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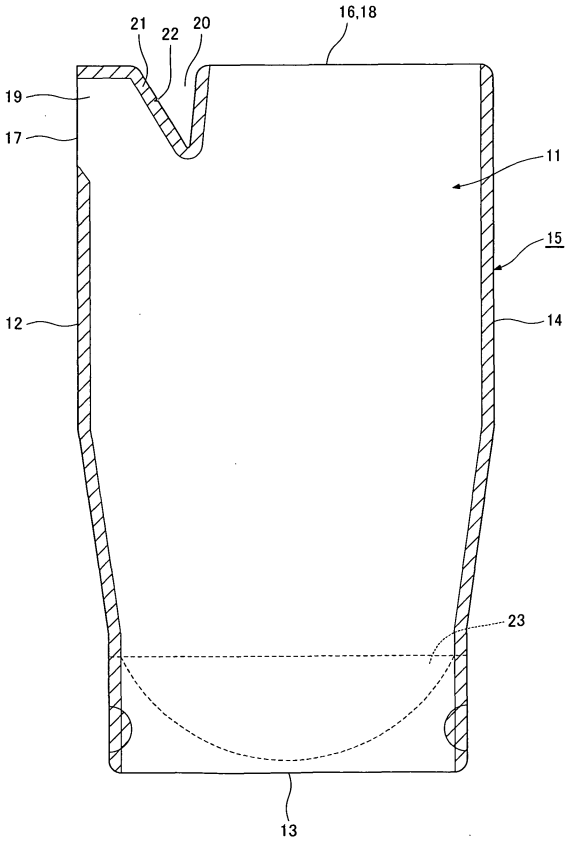
## (54) Liquid storage bag

(57) A standing-pouch liquid storage bag in which a bottom forming film (23) folded in half is disposed with a crease provided on the upper end of the bottom forming film (23) at a predetermined position of a bag sheet material folded in half with one side (12), a bottom side and an other side (14) of the liquid storage bag are closed by heat sealing, and heat sealing is performed on a portion of the one side except for a given length from the upper end of the liquid storage bag to construct a bag main part, wherein at least the one side is cut so as to align one end of the bottom forming film (23) with the side portion of the bag main part (15), so that the lower part of the liquid storage bag is narrower than the upper part of the liquid storage bag.

F I G. 1

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## Description

Field of the Invention

**[0001]** The present invention relates to a liquid storage bag for storing a liquid such as a detergent.

Background of the Invention

**[0002]** Japanese Patent Laid-Open No. 11-70947 discloses a known liquid storage bag of the prior art. The liquid storage bag is, for example, a liquid sealing bag provided with a gore portion on the lower end and having the side edges and the upper edge closed to form a liquid storage space having a bottom, so that the bag can stand by itself while storing a liquid in the liquid storage space. The upper edge has a sealing overlap portion that is shaped like a belt with a fixed width, the liquid storage space is formed so as to protrude at least to one side of the belt-like overlap portion, and the overlap portion having the protruding liquid storage space is cut to form a spout on the end of the bag. The overlap portion has a V-cut portion for dividing the protruding portion of the liquid storage space and the other portion.

**[0003]** When the liquid is collected from the storage bag disclosed in Japanese Patent Laid-Open No. 11-70947, the sealing portion having the spout is cut off on the end of the spout and then the liquid in the storage bag is collected from the spout by tilting the storage bag.

**[0004]** When the liquid is collected from the storage bag disclosed in Japanese Patent Laid-Open No. 11-70947, the sealing portion having the spout is cut off on the end of the spout and then the liquid in the storage bag is collected from the spout by tilting the storage bag. Since the periphery of the storage bag is closed by heat sealing, the sealing portion is cut off on the end of the spout and then the liquid in the storage bag is collected from the spout by tilting the storage bag. A large amount of the liquid in the storage bag is smoothly poured from the spout, however, an air flow into the storage bag becomes insufficient as the amount of liquid in the storage bag decreases, and the inner surfaces of side sheets forming the storage bag come into contact with each other near the sealing portion on both sides of the spout, that is, the spout is substantially closed. Thus even when the storage bag is tilted to collect the liquid in the storage bag from the spout, the liquid is not smoothly poured and it takes a long time to completely collect the liquid in the storage bag.

**[0005]** In order to solve this problem, Japanese Utility Model Laid-Open No. 3140172 discloses a known storage bag that is a self-standing pouch.

