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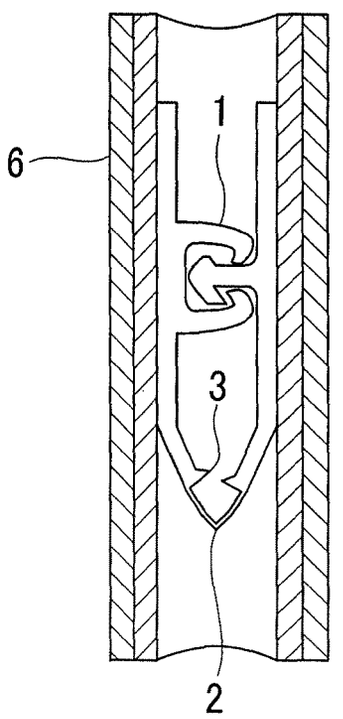
(54) FITTING MEMBER AND PACKAGING BAG BODY HAVING FITTING MEMBER

(57) This packaging bag with a fastener is one which is produced by fusing a fastener including a male member and a female member being engageable with each other, a joining portion whereby an end of a non-opening side flange portion of the male member is joined with an end of a non-opening side flange portion of the female member, and a ridge portion formed between the joining portion and the flange portion, in which the joining portion has a thickness ranging from not less than 10 μm to not more than 100 μm, the ridge portion has a thickness ranging from not less than 200 μm to not more than 2 mm, the joining portion is thinner than the flange portion, and the ridge portion is thicker than the flange portion, to a bag to form a packaging bag.

FIG.4



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Description

TECHNICAL FIELD

[0001] The present invention relates to a fastener and a packaging bag with a fastener, which is capable of preventing contents from leaking to an opening side of the fastener until a consumer utilizes the fastener even if the content is a liquid, cutting a joining portion off easily so as to open the bag when the content is taken out therefrom, fastening repeatedly and opening again after the bag is opened.
Priority is claimed on Japanese Patent Application No. 2004-235302, filed August 12, 2004, the content of which is incorporated herein by reference.

BACKGROUND ART

[0002] A packaging bag with a fastener, which is equipped with a pair of fastening members consisting of a male member and a female member at an opening portion of the bag and capable of opening and closing repeatedly, has been used in various fields such as food, medicine, miscellaneous goods, etc. However, it has been impossible to prevent the contents of the bag from leaking therefrom completely by only the sealing property of the fastening member, when the content has high fluidity. So, various countermeasures such as applying an easily removable film between a fastening member and a raw material film, applying an easily removable layer in a fastening member or a raw material film, etc. so as to form an easily-removable joining portion further at a non-opening side of the fastening member, have been performed in the case in which it is required to prevent the contents from flowing out from the bag completely.
[0003] Although a method of preventing the contents from flowing out of a bag by disposing an easily removable joining portion has been disclosed (for example, see Patent document 1), there is a problem in that a side-seal portion of the easily removable portion has a sealing strength which is inferior to those of the other side sealing portions. [Patent document 1] Japanese Unexamined Patent Application, First Publication No. H11-285518

DISCLOSURE OF INVENTION

[0004] It is an object of the present invention to provide a fastener and a packaging bag with a fastener, which can prevent the content from leaking out from the bag without adding an easily removable joining portion at a non-opening side of a fastening member even when the content is a substance having high fluidity, which can cut a joining portion off easily when the bag is opened and the content is taken out therefrom, and which can be hermetically sealed and opened repeatedly.
[0005] The inventors of the present invention have thoroughly researched in order to solve the above problems, and as a result, they have found that the above problems can be solved by joining the end portion of a non-opening side flange portion of a male member side with the end portion of a non-opening side flange portion of a female member side using a member having a specific thickness, and disposing a ridge having a specific thickness between the joining portion and the flange portion, and completed the present invention.
[0006] That is, the present invention is as follows.
A first aspect of the present invention is a fastener including a male member and a female member being engageable with each other, a joining portion whereby an end of the non-opening side flange portion of the male member is joined with an end of the non-opening side flange portion of the female member, and a ridge portion formed between the joining portion and the flange portion, in which the joining portion has a thickness ranging from not less than 10 μm to not more than 100 μm, the ridge portion has a thickness ranging from not less than 200 μm to not more than 2 mm, the joining portion is thinner than the flange portion, and the ridge portion is thicker than the flange portion.
A second aspect of the present invention is a packaging bag with a fastener, produced by fusing the fastener as set forth in the first aspect of the present invention to a bag to form a packaging bag.
[0007] The fastener and the packaging bag in accordance with the present invention can prevent the contents from leaking out even if the content is a substance having high fluidity, and which can cut the joining portion off easily when opening the packaging bag to take the contents out therefrom.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 is a schematic view showing an example of a fastener of the present invention which is in an engaged state.
FIG. 2 is a schematic view showing an example of a fastener of the present invention.
FIG. 3 is a front view of an example of a packaging bag with the fastener of the present invention.

