

DESCRIPTION

DISPLAY PANEL PROTECTIVE SHEET

5 TECHNICAL FIELD

[0001] The present invention relates to a display panel protective sheet interposed between adjacent ones of a plurality of display panels each including glass substrates in the state in which the plurality of display panels are held in a horizontal attitude and are stacked in tiers in a packaging box.

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BACKGROUND ART

[0002] Typically, a liquid crystal display panel includes a pair of glass substrates arranged so as to oppose each other, a liquid crystal layer formed between the pair of glass substrates, and a sealing material bonding the pair of glass substrates together and provided in a frame shape to seal liquid crystal between the glass substrates.

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[0003] In order to prevent quality degradation due to, e.g., damage caused by a contact between the liquid crystal display panels in the state in which the liquid crystal display panels are held in a horizontal attitude and are stacked in tiers in a packaging box for storing or transporting the liquid crystal display panels, a protective sheet (slip sheet) is interposed between adjacent ones of the liquid crystal display panels as a buffer (cushioning material). Typically, liquid crystal display panels and protective sheets are alternately stacked one by one.

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[0004] More specifically, e.g., a display panel packaging device has been proposed, in which a storage space is formed and a plurality of display panels are held in a horizontal attitude and are stacked in tiers. In the packaging device, the display panels are held in the

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state in which the display panels and protective sheets having cushioning properties are alternately stacked.

[0005] In the packaging device, the protective sheet is in a rectangular shape and has substantially the same dimension as that of the display panel. In addition, in the packaging device, protrusions and grooves extending in a stacking direction of the display panels are alternately formed in a lateral direction in inner peripheral surfaces of side walls of a foam body defining the storage space. Since each of the display panels is supported at a peripheral edge part thereof by the protrusions, the display panels can be safely packaged with high storage efficiency (see, e.g., Patent Document 1).

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CITATION LIST

PATENT DOCUMENT

[0006] PATENT DOCUMENT 1: Japanese Patent Publication No. 2007-084124

15 SUMMARY OF THE INVENTION

TECHNICAL PROBLEM

[0007] However, in the conventional packaging device, the protective sheet has substantially the same dimension as that of the display panel as described above. Thus, it is inevitable that, when the display panel is taken out from the packaging device, the display panel is lifted with, e.g., hands contacting part of the glass substrates at an edge of the display panel. Thus, there is a problem that the thin heavy glass substrates are damaged upon the contact with the hands.

[0008] The present invention has been made in view of the foregoing problem, and it is an objective of the present invention to provide a display panel protective sheet which can effectively prevent damage of a display panel when the display panel is taken out from a

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packaging device.

SOLUTION TO THE PROBLEM

[0009] In order to accomplish the foregoing objective, a display panel protective sheet of
5 the present invention is directed to a display panel protective sheet which is interposed
between adjacent ones of a plurality of display panels held in a horizontal attitude and stacked
in tiers and which includes a protrusion provided in part of a side part of the display panel
protective sheet.

[0010] According to the foregoing configuration, in, e.g., the case where the display panel
10 includes glass substrates, when each of the plurality of display panels held in the horizontal
attitude and stacked in tiers is taken out from a packaging device, the protrusion of the display
panel protective sheet is gripped with the display panel being placed on the display panel
protective sheet, thereby lifting the display panel without, e.g., hands contacting part of the
glass substrates in a peripheral edge part of the display panel. As a result, when each of the
15 plurality of display panels held in the horizontal attitude and stacked in tiers is taken out from
the packaging device, damage of the display panel due to a contact of the thin heavy glass
substrates with the hands can be prevented.

[0011] In the display panel protective sheet of the present invention, the protrusion may be
integrally formed with a body of the display panel protective sheet.

20 [0012] According to the foregoing configuration, since an increase in thickness of the side
parts of the display panel protective sheet provided with the protrusion can be prevented,
damage of the display panel and degradation of display performance of the display panel due
to the increase in thickness of the side part of the display panel protective sheet provided
with the protrusion can be prevented.

