor transmission path formed by the organic protective layer **33**, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(36) In the display panel provided by the embodiment of the present disclosure, the first metal layer **31** is provided to cover at least part of the first organic forbidden area **12** and at least part of the first organic baffle wall **11**, so that the contact area between the first metal layer **31** and the second metal layer **32** is increased, and the influence of the resistance on the first power supply in the transmission process between the first metal layer **31** and the second metal layer **32** is reduced while ensuring a large screen-to-body ratio of the display panel, thereby improving the uniformity of the current on the second electrode **202**, and avoiding the occurrence of Mura. The organic protective layer **33** is provided to cover at least the side wall of the edge of the first metal layer **31**, thereby preventing the edge cross section of the first metal layer **31** from being exposed, thereby preventing the edge of the first metal layer **31** from being oxidized to form the dark spots, and improving the display effect of the display panel. In this embodiment, the length of the first edge segment **311** overlapping the first organic forbidden area **12** is provided to be larger than the length of the first organic forbidden area **12** in the first direction X to prolong the water vapor transmission path formed by the organic protective layer **33**, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(37) Further referring to FIGS. **4** and **5**, optionally; a vertical projection of the first edge segment **311** on the substrate **30** is a straight line, and an extension direction of the straight line intersects the first direction X.

(38) As shown in FIG. **4**, the extension direction of the first edge segment **311** is provided to intersect the first direction X. That is, the first edge segment **311** is disposed obliquely, so that the length of the first edge segment **311** is larger than the length d**2** of the first organic forbidden area **12** in the first direction X, the length of the first edge segment **311** is prolonged, and then the water vapor transmission path formed by the organic protective layer **33** is prolonged. In this manner, the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(39) FIG. **6** is a partial structural view of a display panel provided by an embodiment of the present disclosure. FIG. **7** is a partial structural view of another display panel provided by an embodiment of the present disclosure. As shown in FIGS. **6** and **7**, optionally, the vertical projection of the first edge segment **311** on the substrate **30** is a curve.

(40) As shown in FIG. **6**, the first edge segment **311** is provided to be a curve, so that the length of the first edge segment **311** is larger than the length d**2** of the first organic forbidden area **12** in the first direction X, the length of the first edge segment **311** is prolonged, and then the water vapor transmission path formed by the organic protective layer **33** is prolonged. In this manner, the water

vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(41) It is to be noted that the first edge segment **311** may be configured as an arbitrary curve. For example, the first edge segment **311** is configured as an arc line as shown in FIG. **6**, or the first edge segment **311** is configured as a wavy line as shown in FIG. **7**, which may be configured by those skilled in the art according to actual requirements.

(42) FIG. **8** is a partial structural view of another display panel provided by an embodiment of the present disclosure. FIG. **9** is a partial structural view of a display panel provided by an embodiment of the present disclosure. FIG. **10** is a partial structural view of another display panel provided by an embodiment of the present disclosure. As shown in FIGS. **8** to **10**, optionally, the first edge segment **311** includes at least a first edge sub-segment **42** and a second edge sub-segment **43**. The first edge sub-segment **42** is connected to the second edge sub-segment **43**. In a direction parallel to the substrate **30**, an extension direction of the first edge sub-segment **42** intersects an extension direction of the second edge sub-segment **43**.

(43) As shown in FIGS. **8** to **10**, the extension direction of the first edge sub-segment **42** of the first edge segment **311** is provided to intersect the extension direction of the second edge sub-segment **43** of the first edge segment **311** so that the first edge sub-segment **42** and the second edge sub-segment **43** form a polyline, and then a length of the first edge segment **311** is larger than a length d**2** of the first organic forbidden area **12** in a first direction X. Thus, the length of the first edge segment **311** is prolonged, and a water vapor transmission path formed by the organic protective layer **33** is prolonged, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(44) It is to be noted that the first edge segment **311** may be configured as an arbitrary polyline. For example, the first edge segment **311** is configured in a zigzag shape as shown in FIG. **8**, or the first edge segment **311** is configured in a stepped shape as shown in FIG. **9**, or the first edge segment **311** is configured in a pulse shape as shown in FIG. **10**, which may be configured by those skilled in the art according to actual requirements.

(45) FIG. **11** is a partial sectional view of a display panel provided by an embodiment of the present disclosure. As shown in FIG. **11**, optionally, the first edge segment **311** includes a third edge sub-segment **44** and a fourth edge sub-segment **45**, and a distance between the third edge sub-segment **44** and the fourth edge sub-segment **45** is D in a direction perpendicular to the substrate **30**, where $D>0$.

(46) As shown in FIG. **11**, the distance D between the third edge sub-segment **44** of the first edge segment **311** and the fourth edge sub-segment **45** of the first edge segment **311** is provided to be greater than 0, that is, the first edge segment **311** is undulating, so that the length of the first edge segment **311** is prolonged in a direction perpendicular to the substrate **30**, and a water vapor transmission path formed by the organic protective layer **33** is then prolonged. In this manner, the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(47) Further referring to FIG. **11**, optionally, the first organic forbidden area **12** includes at least one organic island **50**. The at least one organic island **50** is located on a side of the first metal layer **31** facing towards the substrate **30** facing towards the substrate **30**, and the at least one organic island **50** is spaced from the first organic baffle wall **11**. The at least one organic island **50** overlaps the third edge sub-segment **44** in a direction perpendicular to the substrate **30**.

