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(54) **SUPPORT COMPONENT AND LAMINATION DEVICE**

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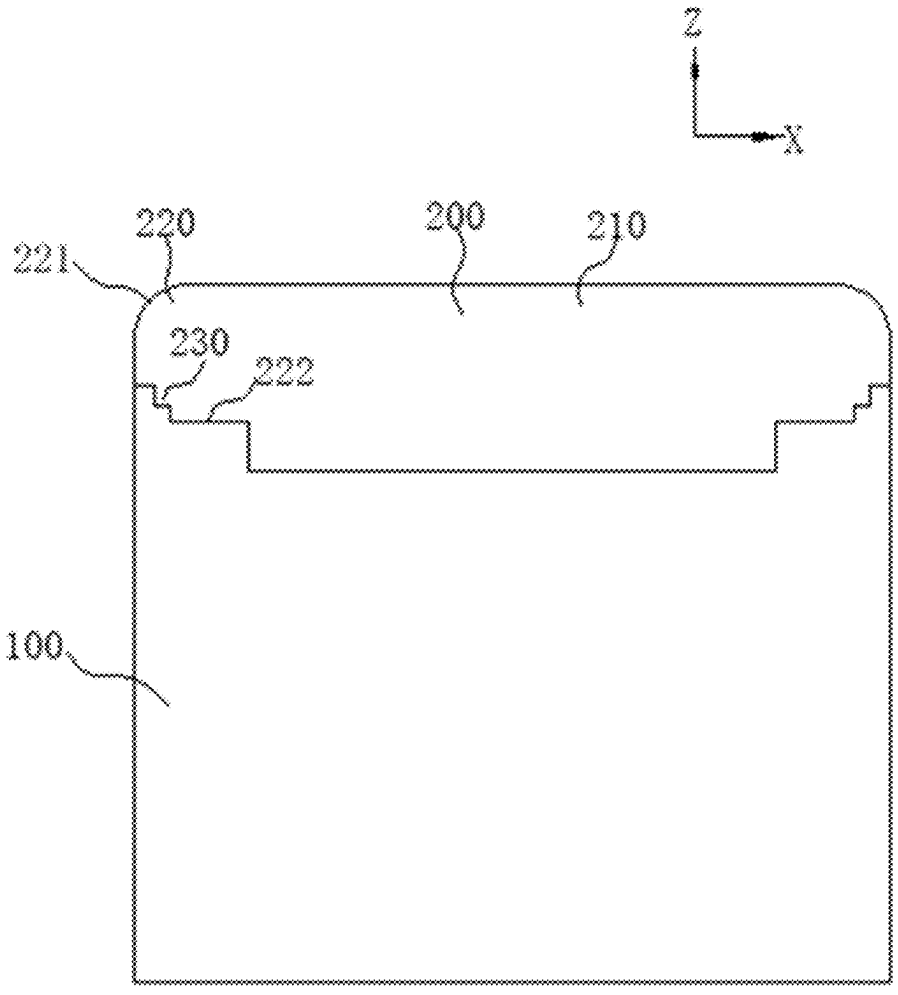
CPC ***B32B 37/0046*** (2013.01); ***B32B 37/10*** (2013.01); *B32B 2457/20* (2013.01)

(57) **ABSTRACT**

The embodiments of the present application provide a support component and a lamination device. The support component is configured to laminate a curved cover plate with a flexible screen, and the support component includes: a base; and a flexible support table arranged on the base and configured to support the flexible screen. The flexible support table includes a main body portion and an arc-shaped portion arranged on at least one side of the main body portion. The arc-shaped portion has an arc-shaped support surface configured to support the flexible screen, and an abutting surface facing the base. The abutting surface is provided with a recessed portion.