**[0006]** The standing-pouch storage bag disclosed in Japanese Utility Model Laid-Open No. 3140172 is formed by folding a bag sheet material in half. Relative to one side of the storage bag, that is, the folded side, the bottom side and the other sides of the storage bag are closed by heat sealing. The one side of the storage bag is heat-sealed except for a portion near the upper end of the storage bag to construct the main part of the storage bag. On the upper side of the main part, an inlet opening for filling the main part with contents is provided at a position not close to the portion having not been heat-sealed near the upper end of the storage bag on the one side of the storage bag, a recessed portion is formed next to the inlet opening on the upper end of the main part of the bag while leaving a portion as a content spout opening on the portion having not been heat-sealed near the upper end of the storage bag on the one side of the storage bag, and heat sealing is performed along the recessed portion. Further, a device for cutting is formed on the heat-sealed portion of the recessed portion opposed to the portion having not been heat-sealed near the upper end of the storage bag on the one side of the storage bag, and the upper side of the main part of the bag is closed by heat sealing in a state in which the main part is filled with the contents. The storage bag is cut from the device for cutting to the portion having not been heat-sealed near the upper end of the storage bag on the one side of the storage bag, so that the content spout opening can be formed.

**[0007]** According to the configuration of the storage bag disclosed in Japanese Utility Model Laid-Open No. 3140172, when a liquid is collected from the storage bag, a portion above the device for cutting is cut from the device for cutting to the portion having not been heat-sealed near the upper end of the storage bag on the one side of the storage bag, so that the content spout opening is formed. And then, when the storage bag is tilted to collect the liquid, the portion having not been heat-sealed is placed under the content spout opening, so that the liquid flows out of the edge of an opening formed on the portion having not been heat-sealed. At this point, the sheet inner surfaces of the front side and the back side of the storage bag hardly come into contact with each other on the portion having not been heat-sealed, so that the contents smoothly flow out of the storage bag.

**[0008]** In the case of the standing-pouch storage bag disclosed in Japanese Utility Model Laid-Open No. 3140172, as shown in FIG. 6, a film 2 forming the bottom is supplied at a predetermined position on the inner surface of a bag sheet material 1 to be folded into half. In this state, the bag sheet material 1 is folded into half as shown in FIG. 7, and then heat sealing is performed at predetermined points of the bag sheet material 1 to fabricate the storage bag. In this method, however, when the supplied bottom forming film 2 protrudes out of folded portions 3 of the bag sheet material 1, the ends of the bottom forming film 2 are bent with the folded bag sheet material 1, so that the bag sheet material 1 and the bottom forming film 2 cannot be normally heat-sealed. In order to solve this problem, it is preferable to accurately supply the bottom forming film 2 so as to align the ends of the bottom forming film 2 with the folded portions 3. However, mechanical alignment requires extremely high accuracy that is quite difficult to obtain in reality. FIGS. 6 and 7 are

explanatory drawings showing that two liquid storage bags are simultaneously manufactured in parallel.

**[0009]** The present invention has been devised to solve the problem. An object of the present invention is to provide a liquid storage bag in which one end of a bottom forming film is not partially bent with a folded bag sheet material, and the one end of the bottom forming film is aligned with a side of the liquid storage bag.

Disclosure of the Invention

**[0010]** A liquid storage bag of the present invention is a standing-pouch liquid storage bag in which a bag sheet material is folded in half with a folded side serving as one side of the liquid storage bag, a bottom forming film folded in half is disposed at a predetermined position between the front sheet and the back sheet of the folded bag sheet material with a crease provided on the upper end of the bottom forming film, the bottom side and the other side of the liquid storage bag are closed by heat sealing, heat sealing is performed on a portion of the one side except for a given length from the upper end of the liquid storage bag to construct a bag main part, an inlet opening for filling the bag main part with a liquid is provided on the upper side of the bag main part, the upper side of the bag main part is closed by heat sealing in a state in which the bag main part is filled with the liquid, and a liquid spout opening is formed by cutting the upper end of the bag main part to a portion having not been heat-sealed on the one side, wherein of the one side and the other side, at least the one side has a portion where the bottom forming film disposed between the front sheet and the back sheet of the bag sheet material exists and the one side is cut so as to align one end of the bottom forming film with the side portion of the bag main part, so that dimensions between both sides of the liquid storage bag are smaller on the lower part of the liquid storage bag than on the upper part of the liquid storage bag.

**[0011]** As has been discussed, in a liquid storage bag of the present invention, at least one side of a folded bag sheet material has a portion where the bottom forming film disposed between the front sheet and the back sheet of the bag sheet material exists and the one side is cut so as to align one end of the bottom forming film with the side portion of a bag main part, so that dimensions between both sides of the liquid storage bag are smaller on the lower part of the liquid storage bag than on the upper part of the liquid storage bag. Thus even when the bottom forming film is supplied in the bag sheet material folded in half, it is possible to achieve a liquid storage bag in which the one end of the bottom forming film and the side portion of the bag main part are preferably bonded to each other by heat sealing at least on the one side of the liquid storage bag.