(48) Specifically; as shown in FIG. **11**, the at least one organic island **50** is disposed in the first organic forbidden area **12**, the at least one organic island **50** is located on the side of the first metal layer **31** facing towards the substrate **30**, and the at least one organic island **50** overlaps the third edge sub-segment **44** in the direction perpendicular to the substrate **30**, so that a height difference between the third edge sub-segment **44** and the fourth edge sub-segment **45** is formed, the distance

D between the third edge sub-segment **44** and the fourth edge sub-segment **45** is achieved to be greater than 0. In this manner, the length of the first edge segment **311** in the direction perpendicular to the substrate **30** is prolonged, and then the water vapor transmission path formed by the organic protective layer **33** is prolonged, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(49) The at least one organic island **50** needs to be spaced from the first organic baffle wall **11**, thus preventing the at least one organic island **50** from being communicated with the first organic baffle wall **11** to form the water vapor transmission path.

(50) It is to be noted that the number of the organic islands **50** and the size of the organic island **50** can be set according to actual requirements, which is not limited by the embodiment of the present disclosure.

(51) Further referring to FIG. **11**, optionally, the display panel provided by the embodiment of the present disclosure further includes an organic planarization layer **34** located on a side of the first metal layer **31** facing towards the substrate **30**, and the at least one organic island **50** is disposed in a same layer as the organic planarization layer **34**.

(52) Specifically, as shown in FIG. **11**, the planarization layer **34** is disposed on the side of the first metal layer **31** facing towards the substrate **30**. The at least one organic island **50** is disposed in the same layer as the organic planarization layer **34** so that the at least one organic island **50** and the organic planarization layer **34** can be prepared in a same process, thereby shortening the preparation time of the display panel and reducing the cost.

(53) FIG. **12** is a partial sectional view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **12**, optionally, the display panel provided by the embodiment of the present disclosure further includes a third metal layer **37** and a first organic layer **38**. The third metal layer **37** is located on a side of the second metal layer **32** facing towards the first metal layer **31**, the first organic layer **38** is located between the second metal layer **32** and the third metal layer **37**, and the at least one organic island **50** is disposed in a same layer as the first organic layer **38**.

(54) Specifically, as shown in FIG. **12**, the display panel further includes the third metal layer **37**. The third metal layer **37** is located on the side of the second metal layer **32** facing towards the first metal layer **31**. The third metal layer **37** may be connected to the second metal layer **32** to form a double-layer trace, so that the trace resistance is reduced to achieve the effect of reducing the voltage drop, thereby reducing the display nonuniformity:

(55) The first organic layer **38** is disposed between the second metal layer **32** and the third metal layer **37**, thereby reducing a coupling capacitance between the second metal layer **32** and the third metal layer **37**, which facilitates improving the display effect of the display panel.

(56) The at least one organic island **50** is disposed in the same layer as the first organic layer **38** so that the at least one organic island **50** and the first organic layer **38** can be prepared in a same process, thereby shortening the preparation time of the display panel and reducing the cost.

(57) It is to be noted that the second metal layer **32** and the third metal layer **37** may be further provided with another insulating layer in addition to the first organic layer **38**, such as an inorganic layer insulating layer, which may be provided by those skilled in the art according to actual requirements.

(58) FIG. **13** is a partial sectional view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **13**, optionally, each organic island **50** includes a first organic sub-segment **51** and a second organic sub-segment **52**. The second organic sub-segment **52** is located on a side of the first organic sub-segment **51** facing away from the substrate **30**. The display panel further includes a third metal layer **37** and a first organic layer **38**. The third metal layer **37** is located on a side of the second metal layer **32** facing towards the first metal layer **31**, the first organic layer **38** is located between the second metal layer **32** and the third metal layer **37**, and the

first organic sub-segment **51** is disposed in a same layer as the first organic layer **38**. The display panel further includes an organic planarization layer **34**. The organic planarization layer **34** is located on a side of the first metal layer **31** facing towards the substrate **30**, and the second organic sub-segment **52** is disposed in a same layer as the organic planarization layer **34**.

(59) Specifically, as shown in FIG. **13**, each organic island **50** includes the first organic sub-segment **51** and the second organic sub-segment **52**. The first organic sub-segment **51** is disposed in a same layer as the first organic layer **38** so that the first organic sub-segment **51** and the first organic layer **38** can be prepared in a same process, thereby shortening the preparation time of the display panel and reducing the cost. The second organic sub-segment **52** is disposed in a same layer as the organic planarization layer **34** so that the second organic sub-segment **52** and the organic planarization layer **34** can be prepared in a same process, thereby shortening the preparation time of the display panel and reducing the cost.

(60) Each organic island **50** is provided to include the first organic sub-segment **51** and the second organic sub-segment **52** so that a distance D between the third edge sub-segment **44** and the fourth edge sub-segment **45** is increased, and then a length of the first edge segment **311** is further increased. In this manner, the water vapor transmission path formed by the organic protective layer **33** is prolonged, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(61) Further referring to FIGS. **12** and **13**, optionally, the first metal layer **31** is connected to the third metal layer **37**. The first organic layer **38** includes a first through hole **381**, and the third metal layer **37** is connected to the second metal layer **32** through the first through hole **381**.

