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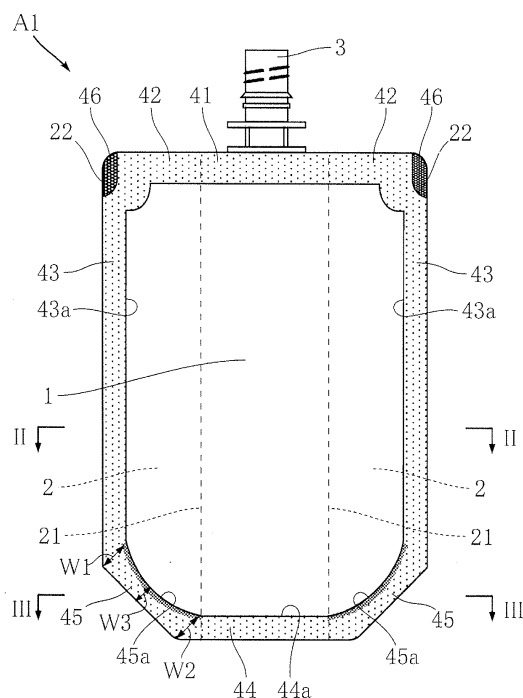
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(54) **POUCH CONTAINER PACKAGING AND POUCH CONTAINER**

(57) A pouch container and a pouch container packaging are provided, which effectively prevents oblique seals from turning back, thereby reducing the risk of leakage of the contents from the pouch container. The pouch container packaging A1 includes a pair of outer films 1 disposed on the front and the back side with a spout 3 sandwiched at the top. The outer films each have side edges, a bottom edge and oblique edges lying between the side edges and the bottom edge. A pair of gusset films 2 are disposed in a folded state between the outer films 1 and each have side edges and oblique edges. Side seals 43 are provided by joining the side edges of the outer films 1 to the side edges of the gusset films 2. A bottom seal 44 is provided by joining the outer films 1 along their bottom edges. Oblique seals 45 are provided by joining the oblique edges of the outer films 1 to the oblique edges of the gusset films 2. At least a portion of an inner edge 45a of each oblique seal 45 is curved.

FIG. 1



Description

TECHNICAL FIELD

[0001] The present invention relates to a pouch container packaging and also to a pouch container.

BACKGROUND ART

[0002] Pouch containers are commonly used as containers for beverages such as sports drinks and for foods such as ice cream and jelly. Patent Document 1 discloses an example of a conventional pouch container. Fig. 13 shows a packaging for producing a pouch container disclosed in Patent Document 1. The packaging X shown in the figure includes a pair of outer films 91, a pair of gusset films 92, and a spout 93. The pair of outer films 91 are disposed on the front and the back. The pair of gusset films 92 are each located in a folded state between the pair of outer films 91.

[0003] To be able to hermetically hold substances, such as beverages and foods mentioned above, the packaging X has a top-edge central seal 94, top-edge side seals 95, side seals 96, a bottom seal 97, and oblique seals 98. The top-edge central seal 94 is formed by joining the pair of outer films 91 along the top edges with the spout 93 sandwiched between portions of the top edges. The top-edge side seals 95 are formed by joining the pair of outer films 91 to the pair of gusset films 92 along the top edges. The side seals 96 are formed by joining the pair of outer films 91 to the pair of gusset films 92 along the side edges. The bottom seal 97 is formed by joining the pair of outer films 91 along the respective bottom edges. The oblique seals 98 are formed by joining the pair of outer films 91 to the pair of gusset films 92 along the oblique edges. The packaging X is such that an inner edge 96a of each side seal 96, an inner edge 97a of the bottom seal 97, and an inner edge 98a of each oblique seal 98 are substantially parallel to their outer edges and are straight throughout their length.

[0004] A method for producing a pouch container using a packaging X may include a leak testing step to check for leakage prior to a step of filling with an above-mentioned substance. In the leak testing step, a nozzle Nz shown in Fig. 13 is inserted into the spout 3, for example. Next, as shown in Fig. 14, air for example is blown in through the nozzle Nz instantaneously within a short period of time (two seconds or so). Fig. 14 shows the state where the packaging X starts to inflate with the air blown in. With completion of the air blowing, the packaging X is fully inflated as shown in Fig. 15. The packaging X in this state is checked for air leakage. Only if no leakage is detected, the packaging X is filled with the substance.

[0005] Unfortunately, the leak testing step may cause an oblique seal 98 to be turned back as shown in Fig. 15. For the convenience of clarity in the figure, portions of the oblique seals 98 are shaded to indicate part of the outer films 91, whereas portions of the oblique seal 98 are left unshaded to indicate part of the gusset films 92. Among the four oblique seals 98 shown in the figure, the oblique seal 98 at the lower left is turned back so that the portion being part of the gusset film 92 is exposed on the bottom. As a result that the oblique seal 98 is turned back, the bottom seal 97 is raised.

[0006] After completion of the leak testing step, the interior space of the packaging X is evacuated and thus the packaging X becomes flat again. Subsequently, the step of filling the packaging with the substance is performed. An edge once turned back in the leak testing step has a crease that remains even after the packaging is flat again. As such, it often happens that the edge is unintentionally turned back again during the filling step. A pouch container having such a turned back edge involves a risk of unintentional stress applied to the bottom during, for example, a transportation step, and a consequent risk of leakage. This may undesirably result in leakage of the substance from a pouch container X despite that the pouch container is produced by using the packaging X determined to be leakage free in the leak testing step.

REFERENCE LIST

Patent Document

[0007] Patent Document 1: JP-A-2000-344252

SUMMARY

Problem to be Solved by Invention:

[0008] The present invention has been conceived in view of the above circumstances and aims to provide a packaging for a pouch container as well as a pouch container capable of effectively preventing an oblique edge from turning back and reducing the risk of leakage of the substance from the pouch container. Solution to Problem:

[0009] According to a first aspect of the present invention, there is provided a packaging for a pouch container, which

includes: a pair of outer films disposed on a front side and a back side with a filling-and-pouring member sandwiched at a top, where the outer films each have side edges, a bottom edge and oblique edges lying between the side edges and the bottom edge; and

a pair of gusset films each disposed in a folded state between the outer films and having side edges and oblique edges.

The side edges of the outer films and the side edges of the gusset films are joined to provide side seals, the bottom edges of the respective outer films are joined to provide a bottom seal, and the oblique edges of the outer films and the oblique edges of the gusset films are joined to provide oblique seals. The oblique seals each have an inner edge at least a part of which is curved.

[0010] According to a preferred embodiment of the present invention, each oblique seal has a narrow-width portion that is narrower in width than ends of the oblique seal.

[0011] According to a preferred embodiment of the present invention, the inner edge of each oblique seal has a curved portion continuous with an inner edge of a side seal.

[0012] According to a preferred embodiment of the present invention, the inner edge of each oblique seal has a curved portion continuous with an inner edge of the bottom seal.

[0013] According to a preferred embodiment of the present invention, the entirety of the inner edge of each oblique seal is curved.

[0014] According to a second aspect of the present invention, there is provided a pouch container that includes a packaging according to the first aspect of the invention; and a substance contained in the packaging.

