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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : B65D 75/66 — A1

(11) International Publication Number: WO 95/30601

(43) International Publication Date: 16 November 1995 (16.11.95)

(21) International Application Number: PCT/EP95/01665

(22) International Filing Date: 3 May 1995 (03.05.95)

(30) Priority Data:
TO94A000361 5 May 1994 (05.05.94) IT

(71) Applicant *(for all designated States except US)*: SALES S.P.A. [IT/IT]; Via Chivasso, 5, I-10096 Leumann (IT).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: TESSERA CHIESA, Emilio [IT/IT]; Via Chivasso, 5, I-10096 Leumann (IT).

(74) Agents: BUZZI, Franco et al.; Buzzi, Notaro & Antonielli D'Oulx s.r.l., Corso Fiume, 6, I-10133 Torino (IT).

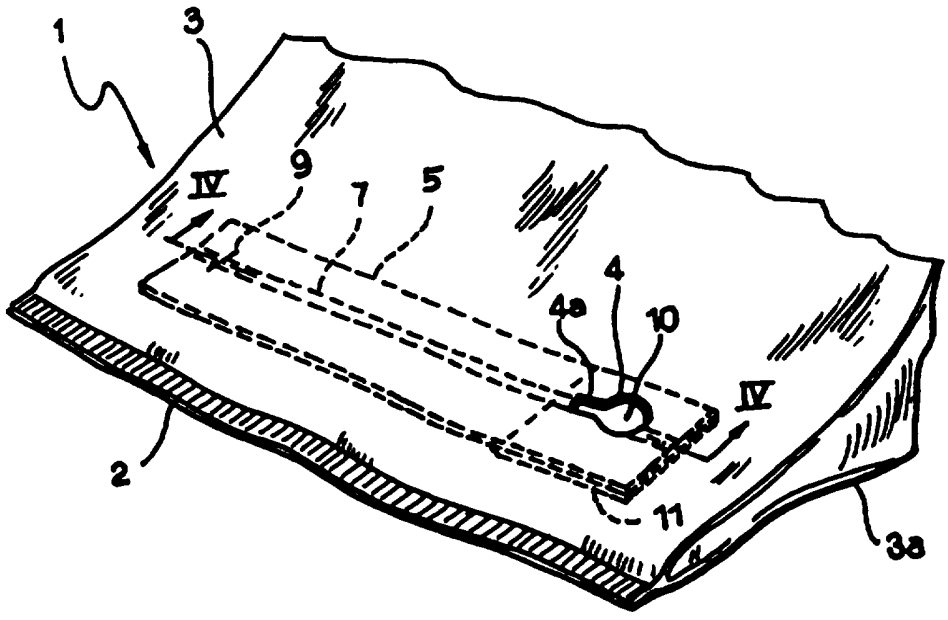
(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).

**Published**
*With international search report.*
*Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.*

(54) Title: OPENING DEVICE FOR FLEXIBLE CONTAINERS, CONTAINER PROVIDED WITH SUCH A DEVICE AND APPLICATION METHOD THEREOF

(57) Abstract

An opening device for sealed flexible containers (1), comprising a label (5) having an adhesive face (6) intended to be adhesively applied to the inner face of a wall (3) of the container (1) and incorporating a substantially central longitudinal strip (7) having an initial portion (10) constituted by a gripper tongue (10). The wall (3) of the container (1) is formed with an aperture, either a hole (4) or a partial cut (24) delimiting on the container wall (3) a tearing wing (25), so as to allow the gripper tongue (10) of the label (5) to be pulled outwardly thus performing tear breakage of the label (5) and the consequent tearing of the wall (3) of the container (1).



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"Opening device for flexible containers, container provided with such a device and application method thereof"

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## Technical field

The present invention is related to opening devices for flexible containers, particularly packets or envelopes for bulk food products (even under vacuum or overpressure), as well as for powders, liquids and other solid materials.

These containers, sealed by the manufacturers, are opened for removal of the contents traditionally by cutting or tearing a top portion thereof, and cannot be subsequently again closed adequately so as to prevent or at least limit accidental coming out of the products.

## Background art

US-3,366,965 discloses an opening device for containers of the above-referenced type formed by a pair of walls sealed around the respective peripheral edges, comprising a tape element intended to be applied to the inner face of one of said container walls and incorporating, along a substantially central area thereof, a longitudinal strip having a substantially initial portion defining a gripper tongue, and wherein said one container wall is formed with an aperture for enabling said gripper tongue to be pulled outwardly so as to perform tear separation of said longitudinal tear strip relative to said tape

element and consequent tearing of said one container wall.

According to this known construction, which is specifically directed to containers at least in part made of thermoplastic sheet material, the tape element is a composite layered material having an inner core and two outer covering layers made of a thermoplastic material which is same as or compatible with the thermoplastic material of the container. This tape element is applied to the inner face of the container wall by means of heat and pressure, e.g. by heat welding.