FIG. 4 is a cross-sectional view showing a cross-section obtained by cutting along II-II line in FIG 3.

BEST MODE FOR CARRYING OUT THE INVENTION

[0009] The present invention will be explained in detail, below.

FIG. 1 is a schematic view showing an example of a fastener of the present invention which is in an engaged state.
FIG 2 is a schematic view showing an example of a fastener of the present invention.
FIG 3 is a front view of an example of a packaging bag with the fastener of the present invention.
FIG. 4 is a cross-sectional view showing a cross-section obtained by cutting along line II-II in FIG. 3.

[0010] In the fastener including a male member and a female member being engageable with each other, an end 4 of a non-opening side flange portion of the male member and of the female member are joined with each other, and a joining portion 2 has a thickness that ranges from not less than 10 μm to not more than 100 μm, preferably ranges from not less than 20 μm to not more than 80 μm, more preferably ranges from not less than 20 μm to not more than 50 μm, and still more preferably ranges from not less than 30 μm to not more than 50 μm. The reason the thickness of the joining portion 2 is regulated within the above range is that if the thickness is less than 10 μm, then the joining portion 2 may be broken due to friction, etc., or due to lack of strength when filling with a content, although the joining portion 2 can be easily cut off. On the other hand, if the thickness is more than 100 μm, then the joining portion 2 has an excessive strength, and hence it becomes difficult to cut the joining portion 2 off easily.

[0011] In the fastener of the present invention, a ridge portion 3 is disposed between the joining portion 2 and the flange portion 4, and the thickness of the ridge portion 3 ranges from not less than 200 μm to not more than 2 mm, preferably ranges from not less than 300 μm to not more than 1.5 mm, and more preferably ranges from not less than 300 μm to not more than 1.0 mm. The ridge portion 3 is disposed to accelerate the concentration of stress at the joining portion 2, and if no ridge portion 3 is disposed, then the boundary between the joining portion 2 and the flange portion 4 becomes unclear, and as a result it becomes impossible to cut the joining portion 2 off easily. If the thickness of the ridge portion 3 is less than 200 μm, then the difference in thickness between the joining portion 2 and the ridge portion 3 is too small, and as a result, stress is hardly concentrated at the joining portion 2. On the other hand, if the thickness of the ridge portion 3 is more than 2 mm, then the amount of resin at the ridge portion 3 becomes too large, and as a result, the ridge portion 3 cannot be completely squashed down in side-sealing during the bag-production process causing bag-production defects. In addition, it is likely to inhibit the engaging or breaking of the joining portion 3 when engaging the male member with the female member.

[0012] Although the resin which constitutes the fastener of the present invention is not particularly limited, polyolefin type resins, such as polyethylene, polypropylene, etc. are preferably used, and a resin composition consisting of two or more resins may be used. Moreover, the shape and the number of each of the male member and the female member are not particularly limited, and an arbitrary shape may be used as long as it has reopenable and reclosable function.

[0013] The method for producing the fastener of the present invention is not particularly limited, and a well-known method such as one that includes extruding a resin which has been melted and kneaded from a die using an extruder, and then cooling the resultant resin and molding it can be used.

[0014] Moreover, a packaging bag can be produced by the method including the step of thermally fusing the fastener of the present invention onto a base material film.

[0015] Moreover, the fastener and the packaging bag of the present invention can also be favorably used for packaging a fluid or liquid content, such as curry sauce, rice gruel, baste, bean jam, a flavoring material, etc., in addition to a dry substance, or a solid material.

[0016] Although details of the present invention will be explained more specifically below based on Examples, the present invention will not be limited only by the following Examples.

Evaluation of the joining portion.

[0017] The cutting-off performance of a joining portion at the time of opening was evaluated by the following method. Each of a flange portion 41 of a non-opening side of a male member and a flange portion 42 of a non-opening side of a female member was pinched by a thumb and a forefinger, and it was stretched to evaluate the cutting-off performance of the joining portion 2.
The evaluation standard is as follows.

◎ : Joining portion can be cut off very easily.

○ : Joining portion can be cut off easily.

Δ : Although joining portion can be cut off, it is hard to cut off.

X : Joining portion cannot be cut off.

Evaluation of liquid leakage

[0018] It was evaluated by the following method to confirm whether the content will be leaked or not. A packaging bag with a fastener was produced by placing a fastener portion with a width of 140 mm and a length of 210 mm on a position which was apart by 30 mm from an upper end of the bag, and then heat sealing the upper end and the side portion of the bag with a width of 10 mm. 200 ml of water was filled into the resultant packaging bag with a fastener from the bottom, and the bottom was heat-sealed with a width of 10 mm. The resultant bag was dropped from a height of 1m and it was confirmed whether the water was leaked or not.
Evaluation standard is as follows.