Advantages of Invention:

[0015] According to the present invention, at least a portion of the inner edge of each oblique seal is curved. With this arrangement, the stress on the oblique seal along the entire length of the inner edge is not uniform in the longitudinal direction but varies gradually in accordance with the shape of the curve. This serves to prevent the stress on the inner edge of the oblique seal from being rapidly concentrated at the end connected to an end of the side seal and at the end connected to an end of the bottom seal, ensuring the stress to be distributed. Consequently, the oblique seals are prevented from turning back and the bottom seal is prevented from rising. Therefore, a pouch container produced by using the packaging can significantly reduce the risk of leakage of the substance as compared with a conventional pouch container.

[0016] Other features and advantages of the present invention will become more apparent from detailed description given below with reference to the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0017]

Fig. 1 is a front view of a packaging according to a first embodiment of the present invention.

Fig. 2 is a sectional view taken along line II-II of Fig. 1.

Fig. 3 is a sectional view taken along line III-III of Fig. 1.

Fig. 4 is a perspective view illustrating a leak testing step in a method for producing a pouch container from the packaging of Fig. 1.

Fig. 5 is a perspective view illustrating the leak testing step in the method for producing the pouch container from the packaging of Fig. 1.

Fig. 6 is a perspective view of an example of a pouch container including the packaging of Fig. 1.

Fig. 7 is a sectional view taken along line VII-VII of Fig. 6.

Fig. 8 is a partial front view of a packaging according to a second embodiment of the present invention.

Fig. 9 is a partial front view of a packaging according to a third embodiment of the present invention.

Fig. 10 is a partial front view of a packaging according to a fourth embodiment of the present invention.

Fig. 11 is a partial front view of a packaging according to a fifth embodiment of the present invention.

Fig. 12(a)-(d) is partial front views of packagings of comparative examples.

Fig. 13 is a perspective view illustrating an example of a method for producing a pouch container using a conventional packaging.

Fig. 14 is a perspective view illustrating an example of the method for producing the pouch container using the conventional packaging.

Fig. 15 is a perspective view illustrating an example of the method for producing the pouch container using the conventional packaging.

MODE FOR CARRYING OUT INVENTION

[0018] Preferred embodiments of the present invention are described below with reference to the accompanying drawings. In the description, the front of a pouch container is toward a customer when the pouch container holding the contents is placed to stand upright on a store shelf. Further, the back of the pouch container is opposite to the front, the sides are in the right and left directions, the top is in a vertically upward direction, and the bottom is in a vertically downward direction. An outer surface of each film of a pouch container refers to a surface exposed to the outside, and an inner surface refers to the opposite surface. In addition, an up-and-down direction refers to the vertical direction of the pouch container standing upright, and a width direction refers to the right-and-left direction.

[0019] Figs. 1 to 3 show a packaging for a pouch container according to a first embodiment of the present invention. The packaging A1 of the present embodiment is formed from a pair of outer films 1, a pair of gusset films 2, and a spout 3 so as to have a top-edge central seal 41, four top-edge side seals 42, four side seals 43, a bottom seal 44, and four oblique seals 45. Fig. 1 is a front view of the packaging A1, Fig. 2 is a sectional view taken along line II-II of Fig. 1, and Fig. 3 is a sectional view taken along line III-III of Fig. 1.

[0020] The pair of outer films 1 are disposed on the front and the back to sandwich the spout 3 at the top. Each outer film 1 according to the present embodiment is generally hexagonal as seen from the front and has a top edge that extends in the width direction at the top, two side edges that are spaced apart in the width direction and extend in the up-and-down direction, a bottom edge that extends in the width direction at the bottom, and two oblique edges each connecting the lower end of a side edge to the upper end of a bottom edge.

[0021] The pair of gusset films 2 are each located between the pair of outer films 1 in a state folded along a fold line 21. Each gusset film 2 has a top edge, two side edges, and two oblique edges and is generally pentagonal when unfolded. In addition, the gusset film 2 has cutaway portions 22 at either end of the top edge.

[0022] The pair of outer films 1 and the pair of gusset films 2 are typically formed from resin films. The resin films are required to have properties expected for a packaging material, including impact resistance, abrasion resistance, and heat resistance. Typically, the seals described above are formed by heat sealing, and thus the sheets are required to have heat sealing properties suitable for that. Appropriate sheets include a multilayer sheet of a base-film layer and a sealant layer that imparts the heat sealing properties. In a case where high gas impermeability and light-shielding characteristics are required, an appropriate multilayer sheet may be provided with a barrier layer between the base-film layer and the sealant layer. Alternatively, the base-film layer per se may be imparted with barrier characteristics. In this case, the barrier layer acts as the base-film layer, and thus the multilayer sheet includes the barrier layer and the sealant layer.

[0023] The following lists examples of component materials of the base-film layer, sealant layer, and gas barrier layer.

[0024] These layers can be stacked through a conventional lamination technique, examples of which include co-extrusion lamination, dry lamination with adhesive, thermal lamination of thermally bonding layers via a heat-sensitive adhesive layer sandwiched in between.

[0025] Examples of the base-film layer include single- and multi-layer films, either oriented or non-oriented, made from polyester (such as, polyethylene terephthalate (PET), polyethylene naphthalate (PEN), polybutylene terephthalate (PBT), and polycarbonate (PC)), polyolefin (such as polyethylene (PE) and polypropylene (PP)), polyamide (such as Nylon-6 and Nylon-66), polyacrylonitrile (PAN), polyimide (PI), polyvinyl chloride (PVC), polyvinylidene chloride (PVDC), polymethyl methacrylate (PMMA), and polyethersulfone (PES).

[0026] Examples of the sealant layer include single- and multi-layer films, either oriented or non-oriented, made from low-density polyethylene (LDPE), linear low-density polyethylene (LLDPE), ethylene-propylene copolymer (EP), cast polypropylene (CPP), bi-axially oriented nylon (ON), ethylene-olefin copolymer, ethylene acrylic acid (EAA) copolymer, ethylene-methyl methacrylate (EMMA) copolymer, and ethylene-vinyl acetate (EVA) copolymer.

[0027] Examples of the gas barrier layer include: a thin film of metal such as aluminum; or a film of resin such as polyvinylidene chloride (PVDC), ethylene vinyl alcohol (EVOH) copolymer and any synthetic resin (which may be the base-film layer), each film of resin having a deposited (or sputtered) layer of aluminum or inorganic oxide such as aluminum oxide or silica.

[0028] The outer films 1 or the gusset films 2 may be provided with a print layer (not shown) for printing of information related to the substance, including the product name, raw materials, and product description, such as precautions for use, in addition to various patterns and designs. In one example, the print layer may be provided on the inner surface of the base-film layer by a known method such as gravure printing.

[0029] The top-edge central seal 41 is formed by heat sealing to join the pair of outer films 1 centrally along the top edges. The top-edge central seal 41 is located between the pair of gusset films 2. In the present embodiment, the spout 3 is sandwiched at the center of the top-edge central seal 41. The top edges of the pair of outer films 1 and the spout 3 are hermetically joined by, for example, heat sealing.

