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(54) Title: INDEX TAB

(57) Abstract: Self-adhesive index tabs comprising: (a) a body having a front surface and a rear surface and comprising a first display section, a first securing section, and at least one reinforcing section; and (b) an adhesive layer disposed on the rear surface of the body corresponding to at least the first securing section and the reinforcing section, wherein: (i) the first display section has a predetermined width in a first direction, and first and second edges parallel to the first direction, and third and fourth edges extending parallel to or not parallel to a second direction that intersects orthogonally with the first direction, (ii) the first securing section is connected to the first edge of the first display section, and has a width that is longer than a width of the first display section in the first direction, and (iii) the reinforcing section is disposed adjacent to at least one of the third and fourth edges of the first display section, and is connected to the first securing section.

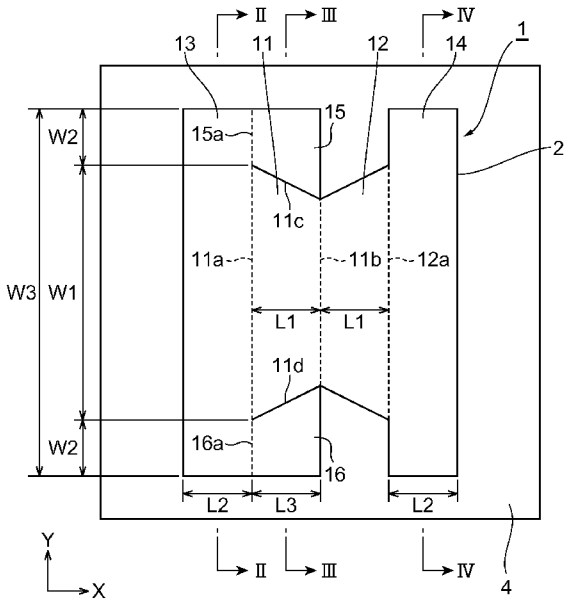

FIG. 1

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INDEX TAB

Field

The present invention relates to index tabs, particularly self-adhesive index tabs.

Background

Various types of self-adhesive index tabs that are used to provide headings attached to the edges of sheet members such as, for example, book pages or note book pages, are known. An illustrative example is disclosed in US Patent No. 6,5949,33 (Attia et al.) which discloses an index tab having a pair of display sections on which desired information can be displayed and a securing section extending from one of the pair of display sections for attaching the index tab to a sheet as desired. Japanese Examined Utility Model Publication No. H3-18219 discloses another illustrative index tab having a pair of display sections and a transparent member covering the pair of display sections.

With conventional index tabs, after the index tab is secured to a sheet member, when the tab is grasped by hand and maneuvered, e.g., to lift the sheet such as when leafing through a file, the sheet member is subject to tearing at the boundary between the edge of the sheet member to which the index tab is secured and the index tab. The need exists for self-adhesive index tabs for which it is more difficult to tear the sheet member to they are adhered.

Summary

In brief summary, index tabs of the invention comprise: (a) a body having a front surface and a rear surface and comprising a first display section, a first securing section, and at least one reinforcing section; and (b) an adhesive layer disposed on the rear surface of the body corresponding to at least the first securing section and the reinforcing section, wherein:

(i) the first display section has a predetermined width in a first direction, and first and second edges parallel to the first direction, and third and fourth edges extending parallel to or not parallel to a second direction that intersects orthogonally with the first direction,

(ii) the first securing section is connected to the first edge of the first display section, and has a width that is longer than a width of the first display section in the first direction, and

(iii) the reinforcing section is disposed adjacent to at least one of the third and fourth edges of the first display section, and is connected to the first securing section.

The novel index tabs of the present invention can be readily applied to the edge of a sheet. After application, the tabs may be grasped, e.g., by hand, and maneuvered, e.g., to lift the sheet, leaf through pages in a file, etc. with surprisingly reduced tearing of the sheet. Accordingly, index tabs of the invention can be used with sheets that exhibit relatively lower tear strength than conventional self-adhesive index tabs.

Brief Description of Drawing

The invention is further explained with reference to the drawing wherein:

FIG. 1 is a plan view of an index tab according to an illustrative first embodiment of the invention;

FIG. 2 is a cross-sectional view at the line II-II in FIG. 1;

FIG. 3 is a cross-sectional view at the line III-III in FIG. 1;

FIG. 4 is a cross-sectional view at the line IV-IV in FIG. 1;

FIG. 5 is a schematic plan view illustrating the initial state of securing the index tab illustrated in FIG. 1 to a sheet;

FIG. 6 is a schematic plan view illustrating the intermediate state of securing the index tab illustrated in FIG. 1 to the sheet;

FIG. 7 is a schematic plan view illustrating the final state of securing the index tab illustrated in FIG. 1 to the sheet;

FIG. 8 is a schematic plan view viewed from the rear surface side of the state in FIG. 7;

FIG. 9 is a cross-sectional view at the line IX-IX in FIG. 7;

FIG. 10 is a plan view of an index tab according to an illustrative second embodiment of the invention;

FIG. 11 is a cross-sectional view at the line XI-XI in FIG. 10;

FIG. 12 is a plan view of an index tab according to an illustrative third embodiment of the invention;

FIG. 13 is a plan view of an index tab according to an illustrative fourth embodiment of the invention;

FIG. 14 is a plan view of an index tab according to an illustrative fifth embodiment of the invention;

FIG. 15 is a plan view of an index tab according to an illustrative sixth embodiment of the invention;

FIG. 16 is a plan view of an index tab according to an illustrative seventh embodiment of the invention;

FIG. 17 is a plan view of an index tab according to an illustrative eighth embodiment of the invention;

FIG. 18 is a schematic plan view illustrating the planar structure of the index tab used in the tension test;

FIG. 19 is a schematic cross-sectional view illustrating the layer structure of the index tab used in the tension test;

FIG. 20 is a schematic plan view illustrating the sheet used in the tension test;

FIG. 21 is a schematic plan view illustrating the stainless steel plate used in the tension test; and

FIG. 22 is a schematic perspective view illustrating the tension test.

These figures are not to scale and are intended to be merely illustrative and not limiting. In the explanations of the drawings, identical elements are given the same number, and duplicate explanations are omitted. Also, the ratios of dimensions on the drawings do not necessarily coincide with actual ratios of dimensions.

List of reference numbers used in the drawing.

Reference No.	Component
1, 21, 31, 41, 51, 61, 71, 81	Index tab
2, 22, 32, 42, 52, 62, 72, 82	Body
3, 33	Adhesive layer
3a, 3b, 3c, 3d, 3e	Adhesive layer segments
4	Release liner
11, 37, 47	First display section
11a	First edge of first display section
11b	Second edge of first display section
11c	Third edge of first display section
11d	Fourth edge of first display section
12, 38, 48	Second display section
13, 23	First securing section
14, 24	Second securing section
15, 25, 35, 45, 55, 65	First reinforcing section
16, 26, 36, 46, 56, 66, 76	Second reinforcing section
S	Sheet

Detailed Description of Illustrative Embodiments

As described above, in general index tabs of the invention comprise: (a) a body having a front surface and a rear surface and comprising a first display section, a first securing section, and a reinforcing section; and (b) an adhesive layer disposed on the rear surface of the body corresponding to at least the first securing section and the reinforcing section.

The first display section has a predetermined width in a first direction, and is defined by first, second, third, and fourth edges. The first and second edges are parallel to the first direction. The third and fourth edges each intersect both the first and second edges, extending parallel to or not parallel to a second direction that intersects orthogonally with the first direction.

The first securing section is connected to the first edge of the first display section, and has a width that is longer than a width of the first display section in the first direction.

The reinforcing section is disposed separated from and adjacent to, i.e., spaced from or abutting,

at least one of the third and fourth edges of the first display section. The reinforcing section is connected to the first securing section.

Body

The body is a substantially planar member having a front surface and a rear surface. The body has several sections as described herein including a first display section, a first securing section, and a reinforcing section. The respective sections are connected to one another in some instances and separated from one another in other instances as described below.

The body may be a single ply member or may be multi-ply (partially or in its entirety). The body may be substantially rigid and self supporting (provided the necessary folds as described below can be achieved) or may be flexible, as desired.

Illustrative examples of materials that may be used in the body of index tabs of the invention include paper such as bond paper, coated paper, matt coat paper, recycled paper, glassine, kraft paper, synthetic paper, Japanese paper, or the like, or plastic film such as polypropylene film, polyethylene film, polyester film, polyacryl film, poly vinyl chloride film, polyurethane film, or the like. Those skilled in the art will be able to readily select suitable materials.

The front surface of the first display section is adapted to bear indicia, e.g., color coding, legends applied there to by hand written notation with a writing instrument, attachment of a label thereto, printing with a computer, etc.

The first securing section has adhesive on at least a portion of the rear surface thereof is bonded to a sheet in use. The front surface of the first securing section may be adapted to bear indicia if desired. The first securing section and first display section are connected at the first edge of the first display section.

The reinforcing section also has adhesive on at least a portion of the rear surface thereof and is bonded to a sheet in use. The front surface of the reinforcing section may also be adapted to bear indicia if desired. The reinforcing section is connected to the first securing section. The reinforcing section and first display section may be abut one another but are separate by at least a full cut through the depth of the body along portions of the third and fourth edge of the first display section.

Adhesive

The adhesive is selected to adhere to the body of the index tab and to adhere as desired to the sheet or other substrate to which the tab is to be bonded. The adhesive is typically pressure sensitive, though activated adhesives (e.g., heat-activated or solvent-activated, etc.) could be used in accordance with the present invention for special applications if desired. Depending upon the performance desired, the adhesive may provide removable adhesion to the sheet or may provide substantially permanent bonding thereto. One skilled in the art will be able to readily select suitable adhesive for desired applications.

Illustrative examples of adhesives suitable for use in the invention include acrylic pressure sensitive adhesives, silicone pressure sensitive adhesives, synthetic rubber pressure sensitive adhesives, natural rubber pressure sensitive adhesives, urethane pressure sensitive adhesives, and the like. Specific illustrative examples of acrylic pressure sensitive adhesive include ARONTACK® HV-C9500 from Toa Gosei Co., Ltd., ARONTACK ® HV-C7559 from Toa Gosei Co., Ltd., FINETAC CT-5030 from DIC Corporation, BPW6112 from Toyo Chem Co., Ltd., and BPW6116 from Toyo Chem Co., Ltd.

Embodiments

In their most general embodiment, the body of an index tab of the invention has a first display section, a first securing section, and at least one reinforcing section wherein:

(i) the first display section has a predetermined width in a first direction, and first and second edges parallel to the first direction, and third and fourth edges extending parallel to or not parallel to a second direction that intersects orthogonally with the first direction,

(ii) the first securing section is connected to the first edge of the first display section, and has a width that is longer than a width of the first display section in the first direction, and

(iii) the reinforcing section is disposed adjacent to at least one of the third and fourth edges of the first display section, and is connected to the first securing section.

In some embodiments, an index tab of the invention will comprise

A first aspect of the present invention is an index tab that includes a body constituted as a single or a plurality of layers, that includes a first display section, a first securing section, and a reinforcing section; and an adhesive layer disposed on a rear surface of the body corresponding to at least the first securing section and the reinforcing section. In this index tab, the first display section has a predetermined width in a first direction, and first and second edges parallel to the first direction, and third and fourth edges extending parallel to or not parallel to a second direction that intersects with the first direction. The first securing section is connected to the first edge of the first display section, and has a width that is longer than a width of the first display section in the first direction. The reinforcing section is disposed adjacent to at least one of the third and fourth edges of the first display section, and is connected to the first securing section.

In such index tabs the reinforcing section is disposed adjacent to at least one of the third and fourth edges of the first display section, and connected to the first securing section. In use, when applied to a sheet the reinforcing section is disposed near the comparatively easy to tear boundary with the index tab of a sheet such as a page in a book, notebook, memo pad, document, or the like, to which the index tab is attached, so it is possible to make the sheet less likely to tear.