○ : There is no liquid leakage
X : There is liquid leakage

[Example 1]

[0019] As a material for a fastener, a resin consisting of 100% by weight of ethylene propylene copolymer (Sumitomo Noblen (trademark) FS3611 made by Sumitomo Chemical Co., Ltd.) was used, and this resin was molded and kneaded at 210˚C, using an extruder having a diameter of 40 mm, and a L/D of 25, and the resultant resin was introduced to a die having a joining portion at a male and female part of a fastener, whereby the resultant resin was subjected to an extrusion molding processing such that the thickness of the joining portion 2 became 30 μm, the thickness of the ridge portion 3 became 300 μm, and the thickness of the flange portion 4 became 150 μm, and then the resultant resin was introduced to a water-cooling bath so as to be cooled and solidified, and thereafter the resultant resin was wound by a winder to obtain a fastener. Results of the evaluation of the joining portion and the evaluation of liquid leakage are shown in Table 1.

[Example 2]

[0020] A fastener was produced by the same way as in Example 1, with the exception of performing an extrusion molding processing such that the thickness of the joining portion 2 became 50 μm, the thickness of the ridge portion 3 became 500 μm, and the thickness of the flange portion 4 became 150 μm, using a resin which consists of 100% by weight of a low density polyethylene (SUMIKASEN(trademark) F412-1 made by Sumitomo Chemical Co., Ltd.) as a material for the fastener. Results of the evaluation of the joining portion and the evaluation of liquid leakage are shown in Table 1.

Comparative Example 1

[0021] A fastener was produced by the same way as in Example 1, with the exception of performing an extrusion molding processing such that the thickness of the joining portion 2 became 5 μm, the thickness of the ridge portion 3 became 300 μm, and the thickness of the flange portion 4 became 150 μm, using a resin which consists of 100% by weight of an ethylene-propylene copolymer (SUMITOMO NOBLEN(trademark) FS3611 made by Sumitomo Chemical Co., Ltd.) as a material for the fastener. Results of the evaluation of the joining portion and the evaluation of liquid leakage are shown in Table 1.

Comparative Example 2

[0022] A fastener was produced by the same way as in Example 1, with the exception of performing an extrusion molding processing such that the thickness of the joining portion 2 became 200 μm, the thickness of the ridge portion 3 became 300 μm, and the thickness of the flange portion 4 became 150 μm, using a resin which consists of 100% by weight of an ethylene-propylene copolymer (SUMITOMO NOBLEN (trademark) FS3611 made by Sumitomo Chemical Co., Ltd.) as a material for the fastener. Results of the evaluation of the joining portion and the evaluation of liquid leakage are shown in Table 1.

[0023] The following can be seen from the results. That is, all of examples which satisfy the condition of the present invention do not show the liquid leakage, the joining portion could be cut off easily at the time of opening the packaging bag, and the packaging bag could be opened. On the other hand, in Comparative Example 1 having too thin a joining

portion, liquid leakage was observed, whereas in Comparative Example 2 having too thick a joining portion, cutting performance of the joining portion could not be achieved and it was inferior in opening performance.

[0024]

[Table1]

	Example 1	Example 2	Comparative Example 1	Comparative Example 2
Thickness of the joining portion (μm)	30	50	5	200
Thickness of the ridge portion (μm)	300	500	300	300
Thickness of the flange portion (μm)	150	150	150	150
Evaluation of the joining portion	◎	○	◎	×
Evaluation of liquid leakage	○	○	×	○

INDUSTRIAL APPLICABILITY

[0025] The fastener and the packaging bag of the present invention can be applied to a fastener and the packaging bag, which can be fastened and opened repeatedly.

Claims

1. A fastener comprising a male member and a female member being engageable with each other, a joining portion whereby an end of a non-opening side flange portion of the male member is joined with an end of a non-opening side flange portion of the female member, and a ridge portion formed between the joining portion and the flange portion, wherein the joining portion has a thickness ranging from not less than 10 μm to not more than 100 μm, the ridge portion has a thickness ranging from not less than 200 μm to not more than 2 mm, the joining portion is thinner than the flange portion, and the ridge portion is thicker than the flange portion.

2. A packaging bag with a fastener, produced by fusing the fastener as set forth in claim 1 to a bag to form a packaging bag.