[0030] Each top-edge side seal 42 is formed by heat sealing to join a side end of the top edge of an outer film 1 to a side end of the top edge of a gusset film 2. In the present embodiment, the pair of outer films 1 and the pair of gusset

films 2 form four top-edge side seals 42 in total.

[0031] Each side seal 43 is formed by heat sealing to join a side edge of an outer film 1 to a side edge of a gusset film 2 and extends in the up-and-down direction. In the present embodiment, the pair of outer films 1 and the pair of gusset films 2 form four side seals 43 in total.

[0032] The bottom seal 44 is formed by heat sealing to join the pair of outer films 1 along the respective bottom edges and extends in the width direction. The bottom seal 44 is located between the pair of gusset film 2.

[0033] Each oblique seal 45 is formed by heat sealing to join an oblique edge of an outer film 1 to an oblique edge of a gusset film 2. The oblique seal 45 extends obliquely relative to both the up-and-down direction and the width direction. In the present embodiment, the pair of outer films 1 and the pair of gusset films 2 form four oblique seals 45 in total. The two oblique seals 45 located on the same side in terms of the width direction are continuous with the same widthwise end of the bottom seal 44.

[0034] Each side seal 43 has an inner edge 43a, the bottom seal 44 has an inner edge 44a, and each oblique seals 45 has an inner edge 45a. In the present embodiment, the inner edge 43a is a straight line in the up-and-down direction throughout its length. The inner edge 44a is a straight line in the width direction throughout its length. The inner edge 45a is curved outward throughout its length. In other words, the inner edge 45a is curved at any portions, including a portion continuous with the inner edge 43a of the side seal 43, a portion continuous with the inner edge 44a of the bottom seal 44, and an intermediate portion located in between. In Fig. 1, cross-hatched portions along the inner edges 45a indicate curved portions of the inner edges 45a. In this embodiment, the entire length of each inner edges 45a is cross hatched.

[0035] Each oblique seal 45 is structured to have a smaller width W3 around the middle than widths W1 and W2 at the ends. This is because the inner edge 45a is defined by an outward curve at least partly, and indeed entirely in the present embodiment.

[0036] In the present embodiment, the packaging A1 has two sealed shoulders 46. The sealed shoulders 46, which are located at the intersections of the top edge with the side edges, are formed by heat sealing to join the inner surfaces of the pair of outer films 1 at portions exposed through the cutaway portions 22 in the gusset film 2.

[0037] The spout 3 is a hollow member made of, for example, resin and defines a path through which the substance is poured in and out. The spout 3 has a tubular portion through which the substance is poured in and out and a boat-shaped welding portion joined to the sheet packaging body. The spout 3 is secured to the pair of outer films 1 with the boat-shaped welding portion hermetically sealed between the pair of outer films 1 at the top-edge central seal 41. The spout 3 corresponds to a filling-and-pouring member according to the present invention.

[0038] Figs. 4 and 5 show a leak testing step in a method for producing a pouch container using a packaging A1. Prior to this, the packaging A1 is produced through a commonly known production method, which typically involves appropriately folding and overlaying a plurality of material sheets, and then heat sealing appropriate portions. Then, the material sheets are cut out to obtain the packaging body. Then, the boat-shaped welding portion of the spout 3 is placed between the outer films 1 at a top of the packaging body and hermetically sealed together by heat sealing. In this manner, the packagings A1 are produced one by one. The leak testing step is performed mainly to check the heat sealed portions for any unintentional leakage.

[0039] First, as shown in Fig. 4, a nozzle Nz may be inserted into the spout 3 of the packaging A1. The nozzle Nz is used in the leak testing step to blow air in. As the blowing of air through the nozzle Nz starts, the pressure in the space enclosed by the pair of outer films 1 and the pair of gusset films 2 rises, causing the packaging A1 to inflate. Eventually, the packaging A1 is fully inflated as shown in Fig. 5. The blowing of air is carried out instantaneously, or within a short period of time (two seconds or so). At this stage, none of the four oblique seals 45 are turned back, and the bottom seal 44 is in an appropriate state of lying flat along one of the outer films 1. Once the packaging A1 is fully inflated, the packaging A1 is kept in the inflated state and tested for any air leakage using, for example, a sensor not shown in the figures. The test takes about two to three seconds. If leakage is detected, the packaging A1 is rejected for use in the subsequent steps as being incapable of holding the substance. Upon completion of the leak testing step, the interior space of the packaging A1 is evacuated within a short period of time (one second or so). As a result, the packaging A1 becomes flat again.

[0040] The packaging A1, which is in a flat state, is subjected to the filling step using a conventionally known technique. Through this, the packaging A1 filled with the substance Lq is obtained as a pouch container B1 shown in Figs. 6 and 7. After the substance Lq is filled, a cap 31 is attached in threaded engagement with the spout 3.

[0041] Next, effects of the packaging A1 are described.

[0042] The conventional packaging X often experiences a turned back edge in the leak testing step. Although the cause is not fully identified, the following is a possible explanation. In the leak testing step of the conventional packaging X shown in Figs. 13 to 15, an increase in the internal pressure of the packaging X creates stress on the inner edges 96a of the side seals 96, the inner edge 97a of the bottom seal 97, and the inner edges 98a of the oblique seals 98 in accordance with the respective shapes. Each of the inner edges 96a, 97a, and 98a is a straight line and thus subjected to a stress resulting from the force tending to push the edge outward with the edge kept straight. In other words, the

stress on the inner edges 96a, 97a, and 98a tends to be relatively uniform in the magnitude and direction substantially along the entire length except for the end portions. On the other hand, since the force is uniform substantially along the entire length, the stress tends to concentrate locally at the points of connection between the inner edges 96a and 98a and between the inner edges 97a and 98a. In addition, since air is intensively blown in within a short period of time, the relevant portions of the packaging are abruptly pushed outward. The present inventors assume that these circumstances create a force tending to locally bend the connected portions of the side seal 96 and the oblique seal 98 and of the bottom seal 97 and the oblique seal 98. This may consequently result in that an oblique seal 98 is turned back and the bottom seal 97 is raised as shown in Figs. 14 and 15.

[0043] Based on the above findings, each oblique seal 45 according to the present embodiment has a curved inner edge 45a as shown in Fig. 1. Thus, the stress on the inner edge 45a is not uniform in the longitudinal direction but varies gradually in accordance with the shape of the curve. This serves to prevent the stress on the inner edge 45a from being concentrated at the ends where the oblique seal 45 is connected to the side seal 43 and where the oblique seal 45 is connected to the bottom seal 44, so that the stress is distributed. Consequently, the oblique seals 45 are prevented from turning back and the bottom seal 44 is prevented from rising. Naturally, a risk of leakage of the substance is reduced for a pouch container produced by using the packaging A1.

[0044] Each oblique seal 45 has a portion having the width W3, which is smaller than the width W1 or W2 at the end portions. That is, the inner edge 45a of the oblique seal 45 defines an outward curve. Through the study of the present inventors, it has been found that such an outwardly curved contour is effective to prevent occurrences of turned back edges.