(62) As shown in FIGS. **12** and **13**, the second metal layer **32** provides a first power supply to the second electrode **202** through the third metal layer **37** and the first metal layer **31**. Compared with the case where the second metal layer **32** is directly electrically connected to the second electrode **202**, in this embodiment, drilling a deeper through hole to make the second metal layer **32** be directly connected to the second electrode **202** can be avoided, so that the problem of poor contact between the second metal layer **32** and the second electrode **202** caused by drilling the deeper through hole can be solved, which facilitates improving the reliability of the display panel.

(63) Further referring to FIGS. **11** to **13**, optionally, each organic island **50** includes a first surface **501** and a second surface **502**. The first surface **501** is located on a side of the organic island **50** facing away from the substrate **30**, and the second surface **502** is located on a side of the organic island **50** facing towards the substrate **30**. A vertical projection of the first surface **501** on the substrate **30** is within a vertical projection of the second surface **502** on the substrate **30**.

(64) As shown in FIGS. **11** to **13**, in the direction perpendicular to the substrate **30**, the projection of the first surface **501** on the side of the organic island **50** facing away from the substrate **30** is located within the projection of the second surface **502** on the side of the organic island **50** facing towards the substrate **30**, so that a sidewall of the organic island **50** is inclined, thereby preventing the first metal layer **31** above the organic island **50** from being fractured.

(65) FIG. **14** is a partial sectional view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **14**, optionally, the display panel provided by the embodiment of the present disclosure further includes an inorganic layer **39**. The inorganic layer **39** is located on a side of the substrate **30** facing towards the first metal layer **31**, and the inorganic layer **39** includes at least one groove **53**. The at least one groove **53** is located in the first organic forbidden area **12**, and a vertical projection of each groove **53** on the substrate **30** overlaps a vertical projection of the respective fourth edge sub-segment **45** on the substrate **30**.

(66) As shown in FIG. **14**, the at least one groove **53** is disposed in the inorganic layer **39** in the first organic forbidden area **12** and the vertical projection of each groove **53** on the substrate **30** overlaps the vertical projection of the respective fourth edge sub-segment **45** on the substrate **30**, so that a height difference is formed between the fourth edge sub-segment **45** and the third edge sub-

segment **44**, a distance D between the third edge sub-segment **44** and the fourth edge sub-segment **45** is greater than ( ) In this manner, a length of the first edge segment **311** is prolonged in a direction perpendicular to the substrate **30**, and a water vapor transmission path formed by the organic protective layer **33** is further prolonged, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel.

(67) Further referring to FIG. **14**, optionally, the display panel provided by the embodiment of the present disclosure further includes a buffer layer **60**. The buffer layer **60** is located on a side of the substrate **30** facing towards the inorganic layer **39**. A depth of each groove **53** is H1, a thickness of the inorganic layer **39** is H2, and a thickness of the buffer layer **60** is H3, where 0<H1<H2+H3.

(68) The buffer layer **60** is disposed on the side of the substrate **30** facing towards the inorganic layer **39** to play a role of shakeproof, buffer, and isolation. The depth H1 of each groove **53** is provided to be greater than 0 so that the height difference is formed between the third edge sub-segment **44** and the fourth edge sub-segment **45**, achieving that the distance D between the third edge sub-segment **44** and the fourth edge sub-segment **45** is greater than 0. In this manner, the length of the first edge segment **311** is prolonged in the direction perpendicular to the substrate **30**, and the water vapor transmission path formed by the organic protective layer **33** is further prolonged, so that the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel. The depth H1 of each groove **53** is provided to be smaller than a sum of the thickness H2 of the inorganic layer **39** and the thickness H3 of the buffer layer **60** so that the formation of a through hole is avoided in the buffer layer **60**, thereby preventing the buffer layer **60** from losing the role of isolation.

(69) It is to be noted that each groove **53** can penetrate any one or more inorganic layers **39**, which may be set by those skilled in the art according to actual requirements.

(70) Exemplarily, as shown in FIG. **14**, the inorganic layer **39** includes a gate insulating layer **61** and an interlayer insulating layer **62**. The at least one groove **53** only penetrates the interlayer insulating layer **62**. In other embodiments, the at least one groove **53** may be provided to be deeper, that is, the depth H1 of the at least one groove **53** is greater to increase the distance D between the third edge sub-segment **44** and the fourth edge sub-segment **45**, so that the length of the first edge segment **311** is further increased, and the water vapor transmission path formed by the organic protective layer **33** is prolonged. In this manner, the water vapor cannot easily enter the display area **10** along the organic protective layer **33**, thereby improving the package quality, and the service life and reliability of the display panel, which is not limited by the embodiment of the present disclosure.

(71) Further referring to FIG. **14**, optionally, each groove **53** includes a bottom **531** and a top **532**. The bottom **531** is located on a side of the groove **53** facing towards the substrate **30**, and the top **532** is located on a side of the groove **53** facing away from the substrate **30**. A vertical projection of the bottom **531** on the substrate **30** is within a vertical projection of the top **532** on the substrate **30**.