FIG. 1

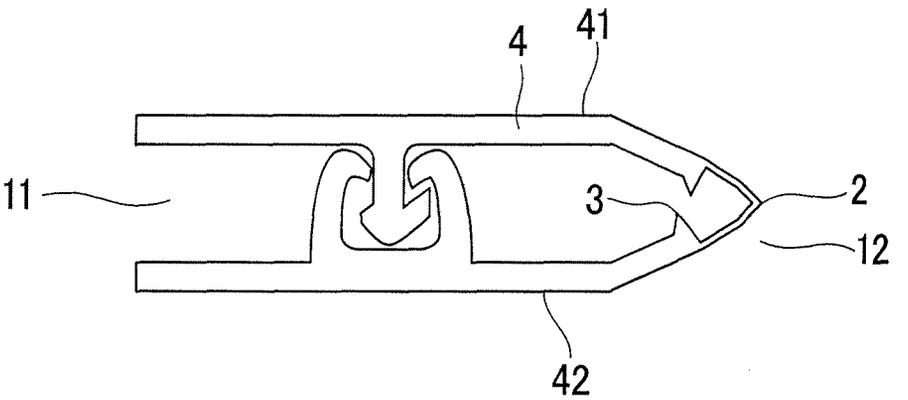


FIG. 2

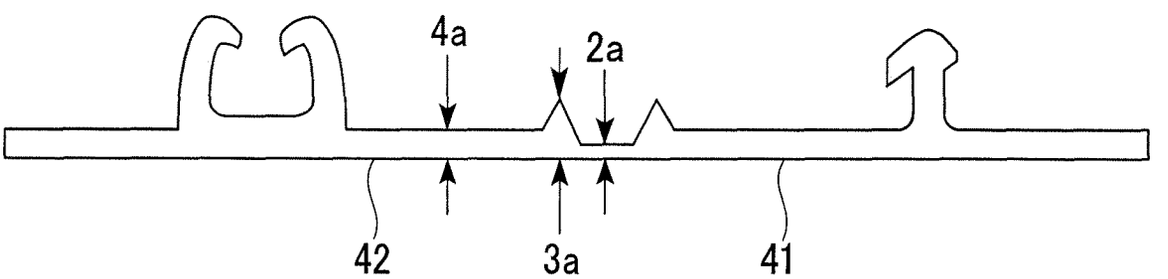


FIG.3

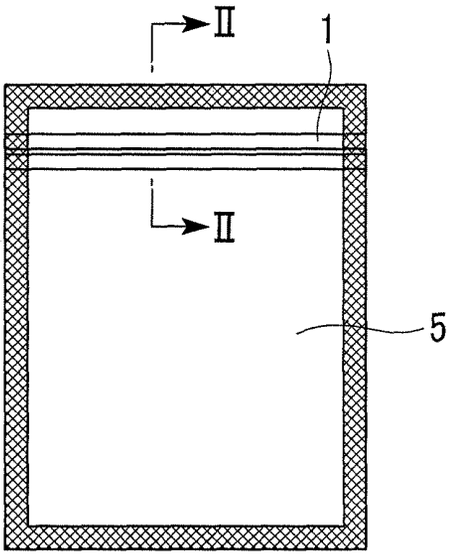
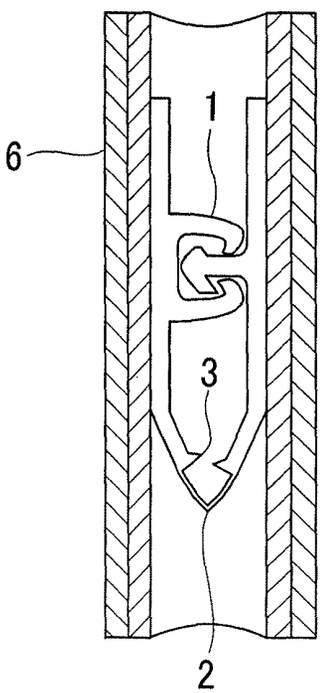


FIG.4



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2005/014452

A. CLASSIFICATION OF SUBJECT MATTER
Int.Cl[7] B65D33/25

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)
Int.Cl[7] B65D33/25

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	1996-2005
Kokai Jitsuyo Shinan Koho	1971-2005	Toroku Jitsuyo Shinan Koho	1994-2005

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.
A	JP 63-191705 A (Nippon Tokkyo Kanri Kabushiki Kaisha), 09 August, 1988 (09.08.88), Full text; Figs. 1 to 4 & US 4874257 A & EP 276554 A2	1,2
A	JP 2005-178791 A (Toshikazu KASAI), 07 July, 2005 (07.07.05), Full text; Fig. 10 (Family: none)	1,2
A	JP 5-501098 A (Dauburanzu Inc.), 04 March, 1993 (04.03.93), Full text; Figs. 1 to 5 & US 4368332 A1 & EP 13607 A1	1,2

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

* Special categories of cited documents:
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Date of the actual completion of the international search 01 November, 2005 (01.11.05)	Date of mailing of the international search report 15 November, 2005 (15.11.05)
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2004235302 A **[0001]**
- JP H11285518 A **[0003]**