[0045] The method for producing a pouch container may be modified to fill the packaging with the substance without performing the leak testing step. However, the filling step still involves the risk that the oblique seals 45 are turned back and the bottom seal 44 is raised. Therefore, in such a method, providing the oblique seals 45 with the inner edges 45a that are at least partly curved is likewise effective to prevent the oblique seals 45 from turning back and the bottom seal 44 from raising.

[0046] Figs. 8 to 11 show other embodiments of the present invention. The figures use the same reference signs for the same or similar elements described in the above embodiment. Similarly to Fig. 1, these figures show cross-hatched portions to indicate the curved portions of the inner edges 45a.

[0047] Fig. 8 shows a packaging for a pouch container according to a second embodiment of the present invention. The packaging A2 according to the present embodiment is such that each oblique seal 45 has an inner edge 45a that is entirely curved. In addition, each side seal 43 has an inner edge 43a that is curved at a portion toward the inner edge 45a, and the bottom seal 44 has an inner edge 44a that is curved at portions toward the inner edges 45a. As shown in the figure, the inner edge 43a is seamlessly continuous with the inner edge 45a. In other words, the inner edge 43a and the inner edge 45a together define a curve at a connected portion. In addition, the inner edge 44a is seamlessly continuous with each inner edge 45a. In other words, the inner edge 44a and the inner edge 45a together define a curve at the connected portion. With respect to the packaging A2 according to the present embodiment, each oblique seal 45 has a portion with the width W3, which is smaller than the widths W1 and W2 at the ends. This embodiment is effective to prevent the stress on each inner edge 45a from being concentrated at the ends. In addition, the present embodiment is more effective in preventing the stress on each inner edge 43a from being concentrated at the end toward the inner edge 45a and the stress on the inner edge 44a from being concentrated at the ends toward the respective inner edges 45a. Therefore, the present embodiment is appropriate to prevent the oblique seals 45 from turning back and the bottom seal 44 from raising.

[0048] Fig. 9 shows a packaging for a pouch container according to a third embodiment of the present invention. The packaging A3 according to the present embodiment is such that each oblique seal 45 has an inner edge 45a that is curved only at an end closer to the inner edge 43a and straight at the other portion. In addition, the inner edge 43a is curved at a portion toward the inner edge 45a such that the inner edge 43a is seamlessly continuous with the inner edge 45a. In other words, the inner edge 43a and the inner edge 45a together define a curve at the connected portion. According to the present embodiment, each inner edge 45a is curved only partly but still effective to prevent stress concentration at the ends as compared with the inner edge 45a being entirely straight. The present embodiment is expected to be particularly effective to prevent the stress on the inner edge 45a from being excessively concentrated at the ends toward the inner edge 43a. This can prevent a force tending to locally bend the connection portions between the side seals 43 and the oblique seals 45. Therefore, the oblique seals 45 are prevented from being turned back.

[0049] Fig. 10 shows a packaging for a pouch container according to a fourth embodiment of the present invention. The packaging A4 according to the present embodiment is such that each oblique seal 45 has an inner edge 45a that is curved only at an end closer to the inner edge 44a of the bottom seal 44 and straight at the other portion. In addition, the inner edge 44a is curved entirely, and the inner edge 44a is seamlessly continuous with the inner edges 45a. In other words, the inner edge 44a and the inner edge 45a together define a curve at the connected portion. As stated with reference to the packaging A3, the partly curved inner edges 45a is effective to prevent stress concentration at the end thereof. The present embodiment is particularly expected to be effective to prevent the stress on the inner edge 45a

from being concentrated at the end toward the inner edge 44a.

[0050] Fig. 11 shows a packaging for a pouch container according to a fifth embodiment of the present invention. The packaging A5 according to the present embodiment is such that each inner edge 45a is curved to define an outward bulge at a central portion. With such a configuration, the oblique seal 45 has the width W3 around the middle that is significantly narrower than the widths W1 and W2 at the ends. The present embodiment provided with the inner edges 45a that are partly curved in this manner are likewise effective to prevent stress concentration at the ends thereof and thus expected to be effective to prevent the oblique seals 45 from turning back and the oblique seals 45 from raising.

[0051] Table 1 below shows the results of tests conducted on the packagings A1 to A5 according to the present invention, the conventional packaging X shown in Fig. 13, and packagings C1 to C5 according to comparative examples shown in Fig. 12. In the tests, occurrences of turned back edges at the oblique seals 45 were checked.

[Table 1]

Packaging	A1	A2	A3	A4	A5	X	C1	C2	C3	C4
Occurrence of turned back edges	21%	23%	25%	38%	31%	51%	73%	66%	58%	51%

[0052] The packagings A1 to A5 are structured as described above. The packaging X is structured as shown in Fig. 13 to have the inner edge 45a of each oblique seal 45 composed only of a single straight line. Fig. 12 shows the packagings C1 to C4 according to the comparative examples. As described below, the packagings C1 to C2 are different mainly in shape of the oblique seals 45 and common in that the inner edges 45a are composed of straight lines.

[0053] In the packaging C1 shown in Fig. 12(a), the inner edge 43a of the side seal 43 meets the inner edge 45a of the oblique seal 45 at a larger angle than in the packaging X. More specifically, the intersection between the inner edge 43a and the inner edge 45a is shifted upward. In addition, the inner edge 45a has a bend point. In the packaging C2 shown in Fig. 12(b), the inner edge 44a of the bottom seal 44 meets the inner edge 45a of the oblique seal 45 at a larger angle than in the packaging X. More specifically, the angle mentioned above is larger as a result that the width of the bottom seal 44 is larger.

[0054] In the packaging C3 shown in Fig. 12(c), the inner edge 45a has a bend point around the middle thereof, and the width of this middle portion is significantly smaller than the width at either end. The packaging C4 shown in Fig. 12(d) has the oblique seal 45 that is narrower throughout its length than in the packaging X.

[0055] The test results about the occurrences of turned back edges shown in Table 1 were obtained on 50 samples of the individual packagings, namely the packagings A1 to A5, X, and C1 to C4. Each sample was subjected to the leak testing step to visually check the oblique seals 45 for any turned back edge.

[0056] As shown in Table 1, the conventional packaging X exhibited the occurrence rate of 51%, whereas the packagings A1 to A5 according to the present invention all exhibited the occurrence rates ranging from 21% to 38%, which are lower than the rate obtained on the packaging X. That is, the occurrences of turned back edges were reduced by providing the oblique seal 45 having an inner edge 45a at least partly curved. In particular, the packagings A1, A2, and A3 respectively exhibited the occurrence rates of 21%, 23%, and 25%, each of which is about a half of the occurrence rate of the packaging X. That is, the occurrences of turned back edges were sufficiently reduced. This is assumed to be a result achieved by the inner edges 45a being entirely curved. In the packagings A3 and A4, each inner edge 45a is curved only at a portion toward the bottom seal 44. As demonstrated by the occurrence rate of 38%, these packagings still achieved the effect of reducing the occurrences of turned back edges. Comparison between the packaging A3 and the packaging A4 reveals that the occurrences of turned back edges were reduced more effectively by providing a curve at the connection between the inner edge 43a of the side seal 43 and the inner edge 45a of the oblique seal 45 than at the connection between the inner edge 44a of the bottom seal 44 and the inner edge 45a of the oblique seal 45. The packaging A5 has the inner edges 45a curved only at a central portion while the portions closer to the ends are straight lines. The packaging A5 having such a structure was still effective to reduce the occurrences of turned back edges, as demonstrated by the occurrence rate of 31%. This shows that the inner edge 45a not curved at the ends is still effective to distribute the stress, which would otherwise be concentrated at the respective ends of the inner edge 45a (at the intersections with the inner edges 43a and 44a).