The main drawback of this known solution resides in the complicated and thus expensive construction of the tape element, as well as in the limit that same can only be used in association with containers at least partially made of thermoplastic material.

On the other hand, the aperture of the container wall through which the gripper tongue is accessible from the outside is placed in the immediate proximity of one edge of the container wall and, consequently, the sealed region of the container walls is necessarily formed -so as to ensure airtight closure of the container before opening thereof- with an inwardly recessed region astride the tape element.

A further drawback of this known construction resides in the relatively difficult and thus expensive manufacturing of the container provided with the opening device, in connection with heat-pressure welded sealed connection both of the device onto the corresponding container wall, and between the two container walls.

Pull strip opening arrangements for containers are also generally known from US-A-4,773,541 and 4,328,924 adg from GB-A-2,172,545.

## Disclosure of the invention

The object of the present invention is to overcome the above drawbacks and to provide a simple and cheap opening device, which is adapted to be applied to containers made of any kind of material, i.e. not necessarily of thermoplastic material, and which enables both to open the first time the container in a convenient and practical way, and to provide immediate visual indication of any prior opening of the container.

A further object of the invention is to provide an opening device which is adapted to be applied onto the container in a simple and mechanized way.

Another object of the invention is to provide an opening device without any limitations in connection with the material both of the device itself and of the container to which the device is intended to be associated, and also not requiring heat welding tecniques for the application thereof.

Still a further object of the invention is to ensure, in the applied condition of the opening device, a total hermetic seal of the container so as to preserve any underpressure or overpressure formed therein.

The device according to the invention is primarily characterized in that said tape element is a label having an adhesive face adhesively secured to said inner face of said one container wall, and in that said aperture for the gripper tongue of the longitudinal tear strip of the label

is formed in an inner area of said one wall with respect to said sealed peripheral edges of the container walls.

In the following specification and claims the term "longitudinal strip" of the label is to be intended as referred both to a small web or string which is distinct from the label and is applied over one face thereof, or even to an integral portion of the label defined between two parallel series of adjacent pre-cut segments.

The label has conveniently an elongated shape and preferably the longitudinal strip is extending substantially along the entire length of the label. The longitudinal strip may be applied either on one or on the other face of the label, but preferably on the face opposite to the adhesive one, i.e. on the face which is not in contact with the container wall. In this case, the gripper tongue may be conveniently defined by a cut of the label formed astride of the longitudinal strip. This cut is substantially U-shaped, and is conveniently placed at a predetermined distance from one end of the label.

According to a first embodiment of the invention, said aperture of the container wall is formed by a complete hole through which the gripper tongue is fitted and projects outwardly, in an accessible way from outside the container.

According to another embodiment of the invention, which is presently to be considered as the preferred one, the aperture of the container wall is constituted by a partial cut which is separated, through a non-pierced area of the container wall, from said cut delimiting the gripper tongue of the label.

In this case the partial cut, which is also placed astride of the longitudinal strip of the label, defines on the container wall a tear wing against which the gripper tongue of the label adheres. In this embodiment, when the tear wing is pulled outwardly, breakage of said unimpaired area of the container wall is accomplished and, consequently, entrainment of the gripper tongue occurs thus producing tear breakage of the label and consequent tearing of the container wall.

This solution is adapted to ensure, in the applied condition of the opening device, a perfect hermetic seal of the container, since any communication between the interior thereof and the outer environment is excluded. In the case of the first embodiment, wherein the aperture of the container wall is constituted by a complete hole, to the aim of ensuring hermetic seal of the container the invention contemplates an air-tight wall applied in correspondence of the U-shaped cut of the label and having a central area which is made non-adhesive and is arranged in correspondence of the gripper tongue of the longitudinal strip.

The longitudinal strip may also be applied only onto a portion of the label, in the area which is intended to define the tearing line. The portions of the label comprised between the two ends thereof thus act as reinforcement elements of the container wall, so as to efficiently prevent undesired breakage or tearing thereof beyond the predetermined limits.

In case the longitudinal strip is applied between the container wall and the wall of the label, the previous U-shaped cut may be simplified as a cut over the strip without cutting also the

label wall. Air-tightness of the package shall be ensured in this case by the integrity without any cuts of the label wall and, therefore, application of an air-tight wall is no more necessary. Opening of the label wall simultaneously with tearing of the container wall may be pre-arranged by means of a pre-cut line or through a pre-punching of an area of the label which shall be removed by pulling the gripper tongue.

According to a further aspect of the invention, the opening device also comprises an adhesive portion which is associated laterally and parallelly to the longitudinal strip of the label and is intended to be positioned on the outer surface of said container wall following the first opening thereof.

This adhesive wall, the function of which is to enable reclosing of the container by simply folding the end edge thereof against said outer surface, may be formed by an area of the adhesive face itself of the label, or by an additional bi-adhesive label or by a simple piece of adhesive tape.

The invention is also related to a container provided with an opening and reclosing device such as set forth in the above, as well as to a method for application of the device itself.

