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 TERMINAL DEVICE MOUNTING THE SAME
 (51) [International Patent Classification 7th Edition]
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 [FI]



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[Theme code (reference)]

2H089

5G435

[F-term (reference)]

2H089 HA40 JA10 QA11

5G435 AA14 AA17 BB12 EE13 EE16 LL07 LL08

Overview

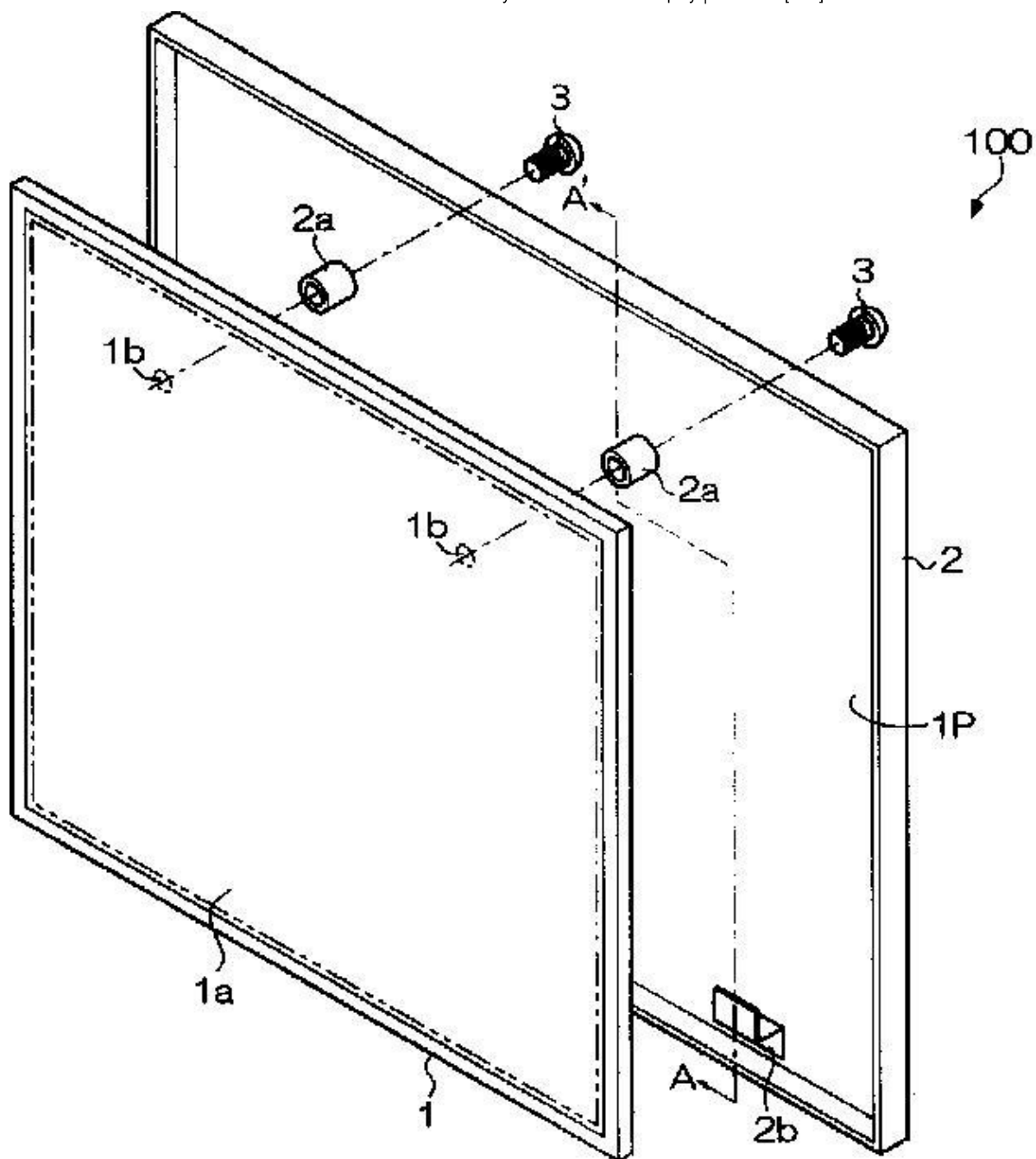
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(57) [Overview]

PROBLEM TO BE SOLVED: To provide the liquid crystal module and portable terminal device which are made thin in thickness when mounted and improved in reliability as well as the ratio of the display area to the surface area of the lid of the portable terminal device and which facilitate mounting and demounting the liquid crystal module on and from the portable terminal device.

SOLUTION: The liquid crystal module 1 has its screw hole 1b on the reverse side fixed to the lower frame 2 of a lid 100 with a screw 3 through a boss 2a of the lower frame 2 so that the display surface 1a faces the front. On the lower frame 2, a fixation part 2b for fixing the liquid crystal module 1 is formed. The fixation part 2b may be in any shape as long as the liquid crystal module 1 can be fixed.





Scope of Claims

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[Patent Claims]

[Claim 1] In the portable terminal device, a plate-like liquid crystal module is mounted on a



over body covering at least one surface of a computer body.

The lid has a bottom plate superposed on one surface of the liquid crystal module.

The liquid crystal module mounting structure is characterized in that the liquid crystal module and the bottom plate are fixed by a connecting member which is inserted into the bottom plate in a direction intersecting with the bottom plate.

[Claim 2] The liquid crystal module mounting structure according to claim 1, wherein the connecting member is a screw member which penetrates the bottom plate and is screwed into the liquid crystal module itself.

[Claim 3] The liquid crystal module mounting structure according to claim 1, wherein the connecting member is a screw member that penetrates the bottom plate and is screwed into a member that sandwiches the liquid crystal module between the connecting member and the bottom plate.

[Claim 4] The liquid crystal module mounting structure according to any one of claims 1 to 3, wherein a groove into which an edge of the liquid crystal module is inserted is provided along one edge of the lid, and the connecting member is provided at a position away from the groove.

[Claim 5] The liquid crystal module mounting structure according to any one of claims 1 to 3, wherein a plurality of screw members are provided.

[Claim 6] The liquid crystal module mounting structure according to any one of claims 1 to 4, wherein the lid body and the computer body are connected to each other so as to be rotatable about an axis along one edge of the lid body.

[Claim 7] The liquid crystal module mounting structure according to any one of claims 1 to 6, wherein a frame having a planar shape approximating a contour of the liquid crystal module is provided substantially in parallel with the bottom plate, and the liquid crystal module is disposed between the bottom plate and the frame.

[Claim 8] The liquid crystal module mounting structure according to any one of claims 1 to 7, wherein the lid body and the computer body are connected to each other via a connecting portion which is formed by inserting a projecting portion protruding outward from an edge of the lid portion into a recessed portion recessed inwardly in a plane direction from an edge portion of the computer main body, the connecting portion being rotatable about an axis parallel to the edge portion.

[Claim 9] The liquid crystal module mounting structure according to claim 8, wherein at least one of the bottom plate or the frame and the liquid crystal module are connected to each other by the convex portion.

[Claim 10] The liquid crystal module mounting structure according to any one of claims 7 to 9, wherein the connecting member is a bolt connecting the bottom plate and the frame body together, and the liquid crystal module has a through hole through which the bolt penetrates.

[Claim 11] A plate-like liquid crystal module is attached to a cover body covering at least one surface of a computer body.



In portable remote terminal equipment,

The lid has a bottom plate superposed on one surface of the liquid crystal module.

A liquid crystal module support structure, comprising : a frame body having a planar shape approximate to a contour of a liquid crystal module ; and a frame body provided substantially parallel to the bottom plate, wherein the liquid crystal module is disposed between the bottom plate and the frame body, and a coupling mechanism for connecting the bottom plate and the frame body is provided between the bottom plate and the frame body.

[Claim 12] The liquid crystal module mounting structure according to claim 11, wherein a projection to be inserted into a hole provided at a predetermined position of the liquid crystal module is provided on either one of the bottom plate and the frame body so as to protrude from the surface.

[Claim 13] The liquid crystal module supporting structure according to claim 11 or 12, wherein the connecting mechanism comprises a connecting piece provided on either one of the bottom plate or the frame body substantially in parallel with an inner surface thereof, and a projection portion provided on the other one of the connecting pieces and engaged with the connecting piece.

[Claim 14] The liquid crystal module mounting structure according to any one of claims 11 to 13, wherein the lid body and the computer body are connected to each other via a connecting portion which is formed by inserting a projecting portion protruding outward from an edge of the lid portion into a recessed portion recessed inwardly in a plane direction from an edge portion of the computer main body, the connecting portion being rotatable about an axis parallel to the edge portion.

[Claim 15] The liquid crystal module mounting structure according to claim 14, wherein at least one of the bottom plate and the frame is connected to the liquid crystal module.

[Claim 16] A portable terminal device comprising a liquid crystal module mounting structure according to any one of claims 1 to 15, wherein the liquid crystal module is fixed to the lid body.

Detailed Description

Close

[Detailed description of the invention]

[0001]

[Technical field of invention] The present invention relates to a mounting structure of a liquid crystal module mounted as a display device on a portable terminal device such as a notebook



personal computer (PC).

[0002]

[Prior art] As shown in FIG. 20, a conventional liquid crystal module is fixed to a lid portion 203 of a notebook personal computer 202 or the like by a screw 204 by a screw by a fixing portion 205 provided on a lid portion 203 by a screw forming portion 201 which protrudes from a side surface of a liquid crystal module 200 in a direction parallel to a display surface and is provided so as to be fixed from a front direction. However, in the conventional liquid crystal module, a ratio of an area of the liquid crystal display surface to an area of the entire cover portion is small only by a length protruding from a side surface of a screw formed portion provided on the front surface.

[0003] In addition, a conventional liquid crystal module has a problem in that a case is enlarged by a length in which a screw forming portion protrudes from a side surface. In the conventional liquid crystal module, it is positive.

This has the disadvantage that it is determined by the length of the screw which, for screwing from the surface, satisfies the fixing strength.

[0004] For this reason, in order to solve the above-mentioned drawbacks of the conventional liquid crystal module, a side mount type liquid crystal module in which a screw forming portion 300 shown in FIG. 21 is provided on a side surface of a liquid crystal module 301 is used. As a result, in the liquid crystal module of the side mount type, the width and the width in the transverse direction are improved due to the absence of the screw forming portion protruding from the side surface.

[0005] In the side mount method, the liquid crystal module 301 is inserted into the lower frame 303 with the display surface 301 facing upward, and the liquid crystal module 301 is fixed to the side wall of the lower frame 303 by a screw 305 from a screw hole 304 of the lower frame 303.

[0006]

[Problem to be solved by the invention] However, as shown in FIG. 22, the side mount type liquid crystal module 303 has a disadvantage in that the width of the module increases by a distance of a distance between a side surface of the outer frame frame 303 b and a side surface of the B / L (backlight portion) 303, that is, a depth of a depth of the screw forming portion.

[0007] In addition, as shown in FIG. 23, in the liquid crystal module 303 of the side mount type, since a screw forming portion is generally formed of a metal material, there is a problem that the weight of the whole of the portable terminal device is increased by the weight of the portion of the screw forming portion of the outer frame. Further, in the liquid crystal module 303 of the side mount type, since the width of the module is increased by the length of the depth of the screw forming portion, that is, the length of the screw 305, there is a problem that the housing of the portable terminal device becomes large as a whole.

[0008] Further, the side mount type liquid crystal module has a drawback that a ratio of an a



a of the liquid crystal display surface to an entire area of the cover portion is reduced by a depth of a screw forming portion parallel to the display surface. Further, in the liquid crystal module of the side mount type, the thickness D of the screw forming portion of the outer frame in a direction perpendicular to the display surface is required by the diameter r of the screw used for forming the screw hole and the length m 1 and m 2 of the allowance, and it is not possible to make the liquid crystal module thinner than a predetermined value.

[0009]Further, in the case of the side mount type liquid crystal module, when the attached information device receives an impact, the stress of an impact is concentrated on the thread forming portion of the outer frame, and the liquid crystal panel and the outer frame are damaged and easily broken. In addition, in the liquid crystal module of the side mount type, since the screw forming portion of the outer frame is generally made of metal, when the screw is screwed onto the lid of the portable device after the screw hole 304 is formed, a metal foreign piece is generated at the time when the screw is inserted into the screw hole, resulting in a problem that the wiring of the electronic circuit is short-circuited.

[0010]In addition, the side mount type liquid crystal module is provided in a module for driving a liquid crystal device.

To solve the problem that it is necessary to form a screw forming part, avoiding a driver IC (integrated circuit) provided, so that the degree of freedom of design becomes low, that is, an optimum layout of a signal line of a driver cannot be performed.

[0011]Further, a lid of a portable terminal device which is further mounted with a side mount type liquid crystal module requires a slide mold to form a screw receiving part, and there is a drawback that a manufacturing line forming cost increases. Further, in the lid of the portable terminal device, since the screw receiving portion is recessed inwardly from the side surface so that the head portion of the screw 305 is not provided on the side surface, the width of the lid increases by the length of the length extending in the inner direction.

[0012]In addition, in the conventional side mount type portable terminal device, when the liquid crystal module is attached / detached, since the screw receiving portion is positioned sideways as compared with a process of removing a screw from the front side, the attaching / detaching process of the liquid crystal module is complicated, so that the operation efficiency is lowered.

[0013]Further, in the conventional side mount type portable terminal device, since the screw receiving portion is positioned laterally, it is necessary to increase the strength of the portion of the screw hole 304 of the lid for fixing the liquid crystal module. To increase the strength of a cover material such as an Mg alloy or the like as a material for a lid, and a material cost of these metals is high, a processing efficiency of a molding process is lowered due to high strength, and a weight of a lid is increased.

[0014]It is an object of the present invention to provide a liquid crystal module and a portable terminal device which can reduce the thickness of the portable terminal device when mounted



d, enhance the reliability, increase the ratio of the display area to the surface area of the lid of the portable terminal device, and facilitate the mounting and detaching process from the portable terminal device.

