



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.04.2016 Bulletin 2016/15

(51) Int Cl.:
B65D 33/25 (2006.01)

(21) Application number: **15184012.1**

(22) Date of filing: **07.09.2015**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA

(71) Applicant: **Takigawa Corporation**
Funabashi Chiba 274-8520 (JP)

(72) Inventor: **Takigawa, Hiroyuki**
Funabashi, Chiba 274-8520 (JP)

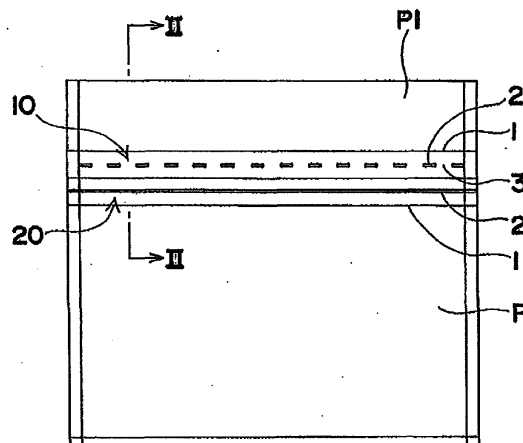
(74) Representative: **Cohausz & Florack**
Patent- & Rechtsanwälte
Partnerschaftsgesellschaft mbB
Bleichstraße 14
40211 Düsseldorf (DE)

(30) Priority: **09.10.2014 JP 2014207812**
12.05.2015 CA 2891831

(54) **CHILD-RESISTANT ZIPPER AND PACKAGING BAG INCORPORATING SAID ZIPPER**

(57) A zipper unit for a packaging bag is provided comprising a sealing zipper to seal the packaging bag in a ally sealed state. The sealing zipper is configured to be opened with the opening operation of the packaging bag. The zipper unit also comprises a locking zipper having a fit-engagement strength stronger than the fit-engagement strength of the sealing zipper. A releasing cut-out portion is provided in a part of a fit-engagement body

of the locking zipper. The locking zipper is configured to be opened from the releasing cutout portion. The locking zipper may be situated as the first zipper at the opening of the packaging bag to prevent the packaging bag from being opened, for example, by a child. The sealing zipper may be provided as the second zipper closest to the inside of the packaging bag and accessible by release or opening of the locking zipper.



Description

Technical Field

[0001] The present invention relates to a child-resistant zipper and a packaging bag incorporating such a zipper to prevent unwanted opening of the zipper, for example, by a child, etc., but which is readily opened by predetermined procedures.

Background Art

[0002] The term "child-resistant" refers to a function/mechanism by means of which it is possible to prevent an object from being easily manipulated, for example, by a child or other similar individual. Due to this function, a child is hindered or prevented, for example, from tampering with a lighter, and from easily opening a container of medicine, etc.

[0003] On the other hand, a packaging bag including a sealing zipper can be easily opened and closed, and may be used for various packaging purposes. For example, the packaging bag disclosed in Japanese Patent Application No. 3655104 is suitable, in particular, for the packaging of food to be cooked by heating by a microwave oven, etc. In this case, two zippers are provided in parallel at the opening of the bag body. Only one of the zippers is opened on heating, and the open zipper is closed when the food is to be stored after the completion of the heating, whereby it is possible to perform the heating and the storage thereafter through easy operational procedures.

[0004] Although there has been proposed a zipper suitable for the packaging of food to be cooked by heating as disclosed in Japanese Patent Application No. 3655104, no zipper has been proposed as of yet which is provided with a child-resistant function to hinder or prevent its opening by a child.

[0005] Thus, in a case where something which has to be prevented from being accidentally ingested by a child is included in a packaging bag equipped with a zipper, control of the packaging bag requires careful monitoring. Thus, there is a need for a child-resistant zipper for use in a packaging bag that is difficult for a child to open.

[0006] The present invention has been made with a view toward solving at least one of the above problems.