## Brief description of the drawings

The invention will now be disclosed in detail with reference to the accompanying drawings, purely provided by way of non-limiting example, in which:

- figure 1 is a diagrammatic and partial perspective view of a flexible container provided with an opening device according to a first embodiment of the invention,

- figure 2 is a plan view showing the adhesive label employed in the opening device of figure 1,

- figure 3 shows an alternative embodiment of figure 2,

- figure 4 is a diagrammatic longitudinal section taken along line IV-IV of figure 1,

- figure 5 is a perspective exploded view of the device of figure 1,

- figure 6 is a perspective view depicting the container during opening thereof,

- figure 7 shows a further alternative embodiment of figure 2,

- figure 8 is a diagrammatic section similar to figure 4 according to the alternative embodiment of figure 7,

- figure 9 depicts the container of figure 1 provided with a reclosing device,

- figure 10 shows a first alternative embodiment of the reclosing device,

- figure 11 shows the opened condition of the device according to figure 10,

- figure 12 shows the condition of reclosure of the container with the device according to figures 10 and 11,

- figures 13 and 14 show two further respective alternative embodiments of the reclosing device,

- figure 15 is an exploded perspective view, similar to figure 5, showing a further embodiment of the device according to the invention, which is presently to be considered as the preferred embodiment thereof, and

- figure 16 is a diagrammatic top plan view of the device according to figure 15.

Preferred embodiments of the invention

Referring initially to figures 1 through 5, reference numeral 1 generally designates a flexible container, for instance constituted by a sealed packet normally made of paper, thermoplastic material, plasticized paper or any other suitable material, which is intended to contain bulk food products, even under vacuum or overpressure.

The container 1 is formed by two walls 3, 3a sealingly connected to each other laterally and along one end 2 of the container 1, by means of heat welding or glueing.

The wall 3 is formed with a hole 4, normally having a circular shape, situated in correspondence of a lateral area at a certain distance from the end 2 and closer to one side edge of the container 1 than to nthe other side edge. A breakage-guiding slot 4a departing from the hole 4 may be provided.

A label 5 having an elongated rectangular shape and provided with an adhesive, preferably self-adhesive face 6, is applied onto the inner face of the wall 3, at the same level of the hole 4.

The label 5 is preferably made of paper or thermoplastic material and the like.

As it can be better seen in figure 2, the label 5 incorporates along a substantially central area thereof a longitudinal strip 7 which, in the case of the shown embodiment, is constituted by a narrow web, for instance made of plastic material, which is adherent to the outer face of the label, i.e. the face which is not in contact with the wall 3 of

the container 1. As an alternative, the strip 7 may be constituted by a string or wire applied over the inner face of the label, or by a portion of the label 5 itself delimited between two series of adjacent pre-punched segments directly formed across the label.

In the embodiment shown in figure 2, the strip 7 is extending over the entire length of the label 5. Reference numeral 8 designates a U-shaped cut formed astride of the strip 7 at a predetermined distance from one end of the label 5. The cut 8 is made across both the label 5 and the strip 7. In correspondence of the other end of the label 5 a second cut 9 is formed through the wall of the label 5 and the strip 7. A longitudinal pre-cut or pre-punched line 9a (figure 2) may possibly be formed in the wall of the label 5, spanning between the cuts 8 and 9 to the aim of facilitating breakage of the wall of the label 5 along the strip 7.

The end of the strip 7 corresponding to the cut 8 is bent outwardly and is arranged through the hole 4 of the wall 3, so as to define a gripper tongue 10 projecting outside of the container 1 (figure 4).

In the alternative embodiment shown in figure 3, the longitudinal strip 7 is applied only onto a portion of the label 5, in correspondence of the area which is intended to define the tearing line. In this case, the cut 8 is only affecting the wall of the label 5 and it is not necessary to provide the second cut 9. Even in this case a longitudinal pre-cut line may be contemplated.

Referring to figures 4 and 5, reference numeral 11 indicates an adhesive air-tight wall, defined by

a second label whose length is appreciable shorter than that of the label 5, and which is applied onto one face thereof in the area corresponding to the hole 4. The air-tight wall 11 has an area 12 which is made non-adhesive and is arranged in correspondence of the cut 8, i.e. of the gripper tongue 10.

The air-tight wall 11 may possibly be applied outside, over the hole 4 and the gripper tongue 10.

Figures 7 and 8 depict a second embodiment of the label which may be employed in the device according to the invention. In this second embodiment the strip 7 is applied on the adhesive face 6 of the label 5 and in use it is arranged between the wall 3 of the container 1 and the label 5. In this case two cuts 8a, 8b may be provided, only affecting the wall of the strip 7 without piercing the label wall. Air-tight seal of the packet shall be ensured by the integrity of the wall of the label 5 across which no cuts are provided. In this case application of an air-tight wall is thus unnecessary. In the area of the cut 8a, the wall 5 is provided with a portion 10a which is made non-adhesive and in correspondence of which the strip 7 is detached from the label 5 and directly forms the gripper tongue 10.