[0015]

[Means for solving the problem] According to a 1 aspect of the present invention, there is provided a portable terminal device in which a plate-like liquid crystal module is attached to a cover body covering at least one surface of a computer main body. A liquid crystal module mounting structure, comprising : a bottom plate stacked on one surface of a liquid crystal module ; and a connecting member inserted into the bottom plate in a direction intersecting with the bottom plate, wherein the liquid crystal module and the bottom plate are fixed.

[0016]According to a 2 aspect of the present invention, in the liquid crystal module mounting structure according to the 1 aspect, the connecting member is a screw member which penetrates the bottom plate and is screwed into the liquid crystal module itself.

[0017]According to a 3 aspect of the present invention, in the liquid crystal module mounting structure according to the 1 aspect, the connecting member is a screw member which penetrates the bottom plate and is screwed into a member which sandwiches the liquid crystal module between the connecting member and the bottom plate.

[0018]According to a 4 aspect of the present invention, there is provided a liquid crystal module mounting structure according to any one of the 1 to 3 aspects.

In addition, a groove into which an edge of the liquid crystal module is inserted is provided along one edge of the lid, and the connecting member is provided at a position away from the groove.

[0019]According to a 5 aspect of the present invention, in the liquid crystal module mounting structure according to any of the 1 to 3 aspects, a plurality of screw members are provided. According to a 6 aspect of the present invention, in the liquid crystal module mounting structure according to any of the 1 to 4 aspects, the lid body and the computer body are connected to each other so as to be rotatable about an axis along one edge of the lid body.

[0020]According to a 7 aspect of the present invention, in the liquid crystal module mounting structure according to any of the 1 to 6 aspects, a frame body having a planar shape approximating an outline of the liquid crystal module is provided substantially in parallel with the bottom plate, and the liquid crystal module is disposed between the bottom plate and the frame body.

[0021]According to a 8 aspect of the present invention, there is provided a liquid crystal module mounting structure according to any one of the 1 to 7 aspects of the invention. The lid and the computer main body are connected to each other via a connecting portion which is formed by inserting a convex portion protruding outward in the plane direction from an edge portion of the cover into a concave portion recessed inwardly in the plane direction from an edge portion of the computer main body.



Brief description of the drawings

Close

[Brief Description of the Drawings]

[Fig. 1]FIG. 3 is a conceptual diagram showing an assembled state of an assembly part constituting a lid 100 of a personal computer according to a first embodiment of the present invention ;.

[Fig. 2]FIG. 3 is a conceptual diagram showing a configuration of a liquid crystal module 1 incorporated in a lid 100 shown in FIG. 1 ;.

[Fig. 3]FIG. 3 is a conceptual diagram showing an example of a shape of a fixing portion 2 b formed on a lower frame 2 of a lid 100 shown in FIG. 1 ;.

[Fig. 4]FIG. 3 is a conceptual diagram showing an example of a shape of a fixing portion 2 b formed on a lower frame 2 of a lid 100 shown in FIG. 1 ;.

[Fig. 5]FIG. 3 is a cross-sectional view taken along line A-A ' of the liquid crystal module 1 and the lower frame 2 shown in FIG. 1 ;.

[Fig. 6]FIG. 4 is a cross-sectional view showing another shape of a fixing portion 2 b formed on a lower frame 2 of a lid 100 shown in FIG. 1 ;.

[Fig. 7]FIG. 4 is a cross-sectional view taken along line B-B ' of the liquid crystal module 1 shown in FIG. 2 ;.

[Fig. 8]FIG. 4 is a cross-sectional view taken along line C-C ' of the liquid crystal module 1 shown in FIG. 2 ;.

[Fig. 9]FIG. 9 is a conceptual diagram showing another assembled state of an assembly part constituting a lid 101 of a personal computer according to a 2 embodiment of the present invention ;.

[Fig. 10]FIG. 9 is a conceptual diagram showing another assembled state of an assembly part constituting a lid 101 of a personal computer according to a 2 embodiment of the present invention ;.

[Fig. 11]FIG. 9 is a conceptual diagram showing another assembled state of an assembly part constituting a lid 101 of a personal computer according to a 2 embodiment of the present invention ;.

[Fig. 12]FIG. 9 is a conceptual diagram showing another assembled state of an assembly part constituting a lid 101 of a personal computer according to a 2 embodiment of the present invention ;.

[Fig. 13]FIG. 4 is a cross-sectional view of the assembled screw portion 12 G in FIG. 12 taken along line P-P ' ;.

[Fig. 14]FIG. 9 is a conceptual diagram showing another assembled state of an assembly part



constituting a lid 102 of a personal computer according to a 3 embodiment of the present invention ;.

[Fig. 15]FIG. 4 is a conceptual diagram illustrating an assembly process of the lid 102 shown in FIG. 14 ;.

[Fig. 16]FIG. 7 is a cross-sectional view of the assembled rib portion RB taken along line J-J ' in FIG. 14 ;.

[Fig. 17]FIG. 9 is a conceptual diagram showing another assembled state of an assembly part constituting a lid 103 of a personal computer according to a 4 embodiment of the present invention ;.

[Fig. 18]FIG. 4 is an emission diagram of a corner portion of a lower frame showing a configuration of a rib portion RB ;.

[Fig. 19]FIG. 3 is a cross-sectional view of the assembled rib portion RB of FIG. 17 taken along line K-K.

[Fig. 20]FIG. 3 is a conceptual diagram showing another assembled state of an assembly part constituting a lid 103 of a personal computer according to a conventional example ;.

[Fig. 21]FIG. 3 is a conceptual diagram showing another assembled state of an assembly part constituting a lid 102 of a personal computer according to a conventional side mount type ;.

[Fig. 22]FIG. 3 is a cross-sectional view showing a structure of a screw forming portion in a conventional side mount type ;.

[Fig. 23]FIG. 3 is a cross-sectional view showing a structure of a screw forming portion in a conventional side mount type ;.

[Explanation of letters or numerals]

10,20,30 frame

1,11,21,31 liquid crystal module

2,12,22,32 lower frame

3 Screw

5 TABLE FRAME

6 LCD Panel

7 b / L unit

8 rear frame

9 Printed Circuit Board

9 b Driver IC

100,101,102,103 lid

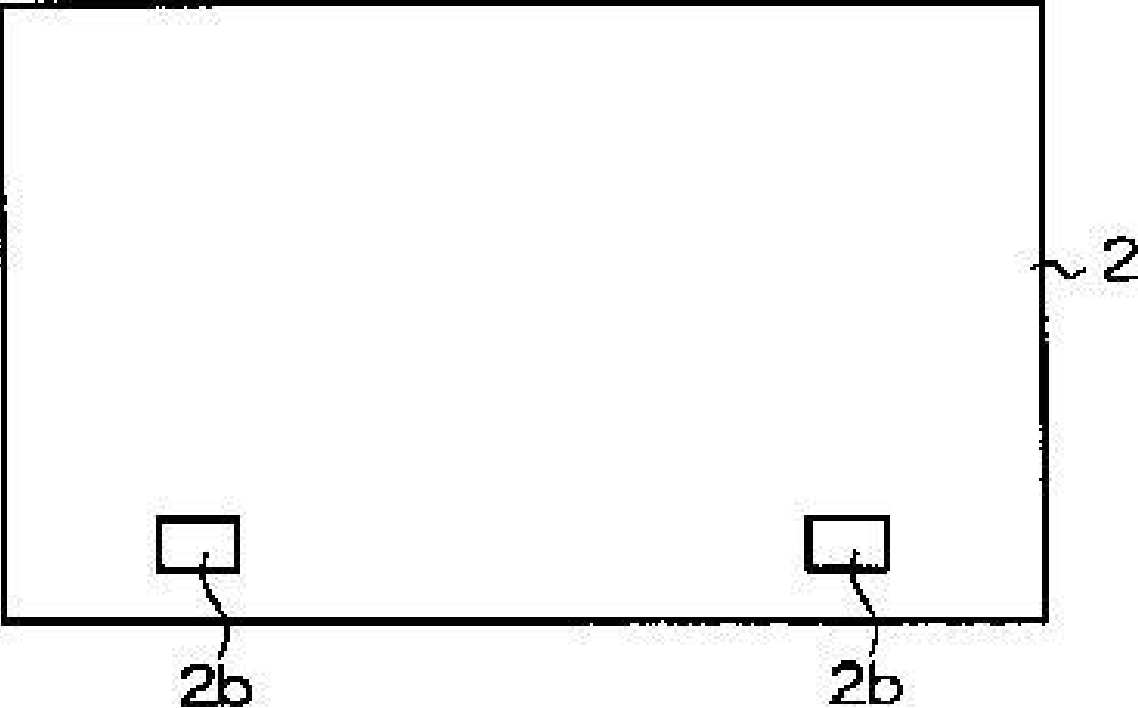
RB rib part

Drawings

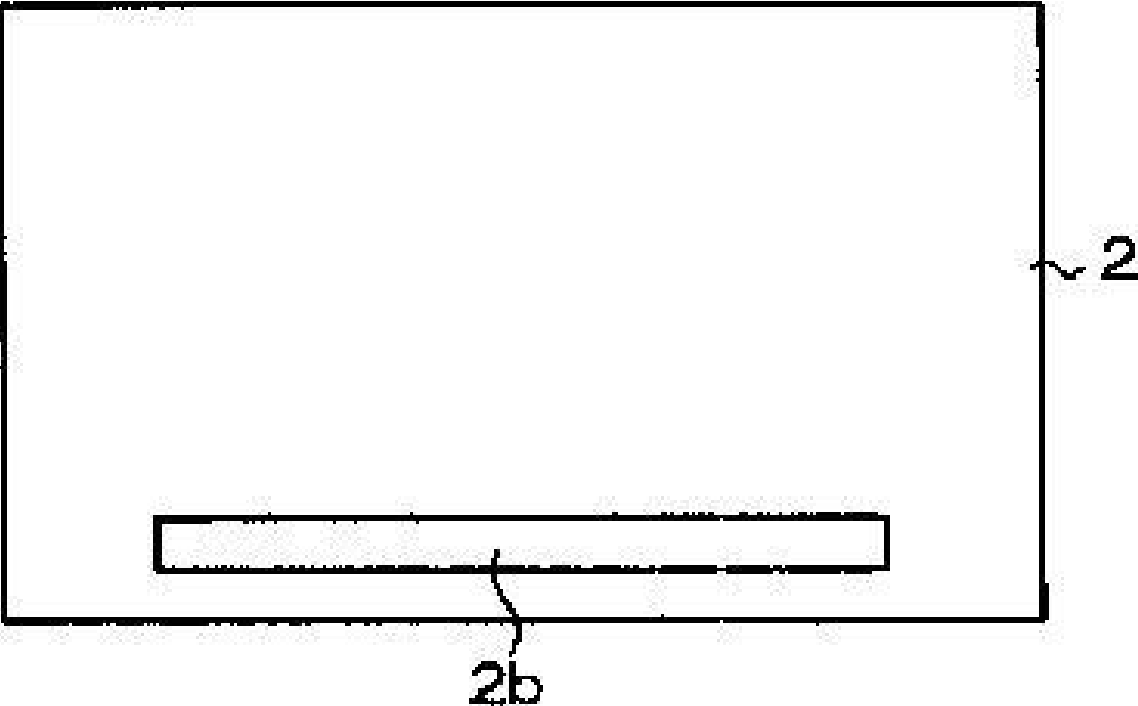
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[FIG.3]

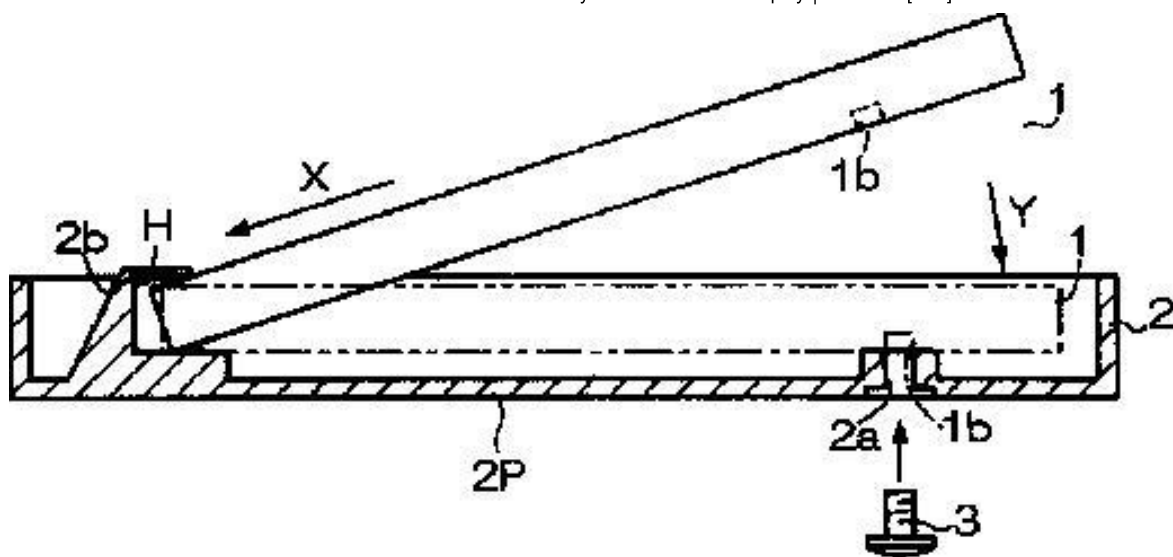


[FIG.4]