In another aspect of the index tab, the width of the first securing section may be equal to a sum of the width of the first display section and a width of the reinforcing section in the first direction. As a result, it is possible to set the width of the first securing section long, and it is possible to ensure the location for disposing the reinforcing section. Each of the elements, the first display section, the reinforcing section, and the first securing section can be disposed on the body compactly and without

waste.

In another aspect of the index tab, the body corresponding to the first securing section and the reinforcing section may be formed from a transparent plastic layer. In this way, when securing the index tab to the edge of a sheet-shaped member, it is possible to prevent concealing of the characters and the like written on the edge of the sheet-shaped member by the index tab.

In another aspect of the index tab, the reinforcing section may be inclined to the inside in the first direction from a first end on the first securing section side toward a second end in the second direction. As a result, it is possible to disperse to the inside of the index tab deformation stress, which can easily concentrate at the boundary between the edge of the sheet-shaped member to which the index tab is secured and the index tab, so it is possible to make the sheet to which the index tab is adhered less likely to tear.

In another aspect of the index tab, the body further includes a second display section disposed axisymmetrically (i.e., symmetrically about an axis) with respect to the first display section with the second edge of the first display section as an axis of symmetry. As a result, it is possible to provide a display section on both sides thereof.

In another aspect of the index tab, the body further includes a second securing section connected to the second display section, disposed axisymmetrically with respect to the first securing section with the second edge of the first display section as the axis of symmetry. In this way, it is possible for the second securing section to reduce the deformation stress, which can easily concentrate at the boundary between the edge of the sheet member to which the index tab is secured and the index tab, so it is possible to make the sheet member even less likely to tear.

Illustrative embodiments of the present invention are described below in detail while referring to the drawings, but the present invention is not restricted to the following embodiments.

First Embodiment

FIG. 1 is a plan view of an index tab according to a first embodiment. FIGS. 2 through 4 are cross-sectional views at lines II-II, III-III, and IV-IV in FIG. 1, respectively. As illustrated in FIGS. 1 through 4, index tab 1 includes body 2 and adhesive layer 3 disposed on the whole rear surface of body 2, and disposed on protective releasable liner 4. Liner 4 may be treated coated on the top surface thereof, e.g., coated with a thin layer of release material such as, for example, silicone resin or the like, to impart desired release properties to adhesive layer 3 such that that index tab 1 can be removed therefrom with adhesive layer 3 intact. Liner 4 facilitates handling and preparation of index tab 1. For instance, desired indicia may be applied to first display section 11 before index liner 1 and liner 4 are separated. An assembly comprising two or more index tabs disposed on liner 4 may be prepared, e.g., by passing through a printer.

As illustrated in FIG. 1, body 2 comprises first display section 11, second display section 12, first securing section 13, second securing section 14, first reinforcing section 15, and second reinforcing section 16. Body 2 may have grid lines or the like printed on it in advance.

First display section 11 is a section for writing a heading with a pencil or pen or the like, or for printing the heading with a printer, and functions as a front heading when index tab 1 is secured to a sheet S (see FIG. 7). First display section 11 has a trapezoidal shape that includes first and second edges 11a and 11b (i.e., demarking the perimeter of first display section 11 where it is connected to first securing section 13 and second display section 12, respectively) parallel to a Y direction (first direction), and third and fourth edges 11c and 11d (i.e., demarking where the rim of first display section 11 is adjacent to or abuts first reinforcing section 15 and second reinforcing section 16, respectively) extending inclined (not parallel) to an X direction (second direction) that is orthogonal to the Y direction. The width of first edge 11a of the first display section 11 is, for example, W1.

Second display section 12 is a section for writing a heading with a pencil or pen or the like, or for printing the heading with a printer, similar to first display section 11, and functions as a rear heading (i.e., opposite to the first display section) when index tab 1 is secured to a sheet S such as a book, a notebook, a memo pad, a document, and so on (see FIG. 8). Second display section 12 has a shape that is axisymmetric with first display section 11 about the boundary line with first display section 11, i.e., second edge 11b, and has the same trapezoidal shape. For convenience of explanation, in FIG. 1, the boundaries of the areas of first and second display sections 11 and 12, first and second securing sections 13 and 14, and the first and second reinforcing sections are indicated with broken lines. Bending lines, e.g., perforations, scores, or partial cuts, etc., may be formed in body 2 at second edge 11b between first and second display sections 11 and 12 and at lines 15a and 16a to facilitate folding tab 1 so as to engage with opposite sides of the sheet (not shown). The bending lines facilitate configuring the initially planar index tab 1 to engage with opposite sides of the sheet. The lengths of first and second display sections 11 and 12 in the X direction are both L1.

As illustrated in FIGS. 1 and 2, first securing section 13 secures index tab 1 to the front side of sheet S, via segment 3a of adhesive layer 3 (see FIG. 5). First securing section 13 is formed so that it is connected to first edge 11a of first display section 11. First securing section 13 has a rectangular shape with a width W3 in the longitudinal direction that is longer than the width W1 of first display section 11. Because the width is longer than that of display section 11 in this way, first securing section 13 acts to reinforce the part of sheet S that was conventionally easy to tear, in addition to the function of securing index tab 1 to sheet S.

The value of the difference in width W3 of the first securing section 13 and the width W1 of first display section 11 is typically from about 2 to about 30 mm, often preferably from about 5 to about 10 mm. It will be understood that index tabs having dimensions outside this range may be used in accordance with the invention. If the difference in width is too little, the desired benefits of reinforcement and reduction of tearing of the sheet are not attained. If the difference between the width W3 and the width W1 is too large, the index tab may obscure portions of the sheet or be more difficult to handle and apply.

As illustrated in FIGS. 1 and 4, second securing section 14 secures index tab 1 to the rear side of sheet S, via segment 3b of adhesive layer 3 (see FIG. 8). Second securing section 14 has a rectangular

shape that is axisymmetric with that of first securing section 13 with second edge 11b as the axis of symmetry. Second securing section 14 is formed so that it is connected to first edge 12a of second display section 12. First edge 12a is axisymmetric with first edge 11a with second edge 11b of first display section 11 as the axis of symmetry. Second securing section 14 has a width W3 that is longer than the width W1 of first and second display sections 11 and 12, similar to first securing section 13. In other words, the width of second securing section 14 and the width of first securing section 13 are the same.

Typically, as shown in this embodiment, the lengths of first and second securing sections 13 and 14 in the X direction are substantially equal, i.e., L2 as shown. In many embodiments, L2 is from about 2 to about 20 mm, sometimes preferably from about 3 to about 15 mm, and more preferably from about 3 to about 10 mm. If length L2 of first and second securing sections 13 and 14 is too little, the resultant reinforcement of the sheet by those securing sections may be insufficient, and, there may be occasions when index tab 1 undesirably separates from sheet S. On the other hand, if length L2 is too great, index tab 1 may tend to undesirably obscure portions of sheet S.

As illustrated in FIGS. 1 and 3, first reinforcing sections 15 and 16 reinforces the securing of index tab 1 to sheet S. First reinforcing section 15 is formed with one edge 15a connected to first securing section 13 in the Y direction, and is disposed adjacent to edge 11c in the Y direction of first display section 11. A cut is formed along edge 11c which is between first display section 11 and first reinforcing section 15, so first display section 11 and first reinforcing section 15 are separated from each other. First reinforcing section 15 has a trapezoidal shape, formed so that it is inclined to the inside in the Y direction from a first end on first securing section 13 side toward a second end in the X direction.

Perforations may be formed on the broken line of side 15a between first reinforcing section 15 and first securing section 13. The perforations function as the starting point when folding first reinforcing section 15 to the rear side of sheet S after folding second display section 12 to the rear side for securing index tab 1 to sheet S.

As illustrated in FIGS. 1 and 3, second reinforcing section 16 is reinforces the securing of index tab 1 to sheet S, by being secured to and covering a section of the top surface of second securing section 14 with a segment 3e of the of adhesive layer 3 (see FIG. 8), similar to first reinforcing section 15. Second reinforcing section 16 has a trapezoidal shape that is axisymmetrical with that of first reinforcing section 15 with the center line of the index tab 1 in the Y direction as the axis of symmetry. Second reinforcing section 16 is formed with one edge 16a connected to first securing section 13 in the Y direction, and is disposed adjacent to other edge 11d in the Y direction of first display section 11. A cut is formed along edge 11d which is between first display section 11 and second reinforcing section 16, so first display section 11 and second reinforcing section 16 are separated from each other.

Perforations may be formed on the broken line of edge 16a between second reinforcing section 16 and the securing section 13. The perforations function as the starting point when folding second reinforcing section 16 to the rear side after folding second display section 12 to the rear side for securing index tab 1 to sheet S.

The width of first and second reinforcing sections 15 and 16 in the Y direction (the sections corresponding to edges 15a and 16a) are the same width W2, and a sum of the width W1 of first display section 11 and widths W2 and W2 of first and second reinforcing sections 15 and 16 is equal to the width W3 of the first or second reinforcing sections 13 and 14. The length L3 of first and second reinforcing sections 15 and 16 is typically a minimum of about 2 mm and a maximum of twice the length L1 of the first and the second display sections. The reason the length L3 of first and second reinforcing sections 15 and 16 is not less than 2 mm is because if length L2 is less than 2 mm, the reinforcement by the first and second reinforcing sections 15 and 16 may be insufficient. On the other hand, the reason the length L3 of first and second reinforcing sections 15 and 16 is a maximum of twice the length L1 is because if the length L3 is greater than twice the length L1, it becomes difficult to efficiently dispose the display sections 11 and 12 or the securing sections 13 and 14 together on the same plane. As illustrated in FIG. 1, if length L3 of first and second reinforcing sections 15 and 16 is equal to the length L2 of second securing section 14 or slightly shorter, it is possible to prevent the first and second reinforcing sections 15 and 16 from projecting out from second securing section 14 when folded, and it is possible to reduce the concealment of the contents on sheet S to which it is secured.

Application or mounting of an index tab of the invention to sheet S is illustrated in FIGS. 5 through 9.

First, index tab 1 is peeled from liner 4. Then, as illustrated in FIG. 5, adhesive layer 3a on first securing section 13 of index tab 1 is secured to the edge of a surface of sheet S.

Next, as illustrated in FIG. 6, second display section 12 and second securing section 14 are folded to the rear side with the broken line (perforations) along second edge 11b as the starting point. As a result of this folding, adhesive layer 3b corresponding to second securing section 14 is contacted to and adhered to the rear side of sheet S. First and second display sections 11 and 12 are also secured to each other with adhesive layer 3d or the like disposed therebetween, as a result of this folding.

Next, as illustrated in FIGS. 7 through 9, first and second reinforcing sections 15 and 16 are folded to the rear side with the broken line (perforations) along edges 15a and 16a as the starting points. As a result of this folding, first and second reinforcing sections 15 and 16 are secured to two edges of second securing section 14 with the corresponding adhesive layers 3c and 3e disposed therebetween. In FIG. 9, the adhesive layer 3 is omitted to simply illustration of the juxtaposition of the sections of the index tab.

Alternatively, when securing index tab 1 to sheet S, instead of the aforedescribed method, second securing section 14 may be first secured to sheet S before securing first securing section 13 to sheet S, and reinforcing sections 15 and 16 may be folded before second display section 12 and second securing section 14 are folded.

As described above, index tab 1 according to the present embodiment includes reinforcing sections 15 and 16 disposed adjacent to third and fourth sides 11c and 11d of first display section 11, and connected to securing section 13. Therefore, according to this embodiment of index tab 1, it is possible to dispose reinforcing sections 15 and 16 near the comparatively easy to tear boundary with index tab 1 of

the sheet S to which index tab 1 is attached, so it is possible to make it more difficult to tear sheet S.

In index tab 1, width W3 of first and second securing sections 13 and 14 is equal to the sum of width W1 of first or second display section 11 and 12 and widths W2 and W2 of reinforcing sections 15 and 16. As a result of this constitution, it is possible to set the width W3 of first and second securing sections 13 and 14 long, and it is possible to compactly ensure the locations for disposing reinforcing sections 15 and 16.

In index tab 1, reinforcing sections 15 and 16 have a trapezoidal shape, formed inclined to the inside in the Y direction from the first end on securing section 13 side toward the second end in the X direction. As a result, it is possible to disperse to the inside of index tab 1 deformation stress, which can easily concentrate at the boundary between the edge of sheet S to which index tab 1 is secured and index tab 1, so it is possible to make sheet S even more difficult to tear.