Opening of the wall of the label 5 simultaneously to tearing of the wall 3 of the container 1 may also be obtained by virtue of a pre-cut or pre-punching line of an area 5a of the label 5 which shall be removed when pulling the gripper tongue 10.

Normally the container 1 is formed starting from a continuous sheet, wound on a reel, which is then severed according to the desired size, folded

and heat welded along the lateral edges, then filled with the products and lastly sealed along the end 2.

Application of the opening device according to the invention is performed on the continuous sheet forming the holes 4 at predetermined distances and any punchings for possibly delimiting areas to be tear-removed, and then positioning and adhering the respective labels 5 such as previously disclosed. In case of tear-web 7 is arranged outside of the label, the second labels 11 will then be applied, according to what has been previously clarified.

Following filling in, the container 1 is then sealed by means of heat welding or equivalent systems along the end 2 thereof.

To perform opening of the container 1, it is sufficient to grasp the gripper tongue 10 which projects across the hole 4 and pull this tongue outwardly, which causes tear-separation of the strip 7 from the label 5 and, consequently, tearing of the wall 3 such as depicted in figure 6, simultaneously with tearing of the label 5 such as previously disclosed. In this way an opening 13 is generated along the wall 3, extending from the gripper tongue 10 of the strip 7 as far as the second cut 9, if present, thereof, or as far as its opposite end, whereby the strip 7 is completely separated from the label 5.

The opening 13 enables convenient withdrawal of the contents from the packet, and the lateral and longitudinal end portions of the label 5 which remain adherent to the inner surface of the wall 3 effectively prevent breakage thereof beyond the limits of the initial tearing.

The invention contemplates four alternative embodiments of the device intended to permit subsequent reclosing of the container 1 by folding the end 2 thereof above the opening 13, so as to prevent accidental outlet therefrom of the contents.

The first variant, shown in figure 9, is employing a supplementary bi-adhesive label 14 having one face applied outside of the wall 3, laterally of the strip 7 of the label 5, and on the opposite face of which a peelable protection 15 is applied. Following opening of the container 1, such as previously disclosed, the protection 15 is removed and the end 2 can than be folded and adhered through the auxiliary label 14 against the wall 3, beyond the opening 13.

The second variant, depicted in figures 10, 11 and 12, contemplates the formation on the wall 3 of a pre-cut 16 punched in the area of application of the label 5, i.e. above the latter, laterally and parallelly to the strip 7. The pre-cut 16 actually is bordering on the area of the wall 3 along which the strip 16 extends, and has an initial section 16a and a final section 16b which are respectively diverging and converging with respect to that area, so as to define a means for facilitating removal.

The cut 16 in practical terms is delimiting a wing 17 which, upon tearing of the strip 7 of the label 5, i.e. upon formation of the aperture 13, is removed together with the strip 16 thus exposing a corresponding portion 6a of the adhesive face 6 of the label 5 (figure 11). The portion 6a can then be used for reclosing the container 1, by adhering thereagainst the wall 3 beyond the opening 13,

after folding the end 2 of the container 1 over such opening in the way shown in figure 12.

The third variant, depicted in figure 13, can be applied in the embodiment according to figures 7 and 8, i.e. in case the strip 7 is arranged between the wall 3 of the container and the label 5. This variant provides the use of a strip 7 having a substantial width which, upon removal thereof and trailing therewith a corresponding portion 7a of the wall of the container 1, exposes an adhesive portion 6b of the label 5.

The fourth variant shown in figure 14 contemplates the use of a simple adhesive tape 18 which is applied on the container wall and is provided with a releasable protection member.

It is evident that the method for applying the device to the continuous sheet employed for the subsequent formation of the container 1 shall contemplate in the case of the first variant the application of the auxiliary labels 14, and in the case of the second embodiment the formation of the cuts 16.

In the case of the third variant it will be necessary to employ strips 7 having a greater width, and in the case of the fourth variant it will be necessary to provide application of the adhesive tape 18 onto the container wall.

Figures 15 and 16 diagrammatically show a further alternative embodiment of the opening device according to the invention, which is presently considered as the preferred embodiment.

This variant differs from the previously disclosed embodiment essentially in that the complete hole 4 on the wall 3 of the container 1 is replaced by a partial cut of this wall 3, having

for instance the shape depicted at 24 in figures 15 and 16. The partial cut 24 is formed astride of the longitudinal strip 7 of the label 5 and delimits on the wall 3 a tear wing 25. As it can be better seen in figure 16, the partial cut 24 is arranged in such a way that the tear wing 25 is separated from the cut 8 defining the gripper tongue 10 of the label 5, through unpierced areas of the wall 3. The partial cut 24 is conveniently formed so as to be provided with end sections converging towards the cut 8 (such as shown in the figures), or even so as to be placed astride thereof. In any case it is necessary that no communication exists between the cut 8 and the partial cut 24.

