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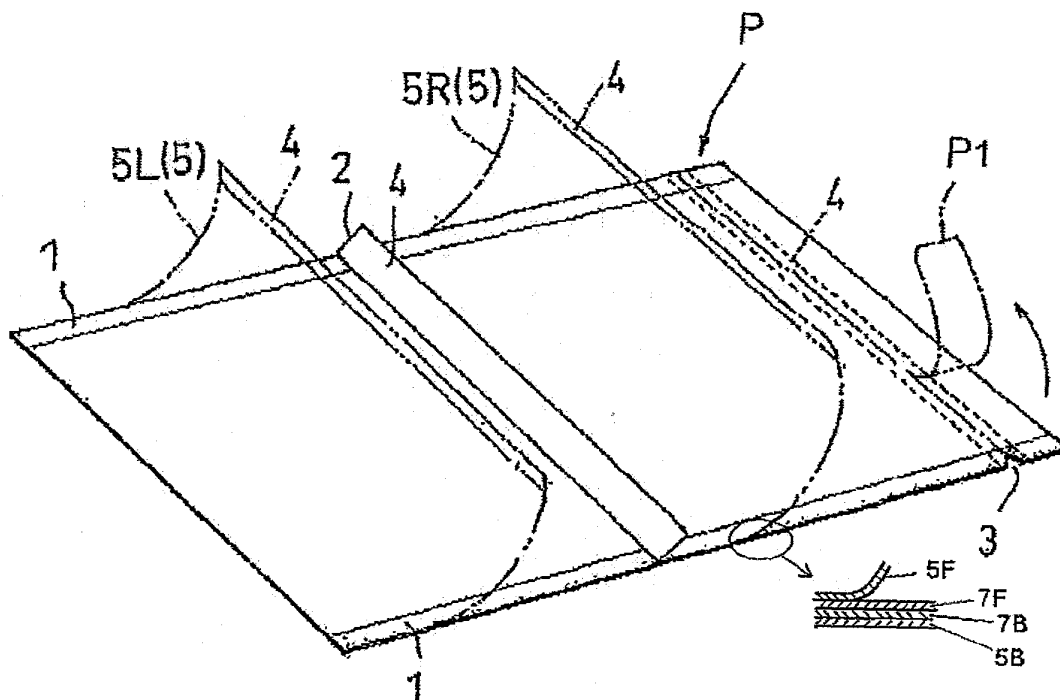
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(54) **Packing bag made of resin**

(57) A packaging bag (P) made of resin includes a bag-shaped film (5) made of resin and an easy-fracture part (3). The bag-shaped film (5) made of resin is a laminate film made of a front layer having an adhesive layer (8) and a resin (7) laminated thereon. The easy-fracture

part (3) is formed near an outer circumferential end of the bag-shaped film (5) made of resin. On the surface layer, a non-adhesive part (4) is formed toward a site of fracture from the easy-fracture part (3). Thus, the surface layer can be easily peeled off from this non-adhesive layer.

Fig. 3



Description

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The present invention relates to a packaging bag made of resin, and more particularly to a packaging bag made of resin that can store the remaining contents even after a part of the contents is taken out.

DESCRIPTION OF THE RELATED ART

[0002] A packaging bag made of a sealable film made of resin is widely used as a bag for packaging foods, bags for storing various small articles, and the like. In such a case, a packaging bag having a zipper-type mechanism in which the opening part can be easily closed with use of hands after the contents are stored has a high convenience because the performance of storing the remaining contents is good even after a part of the contents is taken out.

[0003] Such a packaging bag is disclosed, for example, in Japanese Patent Application Laid-Open (JP-A) No. 08-034 448. This packaging bag has a rectangular planar shape, and the surroundings are sealed except for the upper part. A convexo-concave zipper is provided on the front and back surfaces of the opening part in the upper part in the width direction. Also, a fracture line for tearing the bag off is formed on the outer circumferential side of the zipper. By breaking this fracture line part, the contents can be taken out via the zipper. After a part of the contents is taken out, the remaining contents can be stored as they are by closing the zipper.

[0004] However, with this system, a zipper must be provided in the bag, thereby necessitating an exclusive-use apparatus. This leads to increase in the production costs. The demand for cost reduction of the packaging bags is strong, so that appearance of a packaging bag being easily openable and closable with good storage property and manufacturable at a lower cost is demanded.