25 [0013] In the display panel protective sheet of the present invention, the protrusion may be

provided in part of each of opposing side parts of the display panel protective sheet.

[0014] According to the foregoing configuration, it is ensured that, when the display panel is taken out from the packaging device, the display panel is upwardly lifted with the protrusions of the display panel protective sheet being gripped. As a result, the display panel can be easily taken out.

[0015] In the display panel protective sheet of the present invention, the protrusion may be provided in part of the display panel protective sheet other than a corner thereof.

[0016] According to the foregoing configuration, it is ensured that e.g., hands are prevented from contacting the corner of the display panel when the display panel is taken out from the packaging device, and, as a result, the display panel can be lifted without the hands contacting part of the glass substrates in the peripheral edge part of the display panel. Consequently, the damage of the display panel due to the contact of the thin heavy glass substrates with the hands can be further prevented.

[0017] In the display panel protective sheet of the present invention, at least one selected from a group consisting of a non-woven fabric and clean paper may form the display panel protective sheet.

[0018] According to the foregoing configuration, the display panel protective sheet is prevented from being too soft, and the display panel is prevented from sinking into the display panel protective sheet and being deformed (warped). As a result, the damage of the display panel and the degradation of the display performance of the display panel due to the deformation of the display panel can be prevented.

[0019] The display panel protective sheet of the present invention has excellent properties by which the damage of the display panel can be prevented when each of the plurality of display panels held in the horizontal attitude and stacked in tiers is taken out from the packaging device. Thus, it is suitable that the display panel protective sheet of the present

invention is used for the case where the length of the display panel is 700 - 3500 mm, the width of the display panel is 350 - 3000 mm, and the thickness of the display panel is 1 - 10 mm. In addition, it is suitable that the display panel protective sheet of the present invention is used for the case where the display panel is a liquid crystal display panel.

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ADVANTAGES OF THE INVENTION

[0020] According to the present invention, when each of the plurality of display panels held in the horizontal attitude and stacked in tiers is taken out from the packaging device, the damage of the display panel due to the contact of the thin heavy glass substrates with, e.g.,
10 hands can be prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] [FIG. 1] FIG. 1 is a top view illustrating the state in which display panels are held in a horizontal attitude and are stacked in tiers in a packaging device including protective
15 sheets of a first embodiment of the present invention.

[FIG. 2] FIG. 2 is a cross-sectional view of the packaging device along an A-A line of FIG. 1.

[FIG. 3] FIG. 3 is a cross-sectional view illustrating the liquid crystal display panel to be packaged in the packaging device including the protective sheets of the first
20 embodiment of the present invention.

[FIG. 4] FIG. 4 is a plan view illustrating the protective sheet of the first embodiment of the present invention.

[FIG. 5] FIG. 5 is a view illustrating a step for taking the liquid crystal display panel out from the packaging device.

25 [FIG. 6] FIG. 6 is a view illustrating another step for taking the liquid crystal

display panel out from the packaging device.

[FIG. 7] FIG. 7 is a view illustrating still another step for taking the liquid crystal display panel out from the packaging device.

[FIG. 8] FIG. 8 is a plan view illustrating a protective sheet with protrusions each
5 provided so as to extend across the entirety of a side part of the protective sheet.

[FIG. 9] FIG. 9 is a top view illustrating the state in which display panels are held in a horizontal attitude and are stacked in tiers in a packaging device including the protective sheets illustrated in FIG. 8.

[FIG. 10] FIG. 10 is a cross-sectional view illustrating the state in which a liquid
10 crystal display panel is placed on a protective sheet to which protrusions are attached as separate members.

[FIG. 11] FIG. 11 is a cross-sectional view illustrating the state in which a liquid crystal display panel is placed on a protective sheet made of foam resin.

[FIG. 12] FIG. 12 is a perspective view illustrating a method for stacking the
15 protective sheets of the first embodiment of the present invention and the liquid crystal display panels.