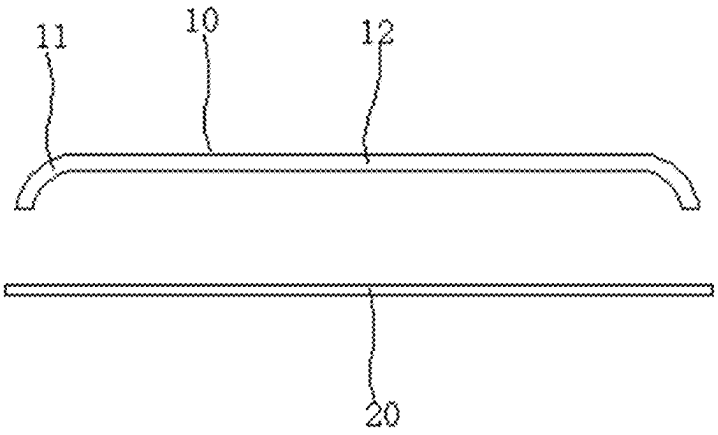


Figure 1

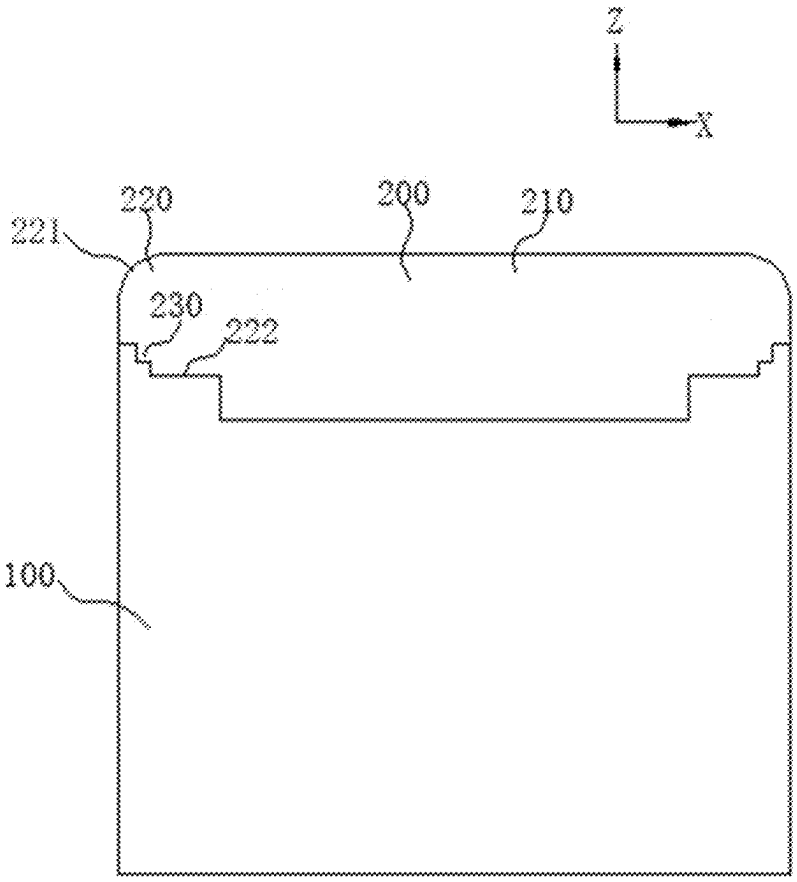


Figure 2

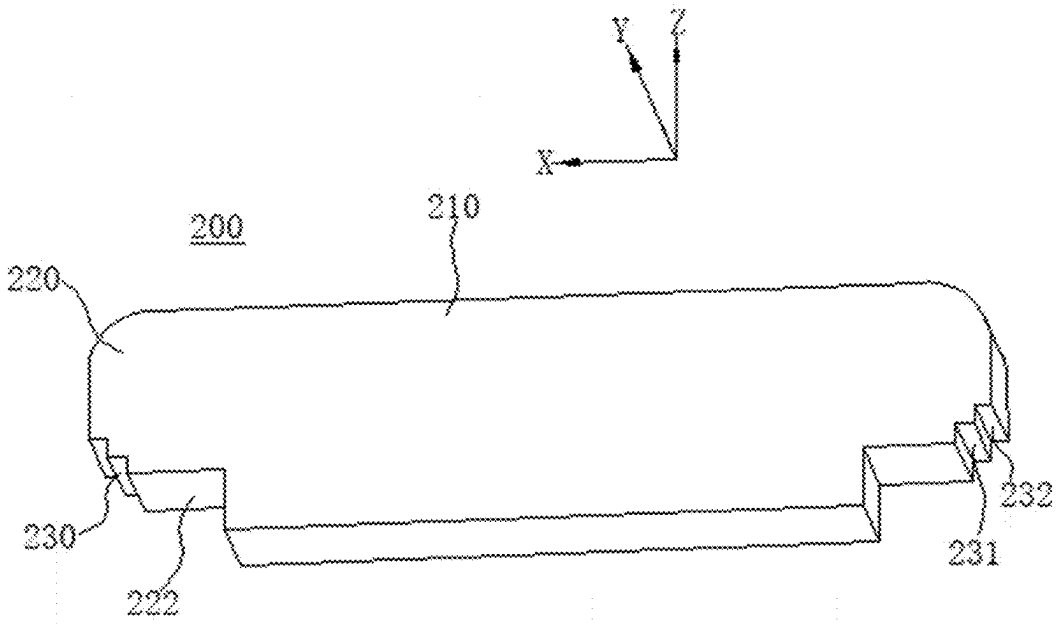


Figure 3

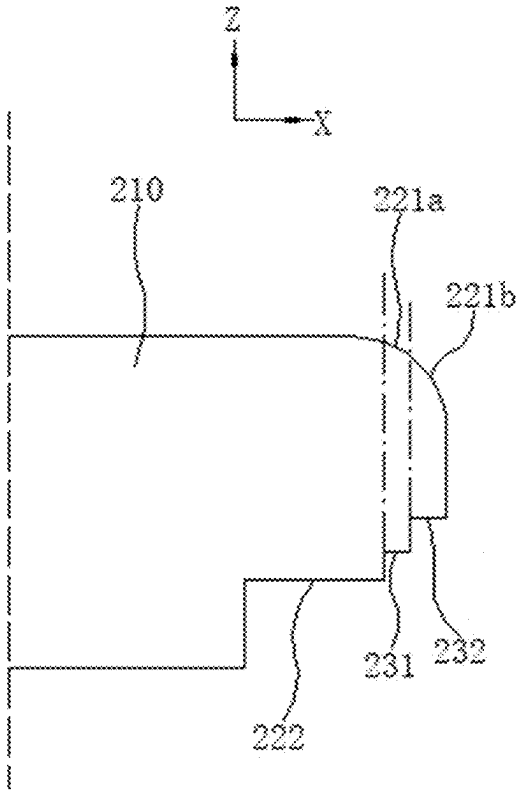


Figure 4

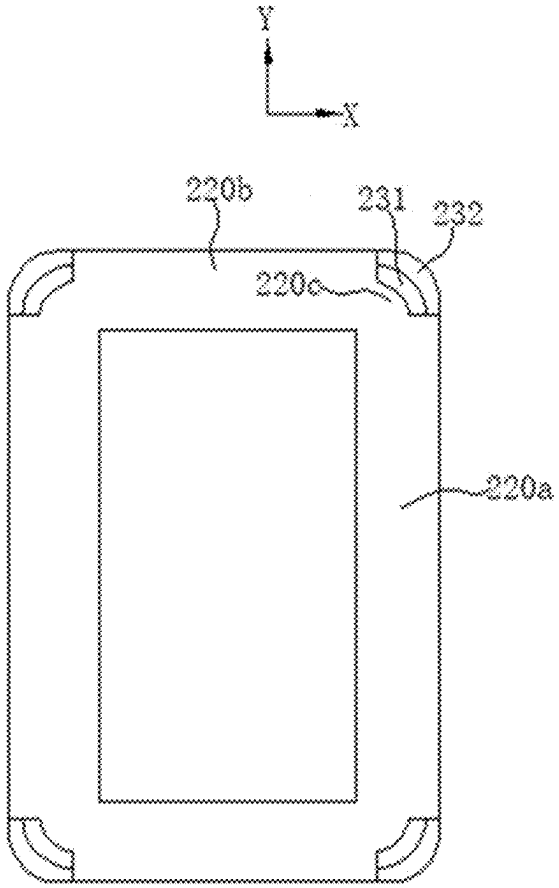


Figure 5

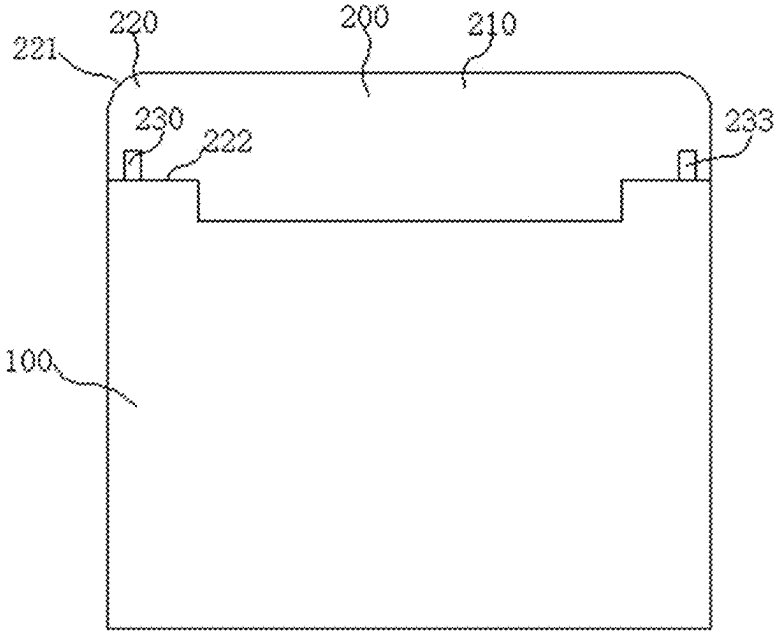


Figure 6

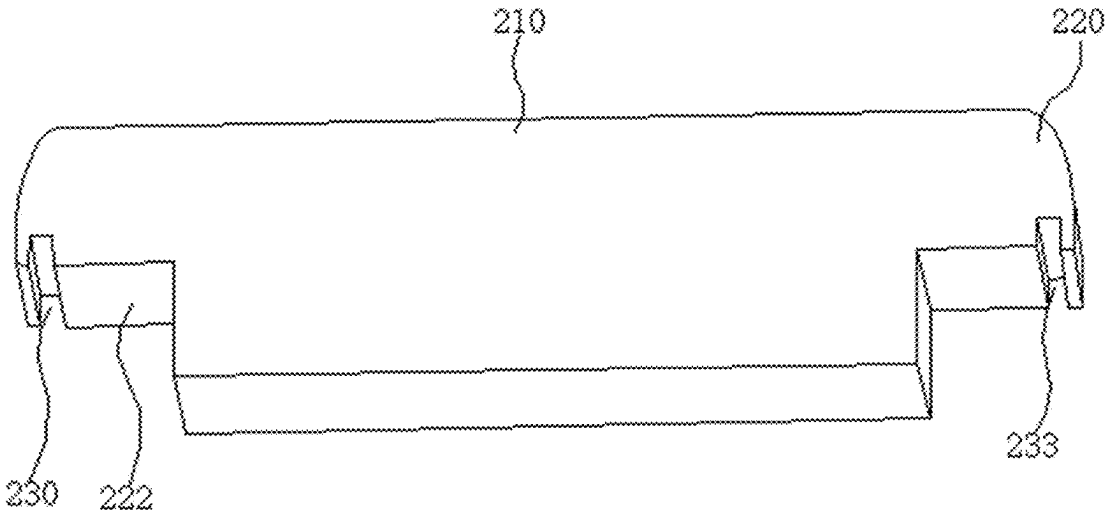


Figure 7

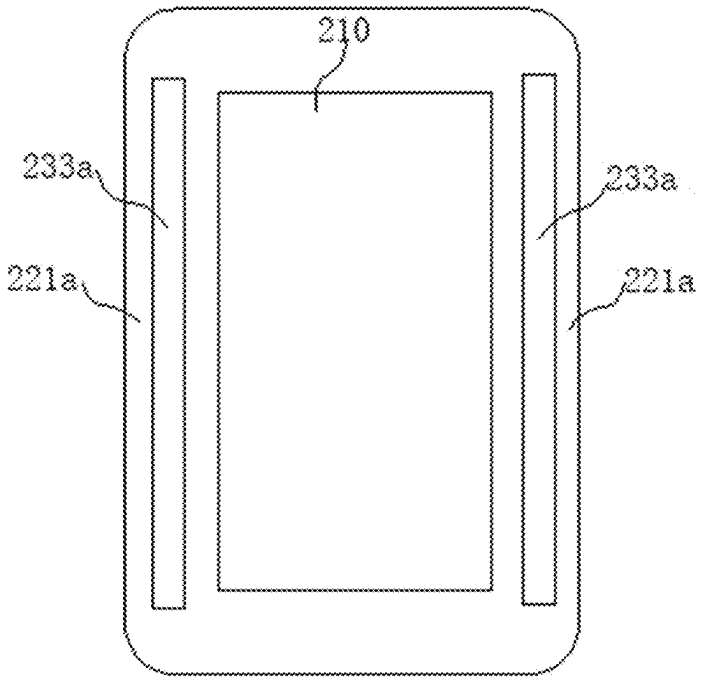


Figure 8

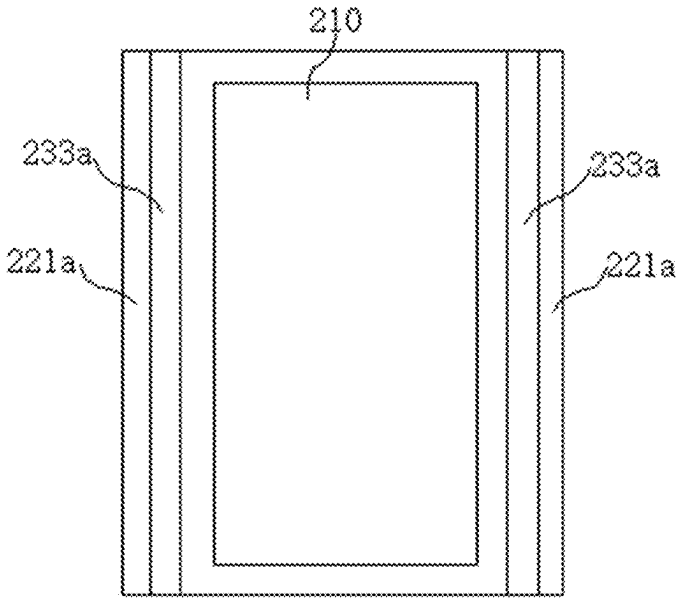


Figure 9

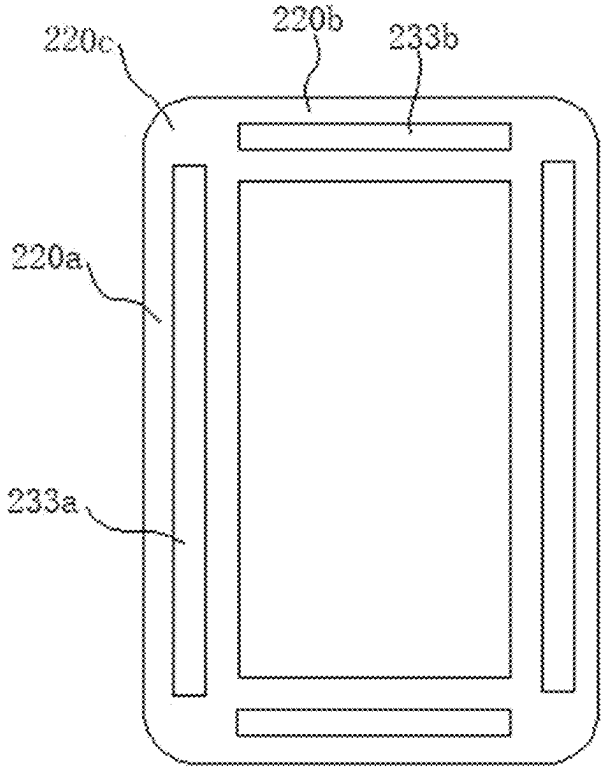


Figure 10

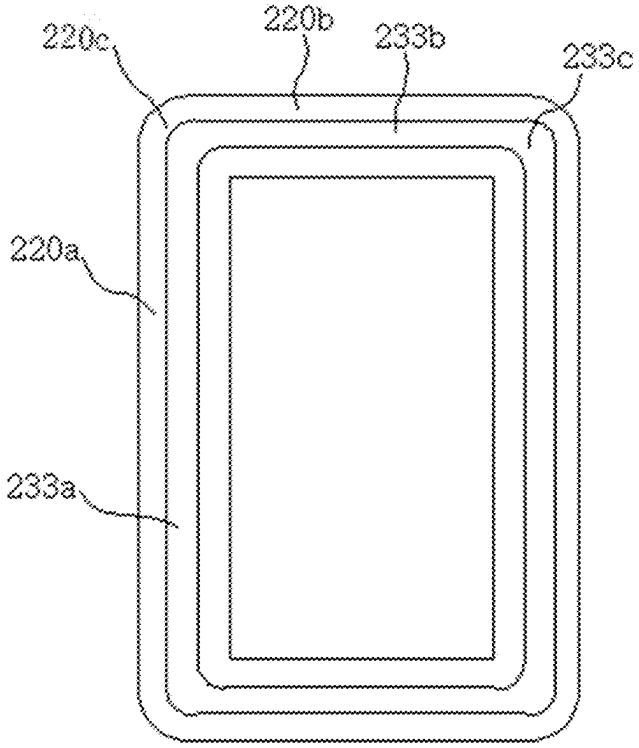


Figure 11

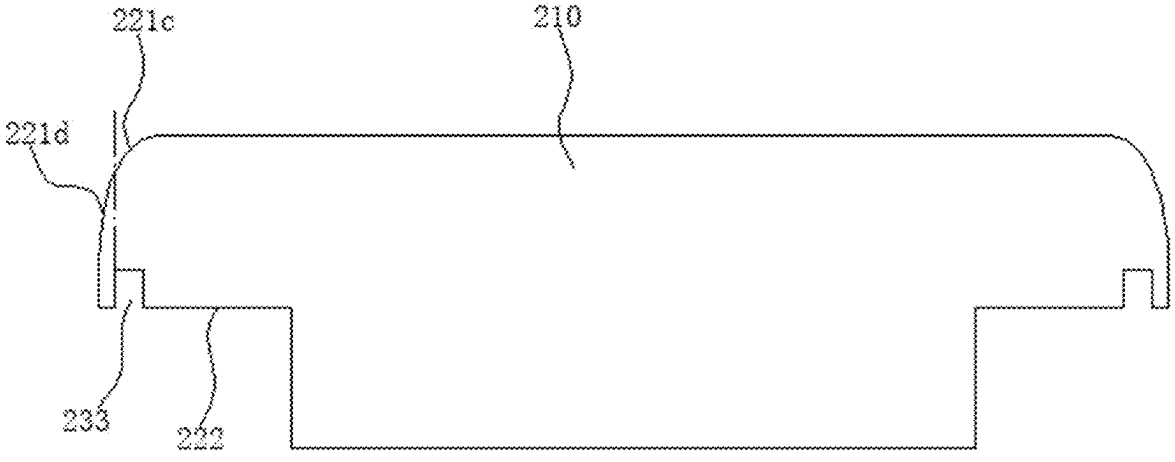