In index tab 1, body 2 further includes second display section 12 which is disposed axisymmetrically with respect to first display section 11 with second edge 11b of first display section 11 as the axis of symmetry. As a result, with index tab 1 it is possible to provide a display section on both sides thereof.

Second Embodiment

A second embodiment of index tabs of is illustrated in FIG. 10, wherein index tab 21 has approximately the same plan shape as the index tab 1 of the first embodiment, the material configuration (layer configuration) is different in some respects.

As illustrated in FIGs. 10 and 11, index tab 21 includes bodies 2 and 22 each constituted as a plurality of layers, and adhesive layers 3 and 33 disposed on the whole rear surface of each of bodies 2 and 22, respectively, disposed on release liner 4.

As illustrated in FIG. 11, bodies 2 and 22 are constituted from two layers, top side layer 22 is formed from a transparent plastic layer, and bottom side layer 2 is formed from paper or plastic film the same as in the first embodiment. Top layer 22 has a rectangular partially notched (trapezoidal shape in two locations) shape, the same as for the first embodiment. On the other hand, bottom layer 2 is formed with only sections corresponding to first and second display sections 11 and 12. Bottom layer 2 is constituted as including only first and second display sections 11 and 12, so adhesive layer 3 disposed on the bottom side of bottom layer 2 is also disposed only in the areas corresponding to display sections 11 and 12.

Specific illustrative examples of transparent plastic film that can be used in top layer 22 include polypropylene film, polyethylene film, polyester film, polyacryl film, poly vinyl chloride film, polyurethane film, and so on. In the present embodiment, bodies 2 and 22 use plastic material or paper material in combination, as described above.

Top layer 22 includes first securing section 23, second securing section 24, first reinforcing section 25, and second reinforcing section 26, similar to the first embodiment discussed above. First and second securing sections 23 and 24 and first and second reinforcing sections 25 and 26 are the same as

first and second securing sections 13 and 14 and first and second reinforcing sections 15 and 16 of the first embodiment, except that they are formed from transparent plastic layers. Body 22 further includes first display cover section 27 and second display cover section 28.

First display cover section 27 has the same shape as first display section 11 that is located below first display cover section 27, and that covers first display section 11 with an adhesive layer 33 disposed therebetween. Second display cover section 28 has the same shape as second display section 12 that is located below second display cover section 28, and that covers second display section 12 with adhesive layer 33 disposed therebetween. The first and second display cover sections 27 and 28 are formed from transparent plastic layers, so they can protect display sections 11 and 12 that are made of paper, from rubbing, moisture, dirt, and the like, without concealing headings, etc. that are written on first and second display sections 11 and 12.

As described above, index tab 21 includes reinforcing sections 25 and 26 disposed adjacent to the third and fourth sides 11c and 11d of first display section 11, and connected to first securing section 23, similar to the first embodiment. Therefore, according to index tab 21, it is possible to dispose reinforcing sections 25 and 26 near the comparatively easy to tear boundary with index tab 21 of sheet S to which index tab 21 is attached, making sheet S more resistant to tearing when the index tab is manipulated.

In index tab 21, first and second securing sections 23 and 24 and body 22 corresponding to reinforcing sections 25 and 26 are formed from transparent plastic layers. Therefore, when securing index tab 21 to the edge of sheet S, it is possible to further prevent concealing of the characters and the like written on the edge of sheet S by index tab 21.

Third Embodiment

FIG. 12 is a plan view of an index tab according to the third embodiment wherein index tab 31 has approximately the same planar shape as index tab 1 of the first embodiment, the planar shape is different in section. The following is an explanation, concentrating on the differences.

As illustrated in FIG. 12, index tab 31 includes body 32 and adhesive layer 3 disposed on the whole bottom surface of body 32 disposed on liner 4. Body 32 is formed from paper or plastic film similar to the first embodiment, and includes first and second display section 37 and 38, first and second securing section 13 and 14, and a first and second reinforcing section 35 and 36. First and second display sections 37 and 38 and first and second reinforcing sections 35 and 36 are the same as first and second display sections 11 and 12 and first and second reinforcing sections 15 and 16 of the first embodiment, except that the planar shapes are different.

First display section 37 has an approximately rectangular shape, with the two corners on boundary line 37b side with second display section 38 rounded to the inside, and the two corners on first securing section 13 side rounded to the outside. Second display section 38 has an approximately rectangular shape that is axisymmetric with first display section 37, with boundary line 37b disposed therebetween. In first display section 37, third and fourth edges 37c and 37d extend parallel to the X direction.

First reinforcing section 35 has an approximately rectangular shape, with one corner on first securing section 13 side rounded to the inside, and one corner on second securing section 14 side rounded to the outside. Second reinforcing section 36 has an approximately rectangular shape that is axisymmetrical with that of first reinforcing section 35 with the center line of index tab 31 in the Y direction as the axis of symmetry.

As described above, index tab 31 includes reinforcing sections 35 and 36 disposed adjacent to third and fourth edges 37c and 37d of first display section 37, and connected to the first securing section 13, similar to the first embodiment. Therefore, with index tab 31 it is possible to dispose reinforcing sections 35 and 36 near the comparatively easy to tear boundary with index tab 31 of sheet S to which index tab 31 is attached, so it is possible to make sheet S more difficult to tear. Note that in the third embodiment the action and effect of configurations that are common with those of the first embodiment are exhibited here as well.

Fourth Embodiment

FIG. 13 is a plan view of the index tab according to the fourth embodiment wherein index tab 41 has a modified planar shape. As illustrated in FIG. 13, index tab 41 includes body 42, and adhesive layer 3 disposed on the whole bottom surface of body 42, disposed on liner 4. Body 42 is formed from paper or plastic film similar to the first embodiment, and includes a first and second display section 47 and 48, first and second securing section 13 and 14, and first and second reinforcing section 45 and 46. First and second display sections 47 and 48 and the first and second reinforcing sections 45 and 46 are the same as first and second display sections 11 and 12 and first and second reinforcing sections 15 and 16 of the first embodiment, except that the planar shapes are different.

First and second display sections 47 and 48 have an approximately rectangular shape, and second display area 48 is axisymmetric with the first display section 47, with boundary line 47b disposed therebetween. First and second reinforcing sections 45 and 46 have an approximately rectangular shape, and second reinforcing section 46 has a shape that is axisymmetrical with that of first reinforcing section 45 with the center line of index tab 41 in the Y direction as the axis of symmetry.

As described above, index tab 41 includes reinforcing sections 45 and 46 disposed adjacent to third and fourth edges 47c and 47d of first display section 47, and connected to first securing section 13, similar to the first embodiment. Therefore, according to this index tab 41, it is possible to dispose reinforcing sections 45 and 46 near the comparatively easy to tear boundary with the index tab 41 of sheet S to which index tab 41 is attached, so it is possible to make sheet S more difficult to tear. Note that in the fourth embodiment the action and effect of configurations that are common with those of the first embodiment are exhibited here as well.

Fifth Embodiment

FIG. 14 is a plan view of the index tab according to the fifth embodiment wherein index tab 51 has still another planar shape. As illustrated in FIG. 14, index tab 51 includes body 52 and adhesive layer

3 disposed on the whole bottom surface of body 52 disposed on liner 4. Body 52 is formed from paper or plastic film similar to the first embodiment, and includes first and second display section 11 and 12, first and second securing section 13 and 14, and a first and second reinforcing section 55 and 56. First and second reinforcing sections 55 and 56 are the same as first and second reinforcing sections 15 and 16 of the first embodiment, except that the planar shapes are different.

First and second reinforcing sections 55 and 56 have an approximately rectangular shape, and second reinforcing section 56 has a shape that is axisymmetrical with that of first reinforcing section 55 with the center line of index tab 51 in the Y direction as the axis of symmetry.

As described above, index tab 51 includes reinforcing sections 55 and 56 disposed adjacent to third and fourth edges 11c and 11d of first display section 11, and connected to first securing section 13, similar to the first embodiment. Therefore, according to this index tab 51, it is possible to dispose reinforcing sections 55 and 56 near the comparatively easy to tear boundary with index tab 51 of sheet S to which index tab 51 is attached, so it is possible to make sheet S more difficult to tear. Note that in the fifth embodiment the action and effect of configurations that are common with those of the first embodiment are exhibited here as well.

Sixth Embodiment

FIG. 15 is a plan view of the index tab according to the sixth embodiment wherein index tab 61 has still another planar shape. As illustrated in FIG. 15, index tab 61 includes body 62, and adhesive layer 3 disposed on the whole bottom surface of body 62, disposed on liner 4. Body 62 is formed from paper or plastic film similar to the first embodiment, and includes first and second display section 11 and 12, first and second securing section 13 and 14, and a first and second reinforcing section 65 and 66. First and second reinforcing sections 65 and 66 are the same as first and second reinforcing sections 15 and 16 of the first embodiment, except that the planar shapes are different.

First reinforcing section 65 has a pentagonal shape that combines two first reinforcing sections 15 in the first embodiment. A cut is formed between first reinforcing section 65 and first and second display sections 11 and 12, so first reinforcing section 65 and first and second display sections 11 and 12 are separated from each other. Also, a cut is formed between first reinforcing section 65 and the second securing section 14, so first reinforcing section 65 and second securing section 14 are separated from each other.

Second reinforcing section 66 has a pentagonal shape that is axisymmetrical with that of the first reinforcing section 65 with the center line of index tab 61 in the Y direction as the axis of symmetry. A cut is formed between the second reinforcing section 66 and first and second display sections 11 and 12, so second reinforcing section 66 and first and second display sections 11 and 12 are separated from each other. Also, a cut is formed between the second reinforcing section 66 and second securing section 14, so second reinforcing section 66 and second securing section 14 are separated from each other.

As described above, index tab 61 includes reinforcing sections 65 and 66 disposed adjacent to third and fourth edges 11c and 11d of first display section 11, and connected to the first securing section

13, similar to the first embodiment. Therefore, according to this index tab 61, it is possible to dispose reinforcing sections 65 and 66 near the comparatively easy to tear boundary with index tab 61 of sheet S to which index tab 61 is attached, so it is possible to make sheet S more difficult to tear. Note that in the sixth embodiment the action and effect of configurations that are common with those of the first embodiment are exhibited here as well.

Seventh Embodiment

FIG. 16 is a plan view of the index tab according to the seventh embodiment wherein index tab 71 has still another planar shape is different in part. As illustrated in FIG. 16, index tab 71 includes body 72, and adhesive layer 3 disposed on the whole bottom surface of body 72, disposed on liner 4. Body 72 is formed from paper or plastic film similar to the first embodiment, and includes first and second display section 11 and 12, first and second securing section 13 and 14, and a first and second reinforcing section 15 and 76. Second reinforcing section 76 is the same as second reinforcing section 16 in the first embodiment, except that layout position is different.

Second reinforcing section 76 has a trapezoidal shape where the layout position is changed to be axisymmetrical with second reinforcing section 16 of the first embodiment with a center line along edge 11b as standard. Second securing section 76 is formed with one edge connected to second securing section 14 in the Y direction, and is disposed adjacent to other edge 12d in the Y direction of second display section 12. A cut is formed along edge 12d which is between second display section 12 and second reinforcing section 76, so second display section 12 and second reinforcing section 76 are separated from each other. When securing index tab 71 to sheet S, second reinforcing section 76 is secured to and covers a section of the top surface of first securing section 13 with a segment of the of adhesive layer 3 that is disposed on the lower side thereof disposed therebetween.

As described above, index tab 71 includes reinforcing sections 15 and 76 disposed adjacent to edges 11c and 12d of first or second display sections 11 and 12, and connected to first or second securing sections 13 and 14, similar to the first embodiment. Therefore, according to index tab 71, it is possible to dispose reinforcing sections 15 and 76 near the comparatively easy to tear boundary with index tab 71 of sheet S to which index tab 71 is attached, so it is possible to make the sheet S more difficult to tear. Note that in the seventh embodiment the action and effect of configurations that are common with those of the first embodiment are exhibited here as well.