Reference 26 designates a portion made non adhesive of the adhesive face 6 of the label 5, across the central area thereof corresponding to the strip 7, and placed in correspondence at least of an initial portion of the tear wing 25, so as to allow convenient grasp thereof from outside of the container 3.

Even in this case the container 1 is formed starting from a continuous sheet, wound on a reel, which is then size-cut, folded and heat welded along its sides, then filled in with the products and lastly sealed as in the case of the embodiments disclosed in the above.

Application of the opening device on the continuous sheet is performed in this case punching the partial cuts 24 at predetermined distances, and then positioning and adhering the respective labels 5 with the corresponding cuts 8 and the corresponding non-adhesive portion 26 arranged in the way previously explained.

Following filling in and sealing of the container 1, the absence of any communication to the exterior through the opening device ensures a total hermetic seal.

In order to open the container 1 it is sufficient in this case to grasp the tear wing 25 in correspondence of the non-adhesive portion 26 of the label 5, and pull this tear wing 25 outwardly, thus causing breakage of the areas of the wall 3 comprised between the partial cut 24 and the cut 8 and, consequently, "capture" of the gripper tongue 10 and consequent tear removal of the strip 7, thus performing tearing of the wall 3, correspondingly to what is shown in figure 6 with reference to the first embodiment.

The various embodiments of the reclosing device of the container 1, previously disclosed with reference to figures 9 through 14, can also be employed in the embodiment of figures 15 and 16.

Naturally the details of construction and the embodiments of the device may be widely varied with respect to what has been disclosed and illustrated, without thereby departing from the scope of the present invention such as defined in the appended claims.

## CLAIMS

1. An opening device for flexible sealed containers (1) formed by a pair of walls (3, 3a) sealed around the respective peripheral edges, said opening device comprising a tape element (5) intended to be applied to the inner face of one of said container walls (3) and incorporating, along a substantially central area thereof, a longitudinal strip (7) having a substantially initial portion defining a gripper tongue (10), and wherein said one container wall (3) is formed with an aperture (4; 24) for enabling said gripper tongue (10) to be pulled outwardly so as to perform tear separation of said longitudinal tear strip (7) relative to said tape element (5) and consequent tearing of said one container wall (3), characterized in that said tape element is a label (5) having an adhesive face (6) adhesively secured to said inner face of said one container wall (3), and in that said aperture (4; 24) for the gripper tongue (10) of said longitudinal tear strip (7) of said label (5) is formed in an inner area of said one wall (3) with respect to said sealed peripheral edges of the container walls (3, 3a).

2. Device according to claim 1, characterized in that the gripper tongue (10) of the label (5) is defined by a cut of the label (5).

3. Device according to claim 1 or claim 2, characterized in that the gripper tongue (10) is fitted across a hole (4) of said wall (3) of the container (1) and projects outside of said hole (4).

4. Device according to claim 2, characterized in that the gripper tongue (10) of the label (5) adheres to a tear wing (25) of said wall (3) of the container (1), which tear wing (25) is delimited by a partial cut (24) separated, through non-pierced areas of said wall (3) of the container (1), from said cut (8) delimiting the gripper tongue (10) of the label (5), said partial cut (24) being arranged astride of the longitudinal strip (7) of the label (5).

5. Device according to claim 4, characterized in that said partial cut (24) has end portions converging towards the cut (8) defining the gripper tongue (10) of the label (5).

6. Device according to claim 4, characterized in that the adhesive face (6) of the label (5) has a non-adhesive portion (26) arranged in correspondence of at least one initial portion of the tear wing (25) of said wall (3) of the container (1).

7. Device according to claim 2, characterized in that the label (5) has an elongated shape and said longitudinal strip (7) is extending substantially along the entire length of the label (5), and in that said gripper tongue (10) is defined by a substantially U-shaped cut (8) formed, astride of said strip (7), at a predetermined distance from one end of the label (5).

8. Device according to claim 2, characterized in that the label (5) has an elongated shape and

said longitudinal strip (7) is extending along a length which is shorter than the length of the label (5), and in that said gripper tongue (10) is defined by a U-shaped cut (8) formed in the wall of the label (5) adjacent to one end of the strip (7).

9. Device according to claim 1 or claim 2, characterized in that said strip (7) is applied on the face of the label (5) opposite to said adhesive face (6).

10. Device according to claim 1, characterized in that said strip (7) is applied on the adhesive face (6) of the label (5), and in that said gripper tongue (10) is defined in correspondence of a non-adhesive portion (10a) of the adhesive face (6) of the label (5).

11. Device according to claim 3, depending upon claim 2, characterized in that it further comprises an adhesive air-tight wall defined by a second label (11) applied in correspondence of the cut (8) of said label (5), said second label (11) having a non-adhesive central area (12) placed in correspondence of the gripper tongue (10) of the longitudinal strip (7).