Summary of the Invention

[0007] In a first aspect according to the present invention, there is provided a zipper unit equipped with a pair of adhesion band members for adherence to opposing inner side surfaces of an opening of a packaging bag, and a fit-engagement body configured to releasably engage opposing surfaces of the adhesion band members, wherein the fit-engagement body comprises a sealing zipper which releasably engages the inner side surfaces of the opening of the bag in a sealed state which is re-

leased with the opening operation of the opening of the packaging bag; and a locking zipper comprising a first fit-engagement portion with at least one fit-engagement protrusion, and a second fit-engagement portion with at least one fit-engagement recess, wherein the first and second fit-engagement portions are on opposing surfaces of the fit engagement body and the fit-engagement protrusion and recess are adapted to releasably engage the first and second fit-engagement portions in a locked state, the locking zipper also comprising a releasing cutout portion provided in the fit-engagement body, wherein engagement of the fit-engaging protrusion and recess is released from the releasing cutout portion to unlock the locking zipper, wherein the locking zipper and the sealing zipper are arranged on the inner side surfaces of the opening of the bag.

[0008] In one embodiment, there is provided a zipper unit, wherein, in the locking zipper, a plurality of releasing cutout portions are alternately provided along the first and second fit-engagement portions between protrusions and recesses, respectively, and wherein the locked state of the locking zipper is released when engaged fit-engagement protrusions and fit-engagement recesses are caused to slide oppositely toward an adjacent releasing cutout portion.

[0009] In another embodiment, there is provided a zipper unit, wherein, in the locking zipper, the releasing cutout portion is provided at an end portion of the fit-engagement body, and the locked state of the locking zipper is released by inserting a finger into the releasing cutout portion.

[0010] In another aspect of the invention, there is provided a packaging bag with a zipper unit equipped with a pair of adhesion band members adhered to inner opposing side surfaces of an opening of the packaging bag, and a fit-engagement body configured to releasably engage opposing surfaces of the adhesion band members, wherein the fit engagement body comprises: a sealing zipper which releasably engages the inner side surfaces of the opening P1 in a sealed state which is released with the opening operation of the opening of the packaging bag; and a locking zipper comprising a first fit-engagement portion with at least one fit-engagement protrusion, and a second fit-engagement portion with at least one fit-engagement recess, wherein the first and second fit-engagement portions are on opposing surfaces of the fit engagement body and the fit-engagement protrusion and recess are adapted to releasably engage the first and second fit-engagement portions in a locked state, the locking zipper also comprising releasing cutout portions provided in the fit-engagement body, wherein engagement of the fit-engaging protrusion and recess is released from a releasing cutout portion, wherein the releasing cutout portions are alternately provided along the first and second fit-engagement portions between protrusions and recesses, respectively, and the locked state of the locking zipper is released when engaged fit-engagement protrusions and recesses are caused to slide

oppositely toward the adjacent releasing cutout portion, and wherein the locking zipper is provided as the first zipper at the opening of the packaging bag, and the sealing zipper is provided as the second zipper accessible when the locking zipper is released.

[0011] In an embodiment, there is provided a zipper packaging bag provided with a zipper unit equipped with a pair of adhesion band members adhered to inner opposing side surfaces of an opening of a packaging bag, and a fit-engagement body configured to releasably engage opposing surfaces of the adhesion band members, wherein the fit engagement body comprises: a sealing zipper which releasably engages the inner side surfaces of the opening in a sealed state which is released with the opening operation of the opening of the packaging bag; and a locking zipper comprising a first fit-engagement portion with at least one fit-engagement protrusion, and a second fit-engagement portion with at least one fit-engagement recess, wherein the first and second fit-engagement portions are on opposing surfaces of the fit engagement body and the fit-engagement protrusion and recess are adapted to releasably engage the first and second fit-engagement portions in a locked state, the locking zipper also comprising a releasing cutout portion provided in the fit-engagement body, wherein engagement of the fit-engaging protrusion and recess is released from the releasing cutout portion, wherein the releasing cutout portion is provided at a longitudinal end portion of the fit-engagement body, the locked state of the locking zipper is released by inserting a finger into the releasing cutout portion, and wherein the locking zipper is provided as the first zipper at the opening of the packaging bag, and the sealing zipper is provided as the second zipper accessible by the release of the locking zipper.

[0012] The zipper unit according to an embodiment of the present invention, for use in a packaging bag, incorporates a locking zipper which has a fit-engagement strength that is greater or stronger than the fit-engagement strength of the sealing zipper. The locking zipper includes a releasing cutout portion formed within part of the fit-engagement body, and the locked state of the locking zipper is released from the releasing cutout portion, whereby, even when the opening of the packaging bag is opened at the sealing zipper, the locking zipper is not released or unlocked, but can be opened from the releasing cutout portion making the opening of the locking zipper difficult for opening by a child, or other similar individual.