Eighth Embodiment

FIG. 17 is a plan view of the index tab according to the eighth embodiment wherein index tab 81 has a planar shape that is approximately the same as that of the index tab 1 except body 82 does not include a second securing section 14. Index tab 81 includes reinforcing sections 15 and 16 disposed adjacent to edges 11c and 11d of first display section 11, and connected to first securing section 13, similar to the first embodiment. Therefore, according to this index tab 81, it is possible to dispose the reinforcing sections 15 and 16 near the comparatively easy to tear boundary with index tab 81 of sheet S

to which index tab 81 is attached, so it is possible to make sheet S more difficult to tear. Note that in the eighth embodiment the action and effect of configurations that are common with those of the first embodiment are exhibited here as well.

Examples

The present invention will be explained in further detail below in the following Working Examples and Comparative Examples.

Working Example 1

First, index tab T1 having the constitution of the first embodiment described above was prepared, having the dimensions shown in FIG. 18a. Also, index tab T1 was a paper tab, and had a layered constitution with an acrylic pressure sensitive adhesive (acrylic adhesive) applied to the bottom side of 80 μm paper, as illustrated in FIG. 19a, that was placed on an 80 μm liner.

Next, photocopying paper P was cut into a 200 mm×70 mm shape as illustrated in FIG. 20. Then, index tab T1 illustrated in FIG. 18a was secured to photocopying paper P. When securing, center line C1 of index tab T1 and center line C2 of photocopying paper P were arranged to be collinear. Then cut photocopying paper P was folded in a slanted manner to the rear side at lines L1 and L2 as illustrated in FIG. 20.

Next, as illustrated in FIG. 21, a 150 mm × 70 mm stainless steel plate B was prepared with a dimension in the longitudinal direction that was shorter than photocopying paper P. Then, lines L1 and L2 of photocopying paper P were superimposed on the edges of the stainless steel plate B in the short direction, and two edges P1 and P2 of photocopying paper P were folded to the rear side of stainless steel plate B, and were secured with double sided tape. Photocopying paper P was folded in an inclined manner and fixed so that, as illustrated in FIG. 22, it formed a semi-dome shape with an opening to the front in the drawing. Photocopying paper P was not fixed to stainless steel plate B on the front side of stainless steel plate B.

Next, as illustrated in FIGS. 20 and 22, a chuck H of a tensile testing machine was fixed to the right half of index tab T1. The reason it was fixed off-center in this manner was because when secured index tab T1 is gripped off-center, sheet S is frequently torn. Stainless steel plate B was placed on a horizontal plane, then as illustrated in FIG. 22, index tab T1 that was fixed to the chuck H was pulled in the vertical direction at the rate 100 mm/minute. Then, it was found that the maximum strength recorded when the photocopying paper P tore was 10.5 N.

Comparative Example C1

Index tab T2 was prepared having the same constitution as index tab T1 in Working Example 1 (first embodiment) except that reinforcing sections 15 and 16 were omitted. The dimensions of index tab T2 are shown in FIG. 18b. Also, index tab T2 was a paper tab the same as Working Example 1, with the layer constitution as illustrated in FIG. 19a. Next, the same tensile test was carried out on index tab T2 as

for Working Example 1, and it was found that the maximum strength recorded when the photocopying paper P tore was 9.0 N.

Working Example 2

Next, index tab T3 was prepared having a body with a two layer structure made from paper and plastic film. In other words, index tab T3 was a laminated tab and, as illustrated in FIG. 19b, in addition to the layered constitution with acrylic pressure sensitive adhesive applied to the bottom surface of the 80 μm paper, 20 μm OPP film was disposed on the top thereof using acrylic pressure sensitive adhesive. The dimensions of index tab T3 are shown in FIG. 18a. Next, the same tensile test was carried out on index tab T3 as for Working Example 1, and it was found that the maximum strength recorded when the photocopying paper P tore was 10.6 N.

Comparative Example C2

Index tab T4 was prepared having the same constitution as index tab T3 in Working Example 2 except that reinforcing sections 25 and 26 were omitted. The dimensions of index tab T4 are shown in FIG. 18b. Also, index tab T4 was a laminated tab the same as Working Example 2, with the layer constitution as illustrated in FIG. 19b. Next, the same tensile test was carried out on index tab T4 as for Working Example 1 and so on, and it was found that the maximum strength recorded when the photocopying paper P tore was 8.9 N.

In this way, by providing the reinforcing sections 15, 16, 25, and 26 in the index tabs, the maximum strength when torn was improved by 17% to 19% (about 20%), so it was confirmed that it is possible to make sheet S to which the index tab is secured more difficult to tear.

Although the present invention has been fully described in connection with the preferred embodiments thereof with reference to the accompanying drawings, it is to be noted that various changes and modifications are apparent to those skilled in the art. Such changes and modifications are to be understood as included within the scope of the present invention as defined by the appended claims unless they depart therefrom.

What is claimed is:

1. An index tab comprising: (a) a body having a front surface and a rear surface and comprising a first display section, a first securing section, and a reinforcing section; and (b) an adhesive layer disposed on the rear surface of the body corresponding to at least the first securing section and the reinforcing section, wherein:

(i) the first display section has a predetermined width in a first direction, and first and second edges parallel to the first direction, and third and fourth edges extending parallel to or not parallel to a second direction that intersects orthogonally with the first direction,

(ii) the first securing section is connected to the first edge of the first display section, and has a width that is longer than a width of the first display section in the first direction, and

(iii) the reinforcing section is disposed adjacent to at least one of the third and fourth edges of the first display section, and is connected to the first securing section.

2. The index tab of claim 1 wherein the width of the first securing section is equal to a sum of the width of the first display section and a width of the reinforcing section in the first direction.

3. The index tab of claim 1 or 2 wherein the body corresponding to the first securing section and the reinforcing section is formed from a transparent plastic layer.

4. The index tab of any one of claims 1 to 3 where the body is a single layer.

5. The index tab of any one of claims 1 through 4 wherein the reinforcing section is inclined to the inside in the first direction from a first end on the first securing section side toward a second end in the second direction.

6. The index tab of any one of claims 1 through 5 wherein the body further includes a second display section disposed axisymmetrically with respect to the first display section, with the second edge of the first display section as an axis of symmetry.

7. The index tab of claim 6 wherein the body further includes a second securing section connected to the second display section disposed axisymmetrically with respect to the first securing section, with the second edge of the first display section as the axis of symmetry.

8. The index tab of claim 1 wherein said tab is in substantially planar form and the adhesive layer thereon is releasably bonded to a liner.

9. A release liner sheet having a first surface comprising an array of index tabs of claim 1 releasably bonded thereto.

10. The index tab of claim 1 bonded to the edge of a sheet having first and second sides such that the adhesive on the first securing section is bonded to the first side of the sheet and the adhesive on the reinforcing section is bonded to the second side of the sheet.

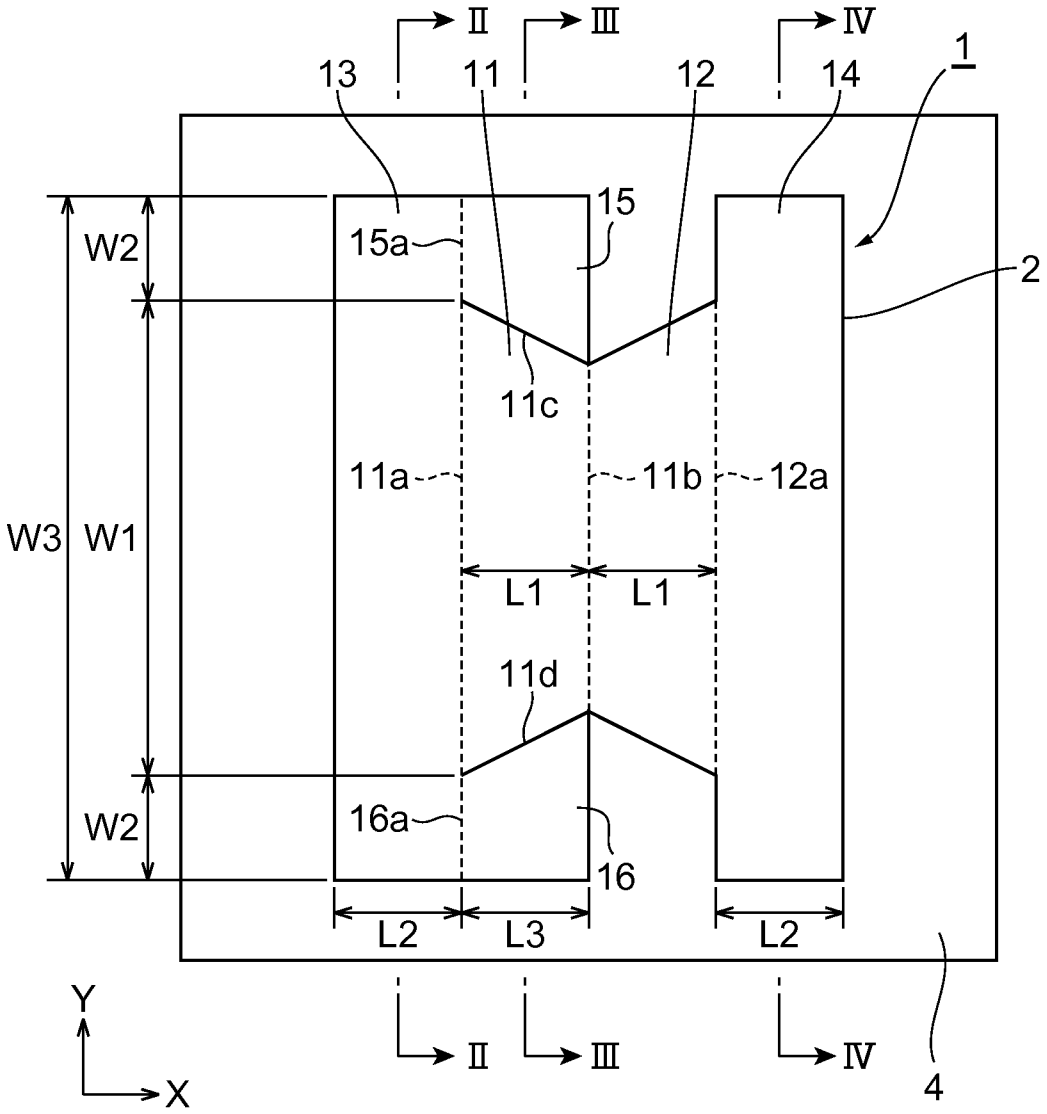
II
III
IV
1
13
11
12
14
15
15a
2
W2
11c
11a
11b
12a
W3
W1
L1
L1
11d
W2
16a
16
L2
L3
L2
Y
X
II
III
IV
4