**[0012]** A liquid storage bag of the present invention is a standing-pouch liquid storage bag for storing a liquid such as a detergent.

Brief Description of the Drawings

**[0013]**

FIG. 1 is a front view showing a state before a liquid storage bag is filled with contents according to a first embodiment of the present invention;
FIG. 2 is a perspective view showing the state before the liquid storage bag is filled with the contents;
FIG. 3 is a front view showing a state after the liquid storage bag is filled with the contents;
FIG. 4 is an explanatory drawing showing a state of the fabrication of the liquid storage bag;
FIG. 5 is a front view showing a state before a liquid storage bag is filled with contents according to a second embodiment of the present invention;
FIG. 6 is an explanatory drawing showing a state in which a bottom forming film is supplied on a bag sheet material, for the explanation of Problem to be Solved by the Invention; and
FIG. 7 is an explanatory drawing showing a state in which the bag sheet material is folded in half, for the explanation of Problem to be Solved by the Invention.

Description of the Embodiments

**[0014]** Embodiments of the present invention will be specifically described below in accordance with the accompanying drawings.

**[0015]** Referring to FIGS. 1 to 4, a liquid storage bag according to a first embodiment will be first described below.

**[0016]** Basically, the liquid storage bag of the first embodiment is formed by folding a bag sheet material 11 into half. The folded side of the liquid storage bag is called one side 12, and a bottom side 13 and an other side 14 are closed by heat sealing. Heat sealing is performed on a portion of the one side 12 except for a given length from the upper end of the liquid storage bag. A bag main part 15 is constructed thus. On an upper side 16 of the bag main part 15, an inlet opening 18 for filling the bag main part 15 with contents is provided at a position not close to the upper end of a portion 17 having not been heat-sealed on the one side 12. On the upper end of the bag main part 15, a portion serving as a liquid spout opening 19 is provided that is close to the portion 17 having not been heat-sealed and has an upper end closed by heat sealing. Between the portion serving as the liquid spout opening 19 and the inlet opening 18, a V-recessed portion 20 is formed along which heat sealing is performed. Further, a notch 22 serving as a device for cutting is formed on a heat sealing portion 21 of the recessed portion 20 opposed to the upper end of the portion 17 having not been heat-sealed on the one side 12 (see FIGS. 1 and 2). In a state in which the bag main part 15 is filled with a liquid, the upper side 16 of the bag main part 15 is closed by heat sealing as shown in FIG. 3. The bag main

part 15 is cut from the notch 22 to the portion 17 having not been heat-sealed on the one side 12, so that the liquid spout opening 19 can be formed.

**[0017]** In this configuration, the liquid storage bag of the present embodiment has a bottom forming film 23 disposed in a horizontal position at a predetermined position between the front sheet and the back sheet of the bag sheet material 11 folded in half. The bottom forming film 23 is folded in half with a crease on the upper end of the bottom forming film 23. The front sheet and the back sheet of the bag sheet material 11 and the bottom forming film 23 are bonded to each other by heat sealing to form a standing pouch. Particularly, in the embodiment illustrated by the drawings, heat sealing is not performed, on the one side 12 of the bag main part 15, on a portion from the upper end of the liquid storage bag substantially to at least the height of the lower end of the V-recessed portion 20, and the other portion of the one side 12 is heat-sealed. In the drawings, heat-sealed portions are diagonally shaded.

**[0018]** In the fabrication of the standing-pouch liquid storage bag, it is difficult to accurately supply the bottom forming film 23 between the front sheet and the back sheet of the bag sheet material 11 so as to align one end of the bottom forming film 23 with the folded one side 12, as has been described in Problem to be Solved by the Invention. Thus the one end of the bottom forming film 23 is slightly separated from the folded one side 12 to prevent the end of the bottom forming film 23 from being bent with the folded one side 12. On the other side 14, the bottom forming film 23 is disposed so as to have the other end aligned with the other side 14 (see FIG. 4). In this state, necessary heat sealing is performed on the overall storage bag as well as on the bottom of the storage bag as previously mentioned in the foregoing explanation. The bottom forming film 23 at the lower end of the storage bag in this state has the one end not aligned with the one side 12 of the liquid storage bag, and then the lower end side of the one side 12 is cut so as to align the one end of the bottom forming film 23 with the one side 12 of the bag main part 15. In the embodiment illustrated in the drawings, the lower end side of the other side 14 is cut like the one side 12. In other words, as shown in the drawings, dimensions between both sides of the liquid storage bag are smaller on the lower part of the liquid storage bag than on the upper part of the liquid storage bag. Further, on portions to be cut on the one side 12 and the other side 14, heat sealing widths are set in consideration of the cutting margins. That is to say, heat sealing is performed beforehand on the portions to be cut on the one side 12 and the other side 14.

