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Splicing display device

Abstract

A splicing display device is provided. The splicing display device includes at least two first display units and a second display unit. The first display units are spliced and connected. Each of the first display units includes a non-display area. The second display unit is disposed on a light-emitting side of the first display units, and attached and fixed to a splicing position of the non-display areas of the two adjacent first display units.

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References Cited

U.S. PATENT DOCUMENTS

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
2022/0059608	12/2021	Tseng	N/A	N/A
2024/0353709	12/2023	Fu	N/A	G09F 9/33

FOREIGN PATENT DOCUMENTS

Patent No.	Application Date	Country	CPC
109026923	12/2017	CN	N/A
110379314	12/2018	CN	N/A
111128051	12/2019	CN	N/A
111290154	12/2019	CN	N/A
111653207	12/2019	CN	N/A
113270049	12/2020	CN	N/A
113658984	12/2020	CN	G02F 1/13336
113703211	12/2020	CN	N/A
113763823	12/2020	CN	N/A
114038340	12/2021	CN	N/A
114141154	12/2021	CN	N/A
114415410	12/2021	CN	N/A
114488621	12/2021	CN	N/A
2002062826	12/2001	JP	N/A
2021255290	12/2020	WO	N/A
WO-2023230879	12/2022	WO	G02F 1/133331

OTHER PUBLICATIONS

English Machine Translation of Fu et al., WO 2023230879 (Year: 2025). cited by examiner
English Machine Translation of Kong et al., CN 11365 8984 (Year: 2025). cited by examiner
International Search Report in International application No. PCT/CN2022/103119, mailed on Dec. 16, 2022. cited by applicant
Written Opinion of the International Search Authority in International application No. PCT/CN2022/103119, mailed on Dec. 16, 2022. cited by applicant

Chinese Office Action issued in corresponding Chinese Patent Application No. 202210710895.2 dated Mar. 31, 2023, pp. 1-7. cited by applicant

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Background/Summary

FIELD OF DISCLOSURE

(1) The present disclosure relates to the field of display technologies, in particular to a splicing display device.

BACKGROUND

(2) At present, it is one of ways to realize seamless splicing of viewing angles of large-size display screens by arranging light-emitting diode strips correspondingly at a splicing position of two liquid crystal display panels which are connected and spliced. However, a flatness of the light-emitting diode strips fixed on the liquid crystal display panel directly affects s display performance of the large-size display screens.

SUMMARY OF DISCLOSURE

(3) A purpose of the present disclosure is to provide a splicing display device to improve a flatness of a splicing position of non-display areas of two adjacent first display units where a second display unit is fixed to.

(4) A splicing display device includes:

(5) at least two first display units which are spliced and connected, where each of the first display units includes a non-display area; and a second display unit disposed on a light-emitting side of the first display units, and attached and fixed to a splicing position of the non-display areas of the two adjacent first display units.

(6) In the splicing display device of some embodiments, the splicing display device further includes: a vacuum suction component disposed in the non-display area of one of the first display units and arranged corresponding to the second display unit, where the vacuum suction component is configured to attach the second display unit; and a vacuuming unit disposed on a side of the one of the first display units away from the second display unit, where the vacuuming unit is connected to the vacuum suction component, and is configured to vacuum the vacuum suction component.

(7) In the splicing display device of some embodiments, the vacuum suction component includes a suction hole, and the suction hole extends in a thickness direction of the first display units.

(8) The splicing display device further includes a connecting pipe, one end of the connecting pipe is connected to the vacuuming unit, and another end of the connecting pipe is inserted into the suction hole.

(9) In the splicing display device of some embodiments, each of the first display units further includes: a first accommodating slot disposed in the non-display area of the first display unit, disposed on a surface of the first display unit close to the second display unit, and arranged corresponding to the second display unit; and a through hole correspondingly arranged and communicated with the first accommodating slot, and extending in a thickness direction of the first display unit.

(10) The vacuum suction component includes a vacuum sucker and is disposed in the first accommodating slot.