Figure 12

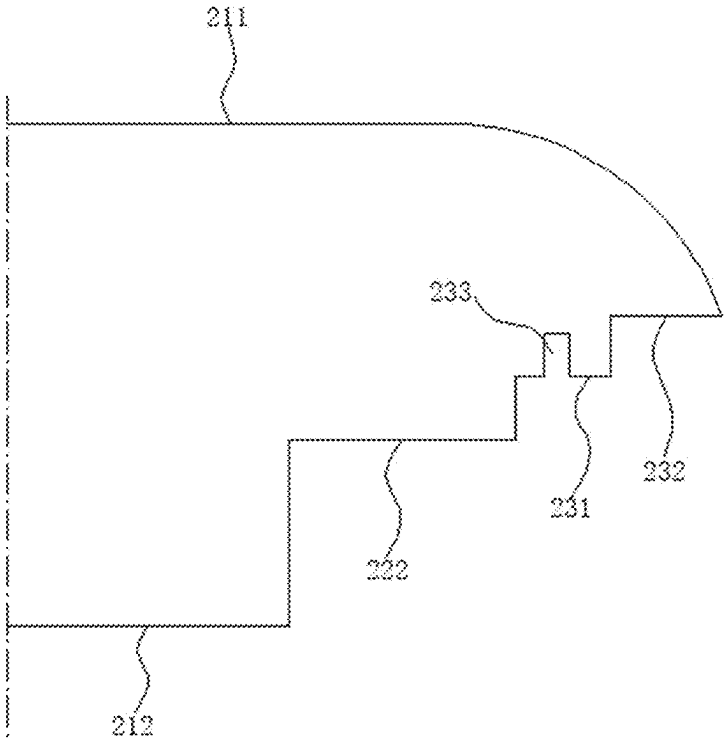


Figure 13

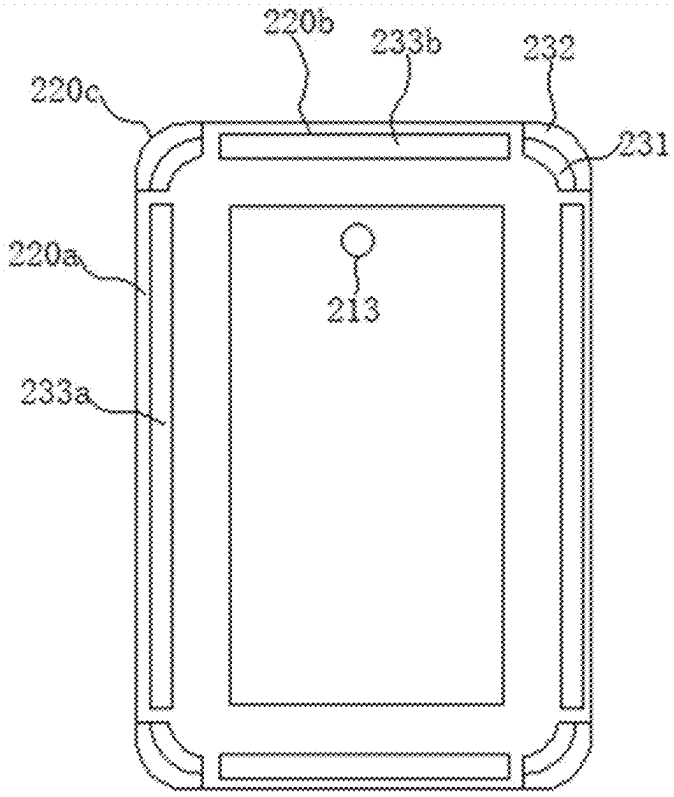


Figure 14

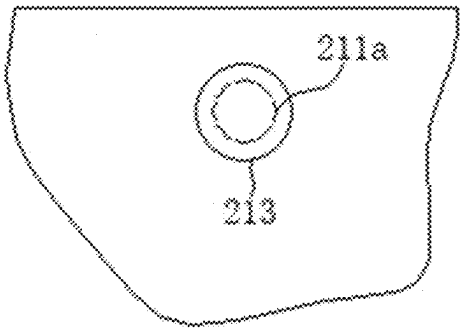


Figure 15

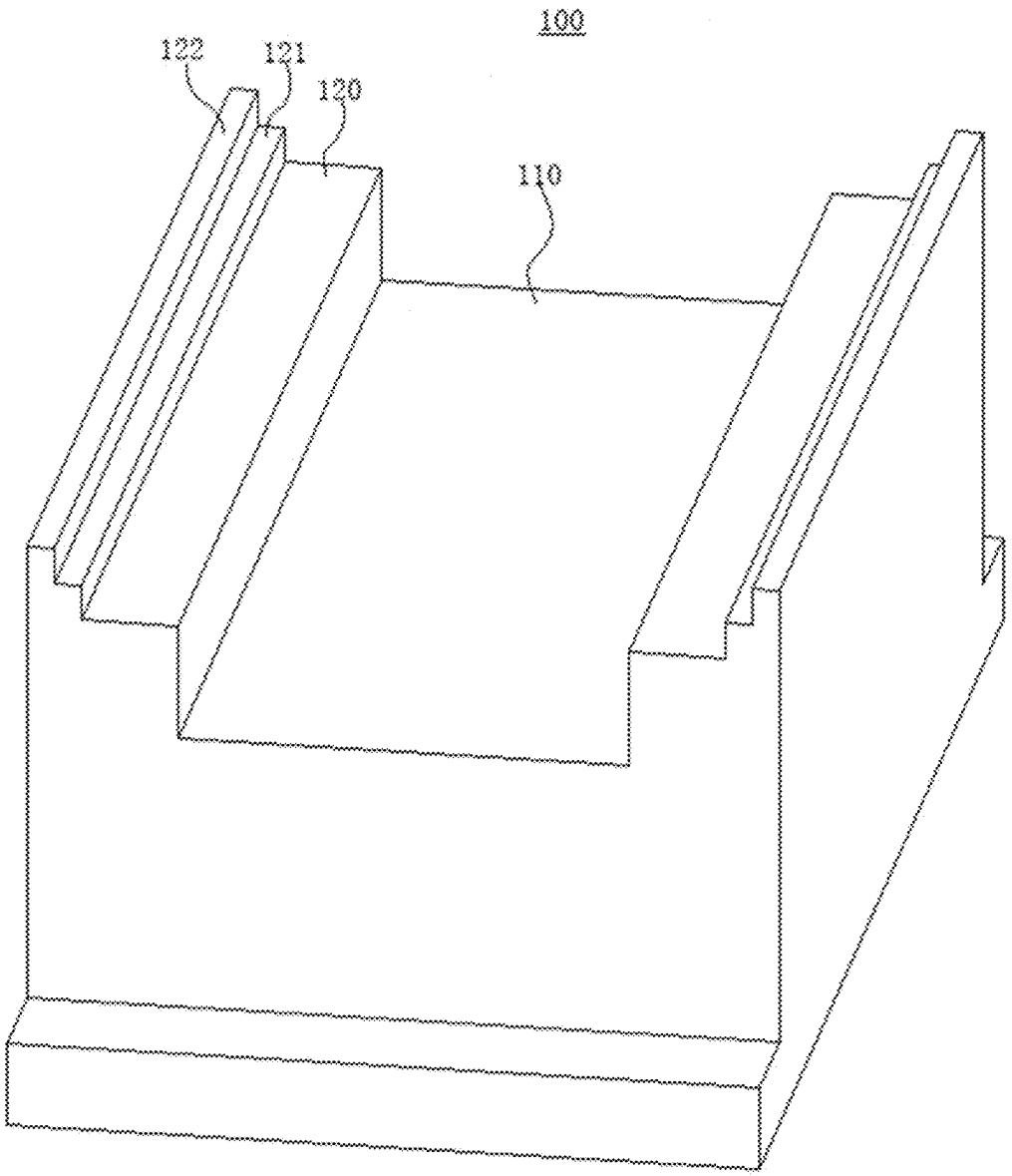


Figure 16

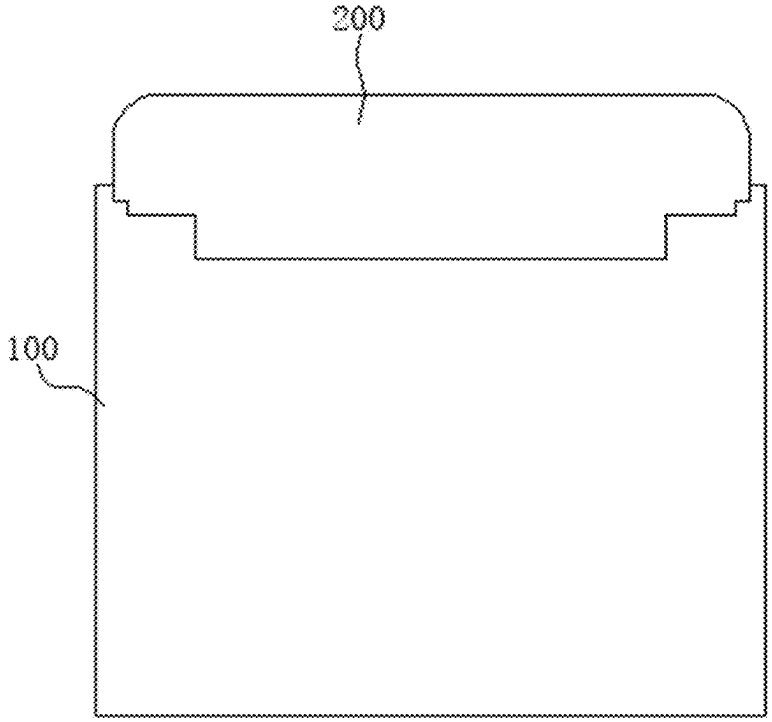


Figure 17

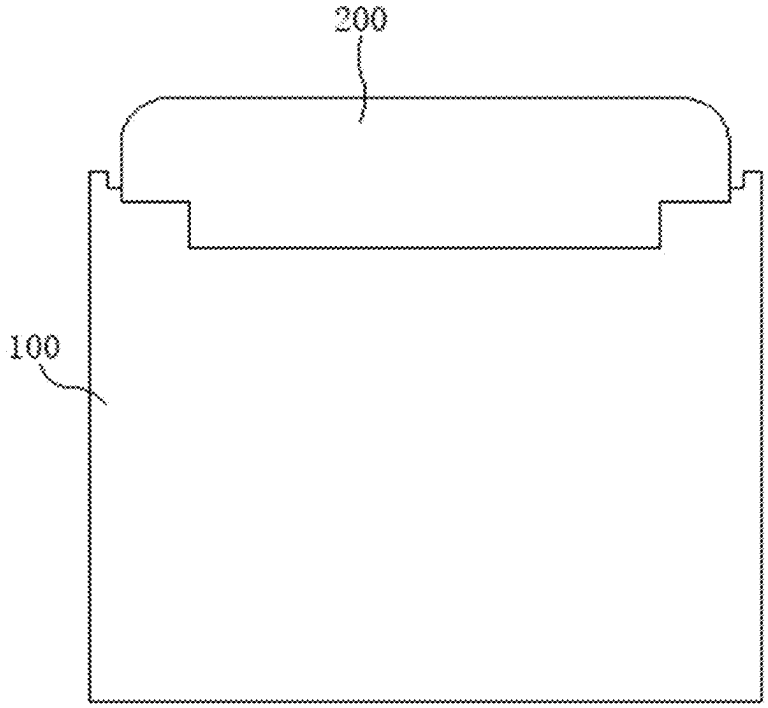


Figure 18

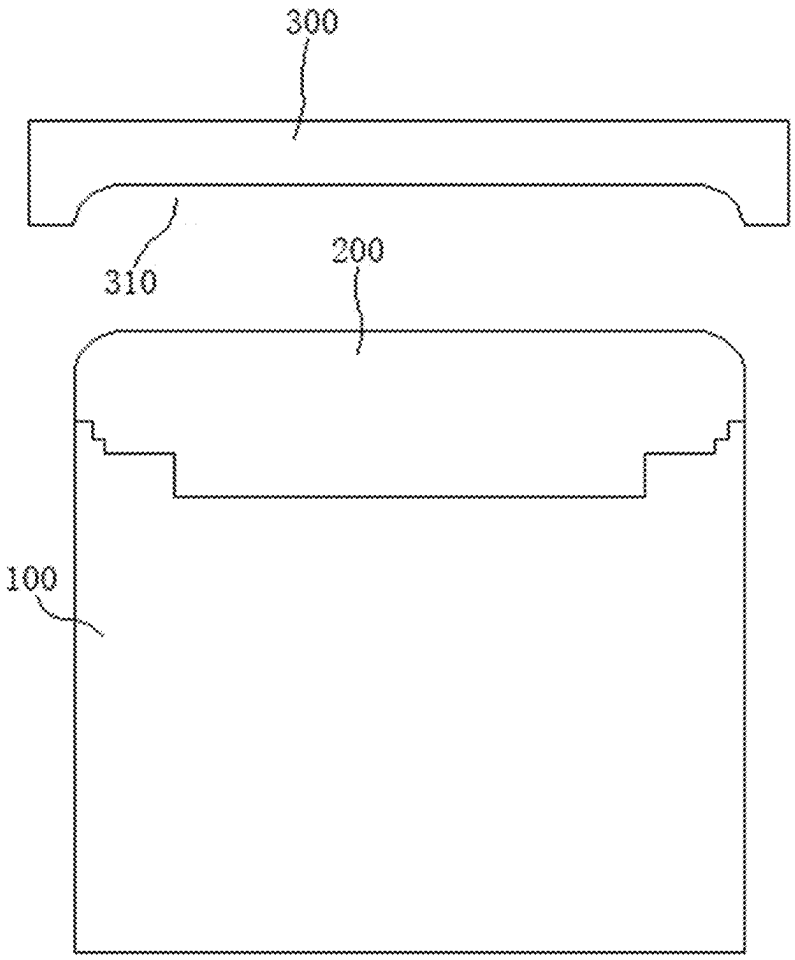


Figure 19

SUPPORT COMPONENT AND LAMINATION DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application a continuation of International Application No. PCT/CN2023/090843 filed on Apr. 26, 2023, which claims priority to Chinese Patent Application No. 202211480202.1, filed on Nov. 24, 2022. All of the aforementioned patent applications are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

[0002] The present application relates to the technical field of flexible screen lamination equipment, and in particular to a support component and a lamination device.

BACKGROUND

[0003] With the advent of the ubiquitous screen era, people's demand for full screens is becoming stronger and stronger. In order to increase the screen-to-body ratio, dual-curved lamination technology and quad-curved lamination technology have emerged.