**[0019]** In the first embodiment, both sides of the lower end of the liquid storage bag are cut. Since the other end of the bottom forming film 23 is aligned with the other side 14, it is not always necessary to cut the other side 14, as illustrated in a second embodiment of FIG. 5.

## Claims

1. A standing-pouch liquid storage bag in which a bag sheet material (11) is folded in half with a folded side serving as one side (12) of the liquid storage bag, a bottom forming film (23) folded in half is disposed at a predetermined position between a front sheet and a back sheet of the folded bag sheet material (11) with a crease provided on an upper end of the bottom forming film (23), a bottom side (13) and an other side (14) of the liquid storage bag are closed by heat sealing, heat sealing is performed on a portion of the one side (12) except for a given length from an upper end of the liquid storage bag to construct a bag main part (15), an inlet opening (18) for filling the bag main part (15) with a liquid is provided on an upper side (16) of the bag main part (15), the upper side (16) of the bag main part (15) is closed by heat sealing in a state in which the bag main part (15) is filled with the liquid, and a liquid spout opening (19) is formed by cutting an upper end of the bag main part (15) to a portion (17) having not been heat-sealed on the one side (12),
wherein of the one side (12) and the other side (14), at least the one side (12) has a portion where the bottom forming film (23) disposed between the front sheet and the back sheet of the bag sheet material (11) exists and the one side (12) is cut so as to align one end of the bottom forming film (23) with the side portion of the bag main part (15), so that dimensions between both sides of the liquid storage bag are smaller on a lower part of the liquid storage bag than on an upper part of the liquid storage bag.