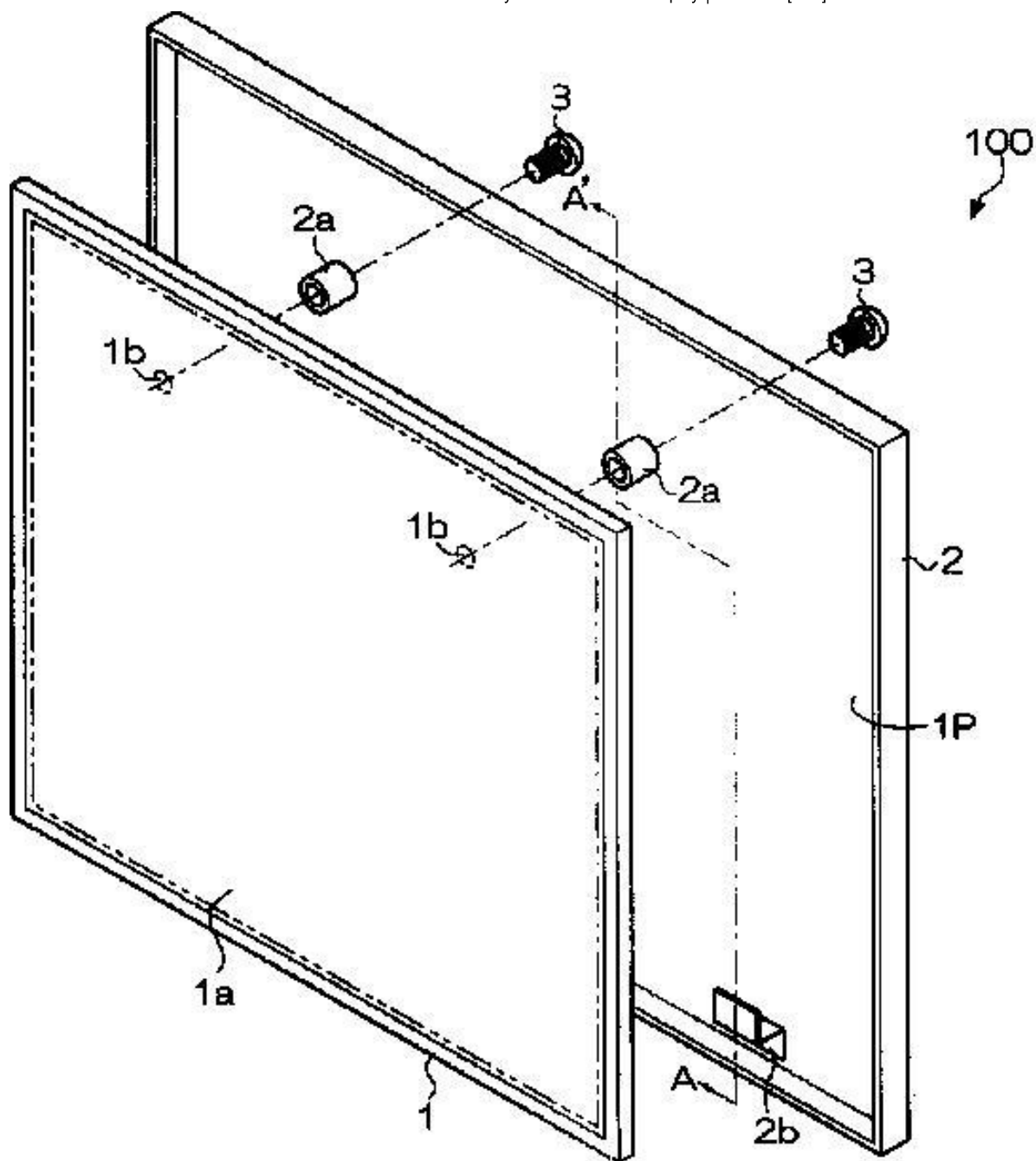


[FIG.5]



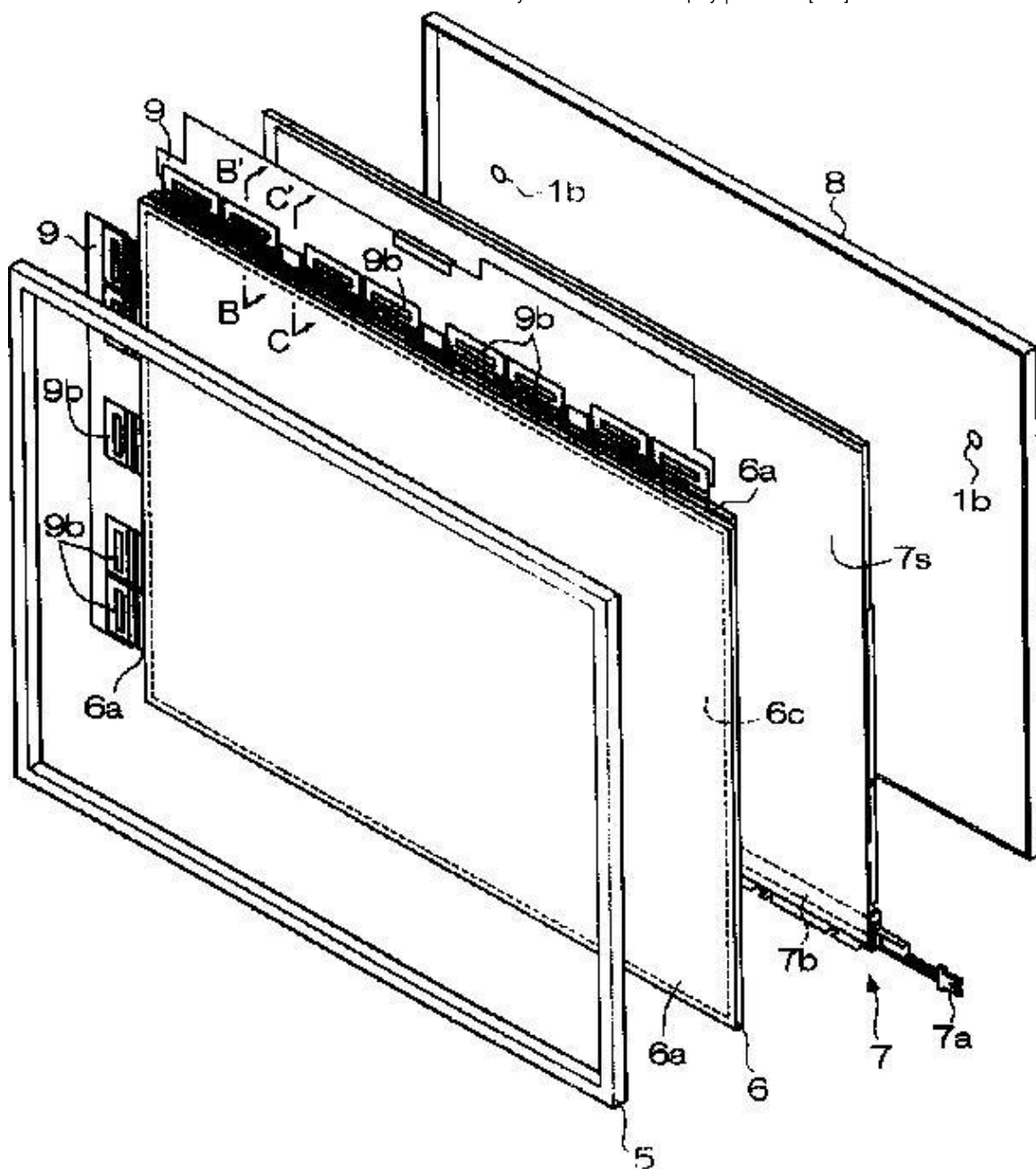


[FIG.1]

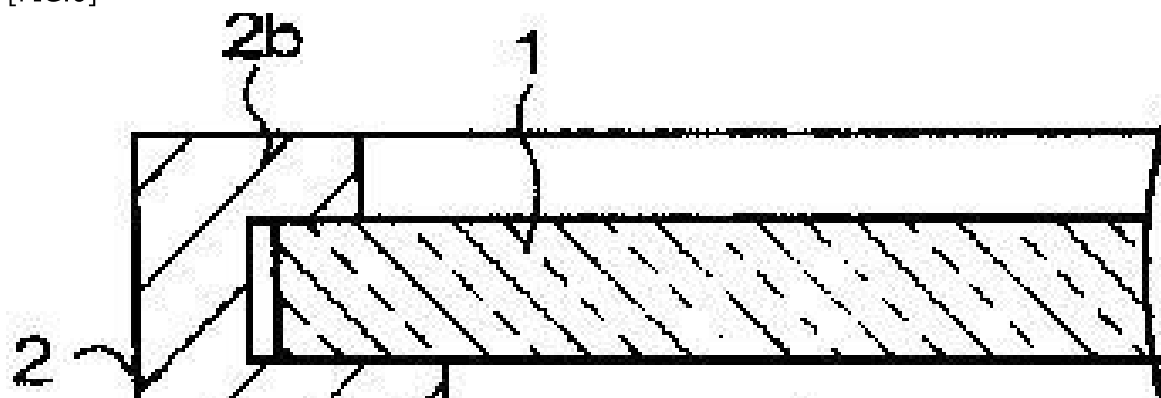


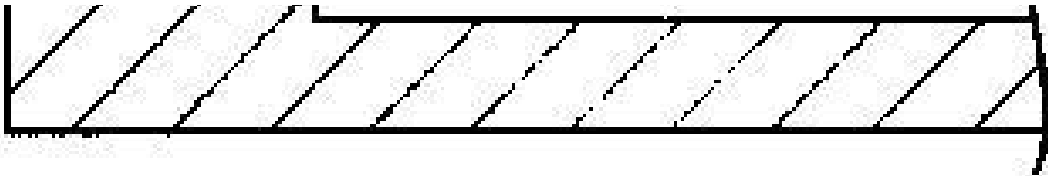
[FIG.2]



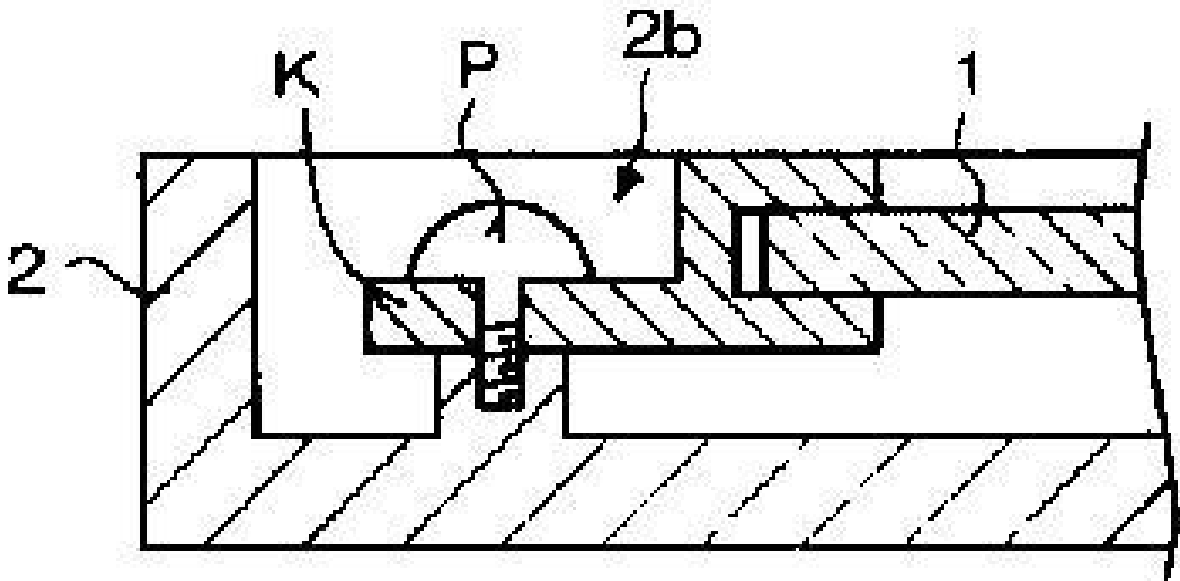


[FIG.6]

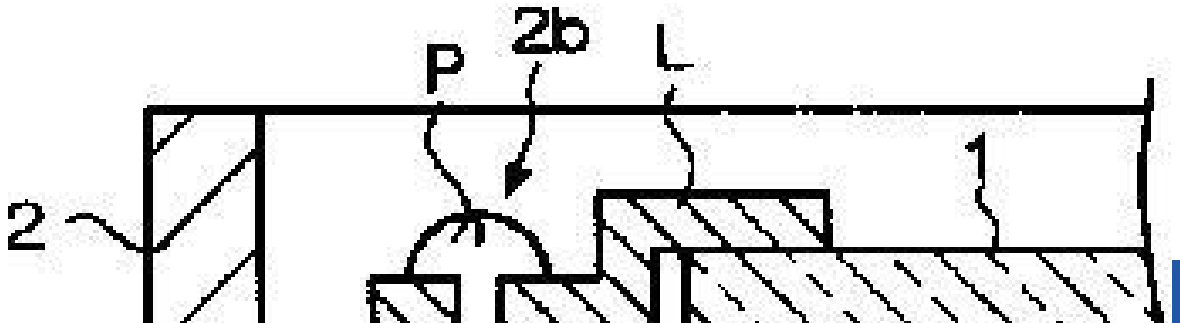


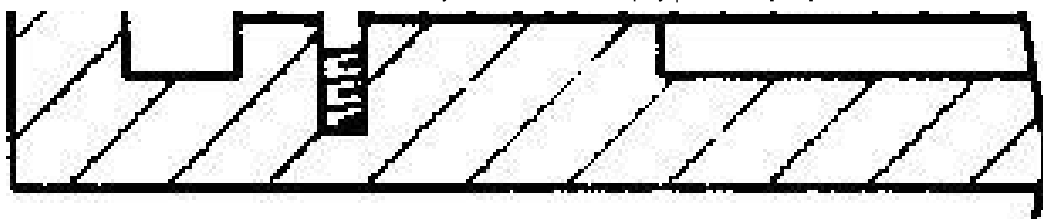


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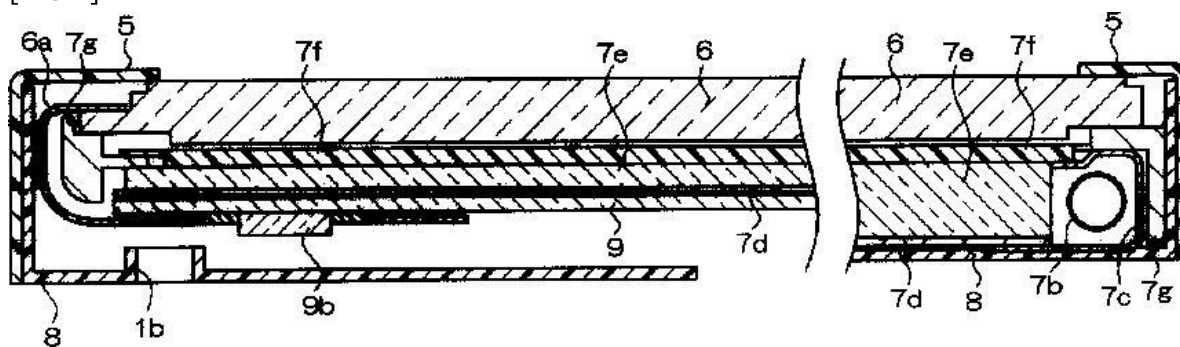
(b)