(72) As shown in FIG. **14**, in the direction perpendicular to the substrate **30**, a projection of the bottom **531** of each groove **53** is located within a projection of the top **532** of the each groove **53**, so that a sidewall of each **53** is inclined, thereby preventing the first metal layer **31** above the at least one groove **53** from being fractured.

(73) Further referring to FIGS. **1** to **5**, optionally; the first organic forbidden area **12** is located on the side of the first organic baffle wall **11** facing towards the display area **10**. The edge of the first metal layer **31** further includes a second edge segment **312**. The second edge segment **312** is located on a side of the first edge segment **311** facing away from the display area **10**, and the second edge segment **312** is connected to the first edge segment **311**. The vertical projection of the second edge segment **312** on the substrate **30** is within the vertical projection of the first organic baffle wall **11** on the substrate **30**.

(74) As shown in FIGS. **1** to **5**, the first organic forbidden area **12** is located on the side of the first organic baffle wall **11** facing towards the display area **10**, thereby preventing the water vapor at the first organic baffle wall **11** from invading the display area **10** along the organic layer, and improving the reliability of the display panel.
(75) The vertical projection of the second edge segment **312** on the substrate **30** is provided to be within the vertical projection of the first organic baffle wall **11** on the substrate **30** so that the first organic baffle wall **11** covers a side wall of the second edge segment **312** to prevent the edge cross section of the second edge segment **312** from being exposed, thereby preventing the second edge segment **312** from being oxidized to form the dark spots, and improving the display effect of the display panel.
(76) FIG. **15** is a partial structural view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **15**, optionally, a first organic forbidden area **12** is located on a side of the first organic baffle wall **11** facing towards the display area **10**. An edge of the first metal layer **31** further includes a second edge segment **312**. The second edge segment **312** is located on a side of the first organic baffle wall **11** facing away from the display area **10**, and the second edge segment **312** is spaced from the first organic baffle wall **11**. The edge of the first metal layer **31** further includes a third edge segment **313**. The third edge segment **313** is connected to the second edge segment **312** and the first organic baffle wall **11** separately: A length of the third edge segment **313** is greater than a shortest distance d**3** between a first intersection point **63** and the first organic forbidden area **12**. The first intersection point **63** is an intersection point of the second edge segment **312** and the third edge segment **313**.
(77) As shown in FIG. **15**, the first organic forbidden area **12** is disposed on the side of the first organic baffle wall **11** facing towards the display area **10**, thereby preventing the water vapor at the first organic baffle wall **11** from invading the display area **10** along the organic layer, and improving the reliability of the display panel.
(78) The second edge segment **312** is provided to be located on the side of the first organic baffle wall **11** facing away from the display area **10**, and the second edge segment **312** is spaced from the first organic baffle wall **11**, so that the contact area between the first metal layer **31** and the second metal layer **32** is further increased while ensuring a large screen-to-body ratio of the display panel, and the influence of the resistance on the first power supply in the transmission process between the first metal layer **31** and the second metal layer **32** is reduced, thereby improving the uniformity of the current on the second electrode **202**, and avoiding the occurrence of Mura.
(79) As shown in FIG. **15**, the water vapor may be transmitted from the second edge segment **312** to the first organic baffle wall **11** along the third edge segment **313**, and then invade the display area **10** along the first edge segment **311**, affecting the package quality. Therefore, in the display panel provided by the embodiment of the present disclosure, the length of the third edge segment **313** is provided to be greater than the shortest distance d**3** between the first intersection point **63** and the first organic forbidden area **12** to prolong the water vapor transmission path formed by the third edge segment **313**, so that the water vapor cannot easily enter the display area **10** along the third edge segment **313**, thereby improving the package quality, and the service life and reliability of the display panel.
(80) FIG. **16** is a partial structural view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **16**, optionally, a first organic forbidden area **12** is located on a side of the first organic baffle wall **11** facing away from the display area **10**. The display panel also includes a second organic baffle wall **13** surrounding the first organic forbidden area **12**. An edge of the first metal layer **31** further includes a second edge segment **312**, and a vertical projection of the second edge segment **312** on the substrate **30** overlaps a vertical projection of the second organic baffle wall **13** on the substrate **30**.
(81) As shown in FIG. **16**, the first organic forbidden area **12** is located on the side of the first organic baffle wall **11** facing away from the display area **10**, thereby preventing the external water

vapor from invading the first organic baffle wall **11**, and improving the reliability of the display panel.

(82) Further referring to FIG. **16**, the display panel further includes the second organic baffle wall **13** surrounding the first organic forbidden area **12**. The second organic baffle wall **13** can play a role of blocking the crack propagation. The second organic baffle wall **13** may have a structure same as or different from the structure of the first organic baffle wall **11**, which is not limited by the embodiment of the present disclosure. The vertical projection of the second edge segment **312** on the substrate **30** overlaps the vertical projection of the second organic baffle wall **13** on the substrate **30**, so that the second organic baffle wall **13** covers a side wall of the second edge segment **312** to prevent the edge cross section of the second edge segment **312** from being exposed, thereby preventing the second edge segment **312** from being oxidized to form the dark spots, and improving the display effect of the display panel.