[0004] In the prior art, the flexible characteristics of the flexible screen are mainly used to achieve a full screen. At present, the lamination methods for the flexible screen are mainly to use a silicone pad to press the flexible screen to an inner side of a glass curved cover plate. During lamination, the silicone pad is deformed due to the pressures from upper and lower jigs, to complete the lamination of the flexible screen with the curved cover plate. When the silicone pad is not deformed enough, it is possible to cause bubbles between the flexible screen and the curved cover plate.

SUMMARY

[0005] Embodiments of the present application provide a support component and a lamination device, which are intended to solve the problem of the generation of bubbles during lamination of a flexible screen with a curved cover plate.

[0006] In a first aspect, the embodiments of the present application provide a support component for laminating a curved cover plate with a flexible screen, the support component including: a base; and a flexible support table arranged on the base and configured to support the flexible screen. The flexible support table includes a main body portion and an arc-shaped portion arranged on at least one side of the main body portion. The arc-shaped portion has an arc-shaped support surface configured to support the flexible screen, and an abutting surface facing the base. The abutting surface is provided with a recessed portion.

[0007] In a second aspect, the embodiments of the present application further provide a lamination device for laminating a curved cover plate with a flexible screen, the lamination device including a support component according to any of the above embodiments of the first aspect, and a pressing table, the pressing table being arranged on one side of the support component, the pressing table having a receiving recess for receiving the curved cover plate, and an opening of the receiving recess facing the support component.

[0008] In the support component provided in the embodiments of the present application, the support component is configured to laminate the curved cover plate with the flexible screen, the base of the support component is configured to provide a support force, and the flexible support table of the support component is configured to support the flexible screen. The curved cover plate and the flexible screen are laminated with each other by means of the deformation of the flexible support table. The flexible support table includes the main body portion configured to support the flexible screen to laminate with a flattened portion of the curved cover plate, and the arc-shaped portion configured to support the flexible screen to laminate with a specially-shaped portion of the curved cover plate. The arc-shaped portion has an arc-shaped support surface configured to support the flexible screen, such that the flexible screen can be better laminated with the specially-shaped portion of the curved cover plate. By providing the recessed portion on the abutting surface of the arc-shaped portion facing the base, the recessed portion can improve the deformation capability of the arc-shaped portion, so that the flexible screen arranged on the arc-shaped support surface can be better laminated with the curved cover plate, thereby effectively alleviating the problem of the generation of bubbles during the lamination of the flexible screen with the curved cover plate. Moreover, the recessed portion can also reduce the force exerted by the arc-shaped portion on the flexible screen, and thus reduce the force exerted by the flexible screen on the specially-shaped portion of the curved cover plate, thereby alleviating the problem of the specially-shaped portion of the curved cover plate being prone to crack. Therefore, in the embodiments of the present application, by providing the recessed portion on the abutting surface of the arc-shaped portion facing the base, not only can the problem of the generation of bubbles during the lamination of the flexible screen with the curved cover plate be effectively alleviated, but the problem of the specially-shaped portion of the curved cover plate being prone to crack during the lamination can also be effectively alleviated.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. **1** is a structural schematic view of a display device according to an embodiment of the present application;

[0010] FIG. **2** is a structural schematic view of a support component in use according to an embodiment of a first aspect of the present application;

[0011] FIG. **3** is a structural schematic perspective view of a flexible support table of a support component according to an embodiment of the first aspect of the present application;

[0012] FIG. **4** is a structural schematic partial enlarged view of a flexible support table of a support component according to an embodiment of the present application;

[0013] FIG. **5** is a bottom view of a flexible support table of a support component according to an embodiment of the present application;

[0014] FIG. **6** is a structural schematic view of a support component according to another embodiment of the present application;

[0015] FIG. **7** is a structural schematic perspective view of a flexible support table of a support component according to another embodiment of the present application;

[0016] FIG. **8** is a bottom view of a flexible support table of a support component according to another embodiment of the present application;

[0017] FIG. **9** is a bottom view of a flexible support table of a support component according to still another embodiment of the present application;

[0018] FIG. **10** is a bottom view of a flexible support table of a support component according to still another embodiment of the present application;

[0019] FIG. **11** is a bottom view of a flexible support table of a support component according to still another embodiment of the present application;

[0020] FIG. **12** is a structural schematic view of a flexible support table of a support component according to an embodiment of the present application;

[0021] FIG. **13** is a structural schematic view of a flexible support table of a support component according to yet another embodiment of the present application;

[0022] FIG. **14** is a structural schematic view of a flexible support table of a support component according to a further embodiment of the present application;

[0023] FIG. **15** is a structural schematic partial enlarged view of FIG. **14**;

[0024] FIG. **16** is a structural schematic view of a base of a support component according to an embodiment of the present application;

[0025] FIG. **17** is a structural schematic view of a support component according to a till further embodiment of the present application;

[0026] FIG. **18** is a structural schematic view of a support component according to a yet further embodiment of the present application; and

[0027] FIG. **19** is a structural schematic view of a lamination device according to an embodiment of the present application.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0028] As shown in FIG. **1**, FIG. **1** shows a structural schematic exploded view of a display device including a flexible screen **20** and a curved cover plate **10** which are laminated with each other. The curved cover plate **10** includes a flattened portion **12** and a specially-shaped portion **11** located on at least one side in a circumferential direction of the flattened portion **12**. The specially-shaped portion **11** is bent with respect to the flattened portion **12**, and the flexible screen **20** is laminated with the flattened portion **12** and the specially-shaped portion **11** so that the specially-shaped portion **11** is also available for display, thereby increasing the screen-to-body ratio of the display device.

[0029] During the lamination of the flexible screen **20** with the curved cover plate **10**, the flexible screen **20** is generally arranged on a deformable flexible support table, such that the flexible screen **20** can be better laminated with the specially-shaped portion **11** of the curved cover plate **10** by means of the deformation of the flexible support table. There is a problem in the related art of the presence of bubbles between the flexible screen **20** and the curved cover plate **10** caused by insufficient deformation of the flexible support table.

[0030] In order to solve the above technical problem, the present application is provided. In order to better understand the present application, a support component and a lamination device according to the embodiments of the present application will be described in detail below with reference to FIGS. **2** to **19**.

[0031] Referring to FIGS. **2** and **3** together, FIG. **2** is a structural schematic view of a support component in use according to an embodiment of a first aspect of the present application, and FIG. **3** is a structural schematic perspective view of a flexible support table **200** of a support component according to an embodiment of the first aspect of the present application.

[0032] As shown in FIGS. **2** and **3**, the embodiments of the first aspect of the present application provide a support component for laminating a curved cover plate **10** with a flexible screen **20** as shown in FIG. **1**. The support component includes a base **100** and a flexible support table **200**. The flexible support table **200** is arranged on one side of the base **100** in a first direction Z and configured to support the flexible screen **20**. The flexible support table **200** includes a main body portion **210** and an arc-shaped portion **220** arranged on at least one side of the main body portion **210**. The arc-shaped portion **220** has an arc-shaped support surface **221** configured to support the flexible screen **20**, and an abutting surface **222** facing the base **100**. The abutting surface **222** is provided with a recessed portion **230**.

[0033] The base **100** may be configured in a variety of ways. In one embodiment, the base **100** may be formed from a rigid material such as metal and plastic, such that the base **100** can provide good support for the flexible support table **200**.

[0034] The flexible support table **200** may be configured in a variety of ways. In one embodiment, the flexible support table **200** may be formed from a flexible material such as silicone, such that the flexible support table **200** has a good deformation capability. The flexible support table **200** may alternatively be formed from another elastic material with deformation capability, as long as the flexible support table **200** has a certain flexibility such that the arc-shaped support surface **221** can be deformed. A surface of the main body portion **210** that supports the flexible screen **20** may be shaped as a planar or specially-shaped surface.

[0035] In one embodiment, the arc-shaped support surface **221** is adapted to the shape of a specially-shaped portion **11**.

[0036] In the support component provided in the embodiments of the present application, the support component is configured to laminate the curved cover plate **10** with the flexible screen **20**, the base **100** of the support component is configured to provide a support force, and the flexible support table **200** of the support component is configured to support the flexible screen **20**. The curved cover plate **10** and the flexible screen **20** are laminated with each other by means of the deformation of the flexible support table **200**. The flexible support table **200** includes the main body portion **210** and the arc-shaped portion **220**. The main body portion **210** is configured to support the flexible screen **20** to laminate with a flattened portion **12** of the curved cover plate **10**, and the arc-shaped portion **220** is configured to support the flexible screen **20** to laminate with the specially-shaped portion **11** of the curved cover plate **10**. The arc-shaped portion **220** has an arc-shaped support surface **221** configured to support the flexible screen **20**, such that the flexible screen **20** can be better laminated with the specially-shaped portion **11** of the curved cover plate **10**. By providing the recessed portion **230** on the abutting surface **222** of the arc-shaped portion **220** facing the base **100**, the recessed portion **230** can improve the deformation capability of the arc-shaped portion **220**, so that the flexible screen **20** arranged on the arc-shaped support surface **221** can be better

laminated with the curved cover plate **10**, thereby effectively alleviating the problem of the generation of bubbles during the lamination of the flexible screen **20** with the curved cover plate **10**. Moreover, the recessed portion **230** can also reduce the force exerted by the arc-shaped portion **220** on the flexible screen **20**, and thus reduce the force exerted by the flexible screen **20** on the specially-shaped portion **11** of the curved cover plate **10**, thereby alleviating the problem of the specially-shaped portion **11** of the curved cover plate **10** being prone to crack. Therefore, in the embodiments of the present application, by providing the recessed portion **230** on the abutting surface **222** of the arc-shaped portion **220** facing the base **100**, not only can the problem of the generation of bubbles during the lamination of the flexible screen **20** with the curved cover plate **10** be effectively alleviated, but the problem of the specially-shaped portion **11** of the curved cover plate **10** being prone to crack during the lamination can also be effectively alleviated.