[FIG. 13] FIG. 13 is a top view illustrating the state in which display panels are held in a horizontal attitude and are stacked in tiers in a packaging device including protective sheets of a second embodiment of the present invention.

[FIG. 14] FIG. 14 is a plan view illustrating the protective sheet of the second
20 embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

[0022] Embodiments of the present invention will be described below in detail with
25 reference to drawings. Note that the present invention is not limited to the embodiments

below.

[0023] (First Embodiment)

FIG. 1 is a top view illustrating the state in which display panels are held in a horizontal attitude and are stacked in tiers in a packaging device including protective sheets of a first embodiment of the present invention. FIG. 2 is a cross-sectional view of the packaging device along an A-A line of FIG. 1. FIG. 3 is a cross-sectional view illustrating the liquid crystal display panel to be packaged in the packaging device including the protective sheets of the first embodiment of the present invention. FIG. 4 is a top view illustrating the protective sheet of the first embodiment of the present invention. Note that the liquid crystal display panel will be described in the present embodiment as an example of the display panel.

[0024] As illustrated in FIGS. 1 and 2, a packaging device 1 of the present embodiment includes a packaging box 2, a buffer 3 provided so as to fill a clearance between the packaging box 2 and each of liquid crystal display panels 10 and configured to absorb vibration impact, and display panel protective sheets 4 (hereinafter simply referred to as a “protective sheet 4”) each interposed between adjacent ones of the plurality of liquid crystal display panels 10 and configured to protect the liquid crystal display panels 10.

[0025] The buffer 3 is formed by molding resin into a resin foam body. As the resin forming the resin foam body, e.g., polyurethane resin, polypropylene resin, polyethylene resin, or a copolymer thereof may be used.

[0026] Note that, as illustrated in FIG. 1, the buffer 3 is provided with supports 3a each protruding toward the liquid crystal display panels 10 held in a storage space 2b of the packaging box 2 to support each of the liquid crystal display panels 10 at a peripheral edge part (side part) 10a thereof.

[0027] According to the foregoing configuration, since movement (rattling) of the liquid

crystal display panels 10 due to vibration caused when the liquid crystal display panels 10 are transported can be prevented, damage of the liquid crystal display panels 10 when the liquid crystal display panels 10 are transported can be effectively prevented.

[0028] Alternatively, the packaging box 2 may be configured by the same resin foam body
5 as the buffer 3, and the packaging box 2 and the buffer 3 may be integrally formed.

[0029] As the material forming the protective sheet 4, e.g., a non-woven fabric or clean paper may be used. Note that, as illustrated in FIG. 4, the protective sheet 4 is substantially in a rectangular shape.

[0030] As illustrated in FIG. 2, a packaged body 20 including the liquid crystal display
10 panels 10 and the protective sheets 4 is configured such that the protective sheet 4 is interposed between adjacent ones of the plurality of liquid crystal display panels 10 held in the horizontal attitude (i.e., in the attitude in which the liquid crystal display panels 10 are parallel to a bottom surface 2a of the packaging box 2) and stacked in tiers, and that the liquid crystal display panels 10 and the protective sheets 4 are alternately stacked one by one.

15 [0031] In the present embodiment, the packaged body 20 is held in the storage space 2b formed inside the packaging box 2.

[0032] As illustrated in FIG. 3, the liquid crystal display panel 10 includes a thin film transistor (TFT) substrate 24 which is a first substrate provided on a side from which display light emitted from a backlight (not shown in the figure) enters, and a color filter (CF)
20 substrate 25 which is a second substrate arranged so as to oppose the TFT substrate 24. The liquid crystal display panel 10 further includes a liquid crystal layer 26 which is a display medium layer provided between the TFT substrate 24 and the CF substrate 25, and a frame-shaped sealing material 27 bonding the TFT substrate 24 and the CF substrate 25 together and sealing the liquid crystal layer 26.

25 [0033] The sealing material 27 is provided so as to surround the liquid crystal layer 26, and

the TFT substrate 24 and the CF substrate 25 are bonded together with the sealing material 27.