(11) The splicing display device further includes a connecting pipe, at least a portion of the connecting pipe is disposed in the through hole, one end of the connecting pipe is connected to the

vacuum sucker, and another end of the connecting pipe is connected to the vacuuming unit.
(12) In the splicing display device of some embodiments, the first display units are liquid crystal display modules, and the second display unit is a light emitting-diode light panel.
(13) In the splicing display device of some embodiments, each of the first display units includes a liquid crystal display panel and a backlight module, the backlight module includes a backplane, the backplane includes a bottom plate and a side plate arranged along an edge of the bottom plate, the side plate of the backplane is arranged around the liquid crystal display panel, the side plate of the backplane is disposed in the non-display area of the first display unit, and the vacuum suction component is disposed in the side plate.
(14) In the splicing display device of some embodiments, the splicing display device further includes: a vacuum valve connected between the vacuum suction component and the vacuuming unit.
(15) In the splicing display device of some embodiments, a group of the vacuum suction components is correspondingly disposed on the splicing position of the non-display area of one of the two adjacent first display units, the group of the vacuum suction components includes a plurality of the vacuum suction components, one of the vacuum valves is connected to the group of the vacuum suction components.
(16) In the splicing display device of some embodiments, two groups of the vacuum suction components respectively disposed on the splicing position of the non-display areas of the two adjacent first display units are symmetrically arranged.
(17) In the splicing display device of some embodiments, the plurality of the vacuum suction components of the group of the vacuum suction components are arranged side by side along an extending direction of a splicing seam of the splicing position.
(18) In the splicing display device of some embodiments, each of the first display units includes: a second accommodating slot disposed on a rear surface of the first display unit away from the second display unit.
(19) The vacuum valve is detachably fixed in the second accommodating slot.
(20) In the splicing display device of some embodiments, the splicing display device further includes: a rear casing disposed on a back side of light-emitting surfaces of at least two of the first display units which are spliced, where the rear casing includes an accommodating cavity, and the vacuum valve and the vacuuming unit are arranged in the accommodating cavity of the rear casing.
(21) The present disclosure provides the splicing display device. By attaching and fixing the second display unit to a splicing position of the non-display areas of the two adjacent first display units, a flatness of the splicing position the non-display areas of the two adjacent first display units where the second display unit is fixed to is improved, thereby improving a display performance of the splicing display device.

Description

BRIEF DESCRIPTION OF DRAWINGS
(1) FIG. **1** is a schematic cross-sectional view of a splicing display device according to an embodiment of the present disclosure.
(2) FIG. **2** is a schematic plan view of a first display unit and a vacuum valve in the splicing display device shown in FIG. **1**.
(3) FIG. **3** is a schematic cross-sectional view along a line A-A shown in FIG. **2**.
(4) FIG. **4** is a schematic cross-sectional view of a splicing display device according to another embodiment of the present disclosure.
(5) FIG. **5** is a partially enlarged schematic view of the splicing display device shown in FIG. **4**.
DETAILED DESCRIPTION

(6) Technical solutions in the embodiments of the present disclosure will be clearly and completely described below with reference to the accompanying drawings in the embodiments of the present disclosure. Obviously, the described embodiments are only some, but not all, embodiments of the present disclosure. Based on the embodiments in the present disclosure, all other embodiments obtained by those skilled in the art without creative efforts shall fall within a protection scope of the present disclosure.

(7) Referring to FIG. **1**, FIG. **2**, and FIG. **3**, the present disclosure provides a splicing display device **100**. The splicing display device **100** includes at least two first display units **10**, a second display unit **20**, a vacuum suction component **30**, a vacuum valve **40**, a vacuum unit **50**, a rear casing **60**, a first connecting pipe **701**, and a second connecting pipe **702**.

(8) The first display units **10** are configured to display. Each of the first display units **10** includes a display area **10***a* and a non-display area **10***b*. The non-display area **10***b* is disposed at a periphery of the display area **10***a* and is arranged around the display area **10***a*.

(9) The first display units **10** are liquid crystal display modules. Each of the first display units **10** includes a liquid crystal display panel **102** and a backlight module **103** disposed on a back side of a light-emitting surface of the liquid crystal display panel **102**.

(10) The backlight module **103** includes a backplane **1031**, a light plate, a diffuser plate, an optical film, and the like. The backplane **1031** includes a bottom plate **1032** and four first side plates **1033**. The bottom plate **1032** is rectangular. The four first side plates **1033** are arranged along four edges of the bottom plate **1032**. The four first side plates **1033** and the bottom plate **1032** are surrounded to form a first accommodating cavity **1031***a*. The light plate, the diffuser plate, and the optical film etc. are arranged in the first accommodating cavity **1031***a*.