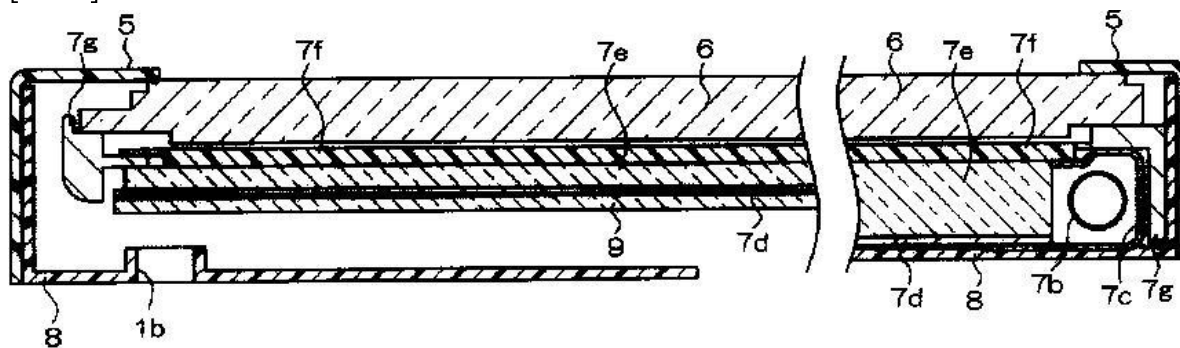


(c)

[FIG.7]

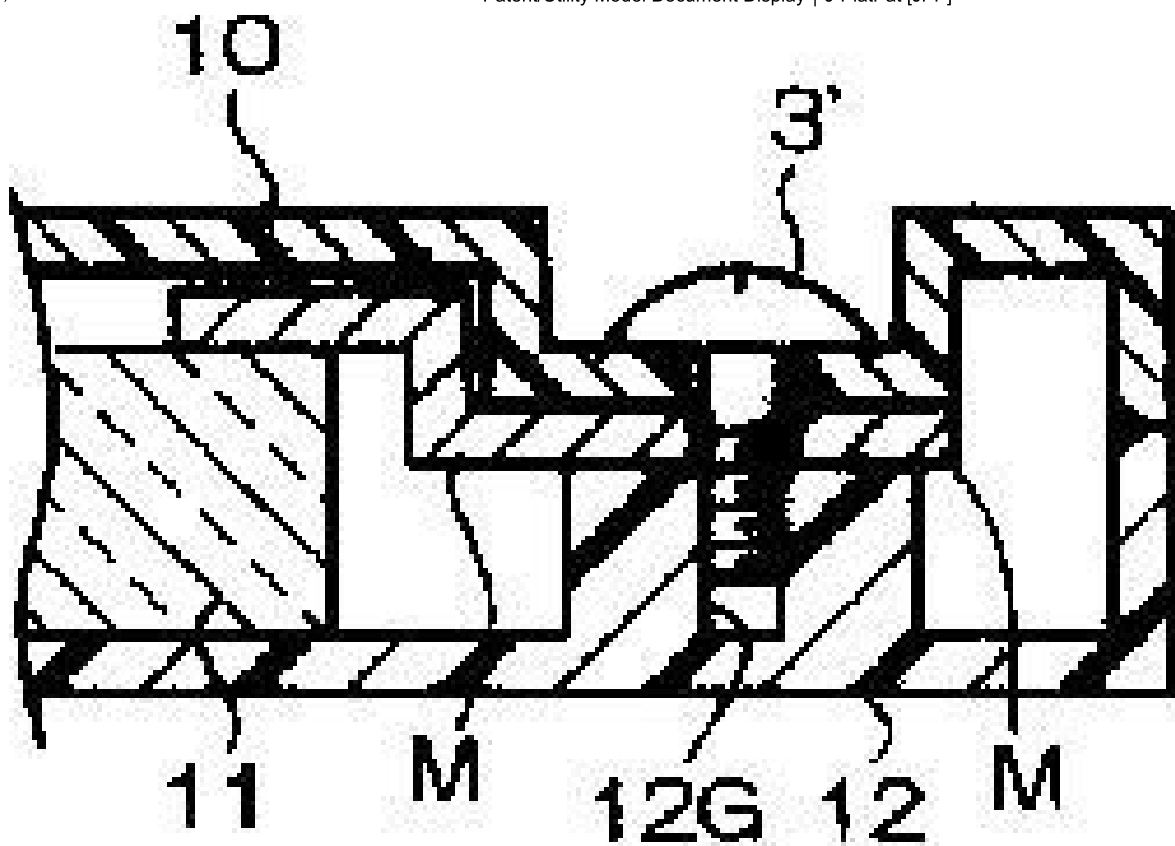


[FIG.8]

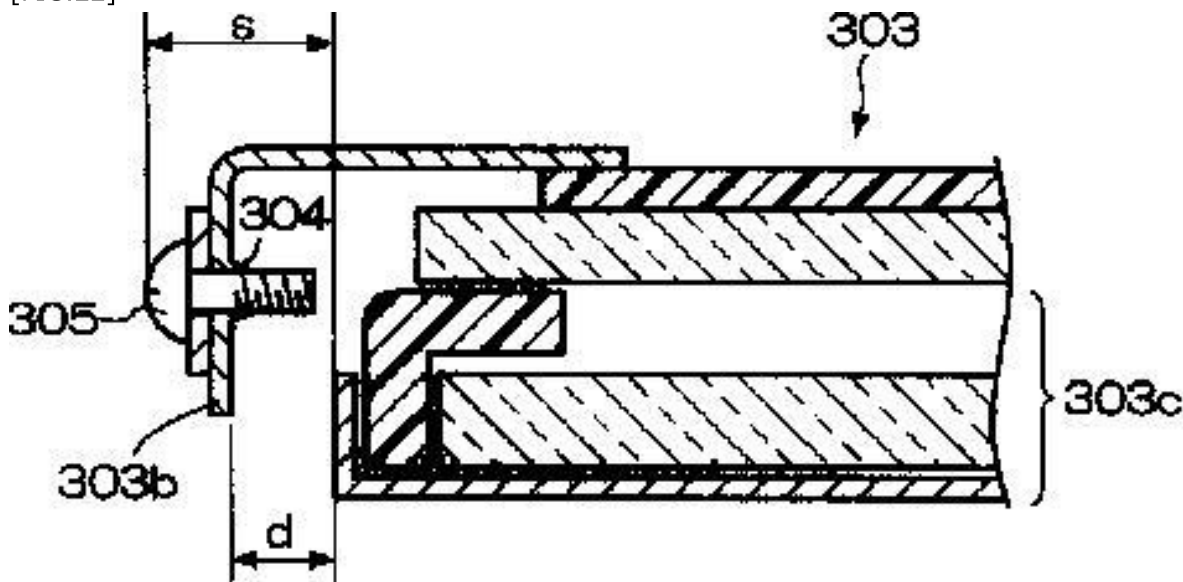


[FIG.13]



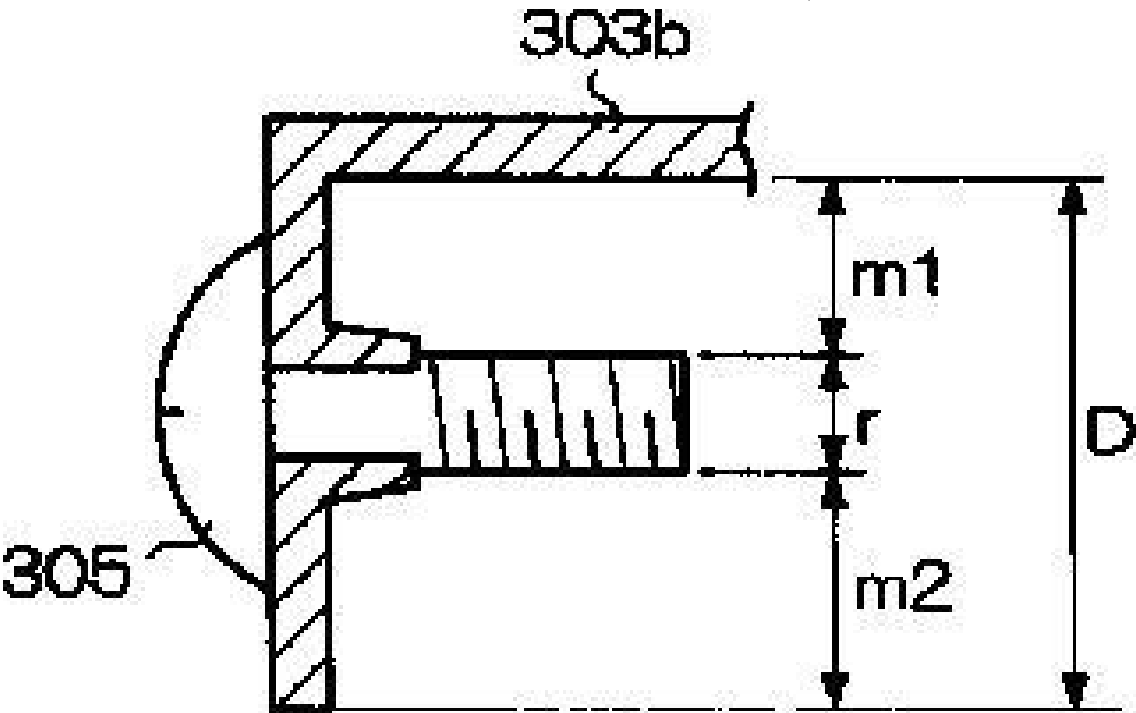


[FIG.22]



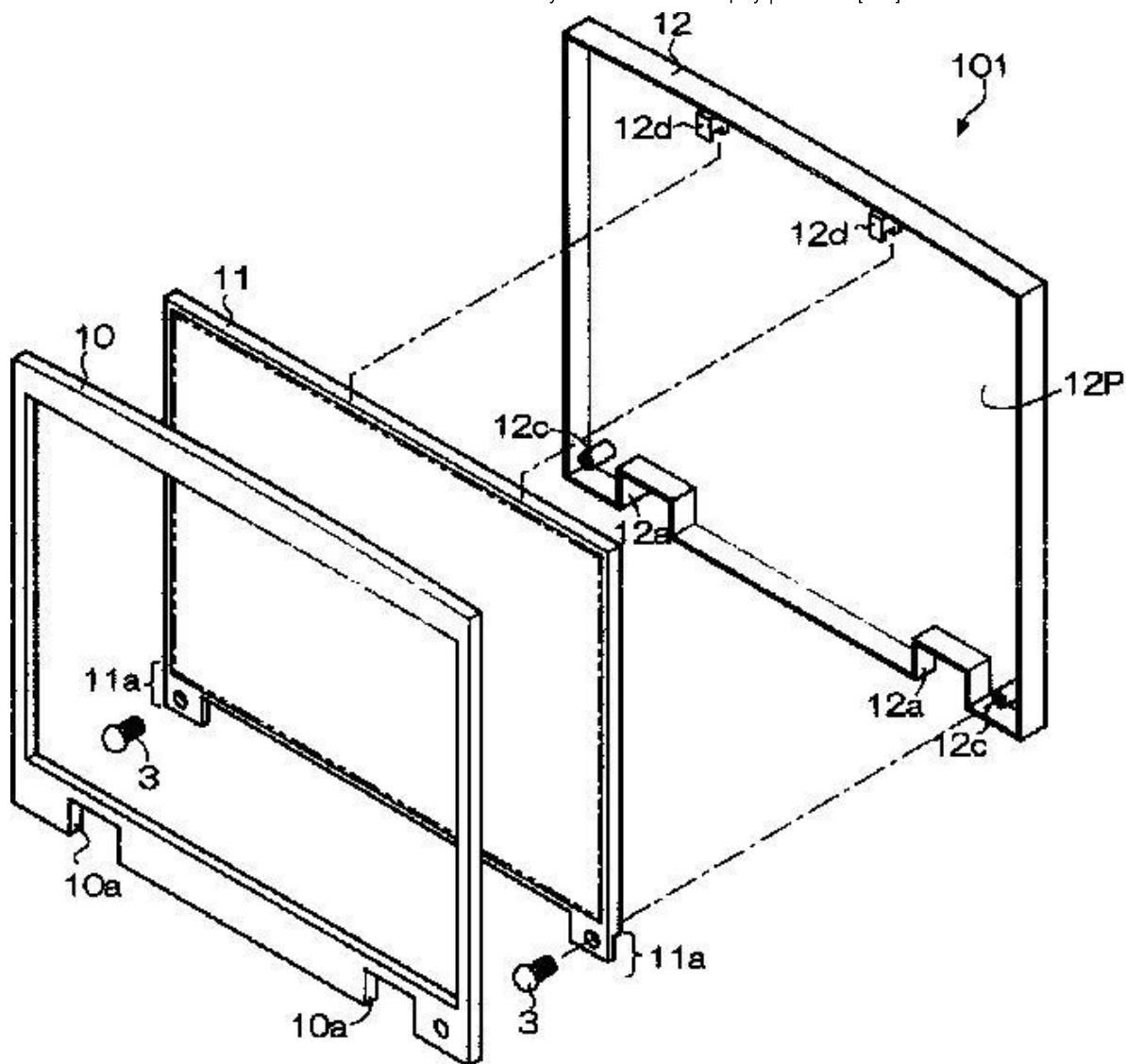
[FIG.23]