(83) FIG. **17** is a partial structural view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **17**, optionally, a first organic forbidden area **12** is located on a side of the first organic baffle wall **11** facing away from the display area **10**. The display panel also includes a second organic baffle wall **13** surrounding the first organic forbidden area **12**. An edge of the first metal layer **31** further includes a second edge segment **312**. The second edge segment **312** is located on a side of the second organic baffle wall **13** facing away from the display area **10**, and is spaced apart from the second organic baffle wall **13**. The edge of the first metal layer **31** further includes a fourth edge segment **314**. The fourth edge segment **314** is connected to the second edge segment **312** and the second organic baffle wall **13** separately: A length of the fourth edge segment **314** is greater than a shortest distance d**4** between a second intersection point **64** and the second organic baffle wall **13**. The second intersection point **64** is an intersection point of the fourth edge segment **314** and the second edge segment **312**.

(84) As shown in FIG. **17**, the first organic forbidden area **12** is located on the side of the first organic baffle wall **11** facing away from the display area **10**, thereby preventing the external water vapor from invading the first organic baffle wall **11**, and improving the reliability of the display panel.

(85) Further referring to FIG. **17**, the display panel further includes the second organic baffle wall **13** surrounding the first organic forbidden area **12**. The second organic baffle wall **13** can play a role of blocking the crack propagation. The second edge segment **312** is provided to be located on the side of the second organic baffle wall **13** facing away from the display area **10**, and the second edge segment **312** is spaced from the second organic baffle wall **13**, so that the contact area between the first metal layer **31** and the second metal layer **32** is further increased while ensuring a large screen-to-body ratio of the display panel. The influence of the resistance on the first power supply in the transmission process between the first metal layer **31** and the second metal layer **32** thus is reduced, thereby improving the uniformity of the current on the second electrode **202**, and avoiding the occurrence of Mura.

(86) As shown in FIG. **17**, the water vapor may be transmitted from the second edge segment **312** to the second organic baffle wall **13** along the fourth edge segment **314**, and then invade the display area **10** along the first edge segment **311**, affecting the package quality. Therefore, in the display panel provided by the embodiment of the present disclosure, the length of the fourth edge segment **314** is provided to be greater than the shortest distance d**4** between the second intersection point **64** and the second organic baffle wall **13** to prolong the water vapor transmission path formed by the fourth edge segment **314**, so that the water vapor cannot easily enter the display area **10** along the fourth edge segment **314**, thereby improving the package quality, and the service life and reliability of the display panel.

(87) FIG. **18** is a partial structural view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **18**, optionally, a first organic forbidden area **12** is located on a side of the first organic baffle wall **11** facing towards the display area **10**. The display panel also

includes a second organic forbidden area **14** surrounding the first organic baffle wall **11** and a second organic baffle wall **13** surrounding the second organic forbidden area **14**. An edge of the first metal layer **31** further includes a second edge segment **312**, and a vertical projection of the second edge segment **312** on the substrate **30** overlaps a vertical projection of the second organic baffle wall **13** on the substrate **30**. The edge of the first metal layer **31** further includes a fifth edge segment **315**. The fifth edge segment **315** is connected to the second edge segment **312** and the first organic baffle wall **11** separately. A length of the fifth edge segment **315** is greater than a length of the second organic forbidden area **14** in a first direction X.

(88) As shown in FIG. **18**, the first organic forbidden area **12** is located on the side of the first organic baffle wall **11** facing towards the display area **10**, thereby preventing the water vapor at the first organic baffle wall **11** from invading the display area **10** along the organic layer, and improving the reliability of the display panel.

(89) Further referring to FIG. **18**, the display panel further includes the second organic baffle wall **13** surrounding the second organic forbidden area **14**. The second organic baffle wall **13** can play a role of blocking the crack propagation. The display panel further includes the second organic forbidden area **14** surrounding the first organic baffle wall **11**, thereby preventing the water vapor at the second organic baffle wall **13** from invading the display area **10** along the organic layer, and improving the reliability of the display panel.

(90) Further referring to FIG. **18**, the vertical projection of the second edge segment **312** on the substrate **30** is provided to overlap the vertical projection of the second organic baffle wall **13** on the substrate **30**, so that the second organic baffle wall **13** covers the side wall of the second edge segment **312** to prevent the edge cross section of the second edge segment **312** from being exposed, thereby preventing the second edge segment **312** from being oxidized to form the dark spots, and improving the display effect of the display panel.

(91) Further referring to FIG. **18**, the water vapor may be transmitted from the second edge segment **312** to the second organic baffle wall **13** along the fifth edge segment **315**, and then invade the display area **10** along the first edge segment **311**, affecting the package quality. Therefore, in the display panel provided by the embodiment of the present disclosure, the length of the fifth edge segment **315** is provided to be greater than a length d**5** of the second organic forbidden area **14** in the first direction X to prolong a water vapor transmission path formed by the fifth edge segment **315**, so that the water vapor cannot easily enter the display area **10** along the fifth edge segment **315**, thereby improving the package quality, and the service life and reliability of the display panel.