(11) The liquid crystal display panel **102** is fixed on a first side plate **1033** of the backplane **1031**. The first side plate **1033** is disposed around the liquid crystal display panel **102**. A display area of the liquid crystal display panel **102** is the display area **10***a* of the first display unit **10**. The non-display area **10***b* of the first display unit **10** includes a non-display area of the liquid crystal display panel **102**. The non-display area **10***b* of the first display units **10** is provided with the first side plate **1033** of the backplane **1031**.

(12) It can be understood that the first display units **10** may also be micro light emitting diode display devices, sub-millimeter light emitting diode display devices, organic light emitting diode display devices or quantum dot display devices.

(13) At least two first display units **10** may be spliced and connected along a same direction, or may be spliced and connected along two perpendicularly intersecting directions. Specifically, at least two first display units **10** are spliced and connected in the same direction. The two adjacent spliced first display units have a splicing position M. The splicing position M includes a splicing seam and the non-display areas **10***b* of the first display units **10**.

(14) In order to prevent the splicing seam of the splicing position M of the two adjacent spliced first display units and the non-display areas **10***b* of the first display units **10** from being viewed by human eyes, each second display unit **20** is disposed on the light-emitting side of the first display units, and is attached and fixed to the splicing position M of the non-display area **10***b* of the two adjacent first display units **10**.

(15) The second display unit **20** is a light emitting-diode light panel. The second display unit **20** includes a substrate and a plurality of inorganic light-emitting diodes arranged on the substrate. The substrate is a printed circuit board, and the inorganic light-emitting diodes can be micro light-emitting diodes or sub-millimeter light-emitting diodes.

(16) The splicing display device **100** further includes a flexible printed circuit board **80** and a control circuit board **90**. One end of the flexible printed circuit board **80** is connected to a rear surface of the light-emitting surface of the second display unit **20**, and another end of the flexible printed circuit board **80** is connected to the control circuit board **90**, so that the control circuit board **90** can control the second display unit **20** to emit light.

(17) The splicing display device **100** also includes a middle frame **110**. The middle frame **110** includes a frame body **1101** and four second side plates **1102** connected with the frame body **1101**. The frame body **1101** is a rectangular frame body. The frame body **1101** is disposed on a side of the liquid crystal display panel **102** away from the backlight module **103** and is parallel to the liquid crystal display panel **102**. The frame body **1101** is disposed in the non-display area of the splicing display device **100**. An opening of the frame body **1101** overlaps with the display areas **10***a* of the at least two first display units **10** and the second display unit **20**. The four second side plates **1102** are vertically connected to the frame body **1101**. The four second side plates **1102** are disposed one-to-one with the four first side plates **1033** and are disposed at a periphery of the four first side plates **1033**. The second side plate **1102** is detachably fixed on the first side plate **1033**.
(18) The rear casing **60** is disposed on a back side of the at least two spliced first display units **10**. The rear casing **60** is detachably fixed to a rear surface of the first display units **10**. The rear casing **60** includes a second accommodating cavity **60***a*. Specifically, the rear casing **60** is detachably fixed on the bottom plate **1032** of the backplane **1031**.
(19) In this embodiment, the splicing seam of the splicing position M and the non-display areas **10***b* of the first display units **10** are blocked by the second display unit **20**. The second display unit **20** displays, which prevents the splicing seam of the splicing position M of the two adjacent spliced first display units and the non-display areas **10***b* of the first display units **10** from being viewed by the human eye. Moreover, for bonding the second display unit and the first display unit with an adhesive layer with a thickness of millimeters, unevenness and fixing problems are caused due to the uneven thickness of the adhesive layer. Compared with the above, in this embodiment, since each second display unit **20** is fixed to the non-display area **10***b* of the first display unit **10** by suction, the second display unit **20** can be fixed to the non-display area **10***b* of the first display unit **10** flatly, thereby improving the display performance of the splicing display device **100**.
(20) The vacuum suction component **30** is configured to attach the second display unit **20**. The vacuum suction component **30** is disposed in the non-display area **10***b* of the first display unit **10**, and is arranged corresponding to the second display unit **20**.
(21) Referring to FIG. **2** and FIG. **3**, a group of the vacuum suction components **30***a* are correspondingly disposed in the splicing position M of the non-display areas **10***b* of two adjacent first display units **10**. The group of the vacuum suction components **30***a* includes a plurality of the vacuum suction components **30**.
(22) The plurality of vacuum suction components **30** of the group of vacuum suction components **30***a* are arranged side by side along an extending direction of the splicing seam. The plurality of vacuum suction components **30** of the group of vacuum suction components **30***a* may also be arranged in a single row, two rows, or multiple rows. The plurality of vacuum suction components **30** of the group of vacuum suction components **30***a* may also be arranged in a rectangular or other shape.
(23) When the plurality of vacuum suction components **30** of the group of vacuum suction components **30***a* are arranged side by side along the extension direction of the splicing seam, a distance between any two adjacent vacuum suction components **30** is equal in the extension direction of the splicing seam.
(24) Two groups of the vacuum suction components **30***a* respectively disposed on the splicing position M of the non-display areas **10***b* of the two adjacent first display units **10** are symmetrically arranged. Suction forces of the two groups of the vacuum suction components **30***a* to the second display unit **20** are the same, and the second display unit **20** can be fixed to the non-display areas **10***b* of the two adjacent first display units **10** more smoothly.
(25) The vacuum suction component **30** includes a suction hole **301**. The suction hole **301** is disposed on the first side plate **1033** of the backplane **1031** close to the splicing seam. The suction hole **301** extends in a thickness direction of the first display units **10** and extends through the first side plate **1033**.