[0037] The recessed portion **230** may be configured in a variety of ways. For example, the recessed portion **230** includes a groove and/or a stepped groove formed by recessing at least part of the abutting surface **222**. The groove and/or the stepped groove may be configured to be disconnected from or connected to an edge of the abutting surface **222** facing away from the main body portion **210**.

[0038] In some embodiments, still referring to FIG. **3**, the recessed portion **230** includes a first step surface **231** and a second step surface **232** arranged in a direction away from the main body portion **210** and located on a side of the abutting surface **222** facing the arc-shaped support surface **221**, and a distance between the first step surface **231** and the abutting surface **222** is smaller than a distance between the second step surface **232** and the abutting surface **222** in the first direction Z.

[0039] In these embodiments, the recessed portion **230** includes the first step surface **231** and the second step surface **232**, and the distance between the first step surface **231** and the abutting surface **222** is smaller than the distance between the second step surface **232** and the abutting surface **222**, that is, the recessed portion **230** is in the form of a step, so that the arc-shaped portion **220** has different thicknesses at different positions away from the main body portion **210**, further improving the deformation capability of the arc-shaped portion **220** at different locations, and better alleviating the problem of bubbles being likely to be generated between the flexible screen **20** and the curved cover plate **10**.

[0040] In one embodiment, the recessed portion **230** further includes a first connecting surface (not shown) connecting the first step surface **231** and the second step surface **232**. In one embodiment, the first connecting surface is formed by extending in the first direction Z to facilitate the preparation and shaping of the recessed portion **230**.

[0041] In one embodiment, the recessed portion **230** may also include a further step surface, which is located on a side of the first step surface **231** facing away from the second step surface **232**, or on a side of the second step surface **232** facing away from the first step surface **231**. In one embodiment, when the distance between the further step surface and the abutting surface **222** is smaller than the distance between the first step surface **231** and the abutting surface **222**, the further step surface is located on the side of the first step surface **231** facing away from the second step surface **232**, and when the distance between the further step surface and the abutting surface **222** is greater than the distance between the second step surface **232** and the abutting surface **222**, the further step surface is located on the side of the second step surface **232** facing away from the first step surface **231**, so that the recessed portion **230** is generally in the form of a step and the thickness of the arc-shaped portion **220** decreases in a gradient manner.

[0042] In some embodiments, the first step surface **231** is located on a side of the second step surface **232** close to the main body portion **210** in a direction perpendicular to the first direction.

[0043] In these embodiments, since the first step surface **231** is closer to the main body portion **210**, the depth of the recessed portion **230** relative to the abutting surface **222** gradually increases in a direction from the main body portion **210** to the arc-shaped portion **220**, the thickness of the arc-shaped portion **220** gradually decreases, and the bending deformation capability of the arc-shaped portion **220** gradually increases, so that as the flexible screen **20** is gradually laminated with the curved cover plate **10** from the middle to two sides, the flexible screen **20** can be better laminated with parts of specially-shaped portions **11** on the two sides, thereby better alleviating the problem of bubbles being likely to be generated between an edge part of the curved cover plate **10** and the flexible screen **20**.

[0044] Referring to FIGS. **2** to **4** together, FIG. **4** is a structural schematic partial enlarged view of a flexible support table **200** of a support component according to an embodiment of the present application.

[0045] In some embodiments, as shown in FIGS. **2** to **4**, the first step surface **231** and the second step surface **232** are both laminated with the base **100**, and part of the arc-shaped support surface **221** that overlaps the first step surface **231** has a greater curvature than part of the arc-shaped support surface **221** that overlaps the second step surface **232** in the first direction Z.

[0046] For example, as shown in FIG. **4**, the arc-shaped support surface **221** includes a first arc-shaped surface **221***a* and a second arc-shaped surface **221***b*. The first arc-shaped surface **221***a* overlaps the first step surface **231** in the first direction Z. That is, an orthographic projection of the first arc-shaped surface **221***a* in the first direction Z overlaps an orthographic projection of the first step surface **231** in the first direction Z. The second arc-shaped surface **221***b* overlaps the second step surface **232** in the first direction Z. That is, an orthographic projection of the second arc-shaped surface **221***b* in the first direction Z overlaps an orthographic projection of the second step surface **232** in the first direction Z. The curvature of the first arc-shaped surface **221***a* is greater than the curvature of the second arc-shaped surface **221***b*. That is, the first arc-shaped surface **221***a* is curved to a greater degree than the second arc-shaped surface **221***b*.

[0047] In these embodiments, since the first step surface **231** and the second step surface **232** are both laminated with the base **100**, part of the arc-shaped portion **220** corresponding to the first step surface **231** has a greater thickness and part of the arc-shaped portion **220** corresponding to the second step surface **232** has a smaller thickness, then the amount of elastic deformation of the part of the arc-shaped portion **220** itself corresponding to the first step surface **231** is greater than the amount of elastic deformation of the part of the arc-shaped portion **220** corresponding to the second step surface **232**, and the first arc-shaped surface **221***a* corresponding to the first step surface **231** can have a greater deformation, and can better adapt to the specially-shaped

portion **11** with a greater curvature, thereby better alleviating the problem of lamination bubbles being likely to be generated between the flexible screen **20** and the specially-shaped portion **11**.

[0048] In some embodiments, still referring to FIGS. **2** to **4**, the first step surface **231** or the second step surface **232** is connected to the edge of the arc-shaped support surface **221** facing away from the main body portion **210**, to facilitate the preparation and shaping of the recessed portion **230** in the form of a step.

[0049] For example, when the first step surface **231** and the second step surface **232** are laminated with the base **100**, the second step surface **232** is connected to the edge of the arc-shaped support surface **221** facing away from the main body portion **210**. During the initial stage of bending of the specially-shaped portion **11** relative to the main body portion **210**, the curvature of the specially-shaped portion **11** is relatively large, and at the end of the specially-shaped portion **11** away from the main body portion **210**, the curvature of the specially-shaped portion **11** is generally relatively small. The second step surface **232** is connected to the edge of the arc-shaped support surface **221** facing away from the main body portion **210**, such that the shape of the arc-shaped portion **220** is adapted to the shape of the specially-shaped portion **11**, thereby better alleviating the problem of lamination bubbles being likely to be generated between the specially-shaped portion **11** and the flexible screen **20**.

[0050] In some other embodiments, it is also possible that the first step surface **231** is connected to the edge of the arc-shaped support surface **221** facing away from the main body portion **210**.

[0051] In the curved cover plate **10**, there may be two specially-shaped portions **11** respectively arranged on two sides of the main body portion **210**. That is, the curved cover plate **10** is a dual-curved cover plate. Alternatively, the curved cover plate **10** may be a quad-curved cover plate, there are four specially-shaped portions **11** respectively arranged on peripheral sides of the main body portion **210**, and an arc-shaped connecting portion may also be connected between two adjacent specially-shaped portions **11**.

[0052] Referring to FIGS. **3** to **5** together, FIG. **5** is a bottom view of a flexible support table **200** of a support component according to an embodiment of the present application.

[0053] In the support component according to some embodiments of the present application, as shown in FIGS. **3** to **5**, the arc-shaped portion **220** includes a first arc-shaped portion **220***a* located on at least one side of the main body portion **210** in a second direction X, a second arc-shaped portion **220***b* located on at least one side of the main body portion **210** in a third direction Y, and a bent portion **220***c* connecting the first arc-shaped portion **220***a* and the second arc-shaped portion **220***b*. The bent portion **220***c* is provided with the first step surface **231** and the second step surface **232**.

[0054] In these embodiments, the bent portion **220***c* is more complex in shape relative to the first arc-shaped portions **220***a* and the second arc-shaped portion **220***b*, and it is more likely to generate bubbles when the flexible screen **20** supported by the bent portion **220***c* is laminated with the curved cover plate **10**. The arrangement of the first step surface **231** and the second step surface **232** at the bent portion **220***c* can better alleviate the problem of lamination bubbles being likely to be generated between the flexible screen **20** and the curved cover plate **10**.

[0055] In other embodiments, it is also possible that the first arc-shaped portion **220***a* and/or the second arc-shaped portion **220***b* is provided with the first step surface **231** and the second step surface **232**, as long as the arc-shaped portion **220** is provided with the first step surface **231** and the second step surface **232**.

[0056] Referring to FIGS. **6** and **7** together, FIG. **6** is a structural schematic view of a support component according to another embodiment of the present application, and FIG. **7** is a structural schematic perspective view of a flexible support table **200** of a support component according to another embodiment of the present application.