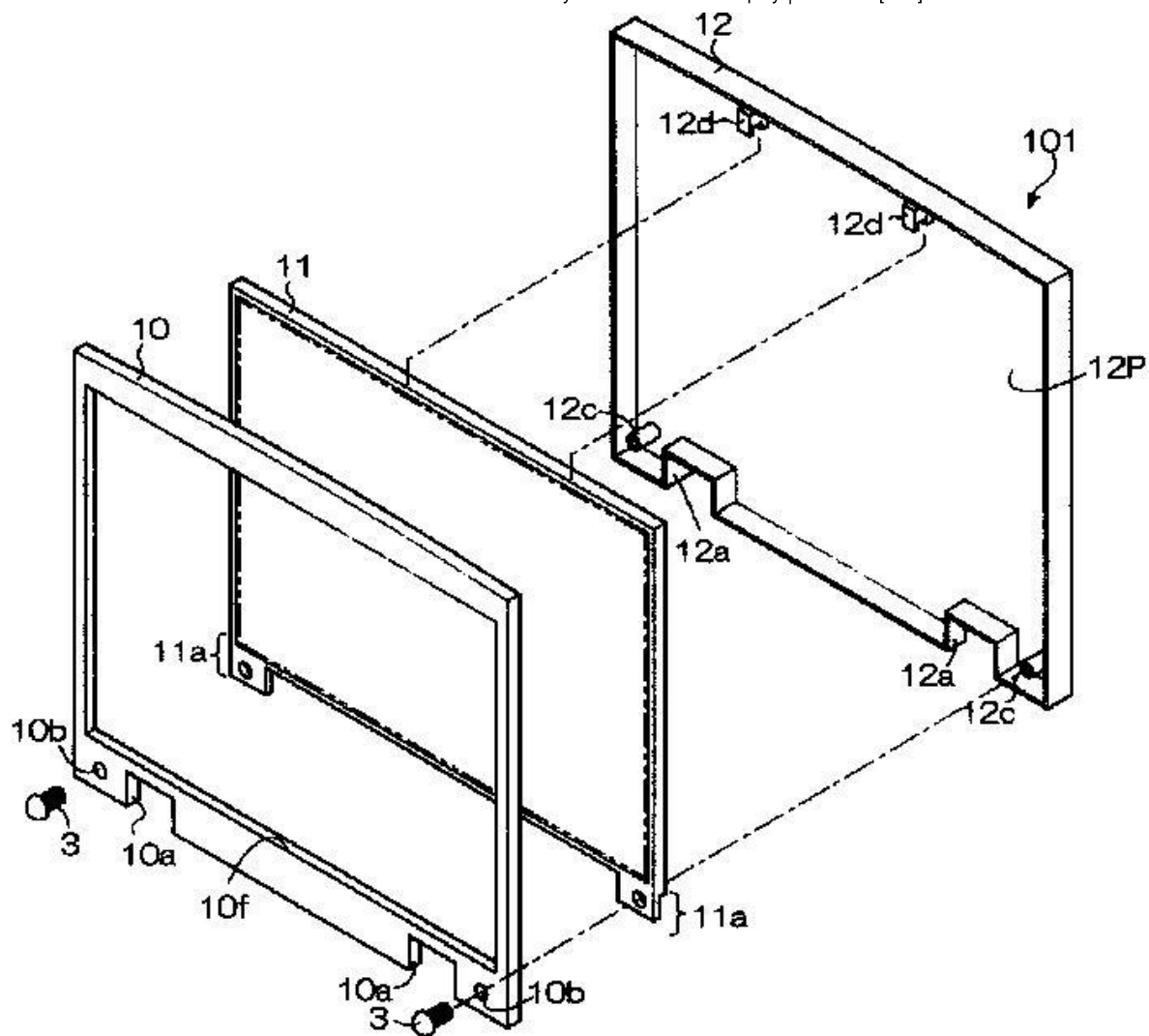
[FIG.9]





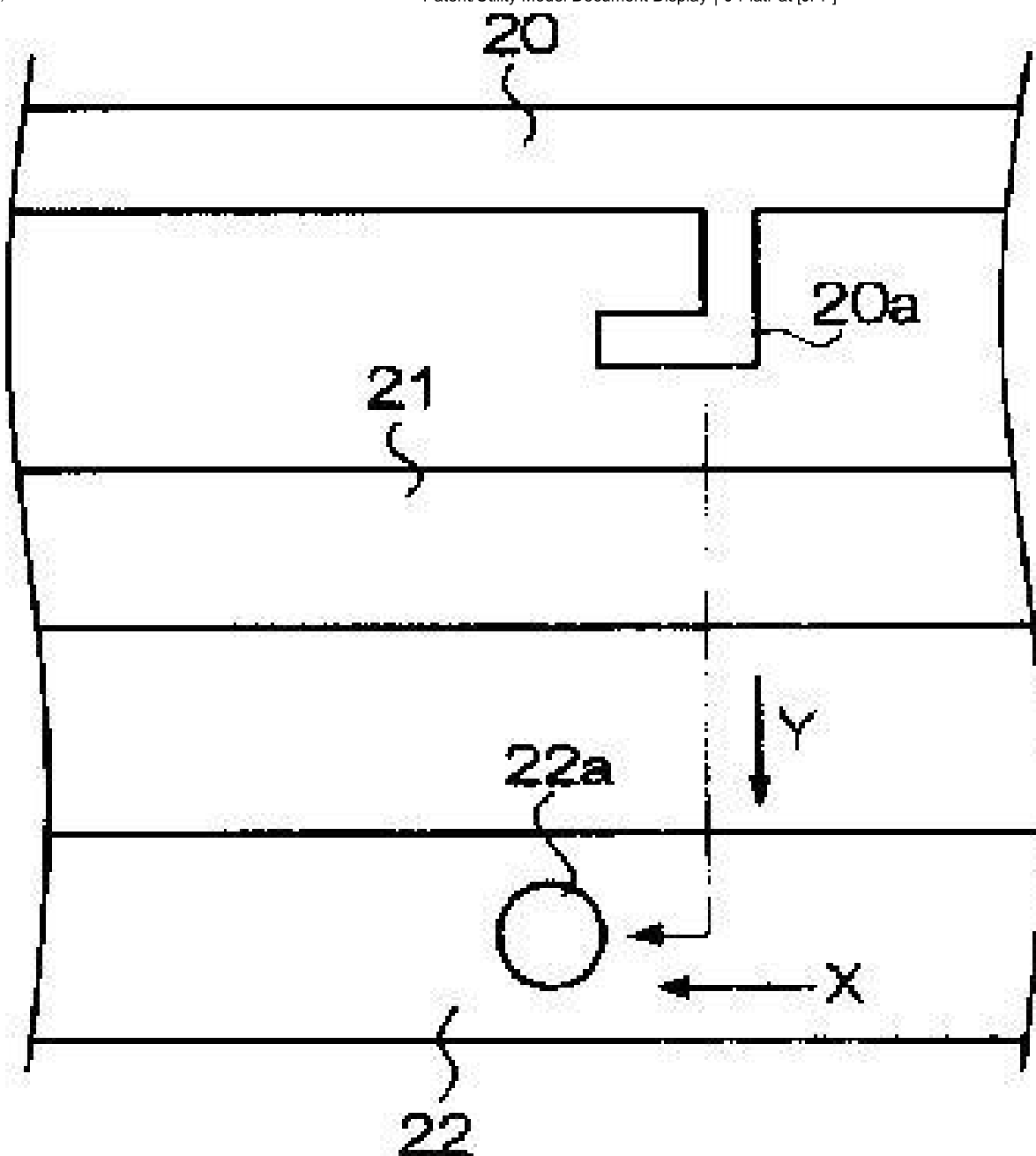
[FIG.10]





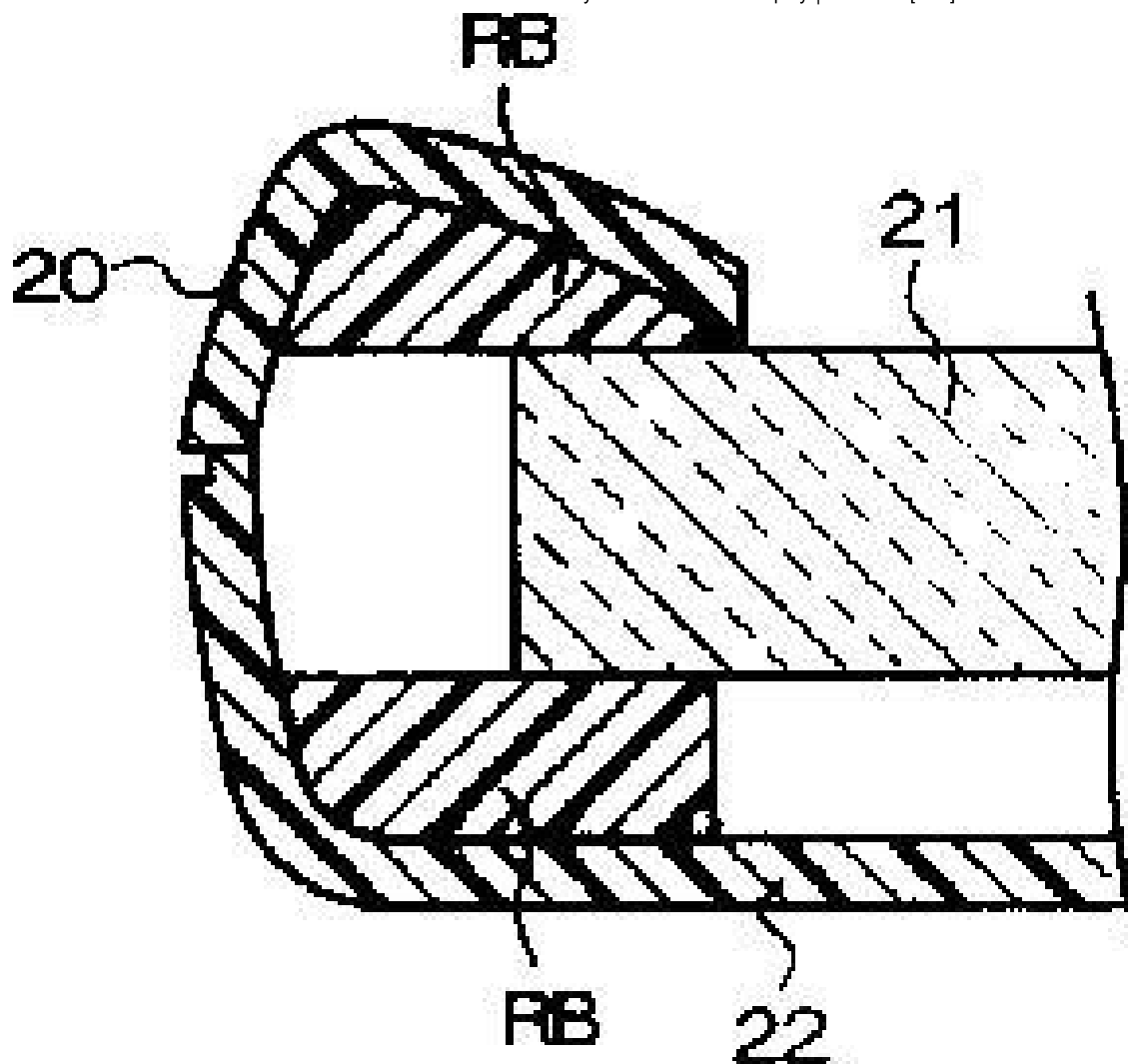
[FIG.15]