[0013] The locking zipper is formed such that protrusions and recesses formed in the fit-engagement body and releasing cutout portions are alternately provided along the fit-engagement body, and that fit-engaged protrusions and recesses of the fit-engaged fit-engagement body are released from engagement when respectively caused to slide oppositely toward the adjacent releasing cutout portion. Thus, if one tries to open the packaging bag, the locking zipper will not open, thereby hindering opening of packaging bag by a child.

[0014] The releasing cutout portion may be provided at a longitudinal end portion of the fit-engagement body and the fit-engaged portions of the fit-engagement body are opened or released from engagement by inserting a finger into the releasing cutout portion. Thus, if one tries to open the packaging bag, the locking zipper will not open. As a result, the packaging bag hinders opening by a child.

[0015] It is possible to provide various packaging bags with a locking zipper as herein described to render the opening of the packaging bags to be child-resistant. Furthermore, when the locking zipper is released from its locked state and opened, the sealing zipper is readily opened through the opening operation of the packaging bag in a normal manner.

Brief Description of the Drawings

[0016]

Fig. 1 is a front view of an embodiment of the present invention.

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

Fig. 3 is a side sectional view showing a lock structure when the opening is widened.

Fig. 4 is a front view of another embodiment of the present invention.

Fig. 5 is a side sectional view taken along arrow line V-V of Fig. 4.

Detailed Description of the Invention

[0017] In one embodiment of the present invention, a zipper unit, for example, a polyethylene or polypropylene zipper unit, is provided having a fit-engagement body 2 comprising first and second fit-engagement portions which may be releasably fit-engaged; basically, the zipper is formed by the adhesion band members 1 and the fit-engagement portions of body 2 protruding therefrom; due to the fit-engagement strength of the fit-engagement portions of body 2, the opening P1 of the packaging bag P may be releasably engaged (See Figs. 1 and 4).

[0018] The adhesion band members 1 are band-like members for adherence to the opposing inner sides of the opening P1 of, for example, a packaging bag P, e.g. a polyethylene or polypropylene bag (See Fig. 1). The first fit-engagement portion of fit-engagement body 2 comprises fit-engagement protrusions 2A and the second fit-engagement portion comprises fit-engagement recesses 2B provided on the opposing surfaces of the fit-engagement body 2 and permit the band-like bodies 1 to be fit-engaged with each other.

[0019] In an embodiment of the present invention, a zipper unit is provided comprising two kinds of zippers: the locking zipper 10 and the sealing zipper 20 (See Figs. 1 and 4). The sealing zipper 20 is a zipper for releasably engaging the opposing inner side surfaces of the opening

P1 of bag P to each other in a sealed state; it is a zipper of a general type in which the fit-engaged fit-engagement body 2 (e.g. the engagement of first and second portions of the fit-engagement body 2) is opened or released with the opening operation of the opening P1 of the packaging bag P.

[0020] The locking zipper 10 is a zipper in which the fit-engagement the first and second portions of the fit-engagement body 2 is stronger than that of the sealing zipper 20; it is provided so as to be difficult to open through the opening operation of the opening P1 of the packaging bag P. Furthermore, at least one releasing cutout portion 3 is provided in a part of the fit-engagement body 2 (See Figs. 1 and 4). This releasing cutout portion 3 is provided so as to open or release the locked state of the locking zipper 10 (e.g. the engagement of first and second portions of the fit-engaged fit-engagement body 2 by the locking zipper 10).

[0021] In the locking zipper 10 shown in Figs. 1 through 3, the fit-engagement portions of body 2 comprises a plurality of releasing cutout portions 3 alternately provided with fit-engagement recesses 2B and protrusions 2A along the longitudinal direction of the fit-engagement body 2 (See Fig. 3(A)). And, when the fit-engagement protrusion 2A and the fit-engagement recess 2B in the fit-engaged state are caused to slide oppositely in the direction of the adjacent releasing cutout portion 3 (See Fig. 3(B)), the fit-engagement body 2 is opened or released from its locked state (See Fig. 3(C)). Although a large number of releasing cutout portions 3 are provided along the fit-engagement body 2 in the drawings, the number and interval of the releasing cutout portions 3 are not restricted to those shown but can be set arbitrarily from at least 1 to a plurality.