(26) The suction hole **301** is a cylindrical hole. It can be understood that the suction hole **301** may also be a quadrangular prism hole or a triangular prism hole.
(27) The vacuuming unit **50** is configured to vacuum the vacuum suction component **30**. The vacuuming unit **50** is disposed on a side of the first display unit **10** away from the second display unit **20**. The vacuuming unit **50** is arranged in the second accommodating cavity **60***a* of the rear casing **60**. The vacuuming unit **50** may be a vacuum compressor.
(28) The vacuum valve **40** is configured to adjust a negative pressure condition in the vacuum suction component **30**. The vacuum valve **40** is connected between the vacuum suction component **30** and the vacuuming unit **50**. One vacuum valve **40** is connected to one group of the vacuum suction components **30***a*.
(29) Specifically, one ends of the plurality of first connecting pipes **701** are connected to the plurality of first ends of the vacuum valves **40** one-to-one. Another ends of the first connecting pipe **701** are inserted into the suction holes **301**. There is good sealing between the another end of the first connecting pipe **701** and the suction hole **301**, which is beneficial to maintain the negative pressure condition in the vacuum suction component **30**. One end of the second connecting pipe **702** is connected to the second end of the vacuum valve **40**. Another end of the second connecting pipe **702** is connected to the vacuuming unit **50**. Both the first connecting pipe **701** and the second connecting pipe **702** are plastic flexible pipes, which can be configured to allow gas to pass through.
(30) As shown in FIG. **3**, the first display unit **10** includes a second accommodating slot **1032***c*. The second accommodating slot **1032***c* is disposed on a rear surface of the first display unit **10** away from the second display unit **20**. The second accommodating slot **1032***c* corresponds to the vacuum suction component **30**. The vacuum valve **40** is detachably fixed in the second accommodating slot **1032***c*.
(31) Specifically, the second accommodating slot **1032***c* is disposed on a surface of the bottom plate **1032** of the backplane **1031** away from the liquid crystal display panel **102**, and the vacuum valve **40** is disposed in the second accommodating slot **1032***c*.
(32) It is understood that the vacuum valve **40** may also be disposed in the second accommodating cavity **60***a* of the rear casing **60**.
(33) In the splicing display device of this embodiment, the suction hole **301** is vacuumed by the vacuuming unit **50**, so that a pressure in the suction hole **301** is lower than an atmospheric pressure. Under an action of a pressure difference between the pressure in the suction hole **301** and the atmospheric pressure, the second display unit **20** is attached on the suction hole **301**, so that the second display unit **20** is attached and fixed to the non-display area **10***b* of the first display unit **10**. Moreover, the vacuum valve **40** can adjust the negative pressure condition in the suction hole **301**, thereby adjusting a flatness of the non-display area **10***b* of the first display unit **10** where the second display unit **20** is attached and fixed to.
(34) Referring to FIG. **4** and FIG. **5**, the splicing display device shown in FIG. **4** is basically similar to the splicing display device shown in FIG. **1**, a difference is that the first display unit **10** further includes a first accommodating slot **1033***a* and a through hole **1033***b*. The first accommodating slot **1033***a* is disposed on a surface of the first display unit **10** adjacent to the second display unit **20**. The first accommodating slot **1033***a* is disposed in the non-display area **10***b* of the first display unit **10** and is arranged corresponding to the second display unit **20**. The through hole **1033***b* corresponds to the first accommodating slot **1033***a* and they are communicated with each other. The through hole **1033***b* extends in a thickness direction of the first display units **10**. The vacuum suction component **30** includes a vacuum sucker **302**. The vacuum sucker **302** is disposed in the first accommodating slot **1033***a*. The first connecting pipe **701** is disposed in the through hole **1033***b*. One end of the first connecting pipe **701** is connected to the vacuum sucker **302**. Another end of the first connecting pipe **701** is connected to the vacuum valve **40**. The second connecting pipe **702** connects the vacuum valve **40** and the vacuuming unit **50**. The second connecting pipe