[0057] In some embodiments, as shown in FIGS. **6** and **7**, the recessed portion **230** further includes a groove **233** having an opening provided in the abutting surface **222**. By providing the groove **233**, it is possible to reduce the thickness of the arc-shaped portion **220** at the position where the groove **233** is located, to increase the bending deformation capability of the arc-shaped portion **220**, to reduce the force exerted by the arc-shaped portion **220** on the flexible screen **20** during the lamination, and thus to reduce the force exerted by the flexible screen **20** on the specially-shaped portion **11** of the curved cover plate **10**, thereby alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0058] In one embodiment, the groove **233** and an edge of the arc-shaped portion **220** facing away from the main body portion **210** are spaced apart from each other. As described above, the specially-shaped portion **11** in the initial stage of bending with respect to the flattened portion **12** has a relatively large curvature, and is prone to crack during the lamination. By making the groove **233** and the edge of the arc-shaped portion **220** facing away from the main body portion **210** spaced apart from each other, the groove **233** is closer to the position where the specially-shaped portion **11** is prone to crack, thereby better alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0059] In one embodiment, the depth of the groove **233** is greater than or equal to 1.5 mm, alleviating the problem of the curved cover plate **10** being prone to crack due to insufficient depth of the groove **233** resulting in insufficient bending deformation force of the arc-shaped portion **220** and excessive force provided by the arc-shaped portion **220** to the flexible screen **20**.

[0060] In one embodiment, a surface of the base **100** that is configured to support the arc-shaped portion **220** may be in the form of a flat surface such that a bottom wall surface of the groove **233** is spaced apart from the base **100** to increase the bending deformation capability of the arc-shaped portion **220** at the position where the groove **233** is located. Alternatively, the base **100** may further include a protrusion located at the groove **233**, so that the support force of the base **100** can be increased to better alleviate the problem of lamination bubbles.

[0061] Referring to FIGS. **5** to **8** together, FIG. **8** is a bottom view of a flexible support table **200** of a support component according to another embodiment of the present application.

[0062] As shown in FIGS. **5** to **8**, the arc-shaped portion **220** includes a first arc-shaped portion **220***a* located on at least one side of the main body portion **210** in the second

direction X. In one embodiment, the groove **233** includes a first groove **233***a* provided at the first arc-shaped portion **220***a*. The first groove **233***a* can reduce the thickness of the first arc-shaped portion **220***a* at its position, to increase the bending deformation capability of the first arc-shaped portion **220***a* and reduce the force exerted by the first arc-shaped portion **220***a* on the flexible screen **20**, thereby alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0063] In one embodiment, the first groove **233***a* extends in the form of a strip in the third direction Y, so that the shape of the first groove **233***a* is more adapted to the shape of the first arc-shaped portion **220***a*, thereby better alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0064] In one embodiment, as shown in FIG. **8**, an extension length of the first groove **233***a* in the third direction Y may be smaller than an extension length of the first arc-shaped portion **220***a* in the third direction Y. Alternatively, as shown in FIG. **9**, the extension length of the first groove **233***a* in the third direction Y may be equal to the extension length of the first arc-shaped portion **220***a* in the third direction Y. That is, it is also possible that the first groove **233***a* runs through the first arc-shaped portion **220***a* in the third direction Y. In one embodiment, when the extension length of the first groove **233***a* in the third direction Y is equal to the extension length of the first arc-shaped portion **220***a* in the third direction Y, the arc-shaped portion **220** is a hyperbolic arc-shaped portion, and the two first arc-shaped portions **220***a* are respectively arranged on two sides of the main body portion **210**.

[0065] Referring to FIGS. **6**, **7** and **10**, FIG. **10** is a bottom view of a flexible support table **200** of a support component according to still another embodiment of the present application.

[0066] In some embodiments, as shown in FIGS. **6**, **7** and **10**, the arc-shaped portion **220** further includes a second arc-shaped portion **220***b*, and the groove **233** further includes a second groove **233***b* provided at the second arc-shaped portion **220***b*. By providing the second groove **233***b*, it is possible to reduce the thickness of the second arc-shaped portion **220***b* at the position where the second groove **233***b* is located, to increase the bending deformation capability of the second arc-shaped portion **220***b*, to reduce the force exerted by the arc-shaped portion **220** on the flexible screen **20** during the laminations, and thus to reduce the force exerted by the flexible screen **20** on the specially-shaped portion **11** of the curved cover plate **10**, thereby alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0067] In one embodiment, the second groove **233***b* extends in the form of a strip in the second direction X, so that the shape of the second groove **233***b* is more adapted to the shape of the second arc-shaped portion **220***b*, thereby better alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0068] In one embodiment, the arc-shaped portion **220** further includes a bent portion **220***c* connecting the first arc-shaped portion **220***a* and the second arc-shaped portion **220***b*. As shown in FIG. **10**, the first groove **233***a* and the second groove **233***b* may provide clearance for the bent portion **220***c*. Alternatively, as shown in FIG. **11**, the groove further includes a third groove **233***c*. The third groove **233***c* is located at the bent portion **220***c* and connects the first groove **233***a* and the second groove **233***b*.

[0069] Referring to FIGS. **6** and **12** together, FIG. **12** is a structural schematic view of a flexible support table **200** of a support component according to an embodiment of the present application.

[0070] In some embodiments, as shown in FIGS. **6** and **12**, the arc-shaped support surface **221** includes a first support surface **221***c* and a second support surface **221***d* arranged side by side in a direction away from the main body portion **210**, the first support surface **221***c* having a greater curvature than the second support surface **221***d*, and the groove **233** and the first support surface **221***c* are arranged to at least partially overlap each other in the first direction Z of the flexible support table **200**.

[0071] In these embodiments, the curvature of the first support surface **221***c* is relatively large, and the degree of bending of the first support surface **221***c* is thus relatively large, so that the curved cover plate **10** is more prone to crack at a position corresponding to the first support surface **221***c*; and the groove **233** and the first support surface **221***c* are arranged to at least partially overlap each other in the first direction Z such that at least part of the groove **233** can be arranged to correspond to the first support surface **221***c*, thereby increasing the bending deformation capability of the arc-shaped portion **220** at the position where the first support surface **221***c* is located, and better alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0072] The groove **233** and the first support surface **221***c* at least partially overlapping each other in the first direction Z means that the orthographic projection of the groove **233** in the first direction Z at least partially overlaps the orthographic projection of the first support surface **221***c* in the thickness direction.

[0073] In one embodiment, the projection of the first support surface **221***c* is located within the orthographic projection of the groove **233** in the first direction Z, so that the entire first support surface **221***c* is provided with the groove **233**, thereby better alleviating the problem of the curved cover plate **10** being prone to crack during the lamination.

[0074] In one embodiment, an extension width of the groove **233** is greater than an extension width of the first support surface **221***c*. The width of the groove **233** is the extent of the groove **233** in the direction from the main body portion **210** to the arc-shaped portion **220**. For example, when the groove **233** is the first groove **233***a*, the width of the groove **233** is the extent of the groove **233** in the second direction X. When the groove **233** is the second groove **233***b*, the width of the groove **233** is the extent of the groove **233** in the third direction Y.

[0075] In these embodiments, the width of the groove **233** is relatively large and the groove **233** can cover the entire first support surface **221***c*, so that the problem of the curved cover plate **10** being prone to crack during the lamination can be better alleviated.

[0076] In any of the above embodiments, the recessed portion **230** may include only the first step surface **231** and the second step surface **232**, and the first step surface **231** and the second step surface **232** may be located at any position of the arc-shaped portion **220**. When the curved cover plate **10** is a quad-curved cover plate and the arc-shaped portion **220** includes a bent portion **220***c*, In one

embodiment, the first step surface **231** and the second step surface **232** are located at the bent portion **220***c* of the arc-shaped portion **220** to better alleviate the problem of lamination bubbles.

[0077] It is also possible that the recessed portion **230** includes only the groove **233**, and the groove **233** may be located at any position of the arc-shaped portion **220**. When the curved cover plate **10** is a dual-curved or quad-curved cover plate, the groove **233** may extend in the form of a strip and is adapted to the shape of the arc-shaped portion **220**.

[0078] In still some embodiments, the recessed portion **230** may include the first step surface **231** and the second step surface **232**, and also the groove **233**, and there are many ways to arrange the relative positions of the first step surface **231**, the second step surface **232** and the groove **233**. For example, when the curved cover plate **10** is a dual-curved cover plate, the first step surface **231** and the second step surface **232**, and the groove **233** may be located on the same side or on different sides of the main body portion **210**.

[0079] In one embodiment, as shown in FIG. **13**, the groove **233** may be provided at the step surface to better adjust the deformation capability of the arc-shaped portion **220**.

[0080] Alternatively, as shown in FIG. **14**, when the curved cover plate **10** is a quad-curved cover plate, and the arc-shaped portion **220** includes a first arc-shaped portion **220***a*, a second arc-shaped portion **220***b* and a bent portion **220***c*, the first step surface **231** and the second step surface **232** are located on the bent portion **220***c*, and the groove **233** includes a first groove **233***a* located at the first arc-shaped portion **220***a* and a second groove **233***b* located at the second arc-shaped portion **220***b*. It is possible to alleviate both the problem of lamination bubbles and the problem of the curved cover plate **10** being prone to crack during the lamination.

[0081] Referring to FIGS. **13** to **15** together, FIG. **15** is a structural schematic partial enlarged view of FIG. **14**.

[0082] In some embodiments, as shown in FIGS. **13** to **15**, the main body portion **210** includes a planar support surface **211** configured to support the flexible screen **20** and a support back surface **212** facing away from the planar support surface **211**. The planar support surface **211** includes a hole area laminating portion **211***a*. The hole area laminating portion **211***a* is configured to support the flexible screen **20** so as to support the lamination of the flexible screen **20** with an under-screen photosensitive hole of the curved cover plate **10**. The main body portion **210** is provided with a clearance slot **213**. An opening of the clearance slot **213** is provided at the support back surface **212** and extends toward the planar support surface **211**, and the clearance slot **213** at least partially overlaps the hole area laminating portion **211***a* in the first direction Z.