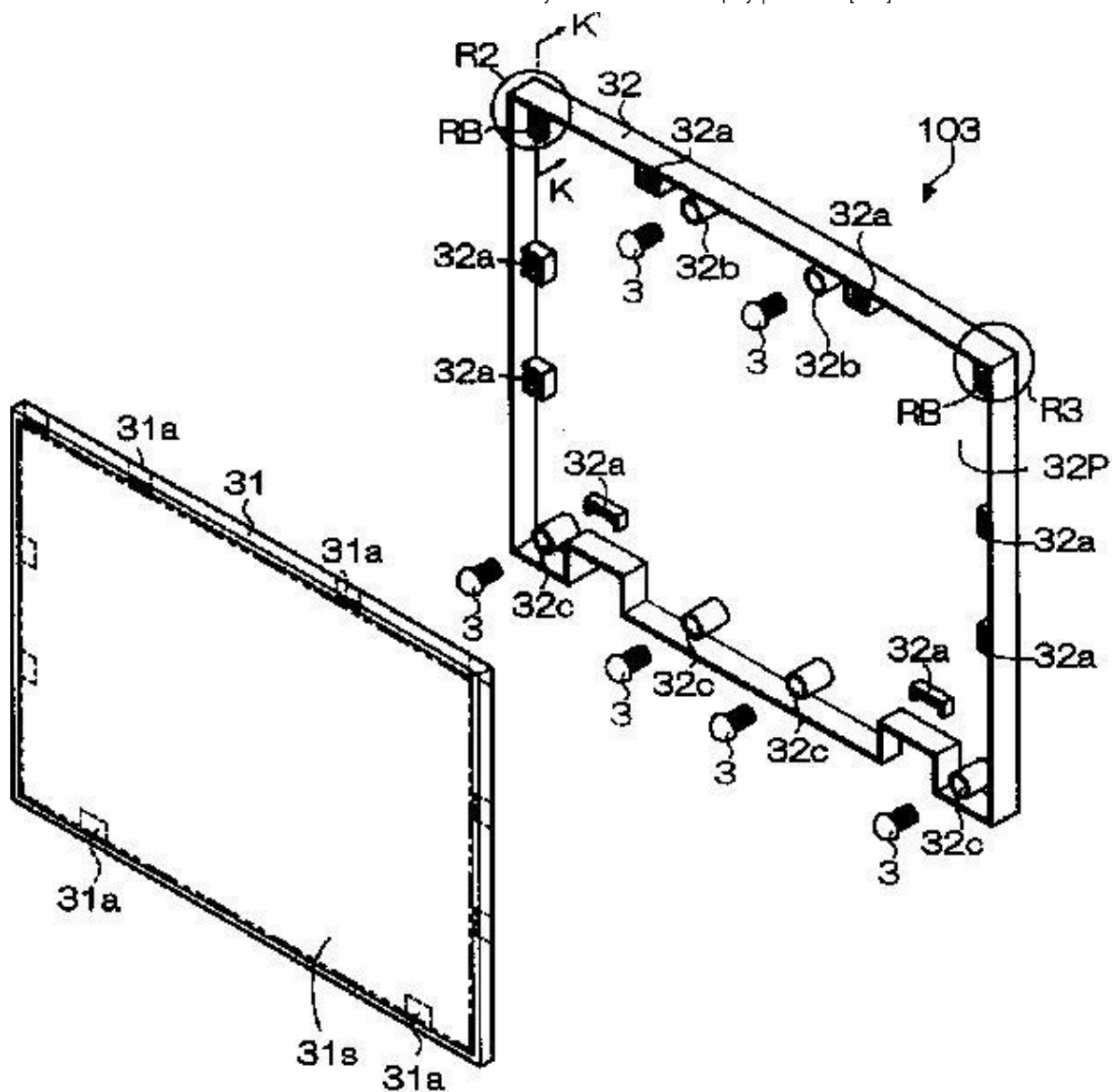
[FIG. 16]



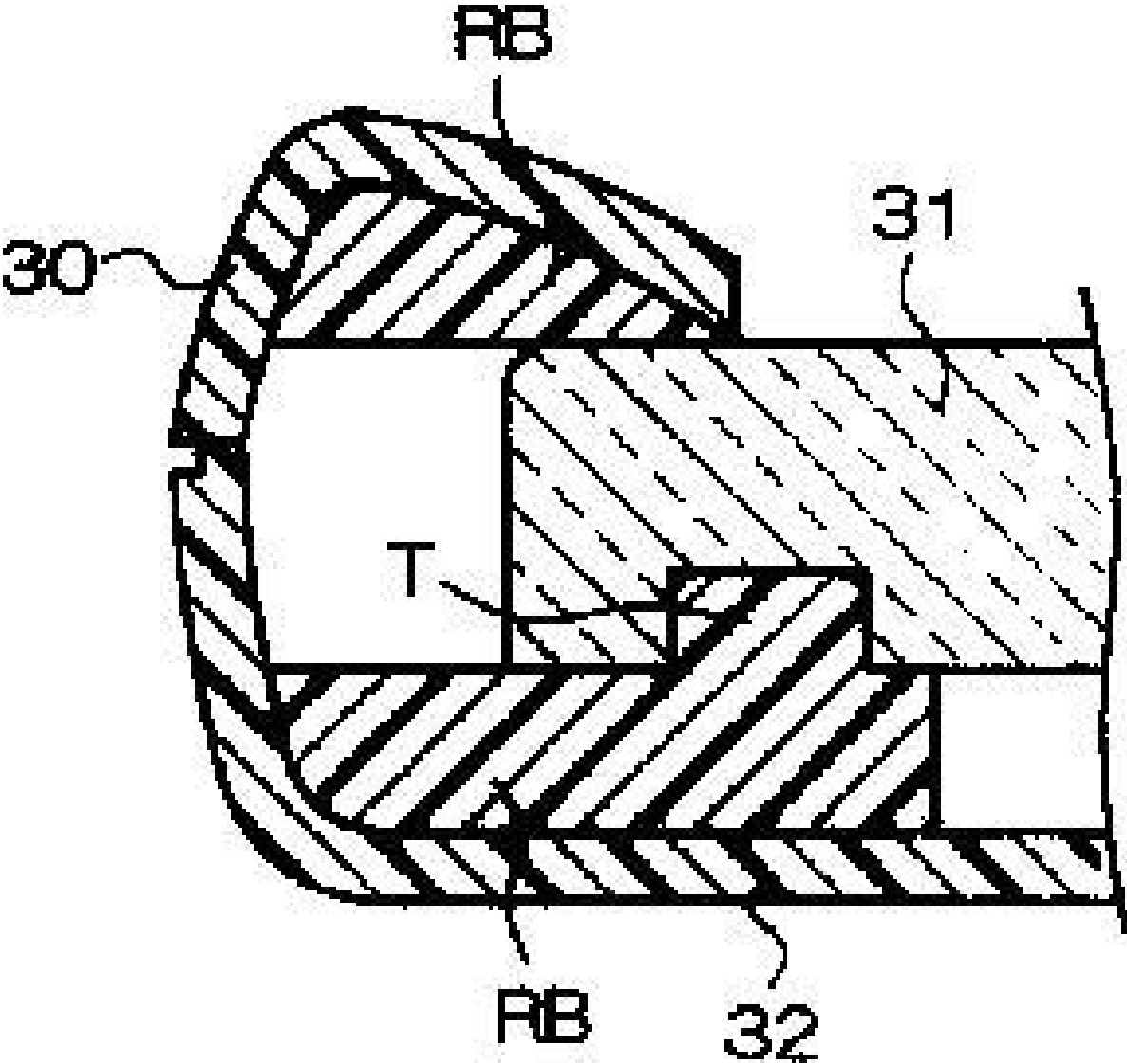


[FIG.17]



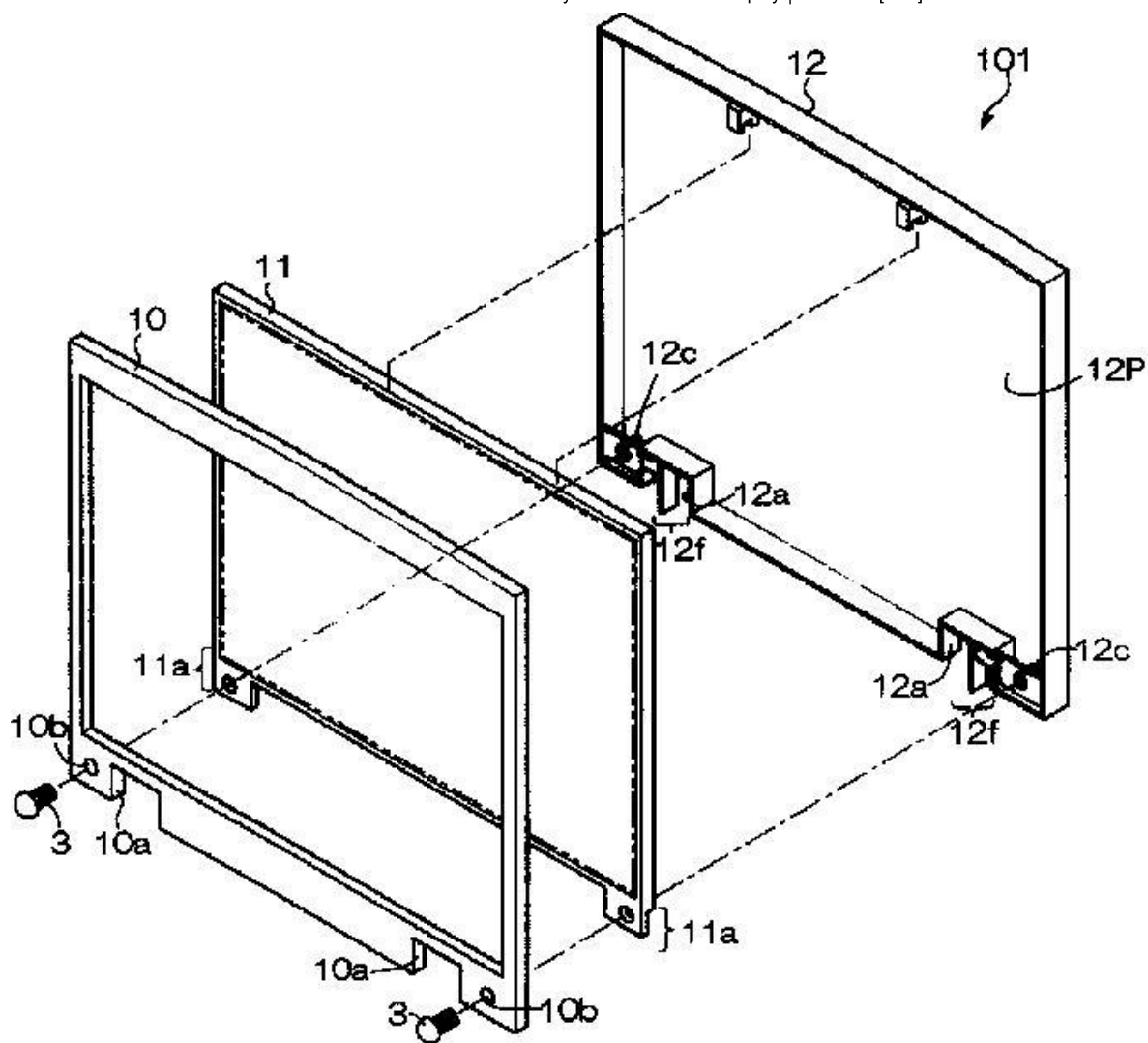


[FIG.19]



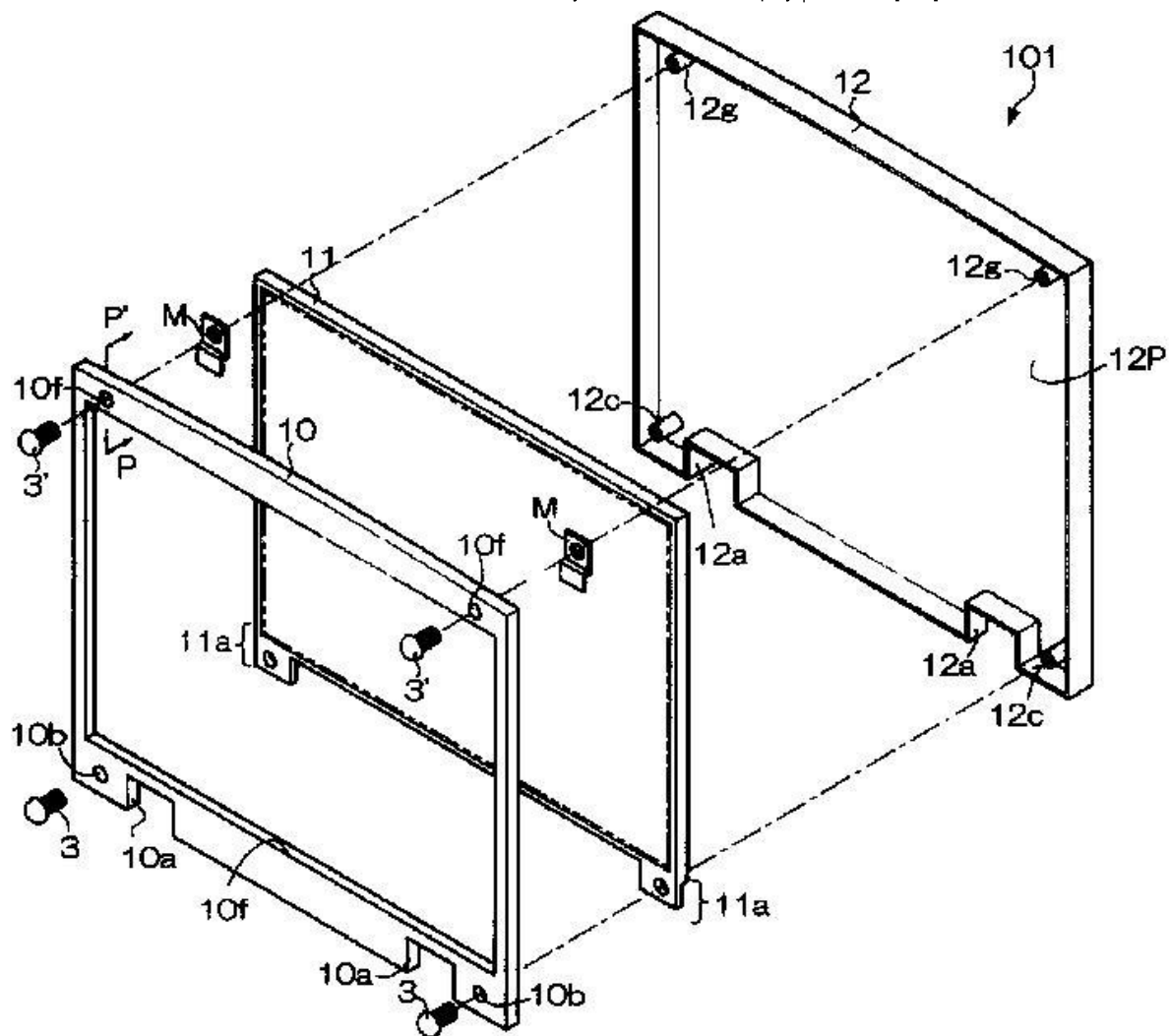
[FIG.11]