702 is disposed in the second accommodating cavity **60***a* of the rear casing **60**.
(35) Specifically, the first accommodating slot **1033***a* and the through hole **1033***b* are disposed on the first side plate **1033** of the backplane **1031**. The first accommodating slot **1033***a* is disposed on a surface of the first side plate **1033** close to the second display unit **20**. An area of a cross-section of the first accommodating slot **1033***a* in a direction parallel to the bottom plate **1032** decreases from being close to the second display unit **20** to being away from the second display unit **20**. The first accommodating slot **1033***a* is funnel-shaped. The through hole **1033***b* extends in the thickness direction of the first display units **10**. The through hole **1033***b* communicates with the first accommodating slot **1033***a*. A shape of the vacuum sucker **302** is the same as that of the first accommodating slot **1033***a*. The vacuum sucker **302** is disposed in the first accommodating slot **1033***a*. One end of the first connecting pipe **701** is connected to vacuum sucker **302**. Another end of the first connecting pipe **701** is connected to the vacuum valve **40**. The second connecting pipe **702** connects the vacuum valve **40** and the vacuuming unit **50**. The second connecting pipe **702** is disposed in the second accommodating cavity **60***a* of the rear casing **60**.
(36) In this embodiment, the vacuum sucker **302** is configured to attach the second display unit **20**, which is beneficial to improve an attaching effect of the second display unit **20**.
(37) The descriptions of the above embodiments are only used to help understand the technical solutions and core ideas of the present disclosure. Those of ordinary skill in the art should understand that they can still make modifications to the technical solutions described in the foregoing embodiments, or perform equivalent replacements to some of the technical features. These modifications or replacements do not make the essence of the corresponding technical solutions deviate from the scope of the technical solutions of the various embodiments of the present disclosure.

Claims

1. A splicing display device, comprising: at least two first display units which are spliced and connected, wherein each of the first display units comprises a non-display area, and the first display units are liquid crystal display modules; and a second display unit disposed on a light-emitting side of the first display units, and attached and fixed to a splicing position of the non-display areas of the two adjacent first display units, wherein the second display unit comprises a substrate and a plurality of inorganic light-emitting diodes disposed on the substrate, and the inorganic light-emitting diodes are micro light-emitting diodes or sub-millimeter light-emitting diodes; a vacuum suction component disposed in the non-display area of one of the first display units and arranged corresponding to the second display unit, wherein the vacuum suction component is configured to attach the second display unit.
2. The splicing display device according to claim 1, wherein further comprising: a vacuuming unit disposed on a side of the one of the first display units away from the second display unit, wherein the vacuuming unit is connected to the vacuum suction component, and is configured to vacuum the vacuum suction component.
3. The splicing display device according to claim 2, wherein the vacuum suction component comprises a suction hole, and the suction hole extends in a thickness direction of the first display units; and the splicing display device further comprises a connecting pipe, one end of the connecting pipe is connected to the vacuuming unit, and another end of the connecting pipe is inserted into the suction hole.
4. The splicing display device according to claim 2, wherein each of the first display units further comprises: a first accommodating slot disposed in the non-display area of the first display unit, disposed on a surface of the first display unit close to the second display unit, and arranged corresponding to the second display unit; and a through hole correspondingly arranged and communicated with the first accommodating slot, and extending in a thickness direction of the first

display unit; wherein the vacuum suction component comprises a vacuum sucker and is disposed in the first accommodating slot; and wherein the splicing display device further comprises a connecting pipe, at least a portion of the connecting pipe is disposed in the through hole, one end of the connecting pipe is connected to the vacuum sucker, and another end of the connecting pipe is connected to the vacuuming unit.