(92) FIG. **19** is a partial structural view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **19**, optionally, a first organic forbidden area **12** is located on a side of the first organic baffle wall **11** facing towards the display area **10**. The display panel also includes a second organic forbidden area **14** surrounding the first organic baffle wall **11** and a second organic baffle wall **13** surrounding the second organic forbidden area **14**. An edge of the first metal layer **31** further includes a second edge segment **312**, the second edge segment **312** is located on a side of the second organic baffle wall **13** facing away from the display area **10**, and is spaced apart from the second organic baffle wall **13**. The edge of the first metal layer **31** further includes a sixth edge segment **316**, and a vertical projection of the sixth edge segment **316** on the substrate **30** overlaps the second organic forbidden area **14**. A length of the sixth edge segment **316** is greater than a length of the second organic forbidden area **14** in the first direction X. The edge of the first metal layer **31** further includes a seventh edge segment **317**. The seventh edge segment **317** is connected to the second edge segment **312** and the second organic baffle wall **13** separately. A length of the seventh edge segment **317** is greater than a shortest distance between a third intersection point **65** and the second organic baffle wall **13**. The third intersection point **65** is an intersection point of the seventh edge segment **317** and the second edge segment **312**.

(93) As shown in FIG. **19**, the first organic forbidden area **12** is located on the side of the first organic baffle wall **11** facing towards the display area **10**, thereby preventing the water vapor at the

first organic baffle wall **11** from invading the display area **10** along the organic layer, and improving the reliability of the display panel.

(94) Further referring to FIG. **19**, the display panel further includes the second organic baffle wall **13** surrounding the second organic forbidden area **14**. The second organic baffle wall **13** can play a role of blocking the crack propagation. The display panel further includes the second organic forbidden area **14** surrounding the first organic baffle wall **11**, thereby preventing the water vapor at the second organic baffle wall **13** from invading the display area **10** along the organic layer, and improving the reliability of the display panel. The second edge segment **312** is provided to be located on the side of the second organic baffle wall **13** facing away from the display area **10**, and the second edge segment **312** is spaced from the second organic baffle wall **13**, so that the contact area between the first metal layer **31** and the second metal layer **32** is further increased while ensuring a large screen-to-body ratio of the display panel, and the influence of the resistance on the first power supply in the transmission process between the first metal layer **31** and the second metal layer **32** is reduced, thereby improving the uniformity of the current on the second electrode **202**, and avoiding the occurrence of Mura.

(95) Further referring to FIG. **19**, the water vapor may be transmitted from the second organic baffle wall **13** to the first organic baffle wall **11** along the sixth edge segment **316**, and then invade the display area **10** along the first edge segment **311**, affecting the package quality. Therefore, in the display panel provided by the embodiment of the present disclosure, the length of the fifth edge segment **316** is provided to be greater than a length d**6** of the second organic forbidden area **14** in the first direction X to prolong a water vapor transmission path formed by the sixth edge segment **316**, so that the water vapor cannot easily enter the display area **10** along the sixth edge segment **316**, thereby improving the package quality, and the service life and reliability of the display panel.

(96) Moreover, the water vapor may be transmitted from the second edge segment **312** to the second organic baffle wall **13** along the seventh edge segment **317**, and then invade the display area **10** along the sixth edge segment **316** and the first edge segment **311**, affecting the package quality: Therefore, in the display panel provided by the embodiment of the present disclosure, the length of the seventh edge segment **317** is provided to be greater than the shortest distance d**7** between the third intersection point **65** and the second organic baffle wall **13** to prolong a water vapor transmission path formed by the seventh edge segment **317**, so that the water vapor cannot easily enter the display area **10** along the seventh edge segment **317**, thereby improving the package quality; and the service life and reliability of the display panel.

(97) Further referring to FIGS. **1** to **5**, optionally, the display panel provided by the embodiment of the present disclosure further includes a pixel defining layer **35**. The pixel defining layer **35** includes multiple opening structures in each of which a respective one of multiple light emitting units **20** is located. In a direction perpendicular to the substrate **30**, the pixel defining layer **35** is located on a side of the first metal layer **31** facing away from the substrate **30**. The organic protective layer **33** is disposed in a same layer as the pixel defining layer **35**.

(98) As shown in FIGS. **1** to **5**, the organic protective layer **33** is configured to be disposed in the same layer as the pixel defining layer **35**, so that the organic protective layer **33** and the pixel defining layer **35** can be prepared in a same process, thereby shortening the preparation time of the display panel and reducing the cost.

(99) FIG. **20** is a partial sectional view of another display panel provided by an embodiment of the present disclosure. As shown in FIG. **20**, optionally, the display panel provided by the embodiment of the present disclosure further includes an organic support pillar **36**. The organic support pillar **36** is located at a side of the first metal layer **31** facing away from the substrate **30**. The organic protective layer **33** is disposed in a same layer as the organic support pillar **36**.