SUMMARY OF THE INVENTION

[0005] Therefore, an object of the present invention is to provide a packaging bag made of resin that can store the remaining contents even after a part of the contents is taken out, wherein the packaging bag is easily openable and closable without providing a zipper, has a storage property equal to that of a bag provided with a zipper, and can be manufactured at a low cost.

[0006] The characteristic construction of the packaging bag made of resin according to the present invention is a packaging bag made of resin comprising:

a bag-shaped film made of resin which is a laminate film made of a front layer having an adhesive layer

and a resin laminated thereon; and
an easy-fracture part formed near an outer circumferential end of the bag-shaped film made of resin,

5 wherein, on the surface layer, a non-adhesive part is formed toward a site of fracture from the easy-fracture part, whereby the surface layer can be easily peeled off from this non-adhesive layer.

[0007] And the other characteristic construction of the packaging bag made of resin according to the present invention is a packaging bag made of resin comprising:

10 a flexible bag-shaped film made of resin having a front layer and a back layer for storing an object in the bag-shaped film between the front layer and the back layer,

wherein the front layer is a laminate film comprised of a front outer layer, a front inner layer, and an adhesive applied on the front outer layer between the front outer layer and the front inner layer; the adhesive being such that the front outer layer is peelable from the front inner layer and re-adherable to a film,

15 wherein the bag-shaped film has an easy-fracture part formed near or at one outer periphery of the bag-shaped film for opening the bag-shaped film,

wherein the front outer layer has a non-adhesive part where the adhesive formed on the front outer layer is discontinued, the non-adhesive part being formed along the easy-fracture part and/or a rafter part of the bag-shaped film if any,

20 wherein the front outer layer can be peeled from the non-adhesive area after the easy-fracture part is opened, the remaining front inner layer and the corresponding back layer can be folded by placing the back layer front, and the front outer layer can re-adhere to the folded back layer.

[0008] With such constructions, the contents can be easily taken out by fracturing the packaging bag using the easy-fracture part as a starting point. Then, in closing the packaging bag, since the non-adhesive part is exposed at the fractured site, the remaining resin can be folded by peeling off the front layer from this non-adhesive part with use of hands and closing the opening part, and this folded site is covered with the front layer having an adhesive. In taking out the contents again, the opening part can be easily opened by peeling off the front layer. The resin film includes materials obtained by vapor deposition of aluminum on a resin film and materials obtained by laminating aluminum foil on a resin film in addition to those produced only from resin.

[0009] As a result of this, it has been made possible to provide a packaging bag made of resin that can store the remaining contents even after a part of the contents is taken out, wherein the packaging bag is easily openable and closable without providing a zipper, has a storage property equal to that of a bag provided with a zipper, and can be manufactured at a low cost.

[0010] It is preferable that a planar shape thereof is generally rectangular; peripheries of two long sides are sealed, and a rafter part is formed that is sealed from a generally central part of the two long sides in a direction intersecting the long sides; and the easy-fracture part is formed at the peripheries of the long sides near the end part.

[0011] The bonding site can be widened in closing the opening part again after the contents are taken out.

[0012] It is preferable that the non-adhesive layer is provided on a side of the rafter part where the easy-fracture part is not formed, whereby the front layer of the rafter part can be peeled off with use of hands.

[0013] The bonding site can be further widened in closing the opening part again after the contents are taken out.

[0014] It is preferable that a planar shape thereof is rectangular; and three sides thereof are sealed to form sealed peripheries, and only one of the short sides forms an opening part, and the easy-fracture part is formed near this opening part.

[0015] With this construction as well, the closure after opening can be easily carried out in the same manner as described above.

[0016] It is preferable that the adhesive is an adhesive that does not give adverse effects in terms of hygiene, and is applied to bond between the films.

[0017] With this construction, it is convenient especially when the contents are foods.

[0018] It is preferable that the adhesive is selected from the group consisting of various polysaccharides derived from natural products such as various cereal starches and galactomannan, proteins such as corn protein, albumin, and gelatin, natural gummy substances, shellac, glycerin, and mixtures obtained by blending these, or a solvent-based adhesive using an acrylic resin or vinyl acetate copolymer adhesive and a solvent such as ethyl acetate.