[0057] Referring now to the comparative examples C1 to C4, the occurrence rates range from 51% to 73%, which are at most comparable to the occurrence rates obtained on the conventional packaging X. These results show that the occurrences of turned back edges at the oblique seal 45 cannot be reduced or may even be increased as long as the inner edges 45a are composed only of straight lines, regardless of the shapes and locations of the inner edges 45a. As set forth above, the packaging according to the present invention has an inner edge 45a that is at least partly curved as exemplified by the packagings A1 to A5 and achieves the effect of preventing the oblique seals 45 from turning back.

[0058] The pouch container packaging according to the present invention is not limited to the embodiments described above. Various design changes can be made to the specific structure of the packaging for a pouch container according

to the present invention.

[Reference Signs List]

5 **[0059]**

	A1 to A5	packaging
	B1	pouch container
	1	outer film
10	2	gusset film
	21	fold line
	22	cutaway portion
	3	spout
	31	cap
15	41	top-edge central seal
	42	top-edge side seal
	43	side seal
	43a	inner edge
	44	bottom seal
20	44a	inner edge
	45	oblique seal
	45a	inner edge
	46	sealing shoulder

25

Claims

1. A packaging for a pouch container, the packaging comprising:

30 a pair of outer films disposed on a front side and a back side with a filling-and-pouring member sandwiched at a top, the outer films each having side edges, a bottom edge and oblique edges lying between the side edges and the bottom edge; and
 a pair of gusset films each disposed in a folded state between the outer films and having side edges and oblique edges,
 35 wherein the side edges of the outer films and the side edges of the gusset films are joined to provide side seals, the bottom edges of the respective outer films are joined to provide a bottom seal, and the oblique edges of the outer films and the oblique edges of the gusset films are joined to provide oblique seals, and the oblique seals each have an inner edge at least a part of which is curved.

40 2. The packaging according to claim 1, wherein each oblique seal has a narrow-width portion that is narrower in width than ends of the oblique seal.

3. The packaging according to claim 1 or 2, wherein the inner edge of each oblique seal has a curved portion continuous with an inner edge of a side seal.

45 4. The packaging according to any one of claims 1 to 3, wherein the inner edge of each oblique seal has a curved portion continuous with an inner edge of the bottom seal.

50 5. The packaging according to any one of claims 1 to 4, wherein an entirety of the inner edge of each oblique seal is curved.

6. A pouch container comprising:

55 the packaging according to any one of claims 1 to 6; and a substance contained in the packaging.