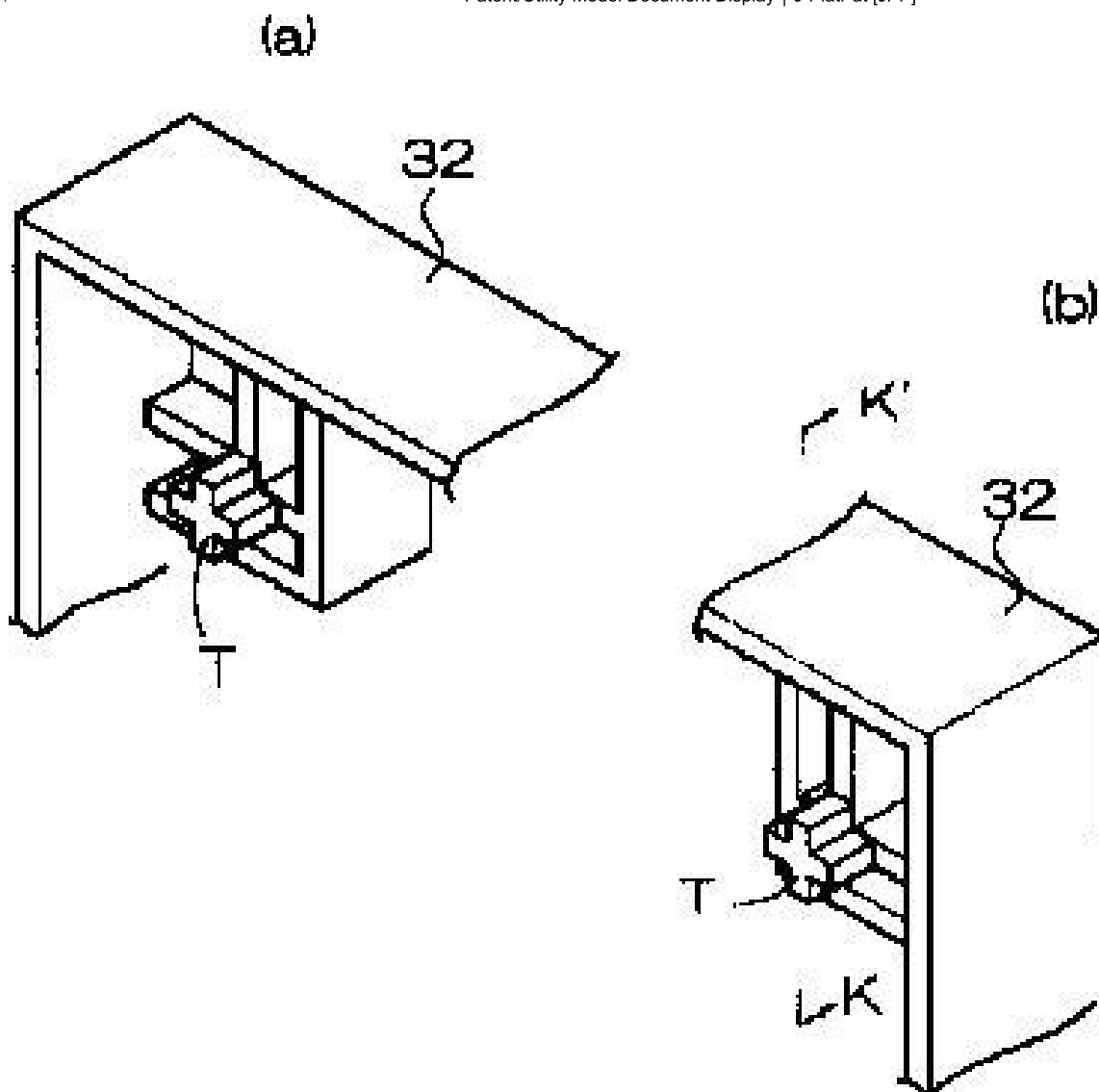
[FIG.12]





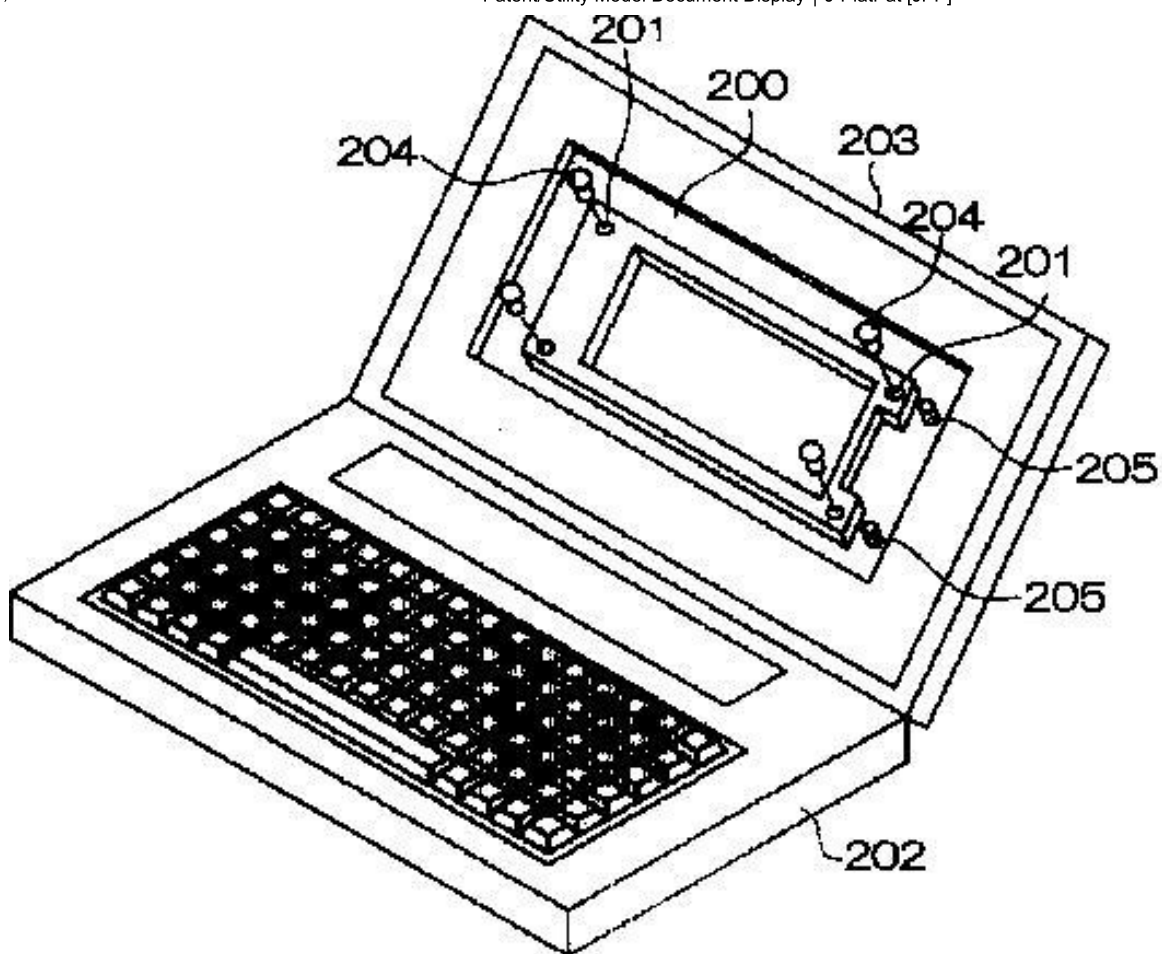
[FIG.18]



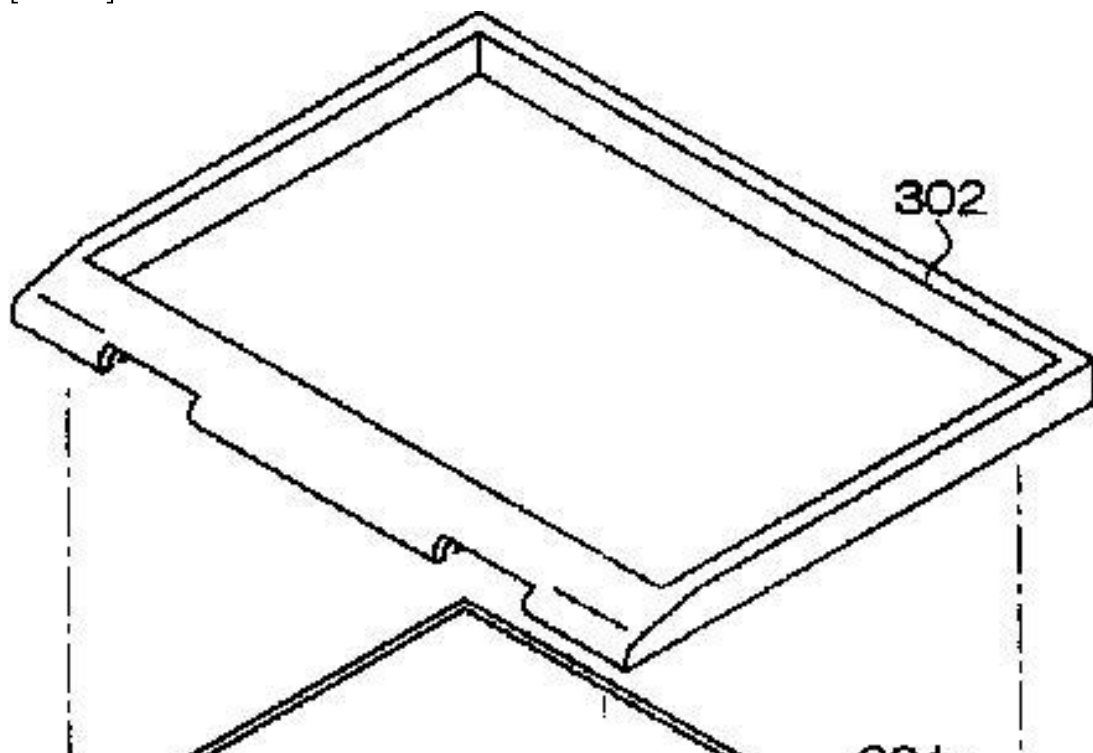


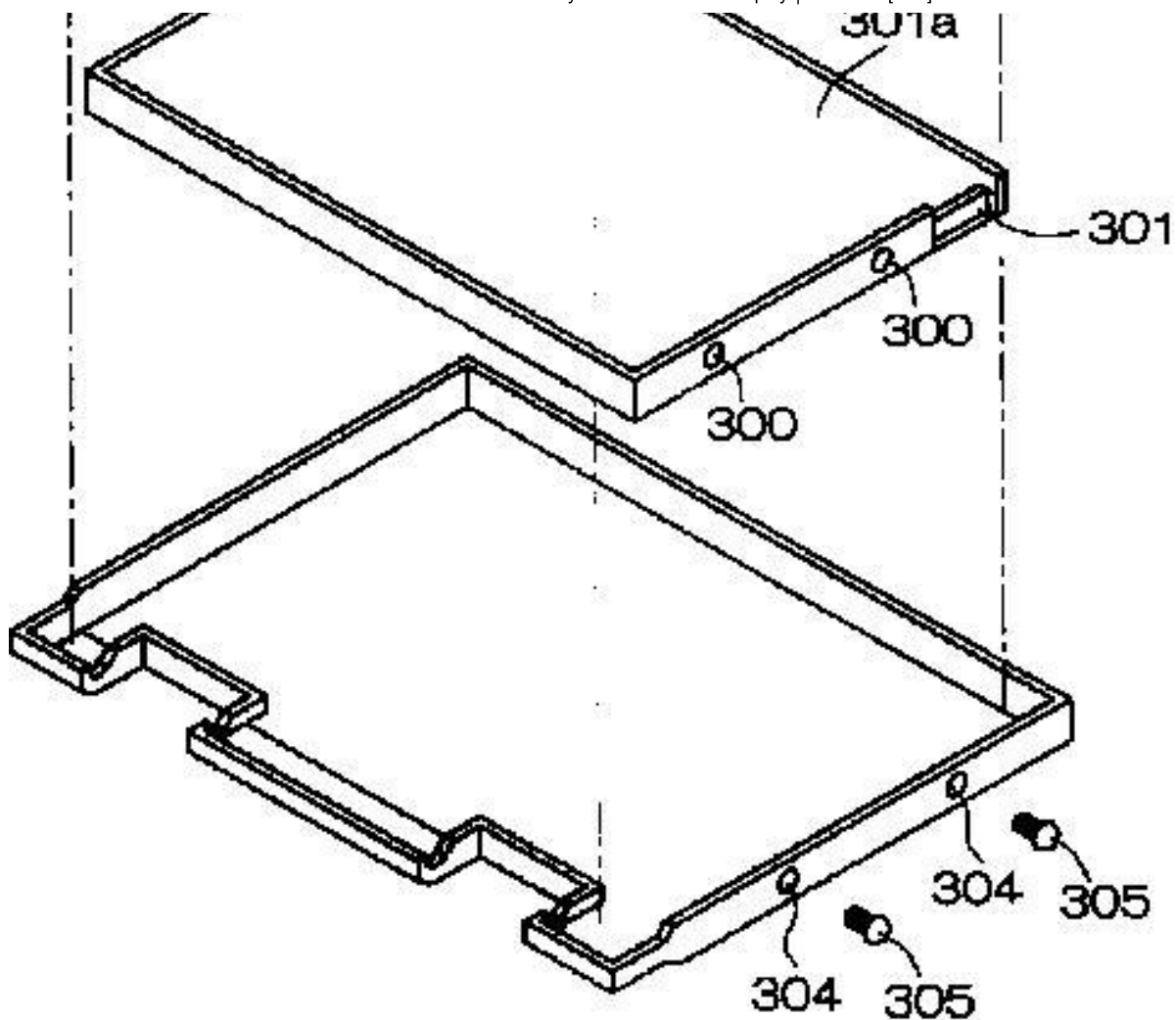
[FIG. 20]