[0019] With this construction, it is convenient because the adhesive will have a suitable adhesive force and will not give adverse effects in terms of hygiene.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020]

Fig. 1 is a cross-sectional view illustrating a state in which contents are housed in a packaging bag made of resin according to one embodiment of the present invention;

Fig. 2 is an enlarged cross-sectional model view illustrating one example of the resin film constituting the packaging bag made of resin of Fig. 1;

Fig. 3 is a perspective view describing a method of closing the packaging bag made of resin of Fig. 1 and illustrating a state in which the film is peeled off using a non-adhesive part as a starting point;

Fig. 4 is a diagram schematically showing an adhesive layer formed on the resin film constituting the packaging bag made of resin of Fig. 1;

Fig. 5 is a perspective view describing a method of closing the packaging bag made of resin of Fig. 1;

Fig. 6 is a perspective view describing another method of closing the packaging bag made of resin of Fig. 1; and

Fig. 7 is a perspective view describing the closure of an opening part of a packaging bag made of resin according to another embodiment.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] Embodiments of a packaging bag made of resin according to the present invention will be described in detail with reference to the attached drawings.

[0022] Figs. 1 to 6 are views describing the use of a packaging bag made of resin according to embodiments of the present invention. This packaging bag P made of resin has an approximately rectangular planar shape, and has peripheries 1 that are thermally fused and sealed, whereby contents can be stored between the front and back surfaces of the film made of resin.

[0023] As shown in an enlarged cross-sectional structure of Fig. 2, the film made of resin is constructed with a laminate film or the like obtained by lamination of an OPP (biaxially extended polypropylene) film or a PET film 5 (front layer) having a thickness of about 10 to 50 μm and an LLDPE (linear low density polyethylene) film 7 subjected to aluminum vapor deposition having a thickness of about 30 to 50 μm with an aluminum vapor deposition surface 6 interposed therebetween.

[0024] On the back surface side of the OPP film or the PET film 5 (the side opposing the LLDPE film 7), printing may be carried out or an adhesive 8 may be applied at necessary sites. Nevertheless, an adhesive may be applied on the LLDPE film 7 side or may be applied on both of these.

[0025] In the present embodiment, the resin film to be used is not limited to the above-described ones, so that it may be a laminate film or the like having a three-layer structure in which a transparent OPP film or a PET film is disposed as an upper surface and an LLDPE film is disposed as a lower surface with a vapor-deposited PET film (VMPET) interposed therebetween.

[0026] A shielding layer such as a vinylidene chloride film having a high oxygen shielding property may be disposed at the central part of the laminate film. Among the two surfaces of the shielding layer, a nylon film having a good printing property may be laminated on the foremost surface side.

[0027] This packaging bag P made of resin can be produced by various known methods generally known in the art while being loaded with contents. As an automatic packaging machine, a Vertical Form, Fill and Seal Ma-

chine, a Horizontal Form, Fill and Seal Machine, or the like is suitable for use. According to the former, end parts (corresponding to a rafter part 2 in Fig. 1) of the resin shown in Fig. 2 are sealed so that the resin will have a tubular form with an interior 10, and then the lowermost part (corresponding to a lower periphery 1 in Fig. 3, for example) is sealed to provide a shape with a bottom, followed by putting the contents (M) therein.

[0028] After completion of putting the contents in, the upper end (corresponding to an upper periphery 1 in Fig. 3, for example) is sealed, and a generally central part of the sealed part is laterally cut with a cutter to separate a packaging bag made of resin of the lower half (e.g., Fig. 3) and, at the same time, to allow the upper half to have a bottom, and contents are put in.

[0029] By repeating such an operation, a packaging bag made of resin that packages contents can be produced automatically. For the latter, an automatic packaging machine such as a HIGH-SPEED HORIZONTAL FORM-FILL-SEAL MACHINE S-5000A manufactured by OMORI MACHINERY CO., LTD. can be used, for example.

[0030] As illustrated in Fig. 3, at the side peripheries of the long sides near the end part of one packaging bag P, a notch 3 is formed which is an easy-fracture part that facilitates fracture of the packaging bag P. By breaking a part of the packaging bag P using this notch 3 as a starting point, the contents can be taken out. The notch 3 may be formed near the outer circumferential end part.

[0031] Also, the shape of the notch 3 is not limited to the one shown in Fig. 3, and may be another shape. With this notch 3 interposed in between, a non-adhesive part 4 with no adhesive applied thereon is formed at the site that crosses the packaging bag (the site to be fractured).