FIG. 1

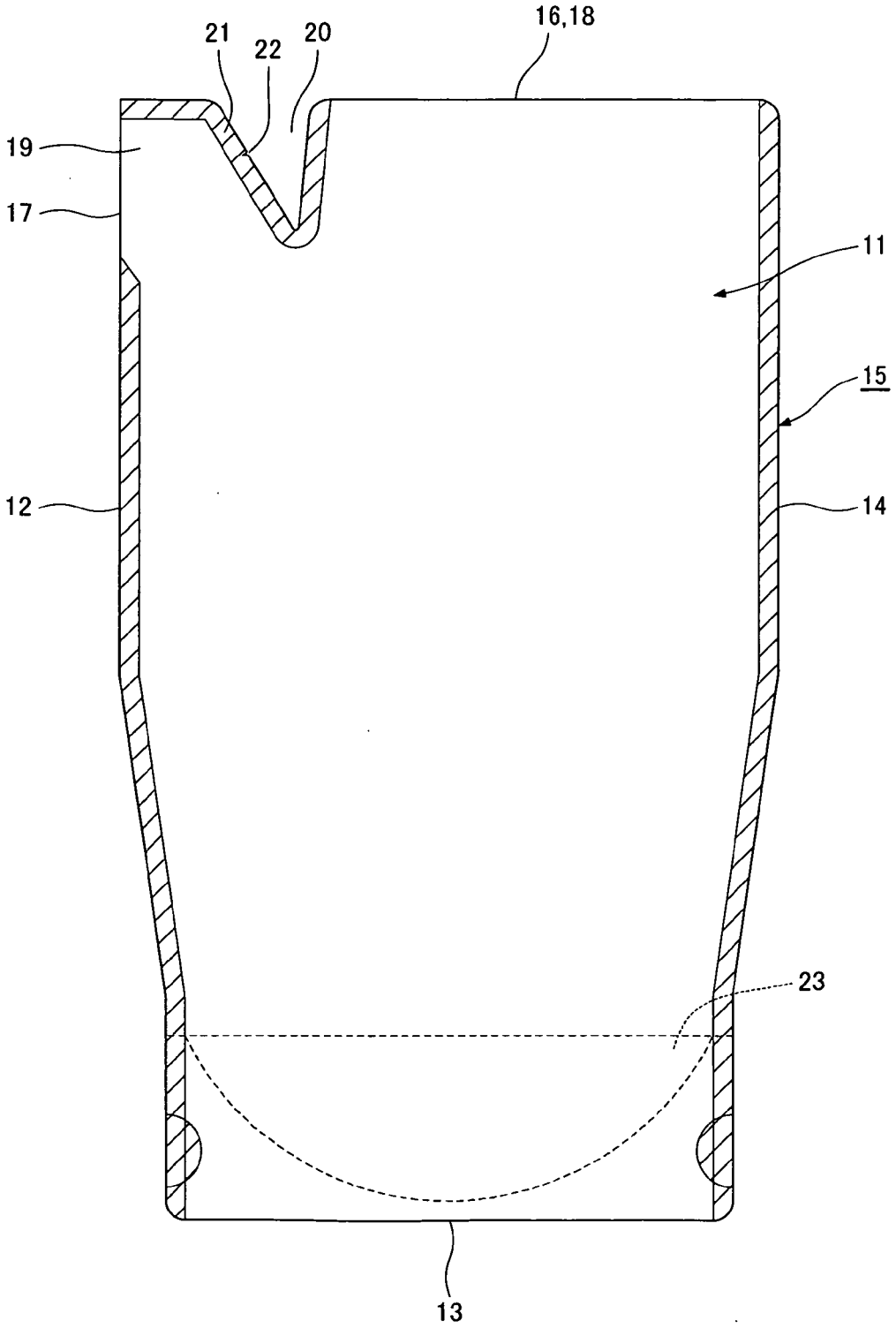


FIG. 2

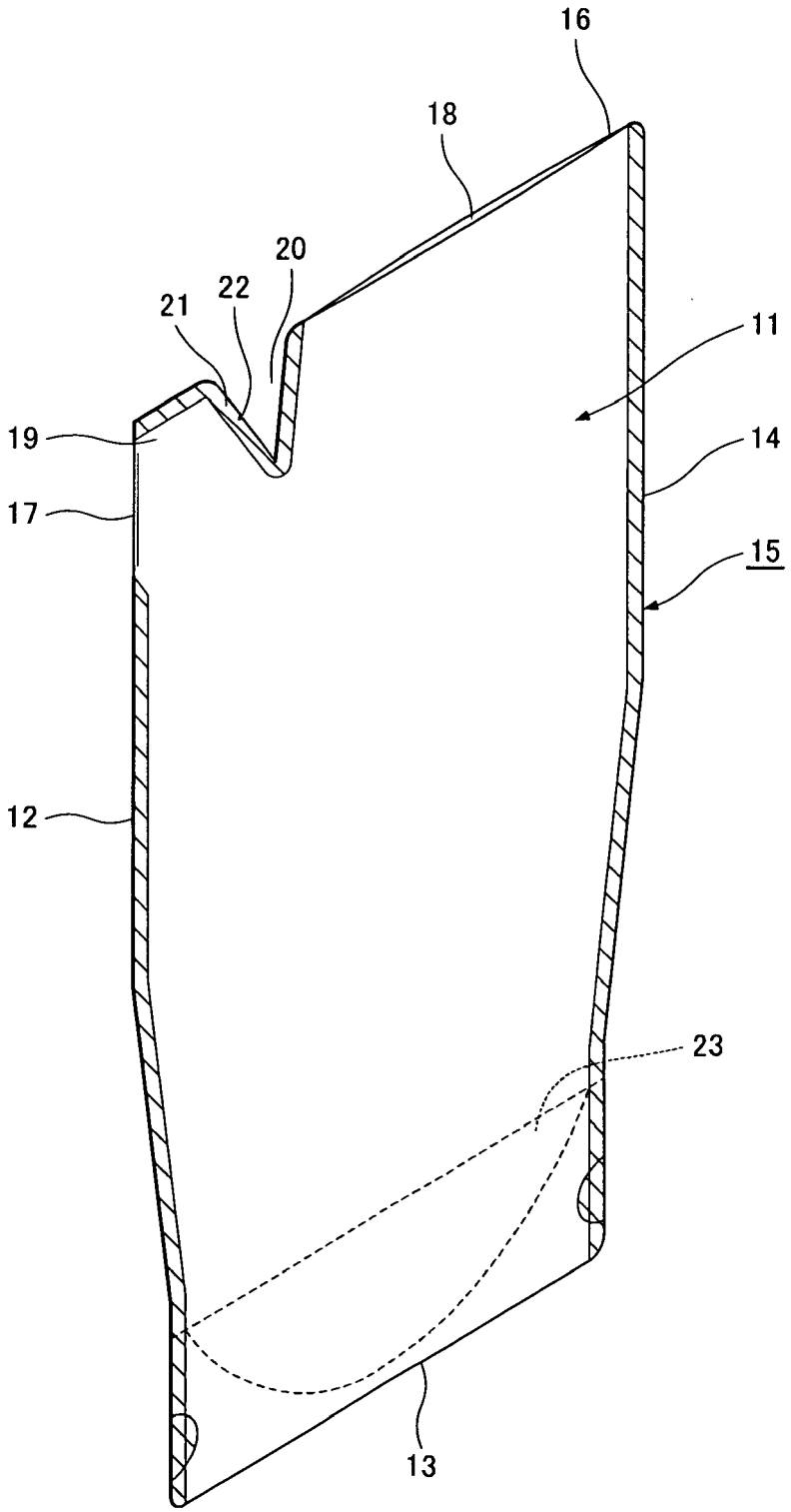


FIG. 3

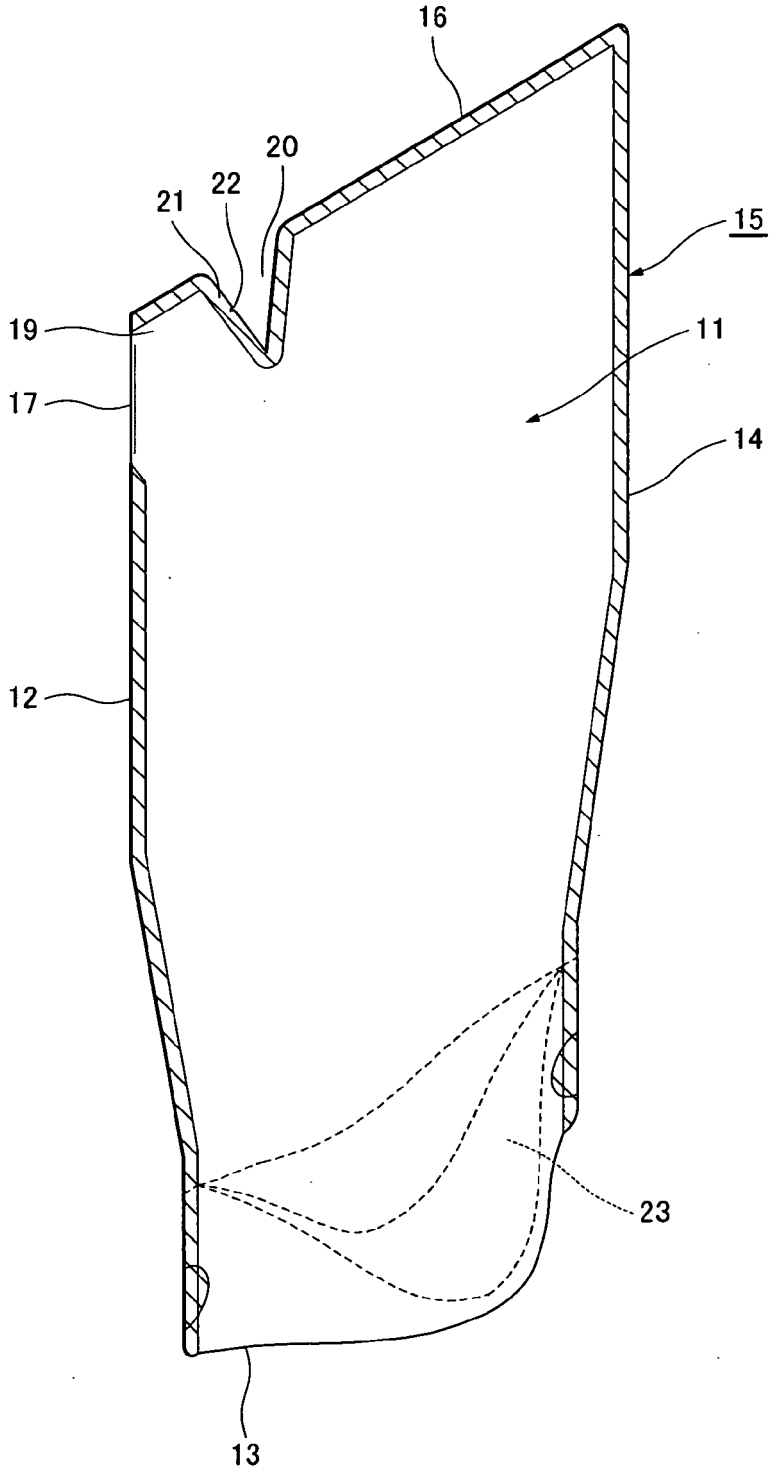


FIG. 4

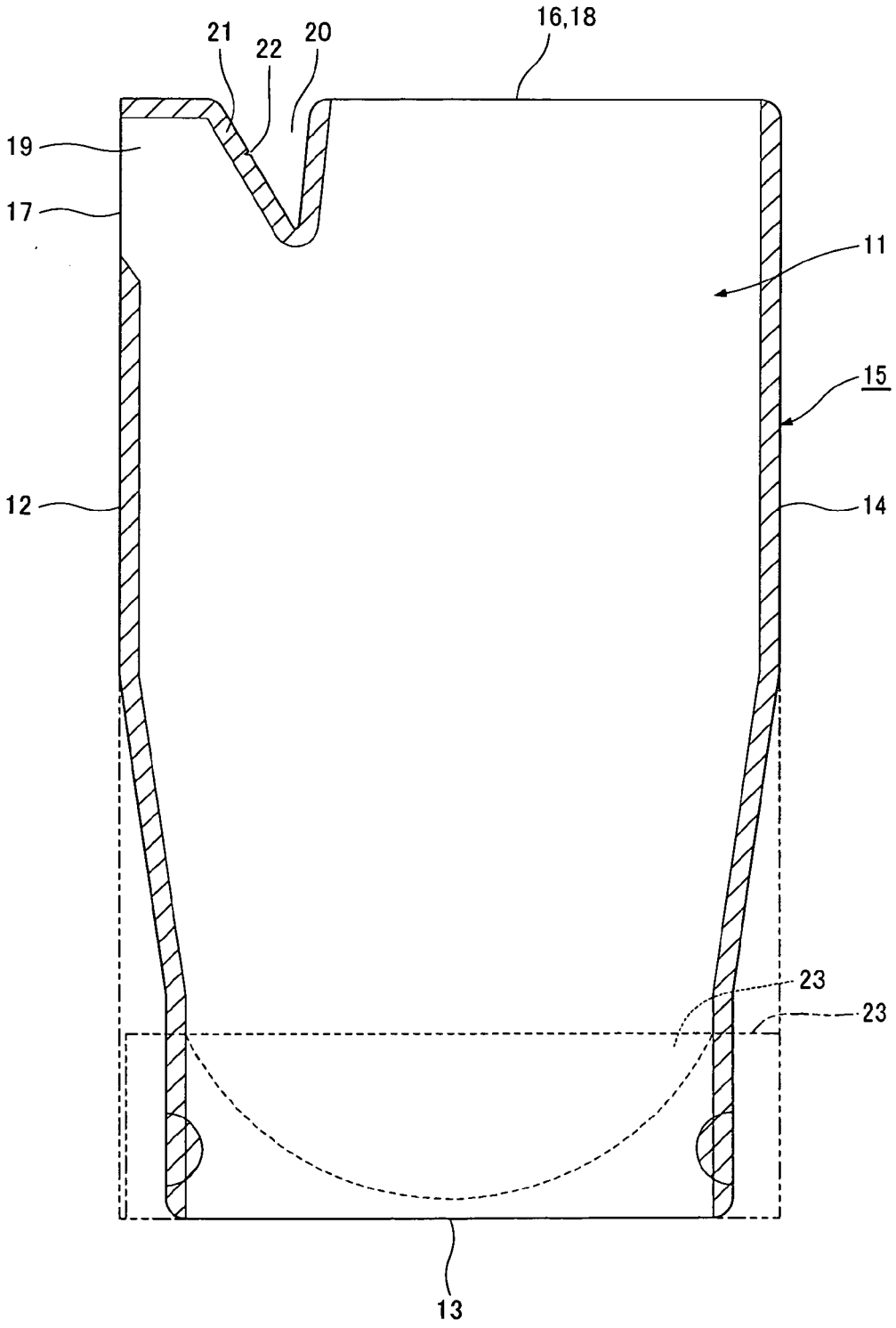


FIG. 5

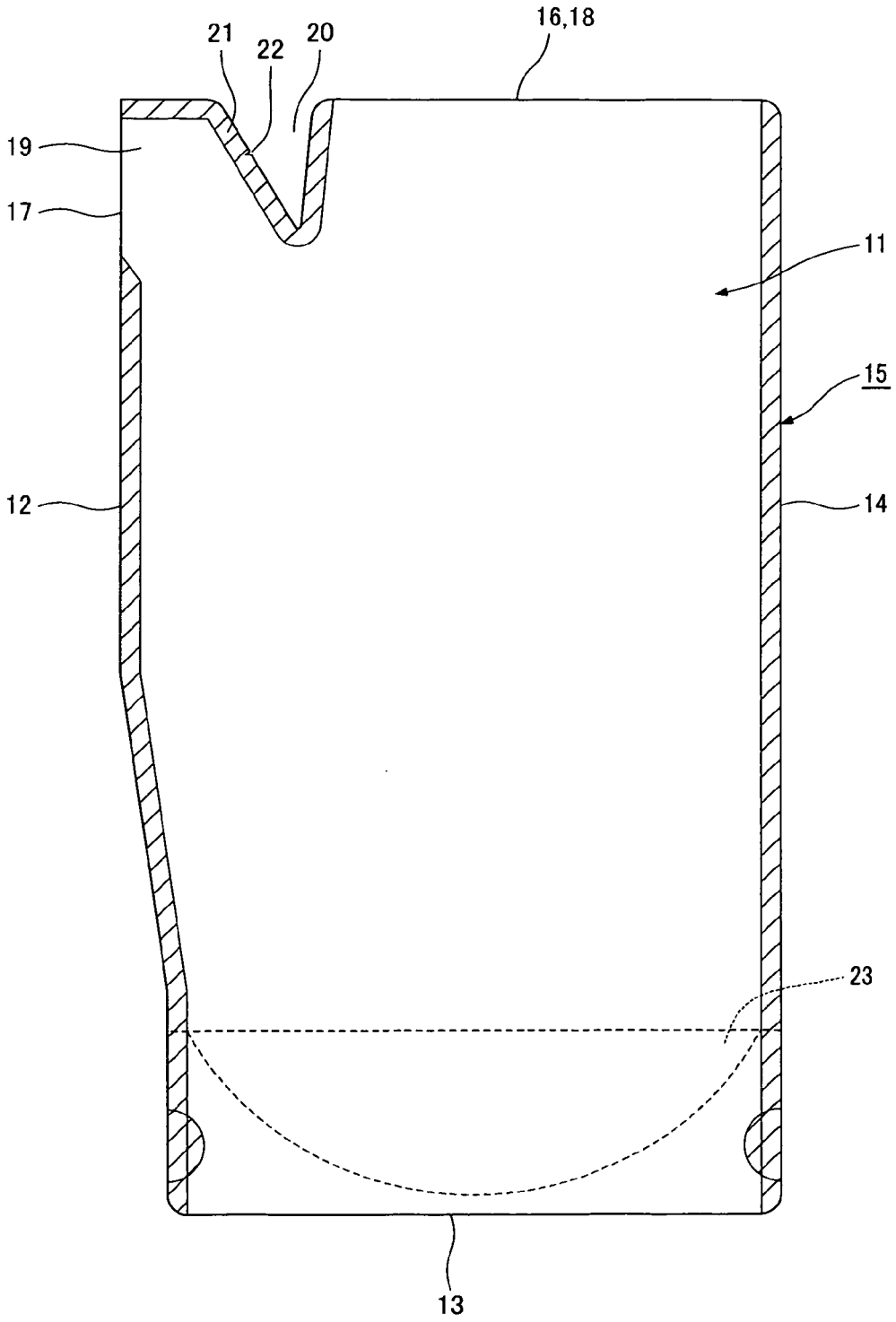


FIG. 6 PRIOR ART

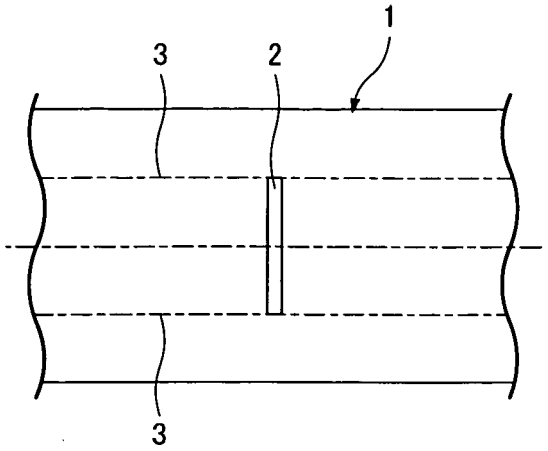
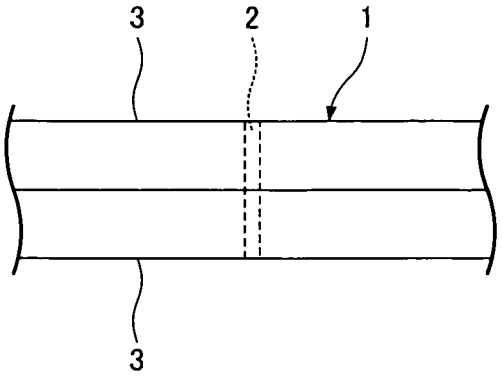



FIG. 7 PRIOR ART



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# EUROPEAN SEARCH REPORT

Application Number
EP 10 00 6380

## DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
|---|---|---|---|
| A | JP 10 095439 A (NIHON TOKKYO KANRI CO LTD) 14 April 1998 (1998-04-14) * abstract; figures 1-10 * | 1 | INV. B65D75/00 B65D75/58 |
| A | JP 2002 068210 A (INAGAKI HIROMICHI; PLASTO KK) 8 March 2002 (2002-03-08) * abstract; figures 1-3 * | 1 | |
| A,D | JP 11 070947 A (DAIWA GRAVURE CO LTD) 16 March 1999 (1999-03-16) * abstract; figures 1-7 * | 1 | |

TECHNICAL FIELDS SEARCHED (IPC)

B65D

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| Munich | 9 September 2010 | Grondin, David |

CATEGORY OF CITED DOCUMENTS

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EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 00 6380

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09-09-2010

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| JP 10095439 A | 14-04-1998 | NONE | |
| JP 2002068210 A | 08-03-2002 | NONE | |
| JP 11070947 A | 16-03-1999 | NONE | |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


- JP 11070947 A **[0002] [0003] [0004]**
- JP 3140172 B **[0005] [0006] [0007] [0008]**