[0022] In the locking zipper 10 shown in the embodiment of Figs. 4 and 5, the releasing cutout portion 3E is provided at a longitudinal end portion of the fit-engagement body; by inserting a finger into the releasing cutout portion 3E, the fit-engagement state of the fit-engagement body 2 is released. That is, by inserting a fingertip into the releasing cutout portion 3E, it is possible to forcibly open, e.g. disengage the fit-engagement body 2 by disengaging the engagement between recesses and protrusions of first and second fit engagement portions. Although, in the shown example, the releasing cutout portions 3E are provided at both longitudinal end portions of the fit-engagement body 2, it is also possible to provide the releasing cutout portion 3E solely at one side of the end portions. Furthermore, apart from forming the releasing cutout portion 3E in a width allowing insertion of a fingertip, it is also possible to form the releasing cutout portion 3 by cutting out a part of the fit-engagement body 2. Thus, a releasing cutout portion 3E permits opening of the fit-engagement body 2 with a fingertip, or other means.

[0023] The packaging bag P of an embodiment of the present invention is a packaging bag P provided with zippers releasably engaging the opening P1 by the fit-

engagement strength of the fit-engagement body 2 (See Figs. 1 and 4). That is, the present invention provides a zipper unit and packaging bag P incorporating a zipper unit comprising a locking zipper 10 and a sealing zipper 20 at the opening P1.

[0024] Thus, the locking zipper 10 may be selected from a locking zipper as defined herein, such as a locking zipper 10 shown in Fig. 1 or a locking zipper 10 shown in Fig. 4. Regarding the sealing zipper 20, any type of conventionally used sealing zippers are sufficient.

[0025] Preferably, by providing the locking zipper 10 as the first zipper at the opening P1 of the packaging bag P, the opening of the packaging bag by a child is hindered (See Figs. 1, 2 and 5). Furthermore, by providing the sealing zipper 20 as the second zipper, closest to the inside P2 of the packaging bag P, and accessed only by opening or releasing locking zipper 10, the packaging bag P is sealed. Although, in the shown examples, the locking zipper 10 and the sealing zipper 20 are separately provided, these may also be provided integrally.

[0026] The zipper unit described herein is applicable to all packaging bags in which both a locking zipper 10 and the sealing zipper 20 are concurrently used at the opening P1. Thus, in addition to the flat bag as shown in the drawings, the packaging bag of the present invention may be gusseted bags of various types, including, but limited to, bottom gusset or side gusset bags, with or without a flat-bottom configuration. Further, regarding the configuration, structure, size, contents, etc., of the packaging bag P, various modifications are possible.

Description of Symbols

[0027]

P:	Packaging bag
P1:	Opening
P2:	the inside of the packaging bag
1:	Adhesion band member
2:	Fit-engagement body
2A:	Fit-engagement protrusion
2B:	Fit-engagement recess
3:	Releasing cutout portion
10:	Locking zipper
20:	Sealing zipper

Claims

1. A child-resistant zipper unit comprising a pair of adhesion band members for adherence to opposing inner side surfaces of an opening of a packaging bag, and a fit-engagement body configured to releasably engage opposing surfaces of the adhesion band members, wherein the fit-engagement body comprises: a sealing zipper which releasably engages the inner side surfaces of the opening in a sealed state which is

released with the opening operation of the opening of a packaging bag; and

a locking zipper comprising a first fit-engagement portion with at least one fit-engagement protrusion, and a second fit-engagement portion with at least one fit-engagement recess, wherein the first and second fit-engagement portions are on opposing surfaces of the fit engagement body and the fit-engagement protrusion and recess are adapted to releasably engage the first and second fit-engagement portions in a locked state, the locking zipper also comprising a releasing cutout portion provided in the fit-engagement body, wherein engagement of the fit-engaging protrusion and recess is released from the releasing cutout portion to unlock the locking zipper, wherein the locking zipper and the sealing zipper are arranged parallel to the inner side surfaces of the opening.

2. The zipper unit according to Claim 1, wherein, in the locking zipper, a plurality of releasing cutout portions are alternately provided along first and second fit-engagement portions between the protrusions and recesses, respectively, and wherein the locked state of the locking zipper is released when the engaged fit-engagement protrusions and a fit-engagement recesses are caused to slide oppositely toward an adjacent releasing cutout portion.