FIG. 1

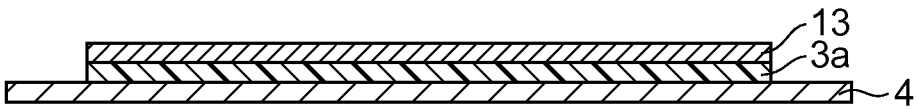

FIG. 2

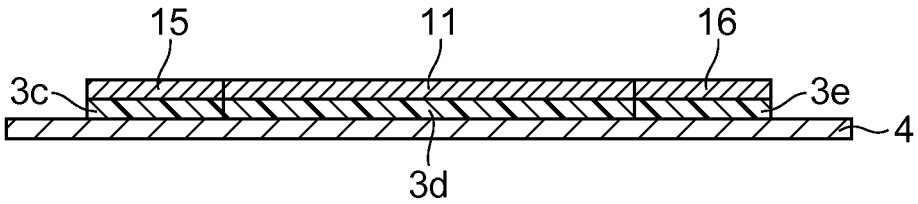

FIG. 3

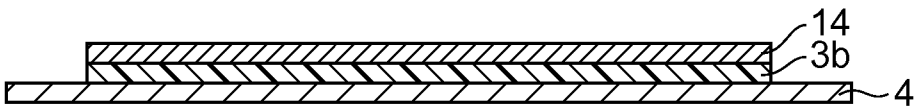

FIG. 4

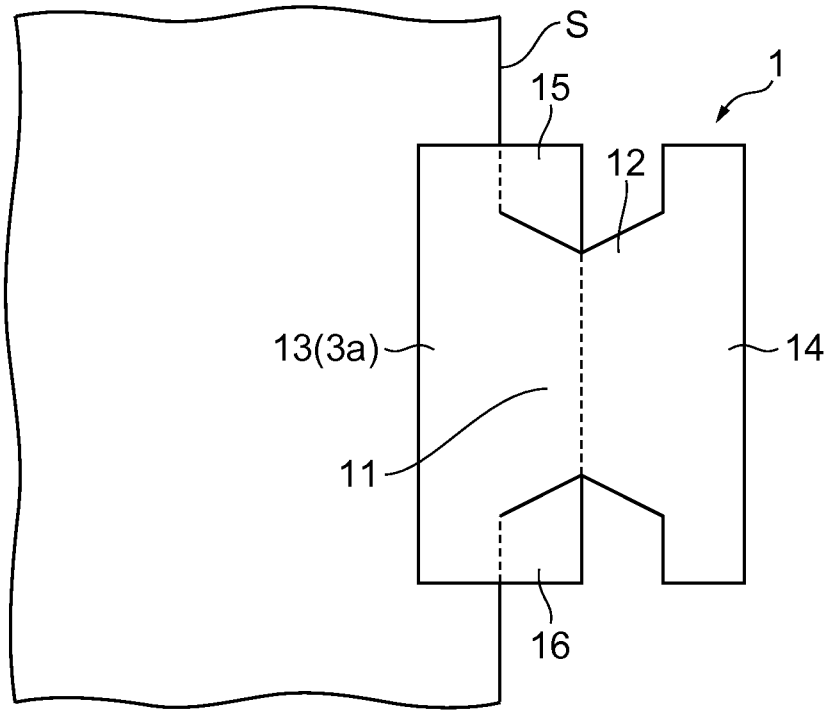

FIG. 5

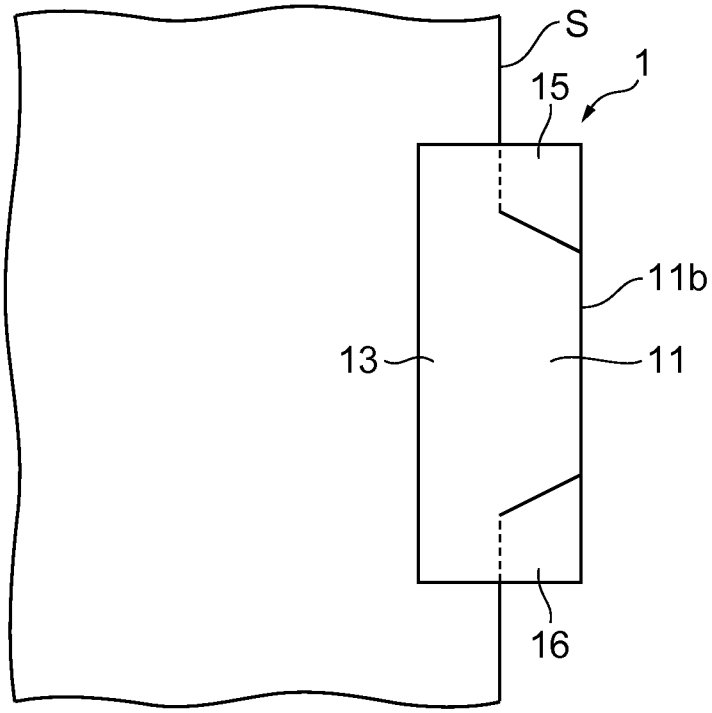

FIG. 6

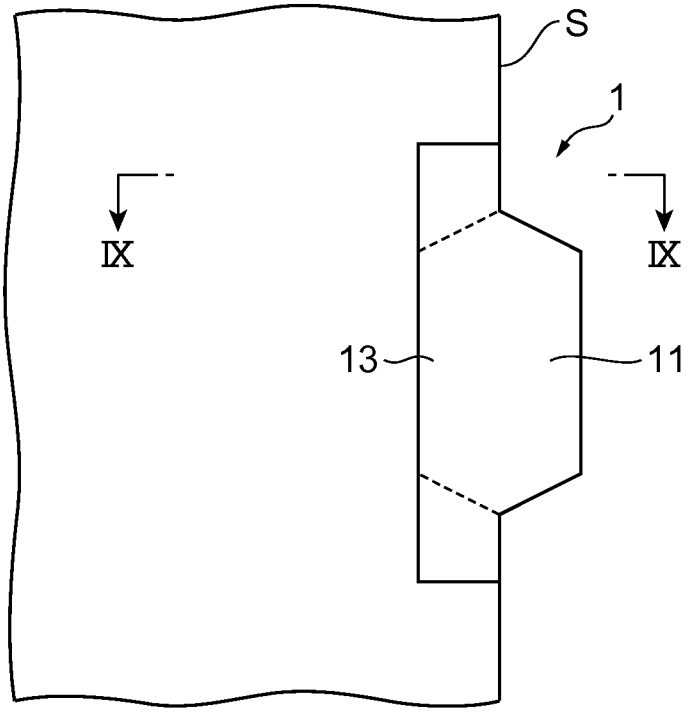

FIG. 7

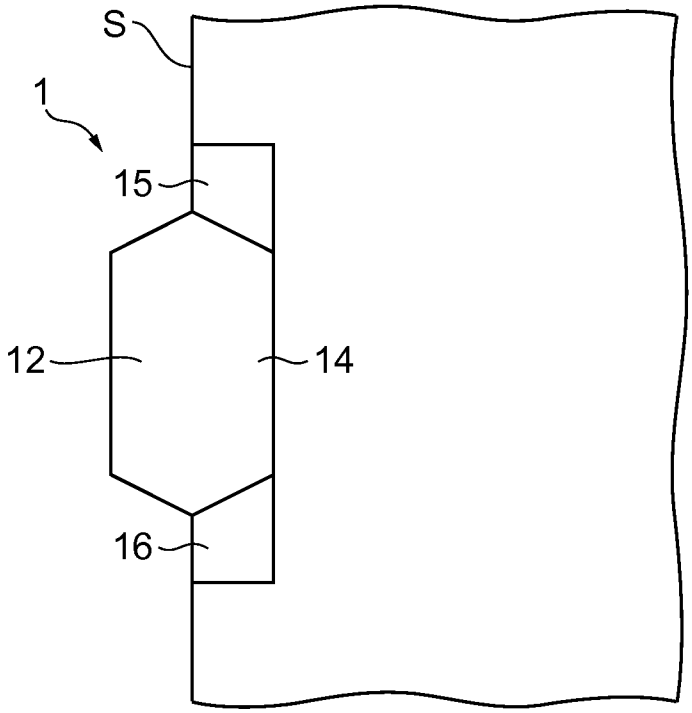

FIG. 8

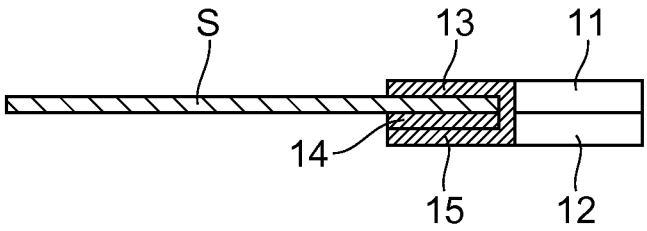

FIG. 9

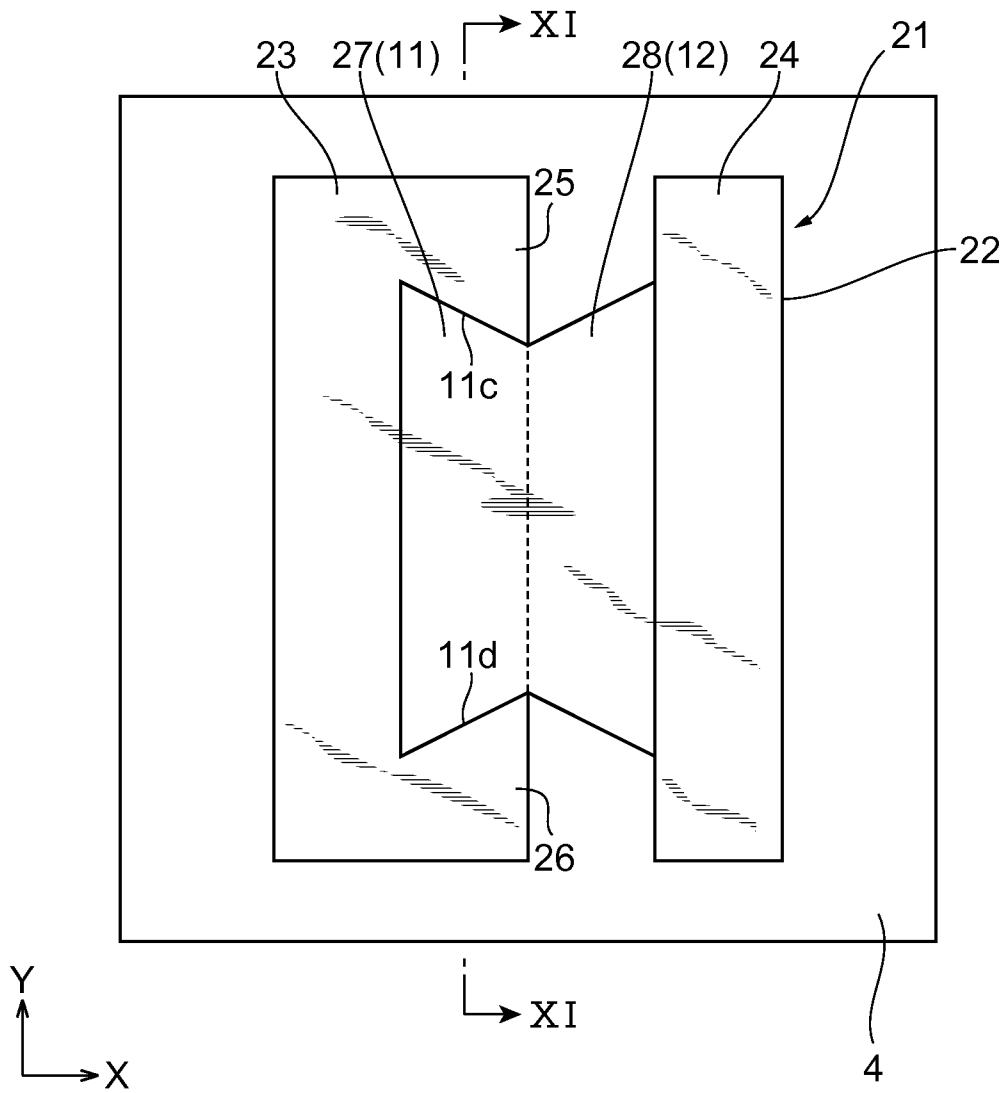

FIG. 10

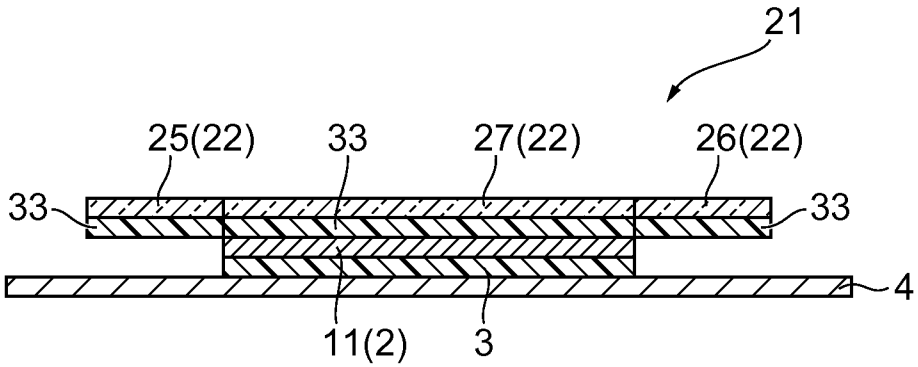
21
25(22)
33
27(22)
26(22)
33
33
4
11(2)
3