12. Device according to claim 11, characterized in that the second label (11) is applied on the face of said label (5) opposite to the respective adhesive face (6).

13. Device according to claim 2, characterized in that the label (5) has a second cut (9) opposite to said cut (8) and formed astride of the

longitudinal strip (7) at a predetermined distance from the other end of the label (5).

14. Device according to claim 1, characterized in that it further comprises an adhesive member (14; 6a) laterally associated to said longitudinal strip (7) of the label (5) and intended to be positioned on the outer surface of said wall (3) of the container (1).

15. Device according to claim 14, characterized in that said adhesive member is an area (6a) of the adhesive face (6) of the label (5).

16. Device according to claim 14, characterized in that said adhesive member is defined by an auxiliary bi-adhesive label (14).

17. Sealed flexible container, characterized in that it is provided with an opening device according to any of claims 1 through 16.

18. Method for the application of an opening and reclosing device according to claim 1 or claim 2 to a sealed flexible container (1) formed starting from a continuous sheet, characterized in that it comprises the following steps:

- forming said aperture (4; 24) in a predetermined area of the continuous sheet,
- applying said adhesive label (5) onto a face of the sheet (3) so as the gripper tongue (10) of the longitudinal strip of said label (5) is placed in substantial correspondence of said aperture (4; 24),

- size-cutting the continuous sheet so as to form the container (1).

19. Method for the application of an opening and reclosing device according to claim 3 to a sealed flexible container (1) formed starting from a continuous sheet, characterized in that it comprises the following steps:

- forming said hole (4) in a predetermined area of the continuous sheet,

- applying said adhesive label (5) onto one face of the sheet so as the gripper tongue (10) of the longitudinal strip (7) of said adhesive label (5) is fitted across the hole (4),

- size-cutting the continuous sheet so as to form the container (1).

20. Method for the application of an opening device according to claim 4 to a sealed flexible container (1) formed starting from a continuous sheet, characterized in that it comprises the following steps:

- forming said partial cut (24) in a predetermined area of the continuous sheet,

- applying the adhesive label (5) to one face of the sheet so that the gripper tongue (10) of the longitudinal strip (7) of said adhesive label (5) adheres in correspondence of non-pierced areas of the sheet adjacent to said partial cut (24),

- size-cutting the continuous sheet so as to form the container (1).

21. Method according to claim 19 or claim 20, characterized in that it further comprises the step of forming on the continuous sheet a pre-cut (16)

in an area arranged aside the longitudinal strip (7) of the adhesive label (5) and defining a substantially wing-shaped member (17).

22. Method according to claim 19 or claim 20, characterized in that it further comprises the step of applying an additional adhesive element (14, 18) to the continuous sheet in a position placed aside and parallel to that of the adhesive label (5).