[0032] The adhesive 8 applied on the front layer 5 must be such that peeling off can be carried out by pulling with use of hands using the non-adhesive part 4 as a starting point without the need for a particularly large adhesive strength. Then, it may be such that adhesion can be made repeatedly by pressing the peeled-off films again onto each other.

[0033] As such an adhesive, one can use edible adhesives such as various polysaccharides derived from natural products such as various cereal starches and galactomannan, proteins such as corn protein, albumin, and gelatin, natural gummy substances, shellac, glycerin, and mixtures obtained by suitably blending these. These are applied after being diluted with a denatured alcohol. When such an adhesive is used, the obtained packaging bag will be suitable as a bag for packaging foods.

[0034] The method of applying the adhesive is not particularly limited, so that various bonding techniques that are conventionally known in the art can be applied.

[0035] Generally in the formation of the adhesive layer 9 applying the adhesive 8, the adhesive 8 is applied wholly on the surface. But adhesion and peeling-off of the front layer 5 of the packaging bag P in the present invention are carried repeatedly, so it is preferable that the

front layer 5 has many non-adhesive parts 8a and such as the adhesive parts 8b forming the pattern illustrated in Fig 4(A) or Fig. 4(B), or the combination of those patterns, or the combination of those patterns and non-adhesive parts 8c illustrated in Fig 4(C).

[0036] After the adhesion of the front layer 5 having the adhesive layer 9 above described to other films, the peeling-off and re-adhesion of the front layer 5 is easy. Then after packing the contents to the packaging bag P, the peeled section can be easily opened or shut by the hand.

[0037] Fig 4(A) shows the pattern applied the adhesive 8 fragmentarily in the straight or curved shape. The strength of adhesion and peeling-off is controlled by the ratio of non-adhesive parts 8a and adhesive parts 8b and the direction of adhesive parts 8b.

[0038] Fig 4(B) shows the pattern applied the adhesive 8 continually with form of spline. It has the same function as that of the pattern applied the adhesive 8 fragmentarily above described, and can get the higher strength.

[0039] Fig 4(C) shows the pattern having the combination of those patterns and the non-adhesive parts 8c between those patterns. Non-adhesion part 8c leads to the peeling-off and can secure desired joining strength in each layer.

[0040] In addition, the adhesive 8 can be not harden at the use temperature by the composition, and then adhesion and peeling-off become easy. Furthermore, the adhesion strength or peeling-off strength can be formed freely by diluting the adhesive 8. The packing bag P of the present invention is superior that the formation of adhesion layer 9 in the outer layer 5R can be set by such processing or the combination of those freely.

[0041] When the whole or a part of the contents M are to be taken out from the packaging bag P that stores the contents, a narrow strip (shown in a virtual line) P1 is broken while being pulled with hands generally in parallel to the short sides using the notch 3 shown in Fig. 3 as a starting point while the packaging bag P on the side containing the contents is pressed down with a hand after the contents M are moved to the side opposite to the position of the notch 3. Here, the front layer 5R in Fig. 3 shows a state of being peeled off with hands for closing again after being already broken.

[0042] Fig. 3 also shows an enlarged view of the peeled portion. A front film is comprised of a front outer layer 5F and a front inner layer 7F (the other layers shown in Fig. 2 are omitted), and a back film is comprised of a back outer layer 5B and a back inner layer 7B (the other layers shown in Fig. 2 are omitted). The front inner layer 7F and the back inner layer 7B are sealed at their peripheries. The front outer layer 5F is separated from the front inner layer 7F.

[0043] In storing the remaining contents in the packaging bag P after a part of the contents is taken out, the opening part is closed again. The method is such that the front layer 5R is peeled off with hands as illustrated in Fig. 3. Since the broken part is the non-adhesive part

4, the front layer 5R can be easily peeled off with hands.

[0044] Subsequently, as illustrated in Fig. 5, the short side of the broken and open packaging bag P (7F, 7B, and 5B in the enlarged view of the peeled section) is folded so as to insert it between the peeled front layer 5R (5F in the enlarged view of the peeled section) and the LLDPE film 7 (7F in the enlarged view of the peeled section), and the front layer 5R is folded toward the back surface side of the packaging bag P so as to cover it from above and pressed onto the back surface of the packaging bag P for bonding and closing.

[0045] When a part of the contents M is to be taken out again from the packaging bag P, the above-described operation is repeatedly carried out. By doing so, the packaging bag can be easily opened and closed without providing a zipper in the packaging bag, so that the contents can be stored in a good condition.