FIG. 1

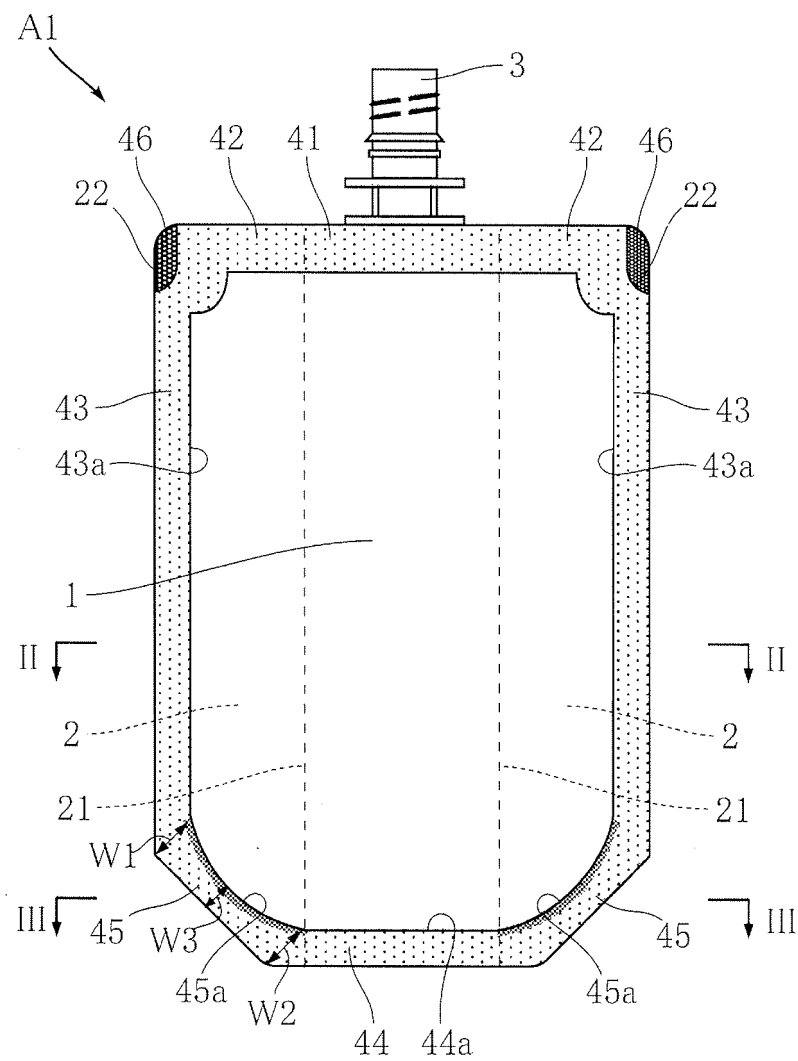


FIG. 2

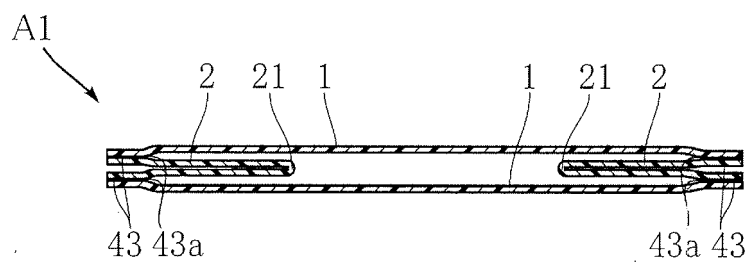


FIG. 3

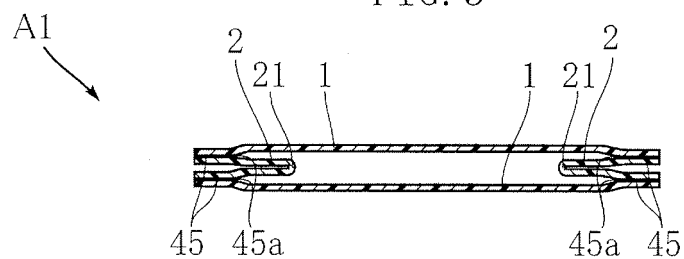


FIG. 4

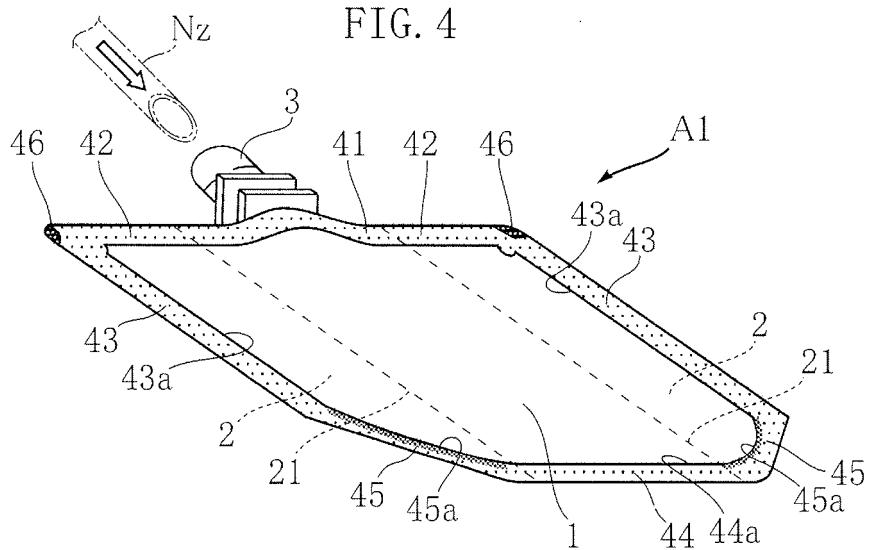


FIG. 5

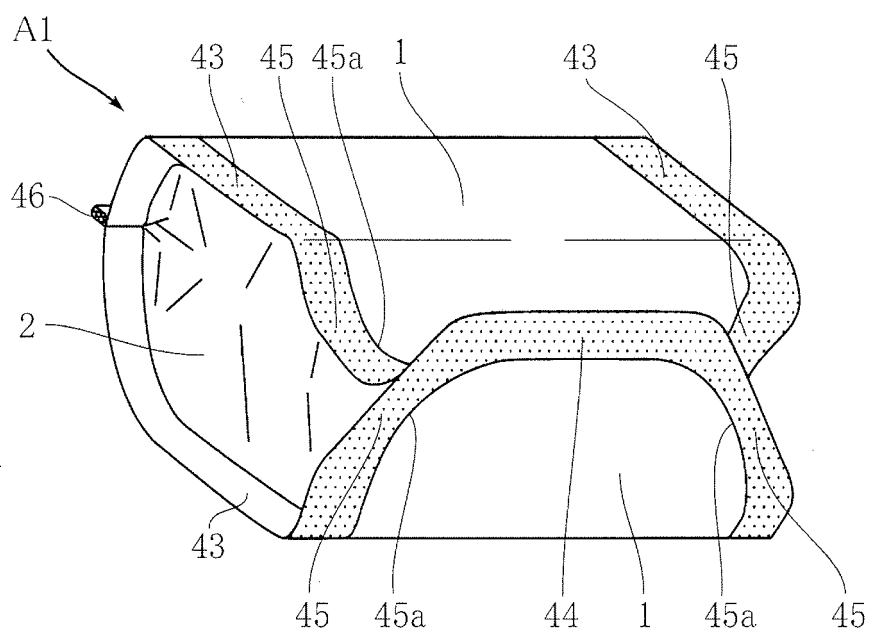


FIG. 6

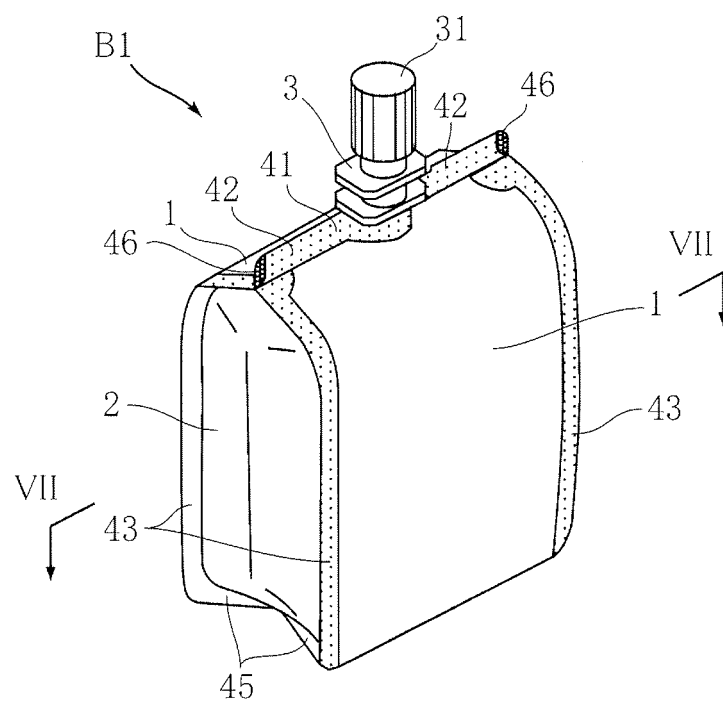


FIG. 7

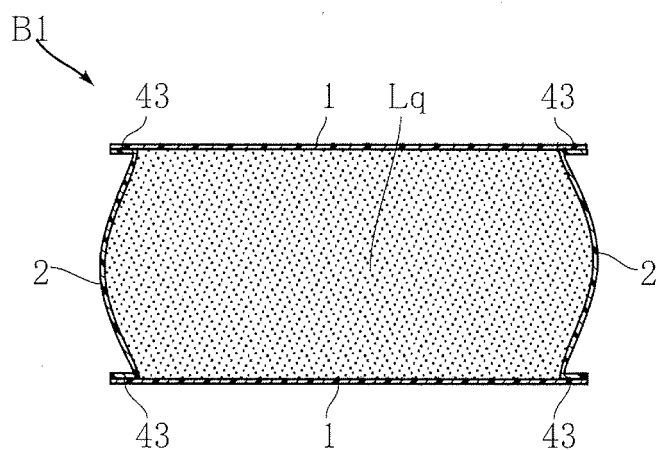


FIG. 8

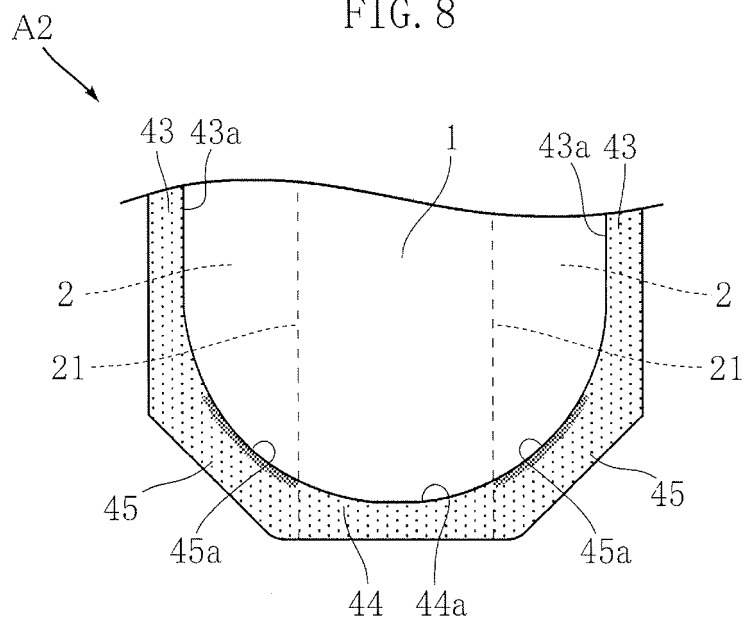


FIG. 9

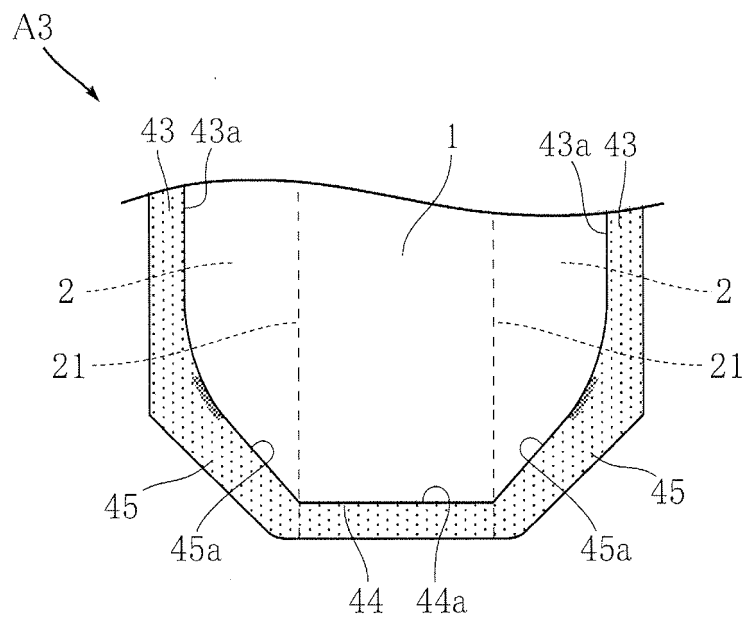


FIG. 10

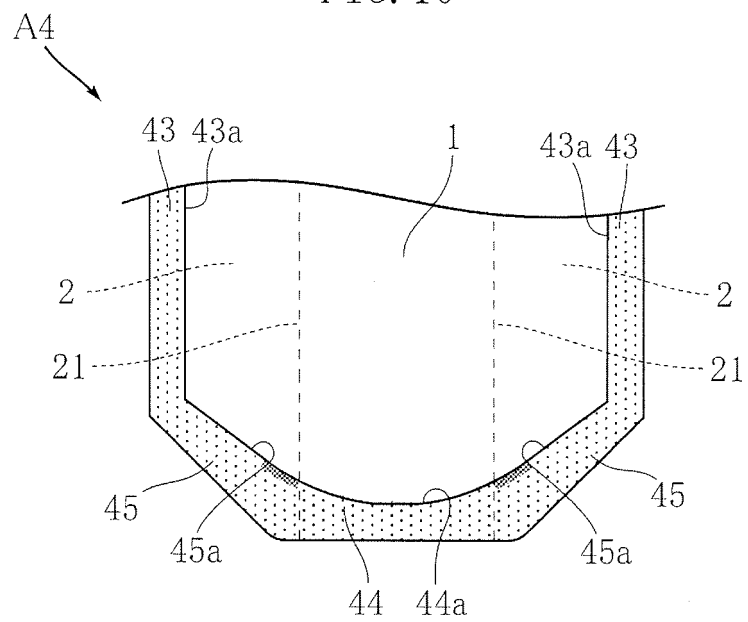


FIG. 11

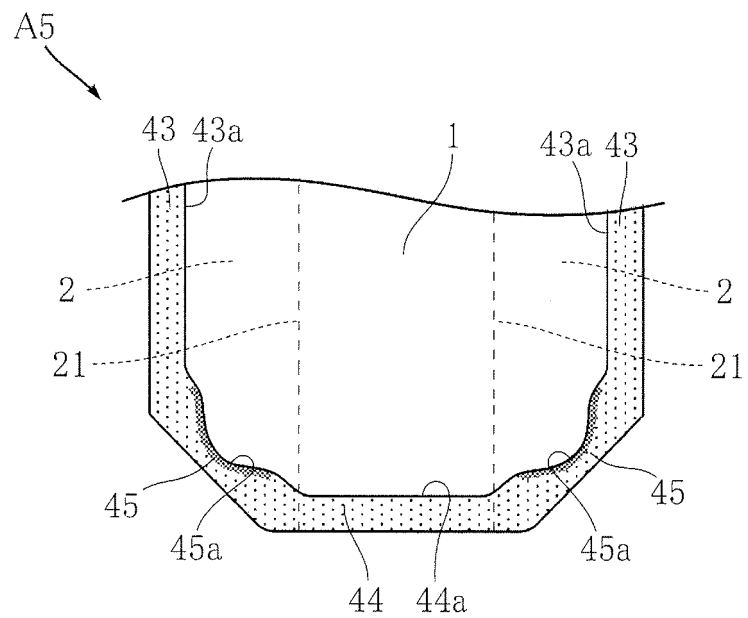


FIG. 12

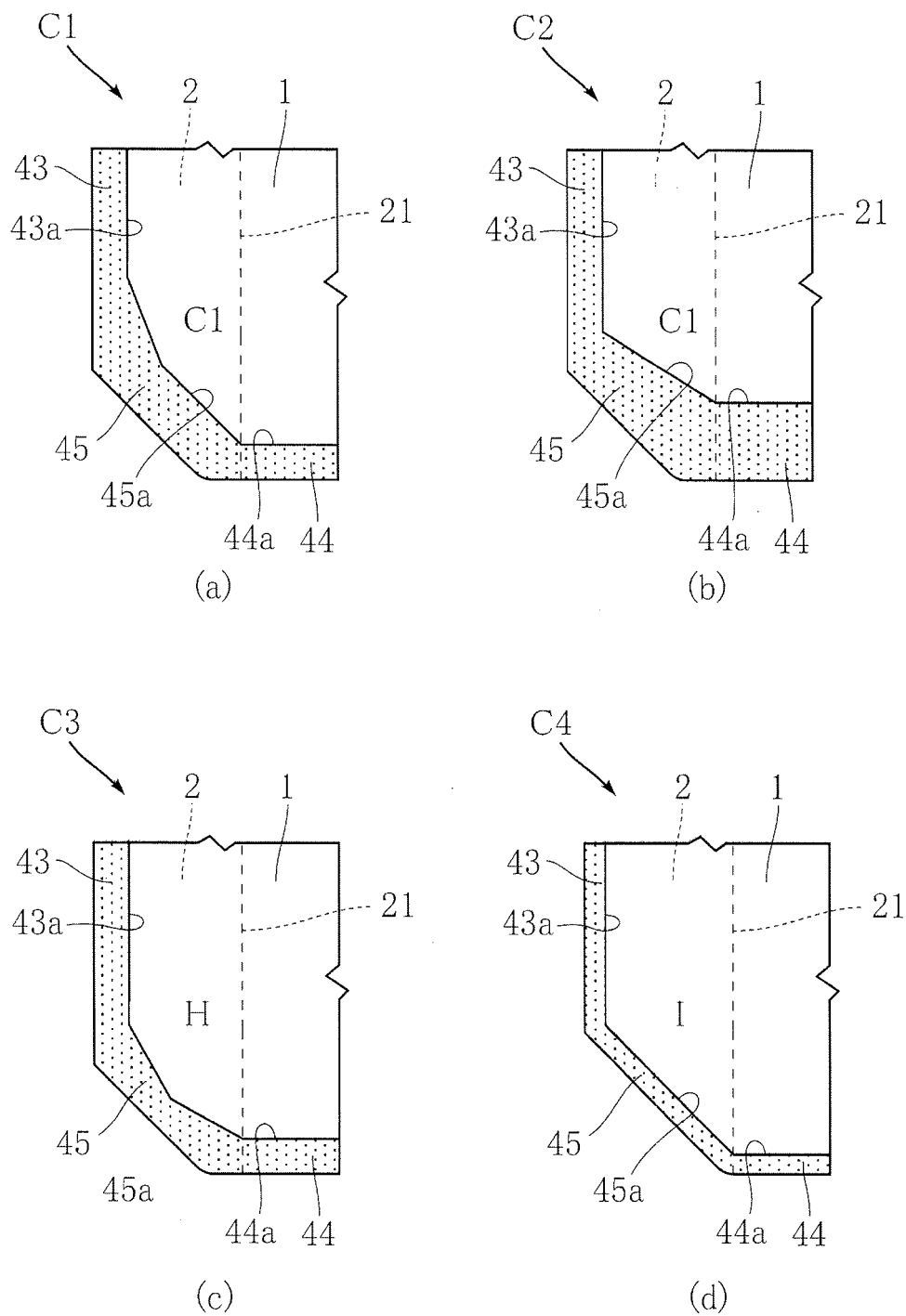


FIG. 13

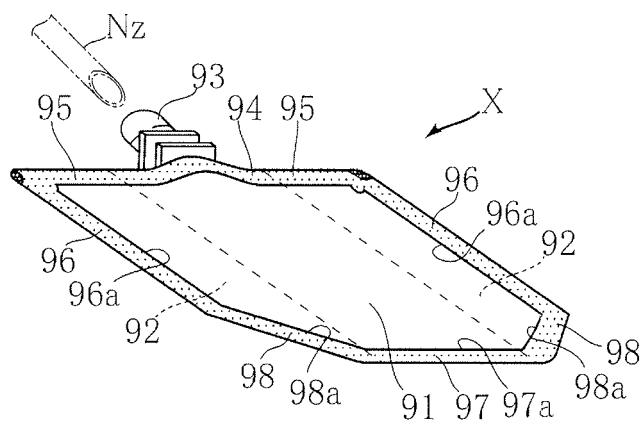


FIG. 14

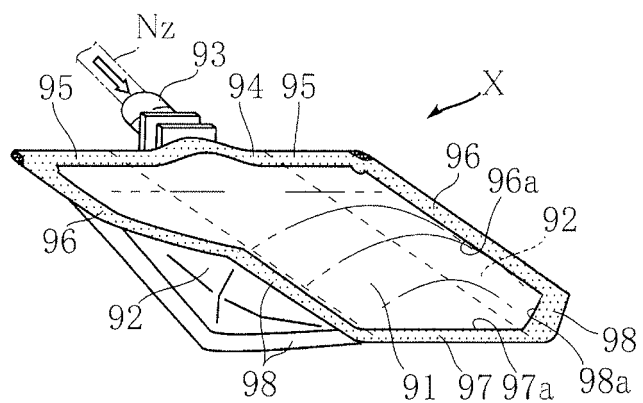
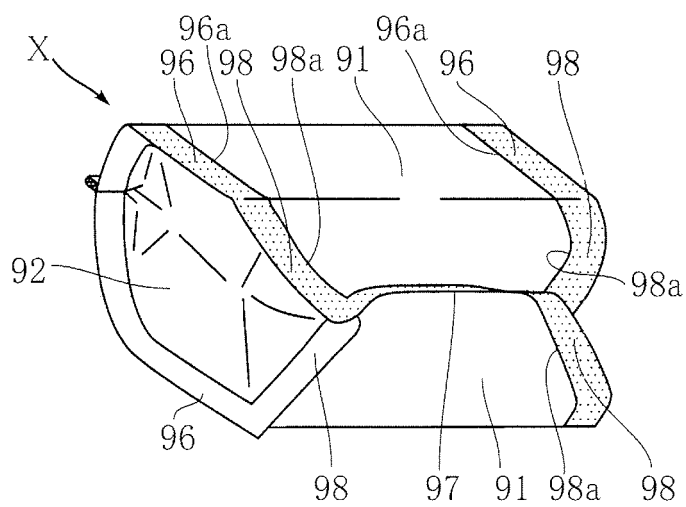


FIG. 15



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/065892

A. CLASSIFICATION OF SUBJECT MATTER