3. The zipper unit according to Claim 1, wherein, in the locking zipper, the releasing cutout portion is provided at an end portion of the fit-engagement body, and the locked state of the locking zipper is released by inserting a finger into the releasing cutout portion.

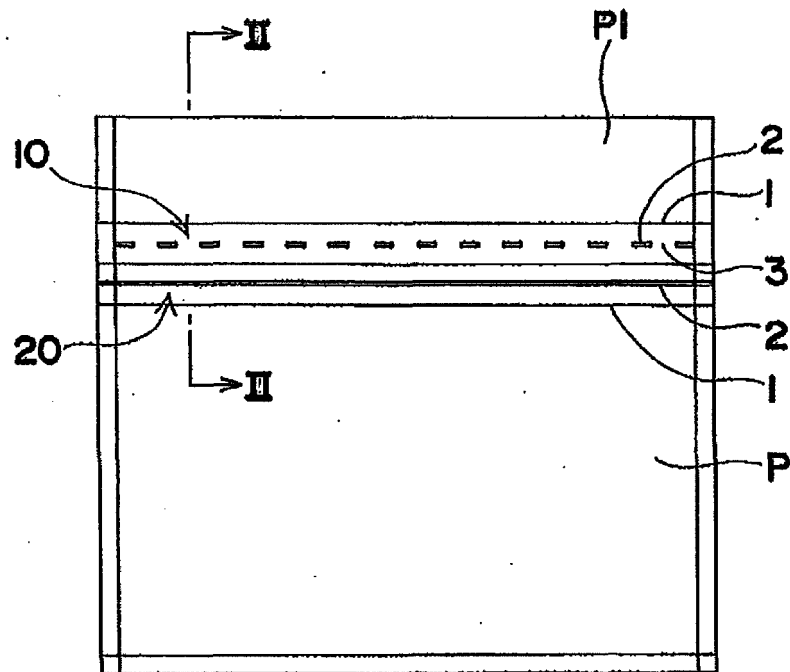
4. A zipper packaging bag provided with a zipper unit comprising a pair of adhesion band members adhered to inner opposing side surfaces of an opening of the packaging bag, and a fit-engagement body configured to releasably engage opposing surfaces of the adhesion band members, wherein the fit engagement body comprises a sealing zipper which releasably engages the inner side surfaces of the opening in a sealed state which is released with the opening operation of the opening of the packaging bag; and a locking zipper comprising a first fit-engagement portion with at least one fit-engagement protrusion, and a second fit-engagement portion with at least one fit-engagement recess, wherein the first and second fit-engagement portions are on opposing surfaces of the fit engagement body and the fit-engagement protrusion and recess are adapted to releasably engage the first and second fit-engagement portions in a locked state, the locking zipper also comprising releasing cutout portions provided in the fit-engagement body, wherein engagement of the fit-engaging protrusion and recess is released from the releasing cutout portion,

wherein releasing cutout portions are alternately provided along the first and second fit-engagement portions between the protrusions and recesses, respectively, and locked state of the locking zipper is released when engaged fit-engagement protrusions and the fit-engagement recesses are caused to slide oppositely toward the adjacent releasing cutout portion, and

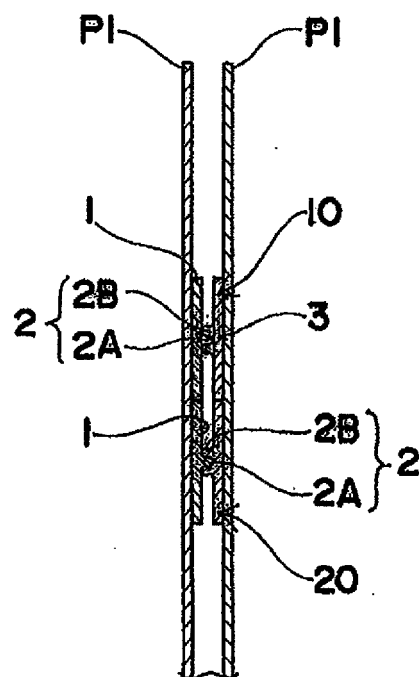
wherein the locking zipper is provided as the first zipper at the opening of the packaging bag, and the sealing zipper is provided as the second zipper accessible on release of the locking zipper.