Modified Example

[0046] In order to increase the adhesion strength, the adhesion area may be further increased. Namely, as illustrated in Fig. 6, the folded part on the short sides of the packaging bag P that has been opened by being broken is enlarged to increase the adhesion area. In this case, as illustrated in Fig. 3, the rafter part 2 on the side where the notch 3 is not formed is made as a non-adhesive part 4, and the front layer 5L is peeled off from the rafter part 2 with hands.

[0047] Then, the short side of the packaging bag P that has been opened by being broken (the front layer 5R is not peeled) is folded so as to be inserted between the peeled front layer 5L and the LLDPE film 7. Then, the front layer 5L is folded toward the back surface side of the packaging bag P so as to cover it from above, and is pressed onto the back surface of the packaging bag P for bonding and closing. By doing so, the adhesion area can be further widened, and the sealing strength at the time of closing again can be increased.

Another Embodiment

[0048]

(1) In the above embodiment, an example of a packaging bag P made of resin and provided with a rafter part 2 has been shown. However, in place of this, the packaging bag may be constructed as shown in Fig. 7.

Fig. 7 (contents are not illustrated) shows a packaging bag P10 made of resin in which three sides are sealed by thermal fusion in advance to form sealed peripheries 1, and only one of the short sides forms an opening part. The opening part is sealed along the periphery 1' by a method such as thermal fusion after the contents are inserted.

The packaging bag P10 made of resin is the same as the packaging bag P made of resin according to

the above embodiment in that the resin film used therein is a film having a structure similar to the one shown above, and a notch 3 is formed near the opening part. With this construction as well, taking the contents out and closing the opening part again can be carried out without providing a zipper in the packaging bag in the same manner as shown in Figs. 3 and 5.

(2) As the adhesive, what is known as a solvent-based adhesive using, for example, an acrylic resin or vinyl acetate copolymer adhesive and a solvent such as ethyl acetate may be used in addition to the aforementioned edible adhesives.

(3) In the above embodiment, an example has been shown in which the packaging bag made of resin has a rectangular planar shape; however, the present invention is not limited to this alone, so that the planar shape of the packaging bag may have a shape such as a square, an ellipse, or a circle. In such a case as well, it is preferable that the easy-fracture part is provided near the outer circumferential end part.

Claims

1. A packaging bag made of resin comprising:

- a bag-shaped film (5) made of resin which is a laminate film made of a front layer having an adhesive layer (8, 9) and a resin (7) laminated thereon; and
- an easy-fracture part (3) formed near an outer circumferential end of the bag-shaped film (5) made of resin,
- wherein, on the surface layer, a non-adhesive part (4) is formed toward a site of fracture from the easy-fracture part (3), whereby the surface layer can be easily peeled off from this non-adhesive layer.

2. A packaging bag comprising:

- a flexible bag-shaped film (5) made of resin having a front layer and a back layer for storing an object (M) in the bag-shaped film (5) between the front layer and the back layer,
- wherein the front layer (5) is a laminate film comprised of a front outer layer (5F), a front inner layer (7F), and an adhesive (8) applied on the front outer layer (5F) between the front outer layer (5F) and the front inner layer (7F); the adhesive (8) being such that the front outer layer (5F) is peelable from the front inner layer (7F) and re-adherable to a film,
- wherein the bag-shaped film (5) has an easy-fracture part (3) formed near or at one outer periphery of the bag-shaped film (5) for opening the bag-shaped film (5),

- wherein the front outer layer (5F) has a non-adhesive part (4, 8c) where the adhesive (8b) formed on the front outer layer (5F) is discontinued, the non-adhesive part (4, 8c) being formed along the easy-fracture part (3) and/or a rafter part (2) of the bag-shaped film if any, 5

wherein the front outer layer (5F) can be peeled from the non-adhesive area (4) after the easy-fracture part (3) is opened, the remaining front inner layer and the corresponding back layer can be folded by placing the back layer front, and the front outer layer can re-adhere to the folded back layer. 10

3. The packaging bag made of resin according to Claim 1 or 2, wherein a planar shape thereof is generally rectangular; wherein peripheries (1) of two long sides are sealed, and a rafter part (2) is formed that is sealed from a generally central part of the two long sides in a direction intersecting the long sides; and wherein the easy-fracture part (3) is formed at the peripheries of the long sides near the end part. 15 20 25