[0034] The CF substrate 25 is provided on a side from which the display light exit so as to oppose the TFT substrate 24 with the liquid crystal layer 26 being interposed therebetween.

5 [0035] The TFT substrate 24 includes a glass substrate and TFT elements such as gate electrodes, source electrodes, and drain electrodes, a transparent insulating layer, pixel electrodes, an alignment film, etc. which are formed on the glass substrate (the foregoing components of the TFT substrate 24 are not shown in the figure).

[0036] The CF substrate 25 includes a glass substrate, a black matrix having a grid part and
10 a frame part serving as a light blocking part on the glass substrate, and a color filter having plural types of colored layers (i.e., red layers R, green layers G, and blue layers B) each provided between adjacent ones of grids of the black matrix corresponding to each pixel (the foregoing components of the CF substrate 25 are not shown in the figure). The CF substrate 25 further includes a common electrode (not shown in the figure) provided so as to cover the
15 black matrix and the color filter, column-shaped photo spacers (not shown in the figure) provided on the common electrode, and an alignment film (not shown in the figure) provided so as to cover the common electrode.

[0037] Note that the black matrix is provided between adjacent ones of the colored layers and functions to divide the plural types of colored layers.

20 [0038] The liquid crystal layer 26 is made of, e.g., a nematic liquid crystal material having electro optical properties.

[0039] Note that, for the foregoing glass substrate, e.g., alkali-free glass which does not contain alkali metal such as sodium, aluminosilicate glass, or aluminoborosilicate glass may be used.

25 [0040] As the liquid crystal display panel 10 of the present embodiment, a large display

panel (32 - 150 inches) is used. The dimensions of the liquid crystal display panel 10 are as follows: a length L of 700 - 3500 mm; a width W of 350 - 3000 mm; and a thickness T of 1 - 10 mm. In addition, a glass substrate having a thickness of 0.5 - 1.5 mm may be used.

[0041] The thickness of the protective sheet 4 interposed between adjacent ones of the plurality of liquid crystal display panels 10 is small in order to ensure the function of the protective sheet 4 as the cushioning material and to prevent the packaged body 20 including the liquid crystal display panels 10 and the protective sheets 4 from being bulky to increase the number of liquid crystal display panels 10 to be held in the packaging box 2. Thus, the protective sheet 4 having a thickness of 0.5 - 1 mm is used.

[0042] In the present embodiment, a protrusion 4a is provided in part of each of side parts 4b of the protective sheet 4 as illustrated in FIGS. 2 and 4 so that, when the liquid crystal display panel 10 is taken out from the packaging device 1, the protective sheet 4 can be gripped with the liquid crystal display panel 10 being placed on the protective sheet 4. That is, as illustrated in FIG. 4, the protective sheet 4 includes a protective sheet body 4c and the protrusions 4a provided in the protective sheet body 4c.

[0043] According to the foregoing configuration, when the liquid crystal display panel 10 is taken out from the packaging device 1, the liquid crystal display panel 10 can be lifted without, e.g., hands contacting part of the glass substrates in the peripheral edge part 10a of the liquid crystal display panel 10.

[0044] That is, when the liquid crystal display panel 10 is taken out from the packaging device 1, the hands are first put in the storage space 2b of the packaging box 2 from above the packaging box 2 and then grip the protrusions 4a formed in the protective sheet 4 in the state illustrated in FIG. 2.

[0045] Next, as illustrated in FIG. 5, the protective sheet 4 is upwardly lifted (i.e., lifted in the direction indicated by arrows X in FIG. 5) with the liquid crystal display panel 10 being

placed on the protective sheet 4, thereby upwardly lifting the liquid crystal display panel 10 with the protective sheet 4.

[0046] Next, as illustrated in FIG. 6, the protrusions 4a of the protective sheet 4 gripped by the hands are downwardly bent (i.e., bent in the direction indicated by arrows Y in FIG. 6), and clearances S are formed between the liquid crystal display panel 10 and the protective sheet 4.