Fig. 1

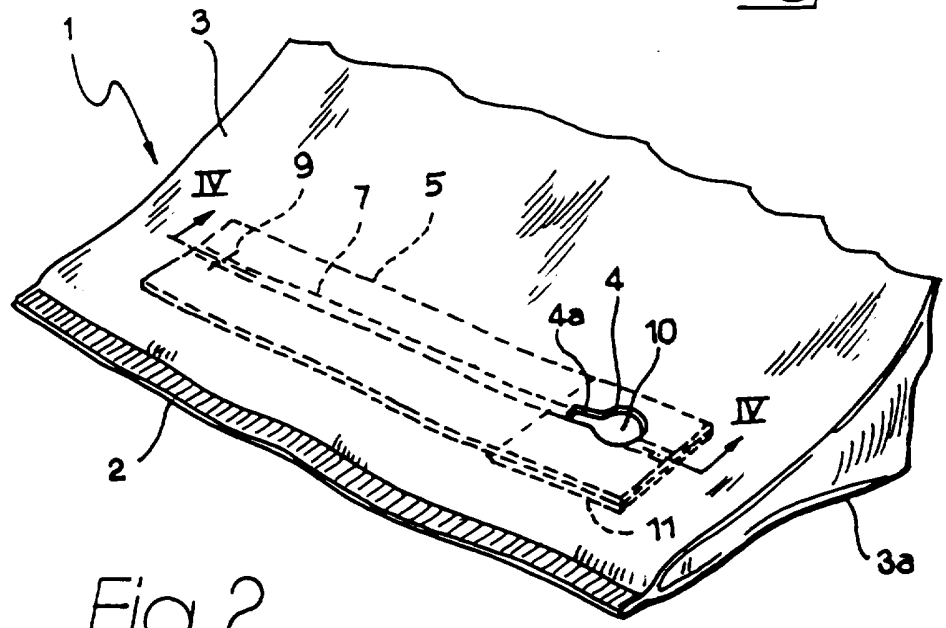



Fig. 2

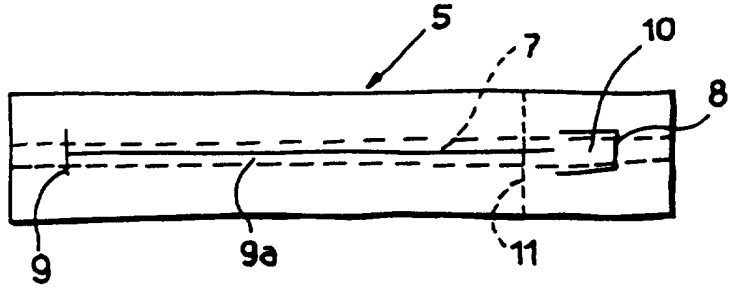



Fig. 3

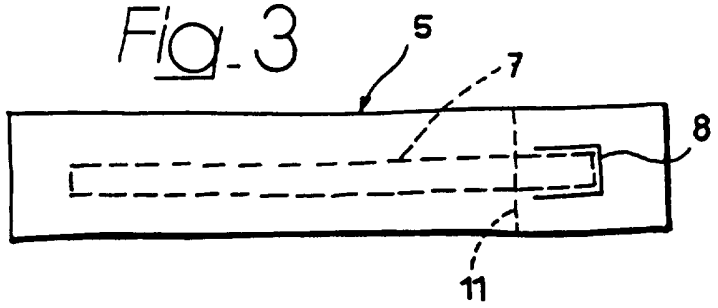



Fig. 4

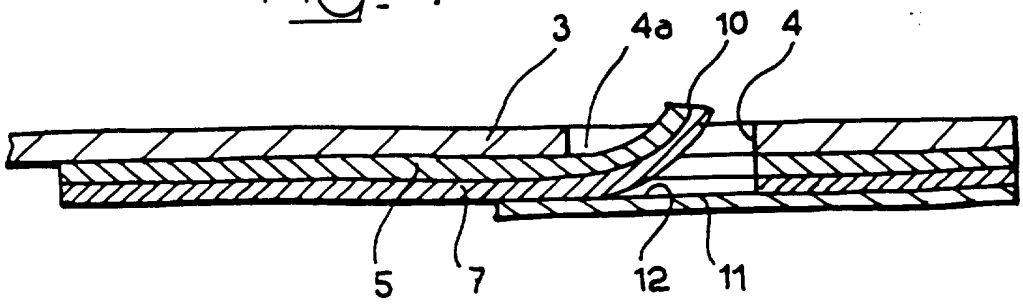