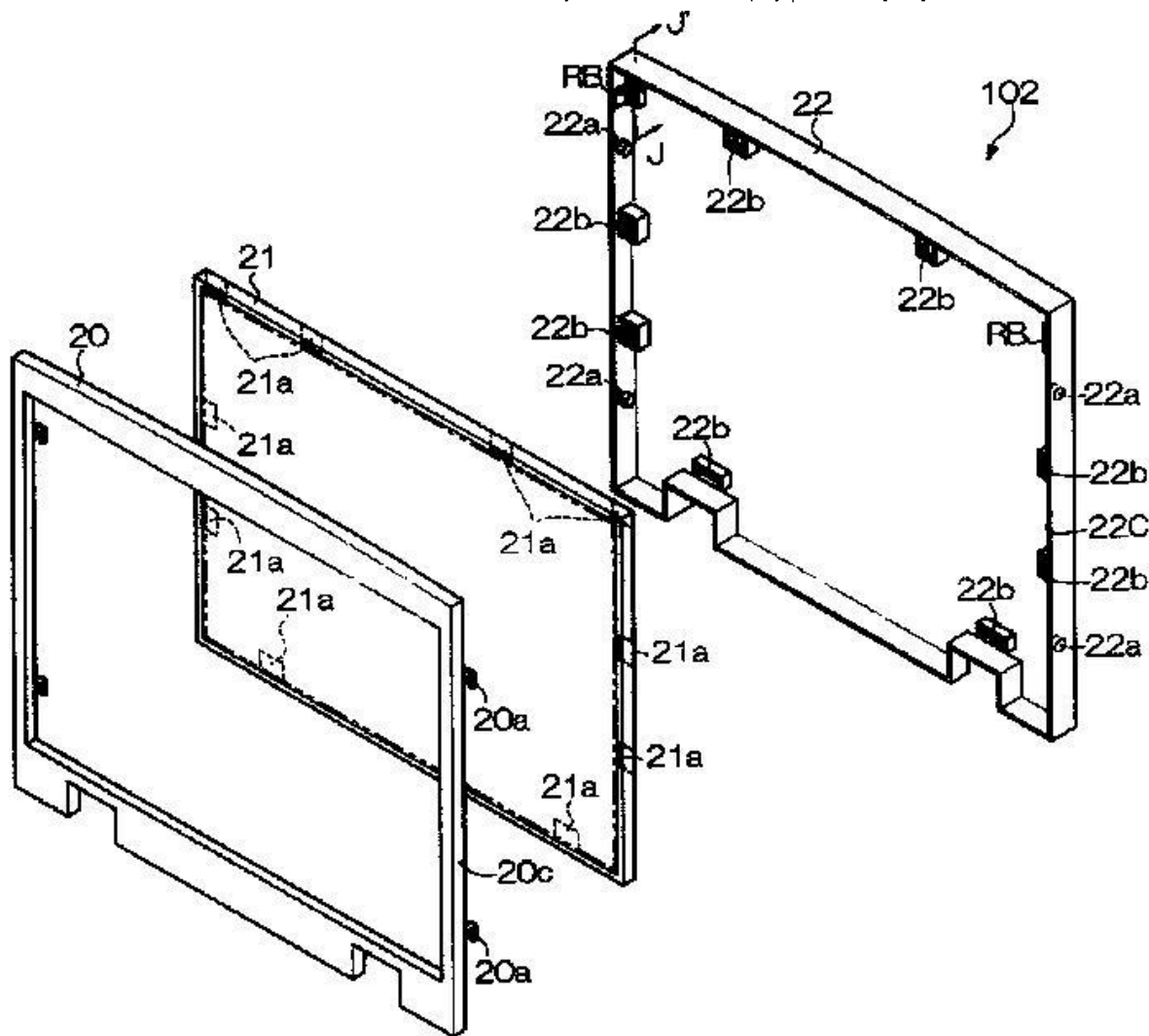
[FIG.21]





[FIG.14]





Written amendment

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----- [Written amendment]

[Submission date] 2000 Feb. 14 (2000.2.14).

[Amendment 1]

[Document name for target of amendment] Description

[Item name for target of amendment] Patent Claims



[Amendment type] Change

[Amendment contents]

[Patent Claims]

[Claim 1] In the portable terminal device, a plate-like liquid crystal module is mounted on a cover body covering at least one surface of a computer body.

The lid has a bottom plate superposed on one surface of the liquid crystal module.

The liquid crystal module mounting structure is characterized in that the liquid crystal module and the bottom plate are fixed at a position overlapping the display surface of the liquid crystal module by a connecting member inserted from a rear surface of the bottom plate toward a direction intersecting with the bottom plate.

[Claim 2] The liquid crystal module mounting structure according to claim 1, wherein the connecting member is a screw member which penetrates the bottom plate and is screwed into the liquid crystal module.

[Claim 3] The liquid crystal module mounting structure according to claim 1 or 2, wherein a position fixed by the connecting member is provided so that an edge of the liquid crystal module facing the computer body is spaced from a position of a fixed portion fixed to the bottom plate.

[Claim 4] The liquid crystal module mounting structure according to any one of claims 1 to 3, wherein the lid body and the computer body are connected to each other so as to be rotatable about an axis along one edge of the lid body.

[Claim 5] The liquid crystal module mounting structure according to any one of claims 1 to 4, wherein a frame having a planar shape approximating a contour of the liquid crystal module is provided substantially in parallel with the bottom plate, and the liquid crystal module is disposed between the bottom plate and the frame.

[Claim 6] The liquid crystal module mounting structure according to any one of claims 1 to 5, wherein the lid body and the computer body are connected to each other via a connecting portion which is formed by inserting a projecting portion projecting from one edge portion toward the outside in the planar direction into a recessed portion recessed inwardly in the plane direction from the other edge portion, and is connected so as to be rotatable about an axis parallel to the edge portion.

[Claim 7] A plate-like liquid crystal module is attached to a lid body covering at least one surface of a computer body, and the lid body and the computer body are provided. The portable terminal device is connected to the edge of one edge from one edge to the outside in the plane direction via a connecting portion formed by inserting the projecting portion into a recessed portion recessed inward in the plane direction from the other edge portion, and is connected so as to be rotatable about an axis parallel to the edge portion.

The lid has a bottom plate superposed on one surface of the liquid crystal module.

The aforementioned computer body of the aforementioned liquid crystal module, the holding



art by which the side surface which opposes was fixed to the aforementioned bottom plate, and the side surface contiguous to the aforementioned computer body of the aforementioned liquid crystal module describe above.

The liquid crystal module mounting structure is characterized in that the liquid crystal module and the bottom plate are fixed by a connecting member fixed to the bottom plate by a convex portion of the lid.

[Claim 8] The liquid crystal module mounting structure according to claim 7, wherein the connecting member is a screw member which penetrates a screw portion protruding at least on a side surface adjacent to the computer body of the liquid crystal module and is screwed into the bottom plate.

[Claim 9] A plate-like liquid crystal module is attached to a lid body covering at least one surface of a computer body, and the lid body and the computer body are provided. The portable terminal device is connected to the edge of one edge from one edge to the outside in the plane direction via a connecting portion formed by inserting the projecting portion into a recessed portion recessed inward in the plane direction from the other edge portion, and is connected so as to be rotatable about an axis parallel to the edge portion.

The lid has a bottom plate superposed on one surface of the liquid crystal module.

A frame body having a planar shape approximate to a contour of the liquid crystal module is provided substantially in parallel with the bottom plate, the liquid crystal module is arranged between the bottom plate and the frame body, and the bottom plate and the frame body are fixed by a connecting member at a position separated from the projecting portion and the projecting portion.

The liquid crystal module mounting structure is characterized in that the bottom plate and the frame body contact only the display surface and the back surface of the liquid crystal module to hold the liquid crystal module.

[Claim 10] The liquid crystal module mounting structure according to claim 9, wherein the connecting member is a screw member which connects the bottom plate and the frame member to each other avoiding the liquid crystal module.

[Claim 11] The liquid crystal module mounting structure according to any one of claims 9 to 10, wherein a projection to be inserted into a hole provided at a predetermined position of the liquid crystal module is provided on one of the bottom plate and the frame body so as to protrude from the surface.

[Claim 12] In the portable terminal device, a plate-like liquid crystal module is mounted on a cover body covering at least one surface of a computer body.

The lid has a bottom plate superposed on one surface of the liquid crystal module.

A frame body having a planar shape approximate to a contour of the liquid crystal module is provided substantially in parallel with the bottom plate, and the liquid crystal module is arranged between the bottom plate and the frame body.



A connecting mechanism is provided between the side plate and the frame body for connecting and fixing the side plate and the frame body.

A liquid crystal module supporting structure, wherein the bottom plate and the frame member sandwich the liquid crystal module.

[Claim 13] The connecting mechanism comprises a connecting piece which is provided on either one of the bottom plate or the frame body substantially in parallel with an inner surface of the connecting piece, and a restricting means which restricts the movement of the liquid crystal module in the direction of the surface of the liquid crystal module.

The liquid crystal module supporting structure according to claim 12 characterized by *.

[Claim 14] The liquid crystal module mounting structure according to claim 12 or 13, wherein the lid body and the computer body are connected to each other via a connecting portion which is formed by inserting a projecting portion projecting outward in a plane direction from one edge portion into a recessed portion recessed inwardly in a plane direction from the other edge portion, and which is connected to the edge portion so as to be rotatable about an axis.

[Claim 15] The liquid crystal module mounting structure according to claim 14, wherein at least one of the bottom plate or the frame and the liquid crystal module are connected to each other by the convex portion.

[Claim 16] A portable terminal device comprising a liquid crystal module mounting structure according to any one of claims 1 to 15, wherein the liquid crystal module is fixed to the lid body.

[Amendment 2]

[Document name for target of amendment] Description

[Item name for target of amendment] 0015

[Amendment type] Change

[Amendment contents]

[0015]

[Means for solving the problem] According to a 1 aspect of the present invention, in the portable terminal device in which a plate-like liquid crystal module is attached to a cover body covering at least one surface of a computer body, the lid body has a bottom plate superposed on one side of the liquid crystal module, and is inserted from a rear side of the bottom plate into a direction intersecting with the bottom plate. The liquid crystal module mounting structure is characterized in that the liquid crystal module and the bottom plate are fixed at a position overlapping with a display surface of the liquid crystal module.

[Amendment 3]

[Document name for target of amendment] Description

[Item name for target of amendment] 0016

[Amendment type] Change

[Amendment contents]



[0016]According to a 2 aspect of the present invention, in the liquid crystal module mounting structure according to the 1 aspect, the connecting member is a screw member which penetrates the bottom plate and is screwed into the liquid crystal module.

[Amendment 4]

[Document name for target of amendment] Description

[Item name for target of amendment] 0017

[Amendment type] Change

[Amendment contents]

[0017]According to a 3 aspect of the present invention, in the liquid crystal module mounting structure according to the 1 or 2 aspect, a position at which the liquid crystal module is fixed by the connecting member is provided away from a position of a fixing portion where an edge portion of the liquid crystal module facing the computer main body is fixed to the bottom plate.

[Amendment 5]

[Document name for target of amendment] Description

[Item name for target of amendment] 0018

[Amendment type] Change

[Amendment contents]

Drawings

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Representative drawing

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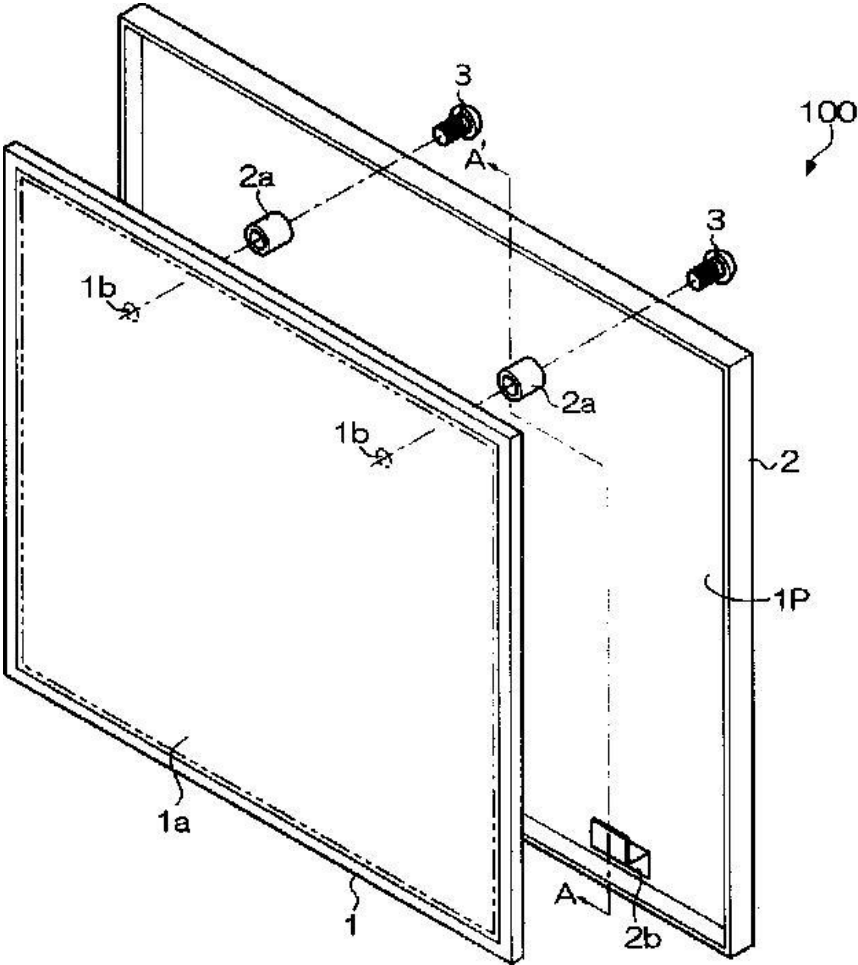
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Representative drawing