[0047] Then, the hands (fingers) are put in the clearances S to support the liquid crystal display panel 10 at a lower surface 10b thereof and to separate the protective sheet 4 from the liquid crystal display panel 10 as illustrated in FIG. 7. In such a manner, the liquid crystal display panel 10 can be lifted and taken out without the hands contacting part of the glass substrates in the peripheral edge part 10a of the liquid crystal display panel 10.

[0048] Although a protrusion may be provided across the entirety of each of side parts of a protective sheet (i.e., a protective sheet may be extended beyond an edge of a liquid crystal display panel), the following disadvantage is caused if the protrusion is provided across the entirety of each of the side parts of the protective sheet.

[0049] That is, in the case where a protrusion 40a is provided across the entirety of each of side parts 40b of a protective sheet 40 as illustrated in FIG. 8, it is difficult that, in a packaging device 50 illustrated in FIG. 9, supports 3a for supporting a liquid crystal display panel 10 at a peripheral edge part 10a thereof are provided corresponding to the respective protrusions 40a. As a result, there is a possibility that movement (rattling) of the liquid crystal display panel 10 in the direction in which the liquid crystal display panel 10 is not supported (in the direction indicated by an arrow Z in FIG. 9) is caused due to vibration caused when the liquid crystal display panel 10 is transported and therefore the liquid crystal display panel 10 is damaged.

[0050] On the other hand, in the present embodiment, since the protrusion 4a is provided in

part of each of the side parts 4b of the protective sheet 4 as described above, each of the protrusions 4a can be arranged in an area of the storage space 2b of the packaging box 2 where the support 3a of the buffer 3 is not provided for the peripheral edge part 10a of the liquid crystal display panel 10 as illustrated in FIG. 1. Thus, it is ensured by the supports 3a
5 of the buffer 3 that the movement (rattling) of the liquid crystal display panel 10 due to the vibration caused when the liquid crystal display panel 10 is transported is prevented.

[0051] In the present embodiment, the protrusions 4a are integrally formed with the protective sheet body 4c. This is because the thickness of each of side parts 60b of a protective sheet 60 to which protrusions 60a are attached is increased as illustrated in FIG. 10
10 if protrusions are members separated from a protective sheet and are attached to the protective sheet. This causes deformation (warping) of the liquid crystal display panel 10 placed on the protective sheet 60, and, as a result, disadvantages such as damage of the liquid crystal display panel 10 and degradation of display performance of the liquid crystal display panel 10 are caused.

15 [0052] In the present embodiment, each of the two protrusions 4a is provided in part of each of the opposing side parts 4b of the protective sheet 4 as illustrated in FIG. 4. According to the foregoing configuration, it is ensured that, when the liquid crystal display panel 10 is taken out from the packaging device 1, the liquid crystal display panel 10 is upwardly lifted with the protrusions 4a of the protective sheet 4 being gripped. Thus, the
20 liquid crystal display panel 10 can be easily taken out.

[0053] As described above, the protective sheet 4 is made of, e.g., a non-woven fabric or clean paper and the protective sheet 4 is not made of foam resin such as polyethylene resin in the present embodiment. This is because of the following reason. If a protective sheet 70 is made of foam resin, the protective sheet 70 is too soft and therefore a liquid crystal display
25 panel 10 sinks into the protective sheet 70 and is deformed (warped) as illustrated in FIG. 11.

As a result, the disadvantages such as the damage of the liquid crystal display panel 10 and the degradation of the display performance of the liquid crystal display panel 10 are caused.

[0054] In the present embodiment, in the state in which the liquid crystal display panels 10 and the protective sheets 4 are alternately stacked in tiers and are held in the horizontal attitude with each of the protective sheets 4 being interposed between adjacent ones of the liquid crystal display panels 10, the protective sheets 4 are stacked in tiers so that the protrusions 4a do not overlap with each other as viewed in the plane of the drawings of FIGS. 1 and 12. According to the foregoing configuration, when the liquid crystal display panel 10 is taken out from the packaging device 1, a plurality of liquid crystal display panels 10 are prevented from being simultaneously taken out by mistake and it is ensured that the liquid crystal display panels 10 can be taken out one by one.