FIG. 11

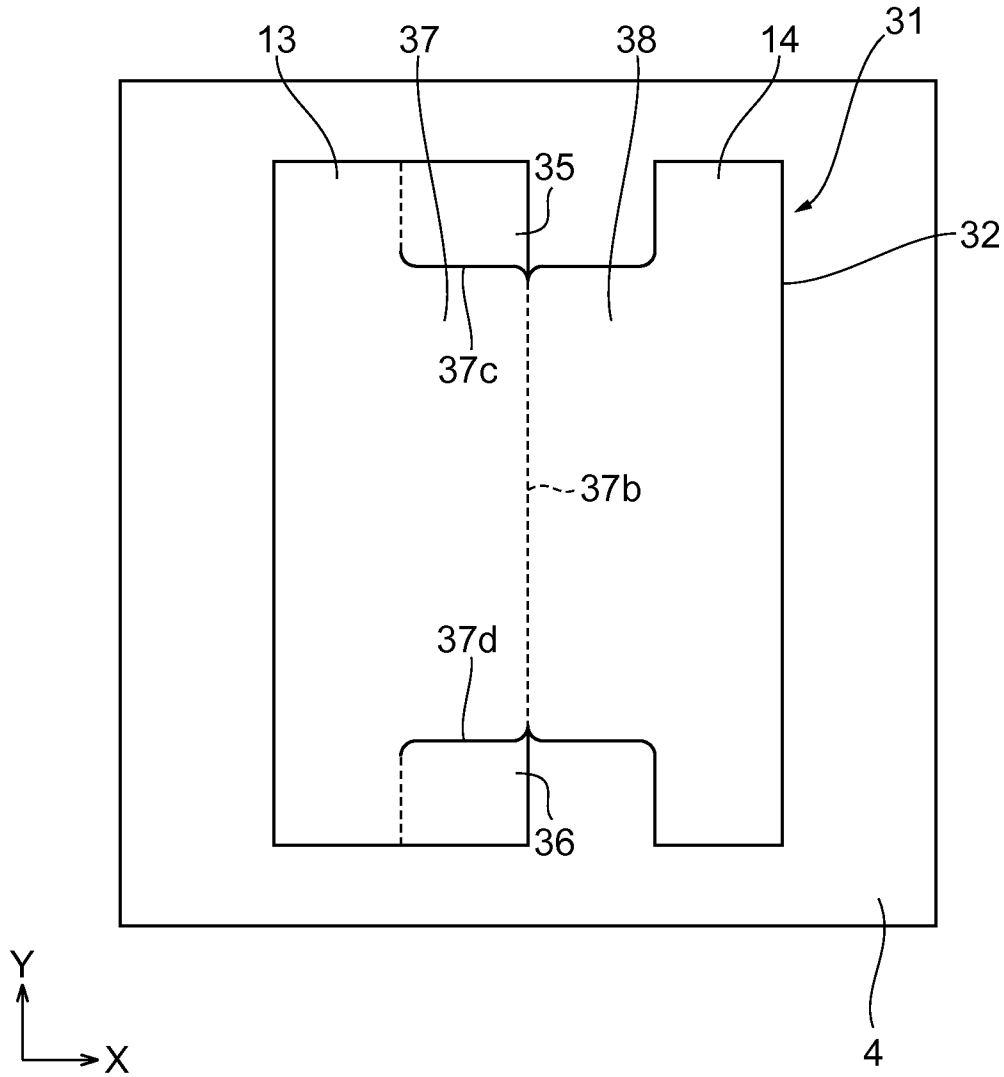
13
37
38
14
31
35
32
37c
37b
37d
36
4
Y
X