(100) As shown in FIG. **20**, the organic support pillar **36** is disposed at the side of the first metal layer **31** facing away from the substrate **30**. The organic support pillar **36** is used for supporting a cover plate. The organic protective layer **33** is disposed in the same layer as the organic support

pillar **36** so that the organic protective layer **33** and the organic support pillar **36** can be prepared in a same process, thereby shortening the preparation time of the display panel and reducing the cost.
(101) Further referring to FIG. **2**, the display panel provided in the embodiment of the present disclosure further includes multiple drive units. The multiple drive units are located on a side of the substrate **30** facing towards the multiple light emitting units **20**, and the multiple drive units are correspondingly connected to the multiple light emitting units **20**. Each drive unit includes a thin film transistor **70**. The thin film transistor **70** includes a source-drain metal layer **71**, and the second metal layer **32** is disposed in a same layer as the source-drain metal layer **71**.
(102) Specifically; as shown in FIG. **2**, each drive unit includes at least one thin film transistor **70**. Each thin film transistor **70** includes the source-drain metal layer **71**, a gate layer **72** and an active layer **73**. The source-drain metal layer **71** has a relatively small resistance. The second metal layer **32** is disposed in the same layer as the source-drain metal layer **71** so that the second metal layer **32** and the source-drain metal layer **71** can be prepared in a same process, which shortens the preparation time of the display panel and facilitates reducing the resistance of the second metal layer **32**, thereby improving the uniformity of the current on the second metal layer **32** and avoiding the occurrence of Mura.
(103) Based on the same concept, an embodiment of the present disclosure also provides a display device. FIG. **21** is a structural view of a display device provided by an embodiment of the present disclosure. As shown in FIG. **21**, the display device **80** includes the display panel **81** according to any one of the above embodiments of the present disclosure. Therefore, the display device **80** provided by the embodiment of the present disclosure has the technical effects of the technical solution of any one of the embodiments described above, and a description of structures and terms which are same as or correspond to those in the embodiments described above are not be repeated here. The display device **80** provided by the embodiments of the present disclosure may be a phone shown in FIG. **21**, or may be any electronic product with a display function, including but not limited to the following categories: television, laptop, desktop display, tablet computer, digital camera, smart bracelet, smart glass, vehicle-mounted display, medical equipment, industrial control equipment, touch interactive terminal, and the like, and no special limitations are made thereto in the embodiments of the present disclosure.
(104) It is to be noted that the above are only example embodiments of the present disclosure and the technical principles used therein. It is to be understood by those skilled in the art that the present disclosure is not limited to the embodiments described herein. Those skilled in the art can make various apparent modifications, adaptations, and substitutions without departing from the scope of the present disclosure. Therefore, while the present disclosure has been described in detail via the preceding embodiments, the present disclosure is not limited to the preceding embodiments and may include equivalent embodiments without departing from the concept of the present disclosure. The scope of the present disclosure is determined by the scope of the appended claims.

Claims

1. A display panel, comprising: a display area, wherein the display area comprises a plurality of light emitting units arranged in an array, and each of the plurality of light emitting units comprises a first electrode and a second electrode; a first organic-layer forbidden area and a first organic baffle wall which are disposed around the display area; a substrate; a drive chip; a first metal layer and a second metal layer which are located at a side of the substrate, wherein the first metal layer is disposed in a same layer as the first electrode, the first metal layer is located at a side of the second metal layer facing away from the substrate, the second electrode is connected to the first metal layer, the first metal layer is connected to the second metal layer, the second metal layer is configured to provide a first power supply for the second electrode through the first metal layer, and the first metal layer covers at least part of the first organic-layer forbidden area and at least part

of the first organic baffle wall; and an organic protective layer, wherein the organic protective layer covers at least a side wall of an edge of the first metal layer, and the organic protective layer is connected to the first organic baffle wall, wherein the edge of the first metal layer comprises a first edge segment and the first metal layer is terminated at the first edge segment, the first edge segment overlaps the first organic-layer forbidden area in a direction perpendicular to the substrate; and wherein a length of the first edge segment is larger than a length of the first organic-layer forbidden area in a first direction; wherein at least part of the first organic-layer forbidden area and at least part of the first organic baffle wall are disposed along the first direction, and the first direction is a direction in which the display area points to the drive chip in a plane direction parallel to the substrate; wherein the first edge segment comprises a third edge sub-segment and a fourth edge sub-segment; in a direction perpendicular to the substrate, a distance between the third edge sub-segment and the fourth edge sub-segment is D, wherein D>0; the first organic-layer forbidden area comprises at least one organic island, the at least one organic island is located on a side of the first metal layer, wherein the side of the first metal layer faces towards the substrate, and the at least one organic island is spaced from the first organic baffle wall; and the at least one organic island overlaps the third edge sub-segment in a direction perpendicular to the substrate; wherein each of the at least one organic island comprises a first organic sub-segment and a second organic sub-segment, wherein the second organic sub-segment is located on a side of the first organic sub-segment facing away from the substrate; the display panel further comprises a third metal layer and a first organic layer, wherein the third metal layer is located on a side of the second metal layer facing towards the first metal layer, and the first organic layer is located between the second metal layer and the third metal layer; and the first organic sub-segment is disposed in a same layer as the first organic layer; the display panel further comprises an organic planarization layer, wherein the organic planarization layer is located on the side of the first metal layer facing towards the substrate, and the second organic sub-segment is disposed in a same layer as the organic planarization layer; and the first metal layer is connected to the third metal layer, the first organic layer comprises a first through hole, and the third metal layer is connected to the second metal layer through the first through hole.

2. The display panel of claim 1, wherein a vertical projection of the first edge segment on the substrate is a straight line, and an extension direction of the straight line intersects the first direction.