[0055] According to the present embodiment described above, the following advantages can be realized.

[0056] (1) In the present embodiment, the protrusion 4a is provided in part of each of the side parts 4b of the protective sheet 4. Thus, when each of the plurality of liquid crystal display panels 10 held in the horizontal attitude and stacked in tiers is taken out from the packaging device 1, the protrusions 4a are gripped with the liquid crystal display panel 10 being placed on the protective sheet 4, thereby lifting the liquid crystal display panel 10 without, e.g., hands contacting part of the glass substrates in the peripheral edge part 10a of the liquid crystal display panel 10. As a result, when each of the plurality of liquid crystal display panels 10 held in the horizontal attitude and stacked in tiers is taken out from the packaging device 1, the damage of the liquid crystal display panel 10 due to the contact of the thin heavy glass substrates with the hands can be prevented.

[0057] (2) In the present embodiment, the protrusions 4a are integrally formed with the protective sheet body 4c. Thus, since an increase in thickness of each of the side parts 4b of

the protective sheet 4 provided with the protrusions 4a can be prevented, the damage of the liquid crystal display panel 10 and the degradation of the display performance of the liquid crystal display panel 10 due to the increase in thickness of each of the side parts 4b of the protective sheet 4 provided with the protrusions 4a can be prevented.

5 [0058] (3) In the present embodiment, the protrusion 4a is provided in part of each of the opposing side parts 4b of the protective sheet 4. Thus, it is ensured that, when the liquid crystal display panel 10 is taken out from the packaging device 1, the liquid crystal display panel 10 is upwardly lifted with the protrusions 4a of the protective sheet 4 being gripped. As a result, the liquid crystal display panel 10 can be easily taken out.

10 [0059] (4) In the present embodiment, the protective sheet 4 is made of a non-woven fabric or clean paper. Thus, the protective sheet 4 is prevented from being too soft, and the liquid crystal display panel 10 is prevented from sinking into the protective sheet 4 and being deformed (warped). As a result, the damage of the liquid crystal display panel 10 and the degradation of the display performance of the liquid crystal display panel 10 due to the deformation of the liquid crystal display panel 10 can be prevented.

15 [0060] (Second Embodiment)

Next, a second embodiment of the present invention will be described. Note that the same reference numerals as those shown in the first embodiment are used to represent equivalent elements and the description thereof will not be repeated. In addition, since a configuration of a liquid crystal display panel and a method for taking a liquid crystal display panel 10 out from a packaging device 1 are similar to those in the first embodiment, the detail description thereof will not be repeated.

20 [0061] FIG. 13 is a top view illustrating the state in which display panels are held in a horizontal attitude and are stacked in tiers in a packaging device including protective sheets of the second embodiment of the present invention. In addition, FIG. 14 is a plan view

illustrating the protective sheet of the second embodiment of the present invention.

[0062] The present embodiment is similar to the first embodiment in that a protrusion 4a is provided in part of each of side parts 4b of a protective sheet 4. However, as illustrated in FIG. 14, the protrusions 4a are provided in part of the protective sheet 4 other than four corners R.

[0063] Each of corners r of the liquid crystal display panel 10 illustrated in FIG. 13 is susceptible to impact and is part of the liquid crystal display panel 10 where damage is likely to cause. Thus, in the case where protrusions are respectively provided at four corners of a protective sheet, when the liquid crystal display panel 10 is taken out from the packaging device 1, e.g., hands may accidentally contact the corner(s) r of the liquid crystal display panel 10. As a result, there is a possibility that a disadvantage such as damage of the liquid crystal display panel 10 is caused.