5. The splicing display device according to claim 1, wherein each of the first display units comprises a liquid crystal display panel and a backlight module, the backlight module comprises a backplane, the backplane comprises a bottom plate and a side plate arranged along an edge of the bottom plate, the side plate of the backplane is arranged around the liquid crystal display panel, the side plate of the backplane is disposed in the non-display area of the first display unit, and the vacuum suction component is disposed in the side plate.

6. The splicing display device according to claim 2, further comprising: a vacuum valve connected between the vacuum suction component and the vacuuming unit.

7. The splicing display device according to claim 6, wherein a group of the vacuum suction components is correspondingly disposed on the splicing position of the non-display area of one of the two adjacent first display units, the group of the vacuum suction components comprises a plurality of the vacuum suction components, one of the vacuum valves is connected to the group of the vacuum suction components.

8. The splicing display device according to claim 7, wherein two groups of the vacuum suction components respectively disposed on the splicing position of the non-display areas of the two adjacent first display units are symmetrically arranged.

9. A splicing display device, comprising: at least two first display units which are spliced and connected, wherein each of the first display units comprises a non-display area; and a second display unit disposed on a light-emitting side of the first display units, and attached and fixed to a splicing position of the non-display areas of the two adjacent first display units; a vacuum suction component disposed in the non-display area of one of the first display units and arranged corresponding to the second display unit, wherein the vacuum suction component is configured to attach the second display unit.

10. The splicing display device according to claim 9, wherein further comprising: a vacuuming unit disposed on a side of the one of the first display units away from the second display unit, wherein the vacuuming unit is connected to the vacuum suction component, and is configured to vacuum the vacuum suction component.

11. The splicing display device according to claim 10, wherein the vacuum suction component comprises a suction hole, and the suction hole extends in a thickness direction of the first display units; and the splicing display device further comprises a connecting pipe, one end of the connecting pipe is connected to the vacuuming unit, and another end of the connecting pipe is inserted into the suction hole.

12. The splicing display device according to claim 10, wherein each of the first display units further comprises: a first accommodating slot disposed in the non-display area of the first display unit, disposed on a surface of the first display unit close to the second display unit, and arranged corresponding to the second display unit; and a through hole correspondingly arranged and communicated with the first accommodating slot, and extending in a thickness direction of the first display unit; wherein the vacuum suction component comprises a vacuum sucker and is disposed in the first accommodating slot; and wherein the splicing display device further comprises a connecting pipe, at least a portion of the connecting pipe is disposed in the through hole, one end of the connecting pipe is connected to the vacuum sucker, and another end of the connecting pipe is connected to the vacuuming unit.

13. The splicing display device according to claim 10, wherein the first display units are liquid crystal display modules, and the second display unit is a light emitting-diode light panel.

14. The splicing display device according to claim 13, wherein each of the first display units

comprises a liquid crystal display panel and a backlight module, the backlight module comprises a backplane, the backplane comprises a bottom plate and a side plate arranged along an edge of the bottom plate, the side plate of the backplane is arranged around the liquid crystal display panel, the side plate of the backplane is disposed in the non-display area of the first display unit, and the vacuum suction component is disposed in the side plate.

15. The splicing display device according to claim 10, further comprising: a vacuum valve connected between the vacuum suction component and the vacuuming unit.

16. The splicing display device according to claim 15, wherein a group of the vacuum suction components is correspondingly disposed on the splicing position of the non-display area of one of the two adjacent first display units, the group of the vacuum suction components comprises a plurality of the vacuum suction components, one of the vacuum valves is connected to the group of the vacuum suction components.

17. The splicing display device according to claim 16, wherein two groups of the vacuum suction components respectively disposed on the splicing position of the non-display areas of the two adjacent first display units are symmetrically arranged.

18. The splicing display device according to claim 16, wherein the plurality of the vacuum suction components of the group of the vacuum suction components are arranged side by side along an extending direction of a splicing seam of the splicing position.

19. The splicing display device according to claim 15, wherein each of the first display units comprises a second accommodating slot disposed on a rear surface of the first display unit away from the second display unit; wherein the vacuum valve is detachably fixed in the second accommodating slot.

20. The splicing display device according to claim 15, further comprising: a rear casing disposed on a back side of light-emitting surfaces of at least two of the first display units which are spliced, wherein the rear casing comprises an accommodating cavity, and the vacuum valve and the vacuuming unit are arranged in the accommodating cavity of the rear casing.