3. The display panel of claim 1, wherein a vertical projection of the first edge segment on the substrate is a curve.

4. The display panel of claim 1, wherein the first edge segment comprises at least a first edge sub-segment and a second edge sub-segment, wherein the first edge sub-segment is connected to the second edge sub-segment; and in a direction parallel to the substrate, an extension direction of the first edge sub-segment intersects an extension direction of the second edge sub-segment.

5. The display panel of claim 1, wherein each of the at least one organic island comprises a first surface and a second surface, the first surface is located on a side of the each of the at least one organic island facing away from the substrate, and the second surface is located on a side of the each of the at least one organic island facing towards the substrate; and a vertical projection of the first surface on the substrate is within a vertical projection of the second surface on the substrate.

6. The display panel of claim 1, further comprising: an inorganic layer, wherein the inorganic layer is located on a side of the substrate facing towards the first metal layer; the inorganic layer comprises at least one groove; the at least one groove is located in the first organic-layer forbidden area; and a vertical projection of the at least one groove on the substrate overlaps a vertical projection of the fourth edge sub-segment on the substrate; and a buffer layer, wherein the buffer layer is located on a side of the substrate facing towards the inorganic layer; and wherein a depth of each of the at least one groove is H1, a thickness of the inorganic layer is H2, and a thickness of the buffer layer is H3, wherein 0<H1<H2+H3, wherein each of the at least one groove comprises a

bottom and a top, the bottom is located on a side of the each of the at least one groove facing towards the substrate, and the top is located on a side of the each of the at least one groove facing away from the substrate; and a vertical projection of the bottom on the substrate is within a vertical projection of the top on the substrate.

7. The display panel of claim 1, further comprising a pixel defining layer, wherein the pixel defining layer comprises a plurality of opening structures in each of which a respective one of the plurality of light emitting units is located; in a direction perpendicular to the substrate, the pixel defining layer is located on a side of the first metal layer facing away from the substrate; and the organic protective layer is disposed in a same layer as the pixel defining layer.

8. The display panel of claim 1, further comprising an organic support pillar located at a side of the first metal layer facing away from the substrate, wherein the organic support pillar is disposed in a same layer as the organic protective layer.

9. The display panel of claim 1, further comprising a plurality of drive units located on a side of the substrate facing towards the plurality of light emitting units, wherein the plurality of drive units are correspondingly connected to the plurality of light emitting units; and each of the plurality of drive units comprises a thin film transistor, the thin film transistor comprises a source-drain metal layer, and the second metal layer is disposed in a same layer as the source-drain metal layer.

10. A display device, comprising a display panel, wherein the display panel comprises: a display area, wherein the display area comprises a plurality of light emitting units arranged in an array, and each of the plurality of light emitting units comprises a first electrode and a second electrode; a first organic-layer forbidden area and a first organic baffle wall which are disposed around the display area; a substrate; a drive chip; a first metal layer and a second metal layer which are located at a side of the substrate, wherein the first metal layer is disposed in a same layer as the first electrode, the first metal layer is located at a side of the second metal layer facing away from the substrate, the second electrode is connected to the first metal layer, the first metal layer is connected to the second metal layer, the second metal layer is configured to provide a first power supply for the second electrode through the first metal layer, and the first metal layer covers at least part of the first organic-layer forbidden area and at least part of the first organic baffle wall; and an organic protective layer, wherein the organic protective layer covers at least a side wall of an edge of the first metal layer, and the organic protective layer is connected to the first organic baffle wall, wherein the edge of the first metal layer comprises a first edge segment and the first metal layer is terminated at the first edge segment, the first edge segment overlaps the first organic-layer forbidden area in a direction perpendicular to the substrate; and wherein a length of the first edge segment is larger than a length of the first organic-layer forbidden area in a first direction; wherein at least part of the first organic-layer forbidden area and at least part of the first organic baffle wall are disposed along the first direction, and the first direction is a direction in which the display area points to the drive chip in a plane direction parallel to the substrate; wherein the first edge segment comprises a third edge sub-segment and a fourth edge sub-segment; in a direction perpendicular to the substrate, a distance between the third edge sub-segment and the fourth edge sub-segment is D, wherein $D>0$); the first organic-layer forbidden area comprises at least one organic island, the at least one organic island is located on a side of the first metal layer, wherein the side of the first metal layer faces towards the substrate, and the at least one organic island is spaced from the first organic baffle wall; and the at least one organic island overlaps the third edge sub-segment in a direction perpendicular to the substrate; wherein each of the at least one organic island comprises a first organic sub-segment and a second organic sub-segment, wherein the second organic sub-segment is located on a side of the first organic sub-segment facing away from the substrate; the display panel further comprises a third metal layer and a first organic layer, wherein the third metal layer is located on a side of the second metal layer facing towards the first metal layer, and the first organic layer is located between the second metal layer and the third metal layer; and the first organic sub-segment is disposed in a same layer as the first organic layer; the display panel further

comprises an organic planarization layer, wherein the organic planarization layer is located on the si of the first metal layer facing towards the substrate, and the second organic sub-segment is disposed in s same layer as the organic planarization layer; and the first metal layer is connected to the third metal layer, the first organic layer comprises a first through hole, and the third metal layer is connected to the second metal layer through the first through hole.