[0064] On the other hand, by providing the protrusions 4a in part of the protective sheet 4 other than the four corners R as in the present embodiment, it is ensured that the hands are prevented from contacting the four corners r of the liquid crystal display panel 10 when the liquid crystal display panel 10 is taken out from the packaging device 1, and, as a result, the liquid crystal display panel 10 can be lifted without the hands contacting a peripheral edge part 10a of the liquid crystal display panel 10.

[0065] Note that, in the foregoing case, a support 3a is provided in a buffer 3 corresponding to each of the four corners R of the protective sheet 4 (i.e., each of the four corners r of the liquid crystal display panel 10) as illustrated in FIG. 13, and the supports 3a support the liquid crystal display panel 10 at the peripheral edge part 10a thereof.

[0066] As in the first embodiment, the protrusions 4a are integrally formed with a protective sheet body 4c as illustrated in FIG. 14 in the present embodiment, and each of the two protrusions 4a is provided in part of each of the opposing side parts 4b of the protective

sheet 4.

[0067] According to the present embodiment described above, the following advantage can be also realized in addition to advantages (1) - (4).

[0068] (5) In the present embodiment, the protrusions 4a are provided in part of the protective sheet 4 other than the four corners R. Thus, it is ensured that e.g., hands are prevented from contacting the four corners r of the liquid crystal display panel 10 when the liquid crystal display panel 10 is taken out from the packaging device 1, and, as a result, the liquid crystal display panel 10 can be lifted without the hands contacting part of glass substrates in the peripheral edge part 10a of the liquid crystal display panel 10. Consequently, the damage of the display panel due to the contact of the thin heavy glass substrates with the hands can be further prevented.

[0069] Note that each of the foregoing embodiments may be changed as follows.

[0070] In each of the foregoing embodiment, the liquid crystal display panel 10 has been described as the example of the display panel, but the present invention can be applied to other display panel including glass substrates, such as an organic EL display panel.

INDUSTRIAL APPLICABILITY

[0071] As described above, the present invention is suitable as the display panel protective sheet interposed between adjacent ones of the plurality of display panels each including the glass substrates in the state in which the plurality of display panels are held in the horizontal attitude so as to be stacked in tiers in the packaging box.

DESCRIPTION OF REFERENCE CHARACTERS

[0072]

25 1 Packaging Device

	2	Packaging Box
	2b	Storage Space
	3	Buffer
	4	Display Panel Protective Sheet
5	4a	Protrusion
	4b	Side Part of Display Panel Protective Sheet
	4c	Display Panel Protective Sheet Body
	10	Liquid Crystal Display Panel
	10a	Peripheral Edge Part of Liquid Crystal Display Panel
10	L	Length of Liquid Crystal Display Panel
	R	Corner of Display Panel Protective Sheet
	T	Thickness of Liquid Crystal Display Panel
	W	Width of Liquid Crystal Display Panel
	r	Corner of Liquid Crystal Display Panel

CLAIMS

1. A display panel protective sheet which is interposed between adjacent ones of a plurality of display panels held in a horizontal attitude and stacked in tiers,
5 comprising:

a protrusion provided in part of a side part of the display panel protective sheet.

2. The display panel protective sheet of claim 1, wherein
the protrusion is integrally formed with a body of the display panel protective sheet.

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3. The display panel protective sheet of claim 1 or 2, wherein
the protrusion is provided in part of each of opposing side parts of the display panel protective sheet.

15 4. The display panel protective sheet of any one of claims 1-3, wherein
the protrusion is provided in part of the display panel protective sheet other than a corner thereof.

5. The display panel protective sheet of any one of claims 1-4, wherein
20 at least one selected from a group consisting of a non-woven fabric and clean paper forms the display panel protective sheet.

6. The display panel protective sheet of any one of claims 1-5, wherein
a length of the display panel is 700 - 3500 mm, a width of the display panel is 350 -
25 3000 mm, and a thickness of the display panel is 1 - 10 mm.

7. The display panel protective sheet of any one of claims 1-6, wherein the display panel is a liquid crystal display panel.