FIG. 12

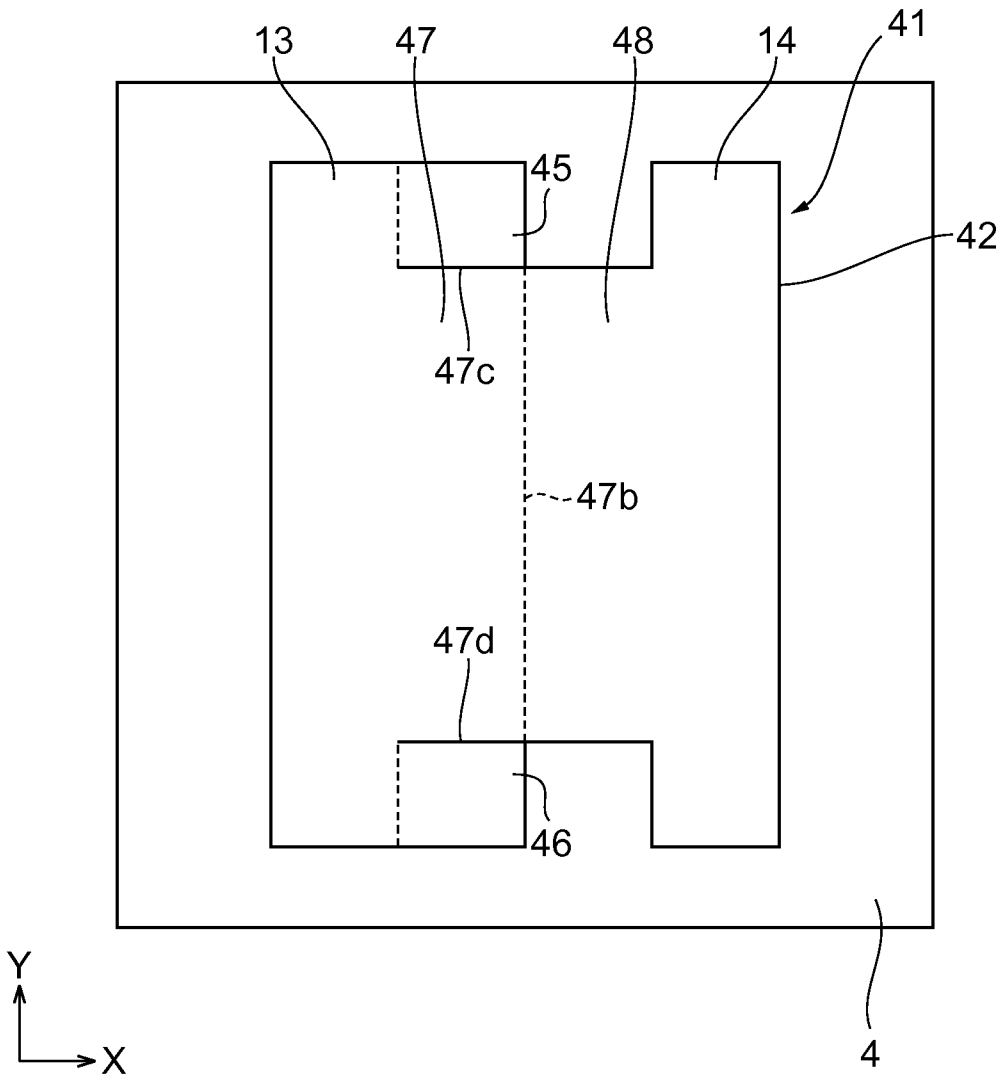

FIG. 13

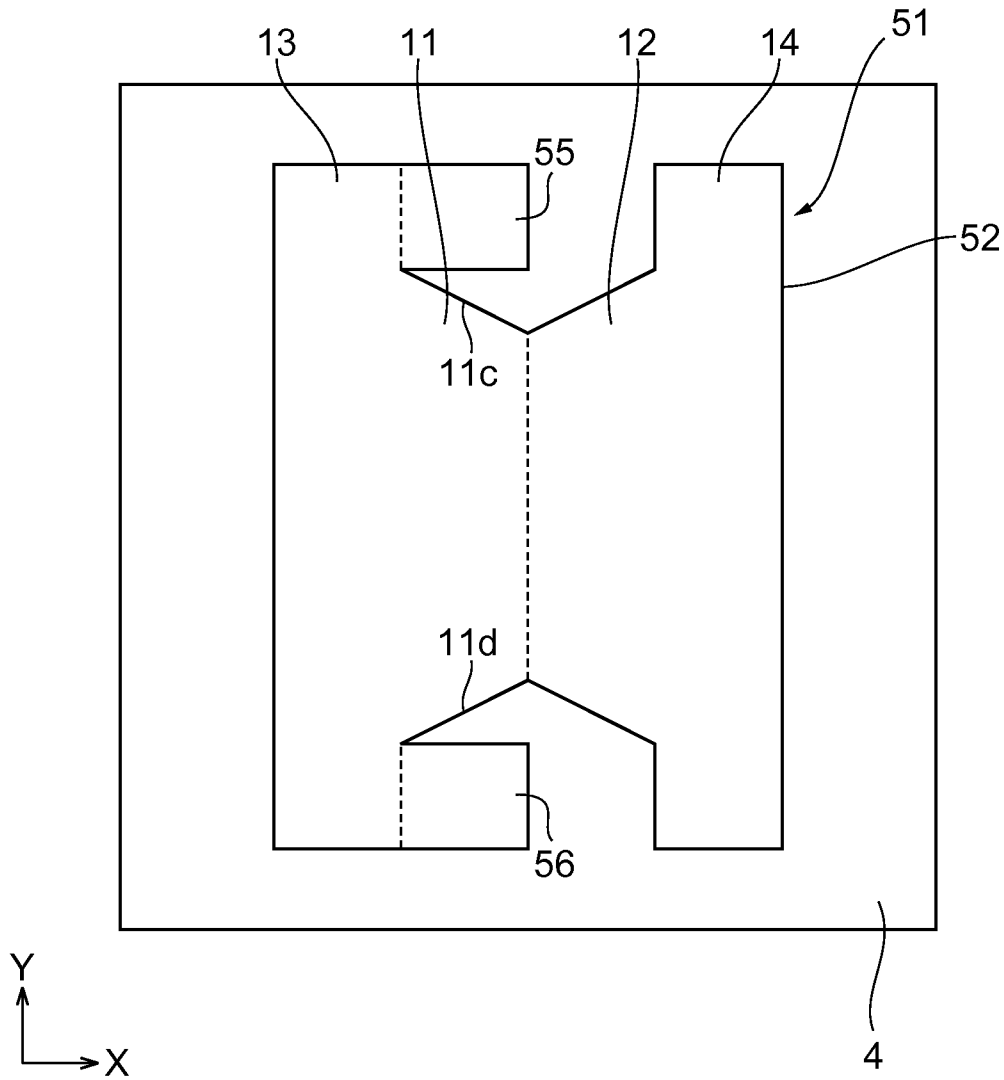

FIG. 14

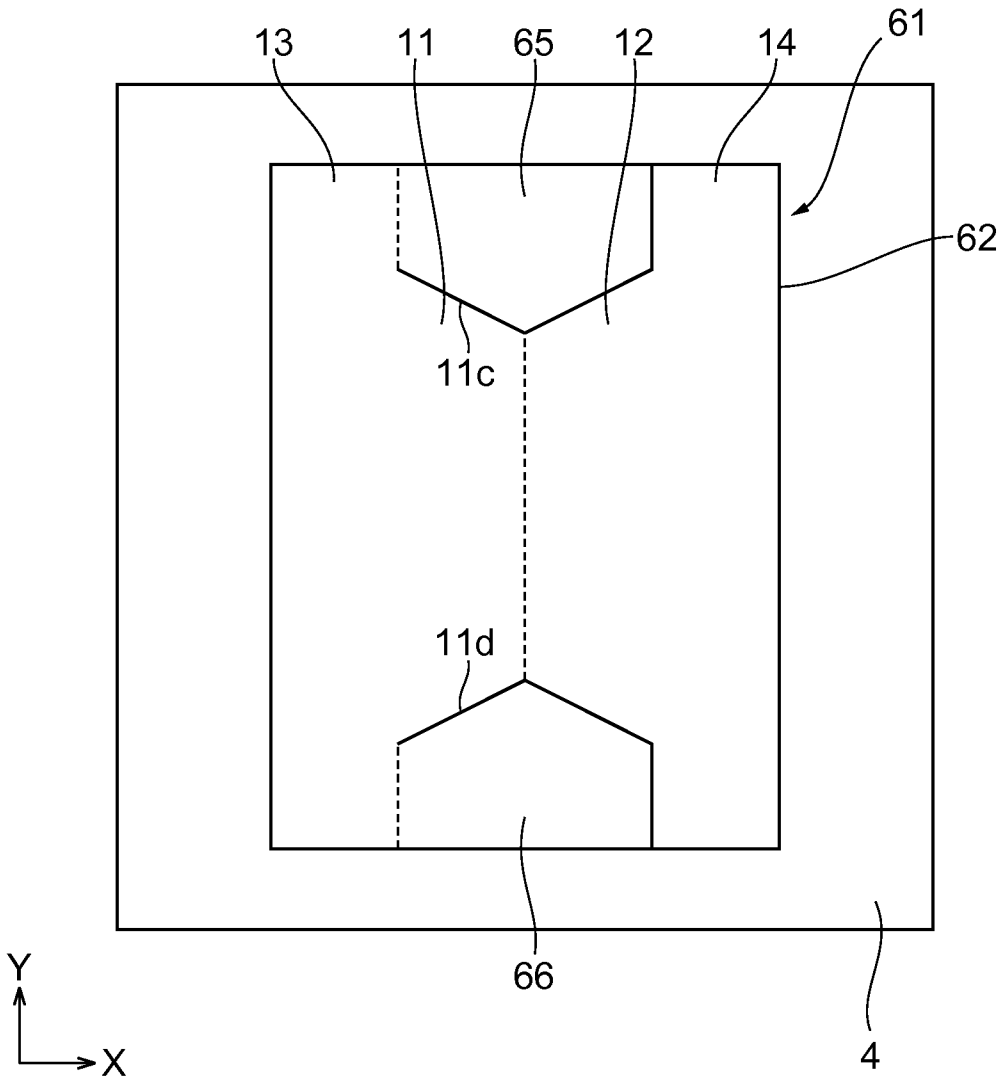

FIG. 15

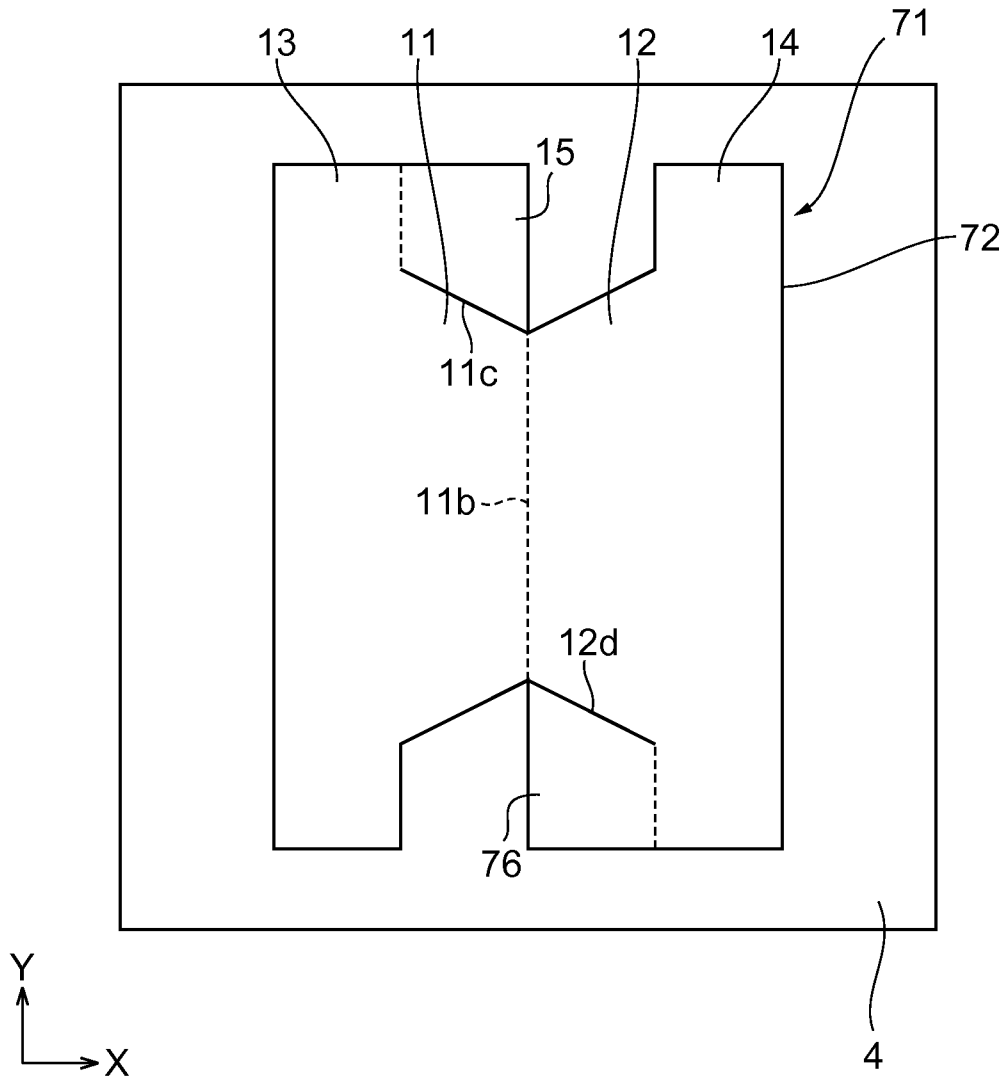

FIG. 16

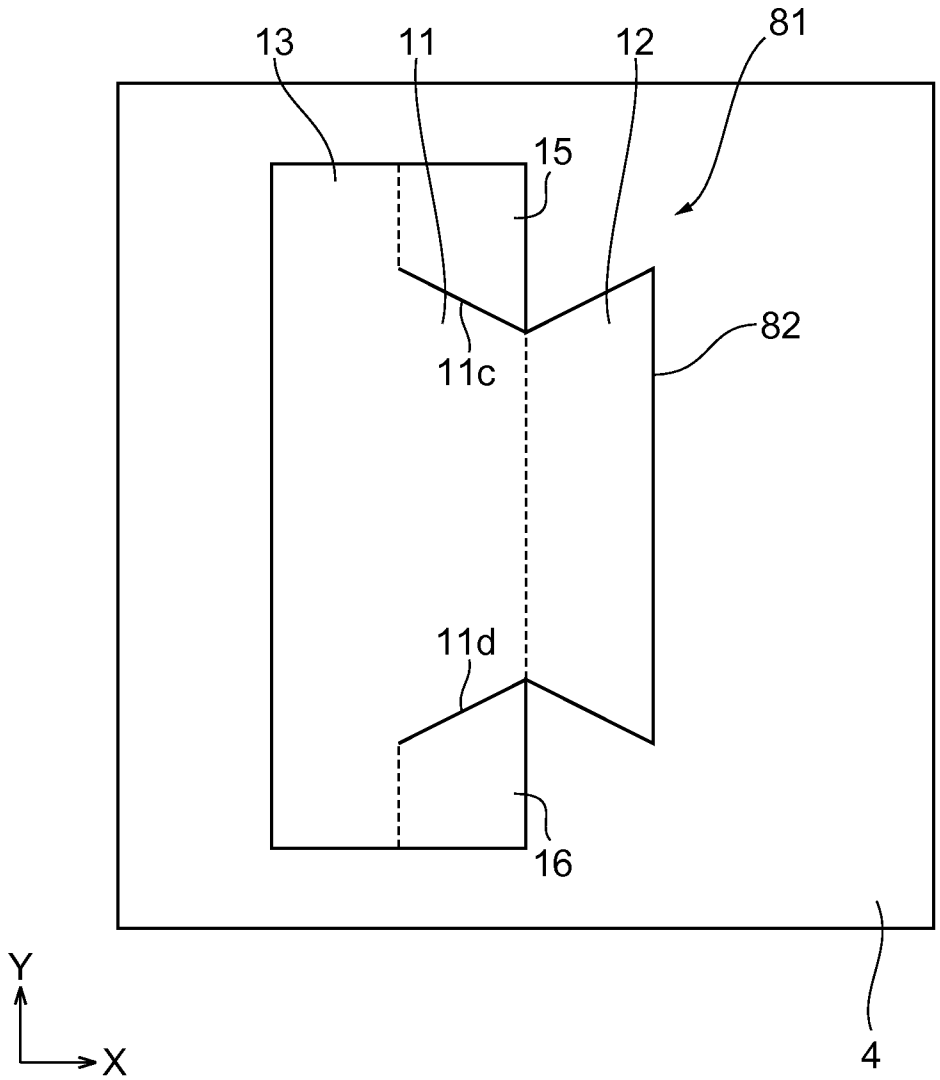

FIG. 17

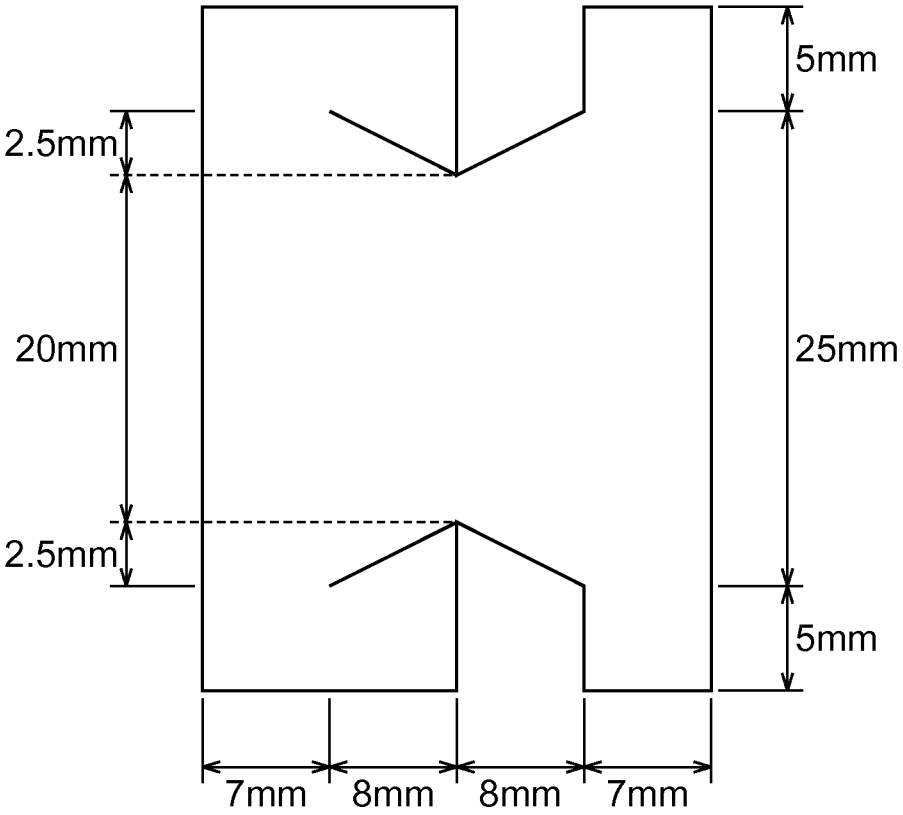

FIG. 18a

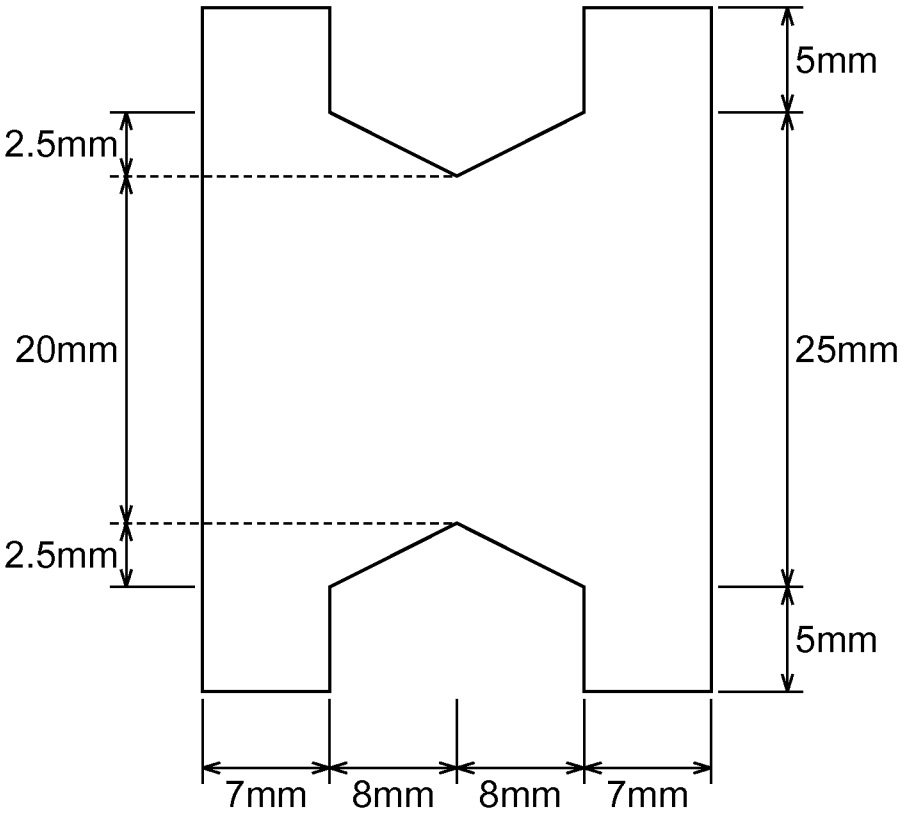

FIG. 18b

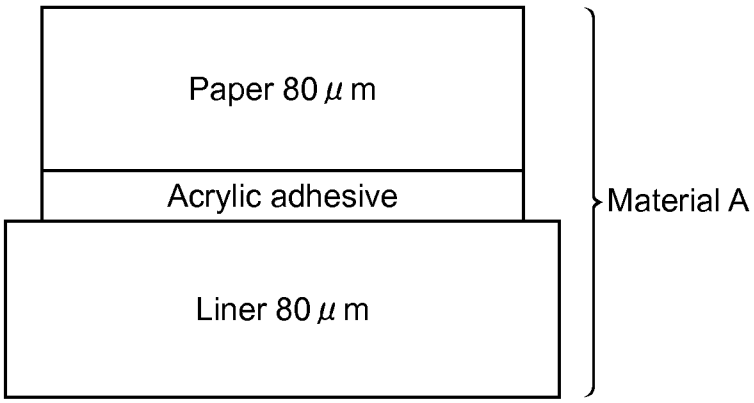

FIG. 19a

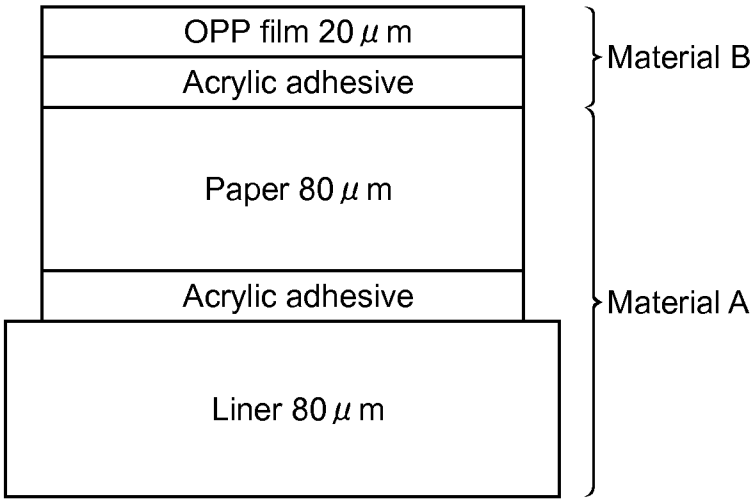

FIG. 19b

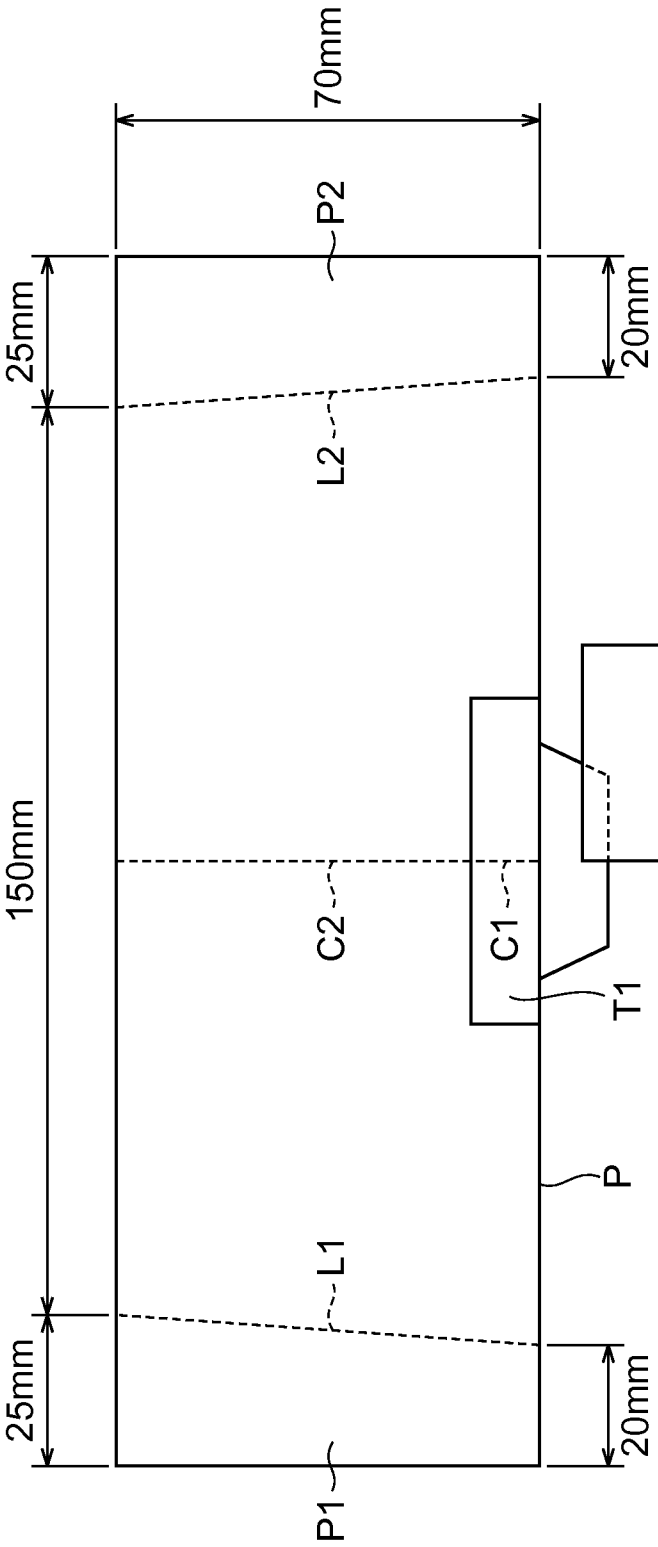

FIG. 20

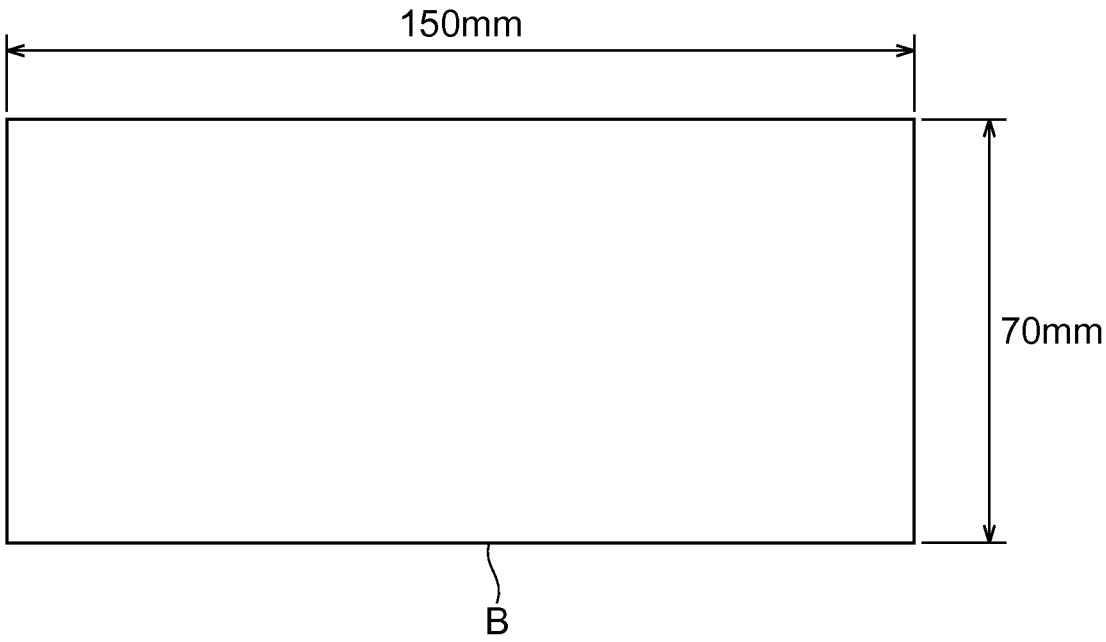

FIG. 21

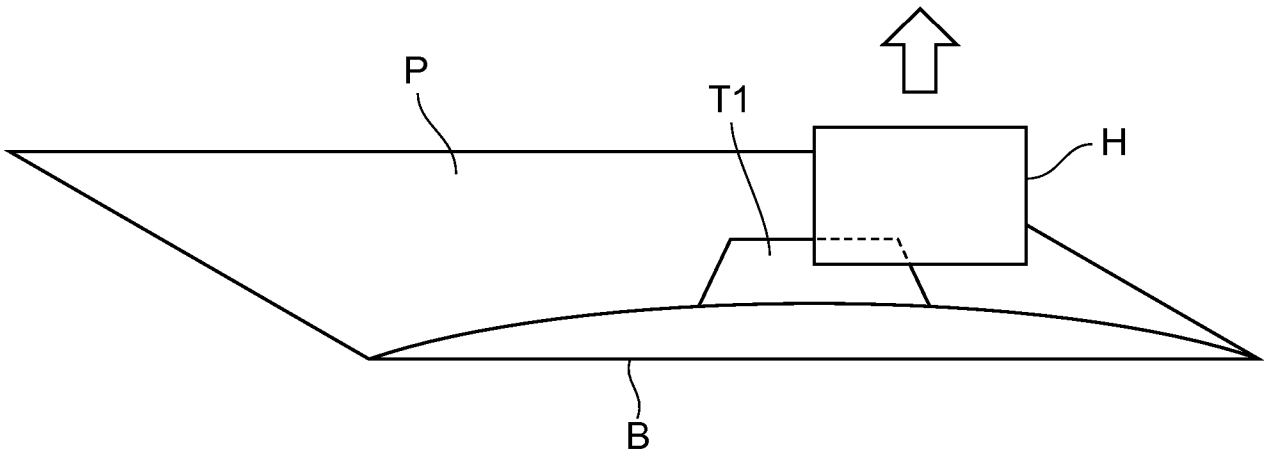

FIG. 22

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/044548

A. CLASSIFICATION OF SUBJECT MATTER
INV. B42F21/06
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B42F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96/12618 A1 (AVERY DENNISON CORP [US]) 2 May 1996 (1996-05-02) figures 9,12,13 page 18, line 35 - page 9, line 8 page 20, lines 9-37	1-10
X	WO 02/075253 A1 (AVERY DENNISON CORP [US]; YAMAMOTO NORMAN [US]; SATO JAY K [US]) 26 September 2002 (2002-09-26) Abstract; paragraph [0054]; figures 1,6,8,10,17,32 page 20, lines 9-37	1-10
X	US 4 019 759 A (STANTON BERNARD M) 26 April 1977 (1977-04-26) Abstract; figures 2-5 column 2, line 63 - column 3, line 53	1-10

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search	Date of mailing of the international search report
25 September 2012	08/10/2012

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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