B65D30/20(2006.01) i, B65D33/38(2006.01) i

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)

B65D30/00-33/38, B65D75/00, B65D75/58

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

Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2014

Kokai Jitsuyo Shinan Koho 1971-2014 Toroku Jitsuyo Shinan Koho 1994-2014

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 2007/126044 A1 (Ajinomoto Co., Inc.), 08 November 2007 (08.11.2007), entire text; all drawings & JP 5262712 B	1-6
Y	JP 11-208676 A (Toppan Printing Co., Ltd.), 03 August 1999 (03.08.1999), paragraph [0004]; fig. 7 (Family: none)	1-6
X	WO 2005/030595 A1 (Fuji Seal, Inc.), 07 April 2005 (07.04.2005), paragraphs [0032], [0039], [0042] to [0043]; fig. 6A to 6B, 9 & US 2006/0285775 A1 & EP 1679264 A1	1, 3-6

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

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Date of the actual completion of the international search
25 August, 2014 (25.08.14)Date of mailing of the international search report
09 September, 2014 (09.09.14)Name and mailing address of the ISA/
Japanese Patent Office

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2014/065892

C (Continuation).	DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	JP 2009-132451 A (House Foods Corp.), 18 June 2009 (18.06.2009), entire text; all drawings (Family: none)	1-6
A	JP 57-046750 A (Toyo Seikan Kaisha, Ltd.), 17 March 1982 (17.03.1982), entire text; all drawings & US 4454979 A	1-6
A	US 2004/0141665 A1 (CHUN YIP PRASTICS LTD.), 22 July 2004 (22.07.2004), entire text; all drawings & EP 1442991 A1 & AU 2004200208 A1 & HK 1057446 A2	1-6

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2000344252 A [0007]