[0083] In these embodiments, when the display device includes an under-screen photosensitive element, the curved cover plate **10** is generally provided with an under-screen photosensitive hole corresponding to the under-screen photosensitive element. The under-screen photosensitive hole is generally a through hole. During the lamination of the curved cover plate **10** with the flexible screen **20**, when the force provided by the flexible support table **200** is too large, there may be a risk of film layer breakage in the region of the under-screen photosensitive hole. In the embodiments of the present application, by providing the clearance slot **213** on the main body portion **210**, the clearance slot **213** at least partially overlaps the hole area laminating portion **211***a* in the first direction Z so that the bending deformation capability of the region where the hole area laminating portion **211***a* is located is increased, to reduce the force provided by the hole area laminating portion **211***a* to the under-screen photosensitive hole portion, thereby alleviating the risk of film layer breakage in the region of the under-screen photosensitive hole.

[0084] In one embodiment, an orthographic projection of the hole area laminating portion **211***a* in the first direction Z is located within an orthographic projection of the clearance slot **213** in the first direction Z, to better alleviate the risk of film layer breakage in the region of the under-screen photosensitive hole.

[0085] In one embodiment, a distance between an edge of the orthographic projection of the hole area laminating portion **211***a* in the first direction Z and an edge of the orthographic projection of the clearance slot **213** in the first direction Z is greater than or equal to 1 mm, to alleviate the risk of film layer breakage in the region of the under-screen photosensitive hole and its peripheral side.

[0086] In one embodiment, the clearance slot **213** is a blind slot, so that the flatness of the planar support surface **211** can be improved.

[0087] In one embodiment, the clearance slot **213** has a depth greater than or equal to 1.5 mm to alleviate the risk of film layer breakage in the region of the photosensitive hole due to insufficient depth of the clearance slot **213**.

[0088] Referring to FIGS. **1** and **16** together, FIG. **16** is a structural schematic view of a base **100** of a support component according to an embodiment of the present application.

[0089] In some embodiments, as shown in FIGS. **1** and **16**, the base **100** includes a first bearing surface **110** configured to support the main body portion **210** and a second bearing surface **120** configured to support the arc-shaped portion **220**. The second bearing surface **120** is in the form of a step, and a distance between the second bearing surface **120** and the first bearing surface **110** in the first direction Z gradually increases in a direction away from the first bearing surface **110**.

[0090] In these embodiments, the second bearing surface **120** is in the form of a step, the second bearing surface **120** includes a plurality of step surfaces, and the distances between the step surfaces and the first bearing surface **110** in the first direction Z gradually increase in the direction away from the first bearing surface **110**, so that as shown in FIGS. **17** and **18**, the base **100** can be configured to adapt to flexible support tables **200** of different sizes. Moreover, when the recessed portion **230** includes a first step surface **231** and a second step surface **232**, the shape of the first bearing surface **110** is more adapted to the shape of the recessed portion **230**, and better support can be provided.

[0091] In one embodiment, as shown in FIGS. **1** and **16**, when the recessed portion **230** includes a first step surface **231** and a second step surface **232**, the second bearing surface **120** is adapted to the shape of the recessed portion **230** and includes a first sub-surface **121** and a second sub-surface **122**. The first sub-surface **121** is configured to be coupled to the first step surface **231** and the second sub-surface **122** is configured to be coupled to the second step surface **232**. In one embodiment, when the second step surface **232** is located on a side of the first step surface **231** away from the main body portion **210** and the second

sub-surface **122** is located on a side of the first sub-surface **121** away from the first bearing surface **110**, the width of the second sub-surface **122** may be greater than the width of the second step surface **232**, to facilitate the mutual alignment of the flexible support table **200** and the base **100**. In one embodiment, the second bearing surface **120** may further include a third sub-surface on a side of the second sub-surface **122** facing away from the first sub-surface **121** to adapt to the flexible support tables **200** of different sizes and specifications, thereby improving the adaptability of the base **100**.

[0092] In some embodiments, the thickness of the main body portion **210** is greater than or equal to the thickness of the arc-shaped portion **220**. For example, the main body portion **210** protrudes toward a bottom surface of the base **100** relative to the abutting surface **222**, the elastic deformation capability of the main body portion **210** can be increased.

[0093] When the main body portion **210** protrudes toward the bottom surface of the base **100** relative to the abutting surface **222**, the first bearing surface **110** is recessed relative to the second bearing surface **120** in a direction away from the flexible support table **200**, so that the shape of the base **100** is more adapted to the shape of the flexible support table **200**.

[0094] Referring to FIG. **19**, FIG. **19** is a structural schematic view of a lamination device according to an embodiment of the present application.

[0095] As shown in FIG. **19**, in a second aspect, the embodiments of the present application further provide a lamination device for laminating a curved cover plate **10** with a flexible screen **20**. The lamination device includes a support component according to any of the above embodiments of the first aspect, and a pressing table **300**. The pressing table **300** is arranged on one side of the support component, and the pressing table **300** has a receiving recess **310** for receiving the curved cover plate **10**. An opening of the receiving recess **310** faces the support component. Since the lamination device according to the embodiments of the present application includes the support component as described above, the lamination device of the embodiments of the present application has the beneficial effects of the support component as described above, which will not be repeated herein.

1. A support component for laminating a curved cover plate with a flexible screen, the support component comprising:

a base; and

a flexible support table arranged on one side of the base in a first direction and configured to support the flexible screen, the flexible support table comprising a main body portion and an arc-shaped portion arranged on at least one side of the main body portion, wherein the arc-shaped portion comprises an arc-shaped support surface configured to support the flexible screen, and an abutting surface facing the base, the abutting surface being provided with a recessed portion.

2. The support component according to claim **1**, wherein the recessed portion comprises a first step surface and a second step surface arranged in a direction perpendicular to the first direction and away from the main body portion and located on a side of the abutting surface facing the arc-shaped support surface, and a distance between the first step surface and the abutting surface is smaller than a distance between the second step surface and the abutting surface in the first direction.

3. The support component according to claim **2**, wherein the first step surface is located on a side of the second step surface close to the main body portion in the direction perpendicular to the first direction.

4. The support component according to claim **3**, wherein the first step surface and the second step surface are both laminated with the base, and a curvature of at least part of the arc-shaped support surface that overlaps the first step surface is greater than part of the arc-shaped support surface that overlaps the second step surface in the first direction.

5. The support component according to claim **3**, wherein the second step surface is connected to an edge of the arc-shaped support surface facing away from the main body portion.

6. The support component according to claim **2**, wherein the arc-shaped portion comprises a first arc-shaped portion located on at least one side of the main body portion in a second direction, a second arc-shaped portion located on at least one side of the main body portion in a third direction, and a bent portion connecting the first arc-shaped portion and the second arc-shaped portion, the bent portion being provided with the first step surface and the second step surface.

7. The support component according to claim **1**, wherein the recessed portion comprises a groove having an opening provided in the abutting surface.

8. The support component according to claim **7**, wherein the groove is spaced apart from an edge of the arc-shaped portion facing away from the main body portion; and,

the groove has a depth greater than or equal to 1.5 mm.

9. The support component according to claim **7**, wherein the base further comprises a protrusion located at the groove.

10. The support component according to claim **7**, wherein the arc-shaped portion comprises a first arc-shaped portion located on at least one side of the main body portion in a second direction, and the groove comprises a first groove provided at the first arc-shaped portion.

11. The support component according to claim **10**, wherein the first groove extends in the form of a strip in a third direction.

12. The support component according to claim **7**, wherein the arc-shaped portion further comprises a second arc-shaped portion located on at least one side of the main body portion in a third direction, and the groove comprises a second groove provided at the second arc-shaped portion;

and the second groove extends in the form of a strip in a second direction.

13. The support component according to claim **7**, wherein the arc-shaped support surface comprises a first support surface and a second support surface arranged side by side in a direction away from the main body portion, a curvature of the first support surface being greater than the second support surface, and the groove and the first support surface are arranged to at least partially overlap each other in the first direction.

14. The support component according to claim **13**, wherein a projection of the first support surface is located within an orthographic projection of the groove in the first direction;

and an extension width of the groove is greater than the first support surface.

15. The support component according to claim **1**, wherein the base comprises a first bearing surface configured to support the main body portion and a second bearing surface configured to support the arc-shaped portion, the second bearing surface being in the form of a step, and a distance between the second bearing surface and the first bearing surface in the first direction gradually increasing in a direction away from the first bearing surface.

16. The support component according to claim **1**, wherein the main body portion comprises a planar support surface configured to support the flexible screen and a support back surface facing away from the planar support surface, the planar support surface comprising a hole area laminating portion, the hole area laminating portion being configured to support the flexible screen such that the flexible screen is laminated with an under-screen photosensitive hole of the curved cover plate, and a clearance slot being provided on a side of the main body portion facing the base, and orthographic projections of the clearance slot and the hole area laminating portion in the first direction at least partially overlap each other.

17. The support component according to claim **16**, wherein the orthographic projection of the hole area laminating portion in the first direction is located within the orthographic projection of the clearance slot in the first direction.

18. The support component according to claim **17**, wherein a distance between an edge of the orthographic projection of the hole area laminating portion in the first direction and an edge of the orthographic projection of the clearance slot in the first direction is greater than or equal to 1 mm.

19. The support component according to claim **17**, wherein the clearance slot is a blind slot;

and a depth of the clearance slot is greater than or equal to 1.5 mm.

20. A lamination device for laminating a curved cover plate with a flexible screen, the lamination device comprising:

a support component of claim **1**, and

a pressing table arranged on one side of the support component, the pressing table comprising a receiving recess for receiving the curved cover plate, and an opening of the receiving recess facing the support component.

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