4. The packaging bag made of resin according to Claim 3, wherein the non-adhesive layer (8c) is provided on a side of the rafter part (2) where the easy-fracture part (3) is not formed, whereby the front layer of the rafter part (2) can be peeled off with use of hands. 30

5. The packaging bag made of resin according to Claim 1 or 2, wherein a planar shape thereof is rectangular; and wherein three sides thereof are sealed to form sealed peripheries, and only one of the short sides forms an opening part, and the easy-fracture part (3) is formed near this opening part. 35 40

6. The packaging bag made of resin according to Claim 1 or 2, wherein the adhesive is an adhesive that does not give adverse effects in terms of hygiene, and is applied to bond between the films. 45

7. The packaging bag made of resin according to Claim 6, wherein the adhesive (8) is selected from the group consisting of various polysaccharides derived from natural products such as various cereal starches and galactomannan, proteins such as corn protein, albumin, and gelatin, natural gummy substances, shellac, glycerin, and mixtures obtained by blending these, or a solvent-based adhesive using an acrylic resin or vinyl acetate copolymer adhesive and a solvent such as ethyl acetate. 50 55

Fig.1

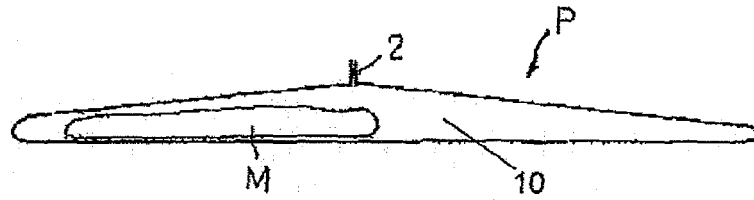


Fig.2

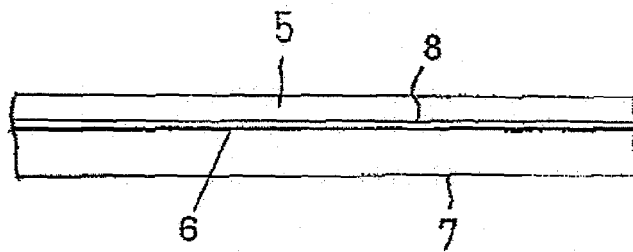


Fig.3

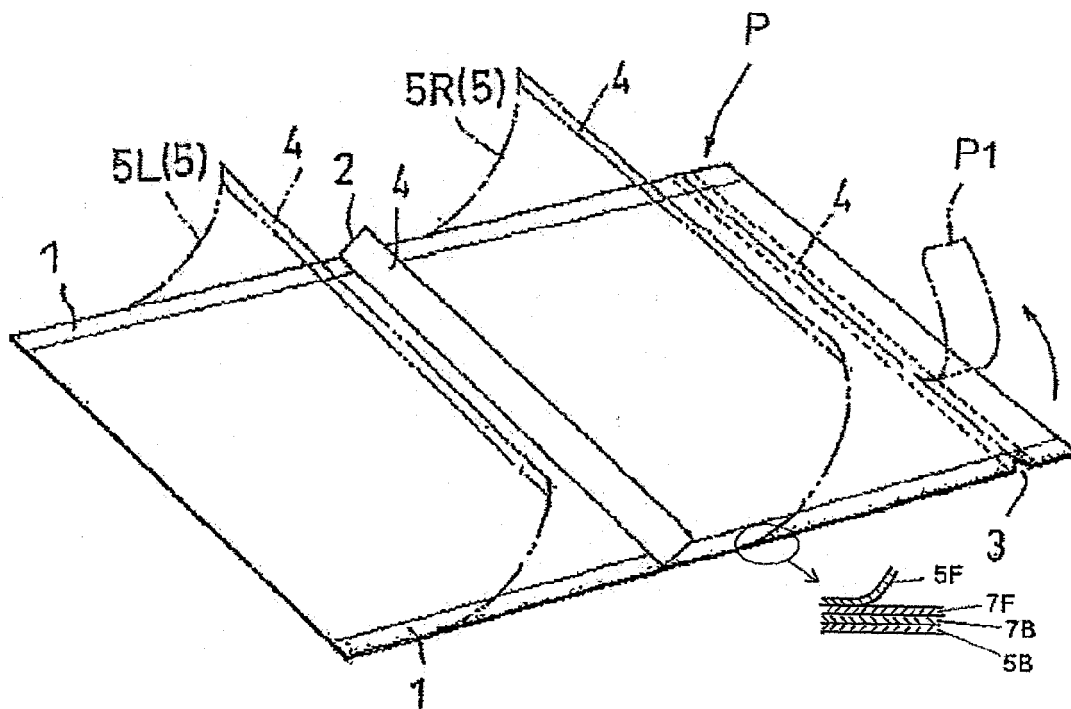


Fig.4

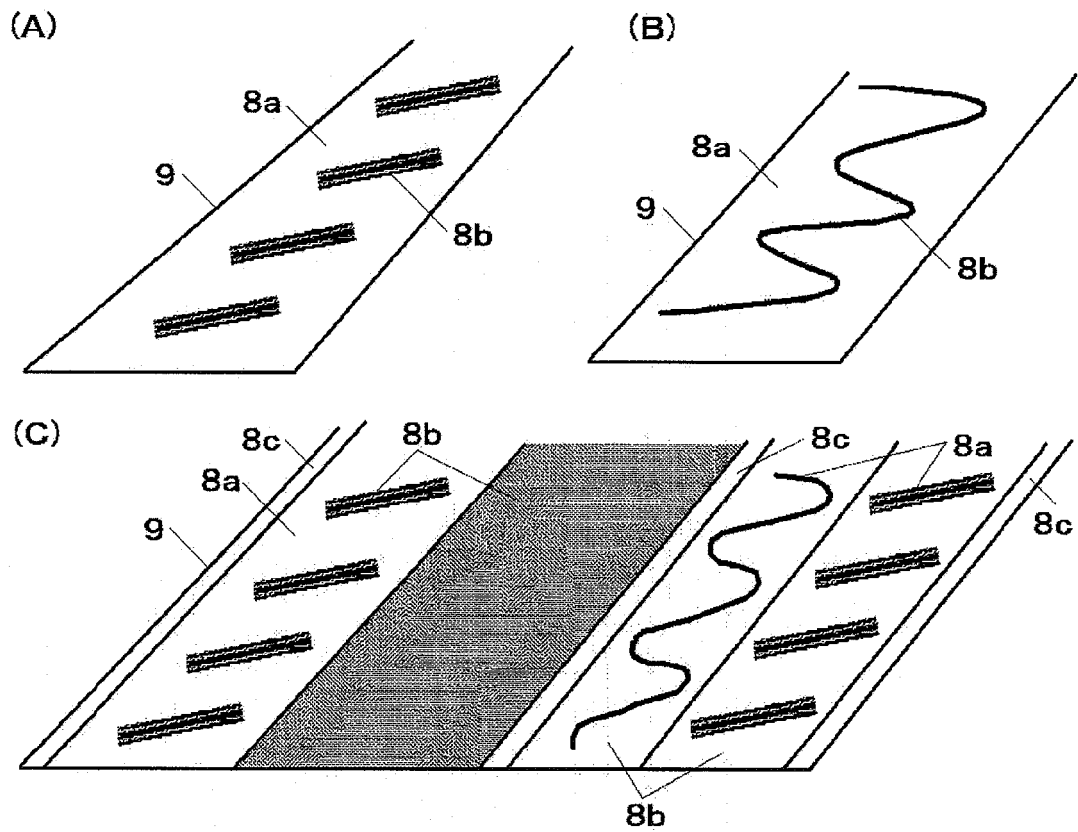


Fig.5

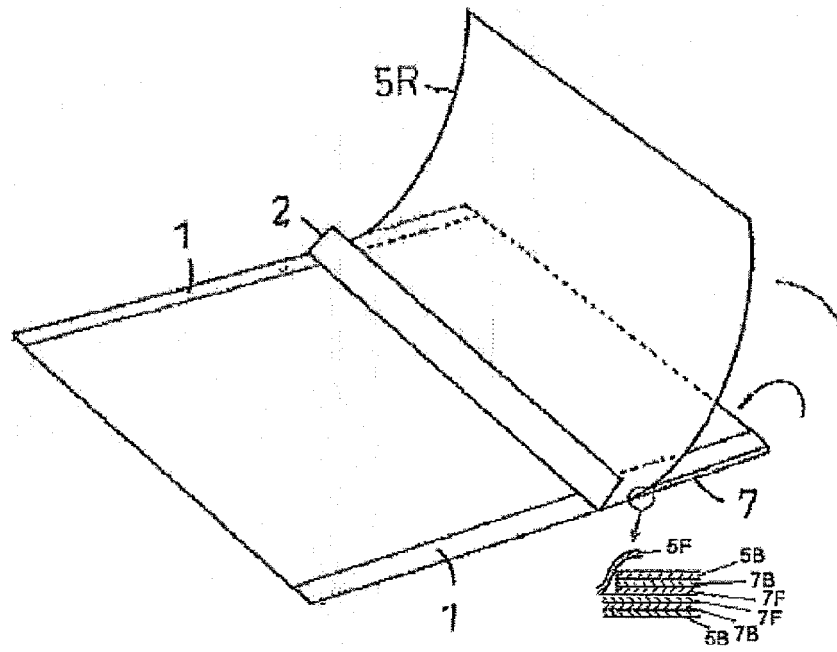


Fig.6

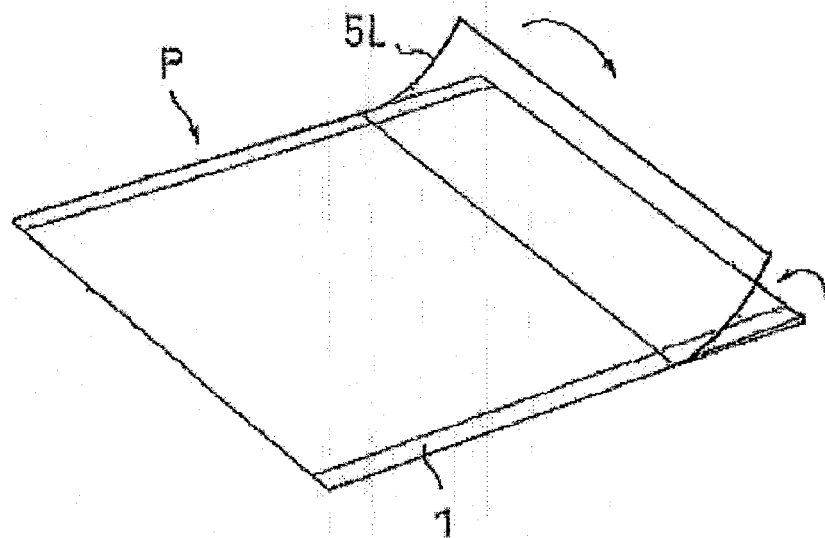
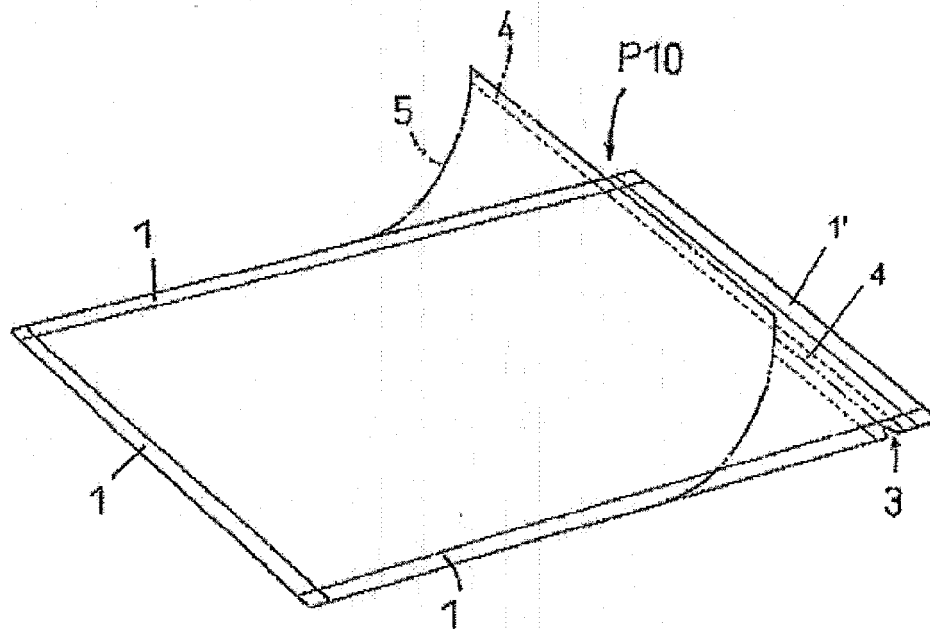


Fig.7





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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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