5. A zipper packaging bag provided with a zipper unit comprising a pair of adhesion band members adhered to inner opposing side surfaces of an opening of a packaging bag, and a fit-engagement body configured to releasably engage opposing surfaces of the adhesion band members, wherein the fit engagement body comprises a sealing zipper which releasably engages the inner side surfaces of the opening in a sealed state and which is released with the opening operation of the opening of the packaging bag; and a locking zipper comprising a first fit-engagement portion with at least one fit-engagement protrusion, and a second fit-engagement portion with at least one fit-engagement recess, wherein the first and second fit-engagement portions are on opposing surfaces of the fit engagement body and the fit-engagement protrusion and recess are adapted to releasably engage the first and second fit-engagement portions in a locked state, the locking zipper also comprising a releasing cutout portion provided in the fit-engagement body, wherein engagement of the fit-engaging protrusion and recess is released from the releasing cutout portion, wherein the releasing cutout portion is provided at a longitudinal end portion of the fit-engagement body, and the locked state of the locking zipper is released by inserting a finger into the releasing cutout portion, and wherein the locking zipper is provided as the first zipper at the opening of the packaging bag, and the sealing zipper is provided as the second zipper accessible when the locking zipper is released.

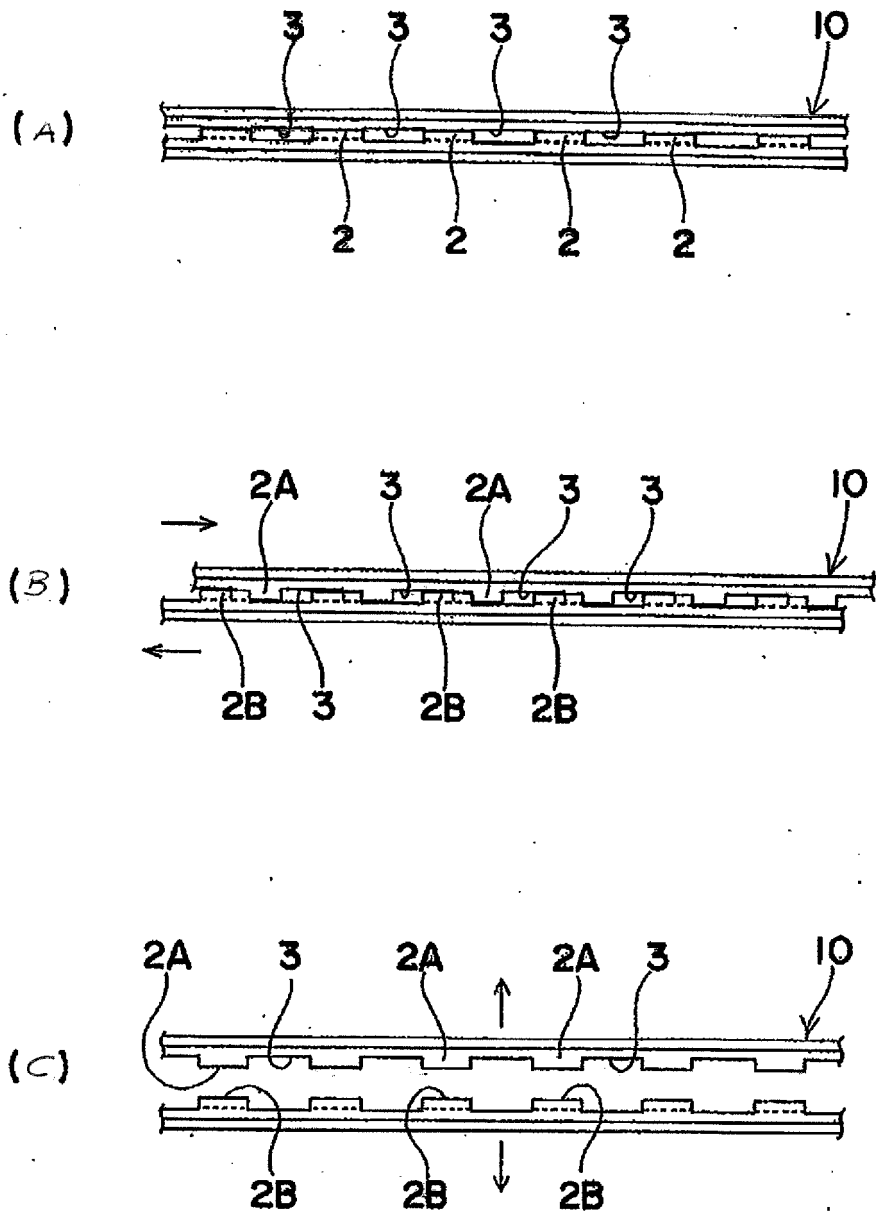
I



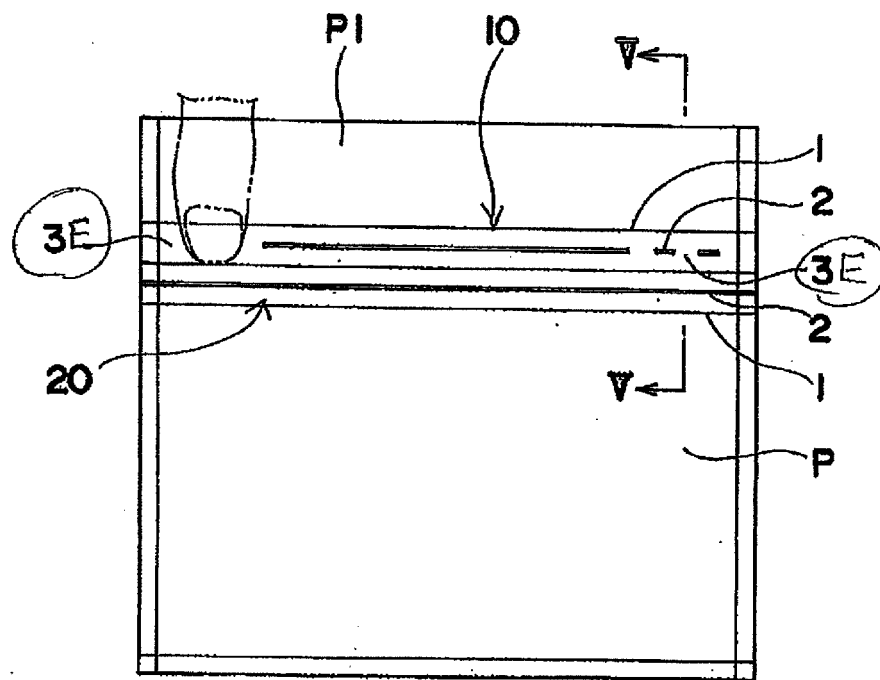
2



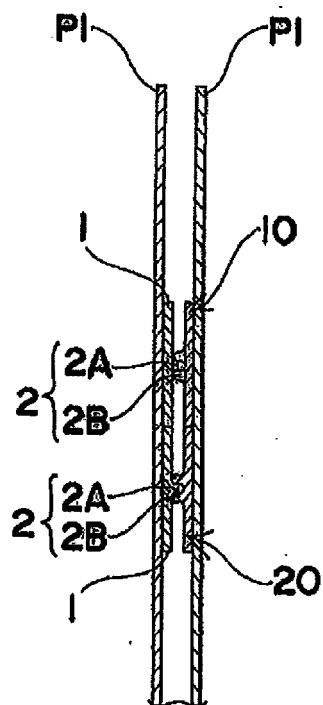
3



4



5





EUROPEAN SEARCH REPORT

Application Number
EP 15 18 4012

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2006/168776 A1 (DAIS BRIAN C [US] ET AL) 3 August 2006 (2006-08-03) * page 3, paragraph 30; figures 1-12 * -----	1-5	INV. B65D33/25
X	US 5 878 468 A (TOMIC MLADOMIR [US] ET AL) 9 March 1999 (1999-03-09) * column 6, lines 15-16; figures 3-6 * -----	1-5	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 February 2016	Examiner Serbescu, Anca
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 15 18 4012

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-02-2016

10

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2006168776 A1	03-08-2006	NONE	

US 5878468 A	09-03-1999	CA 2277300 A1	23-07-1998
		DE 69728427 D1	06-05-2004
		DE 69728427 T2	17-03-2005
		EP 0958184 A1	24-11-1999
		JP 2001509119 A	10-07-2001
		US 5878468 A	09-03-1999
		US 5934806 A	10-08-1999
		WO 9831597 A1	23-07-1998

15

20

25

30

35

40

45

50

55

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

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 3655104 B [0003] [0004]