Fig. 5

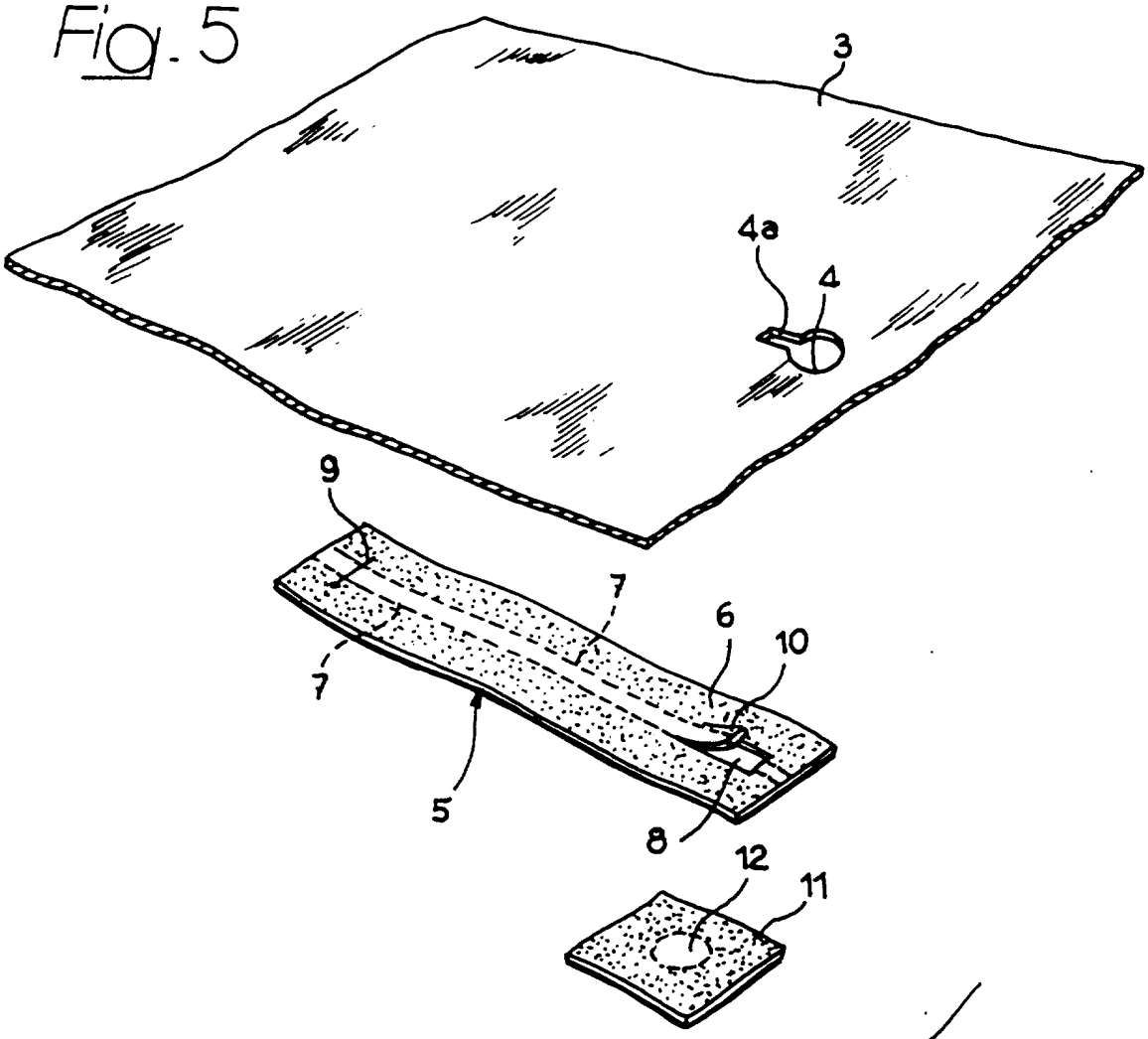



Fig. 6

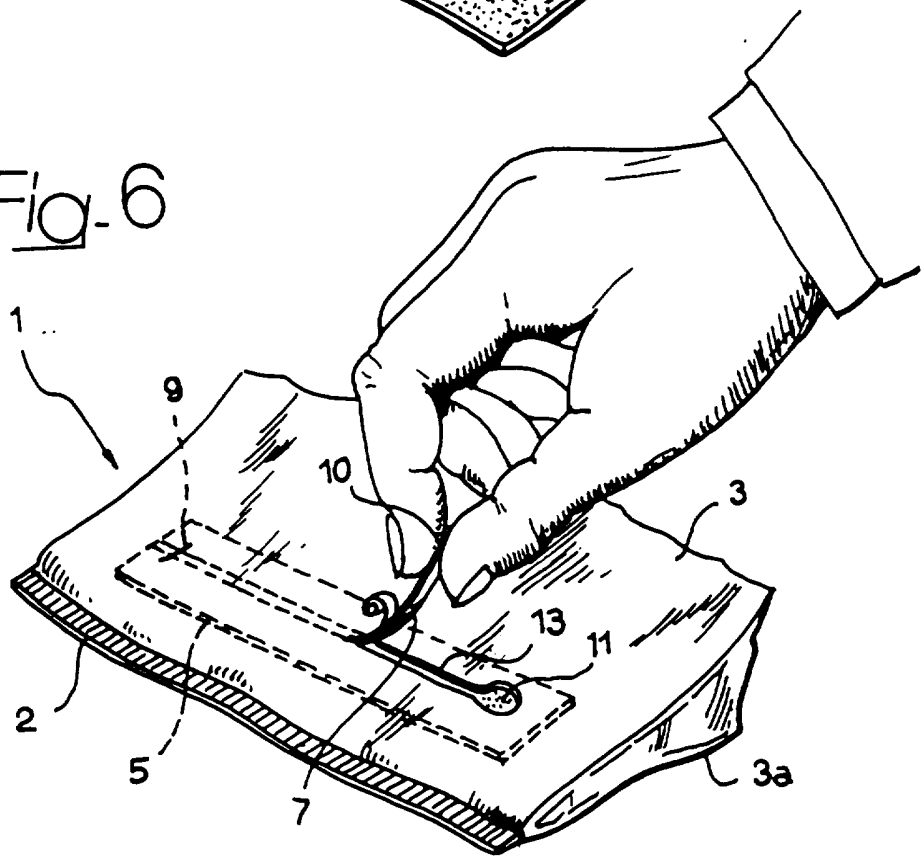
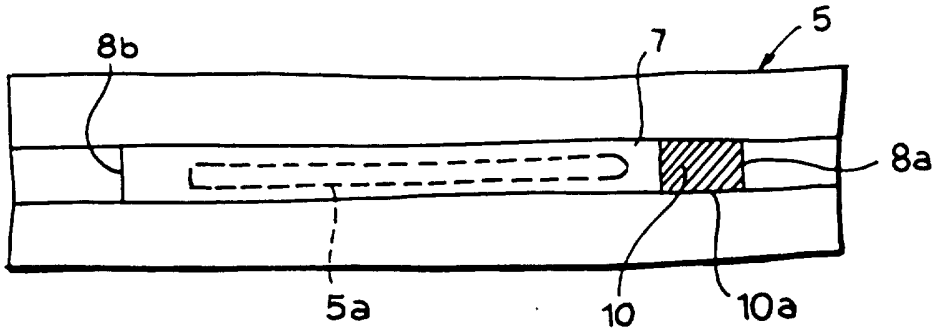


Fig. 7

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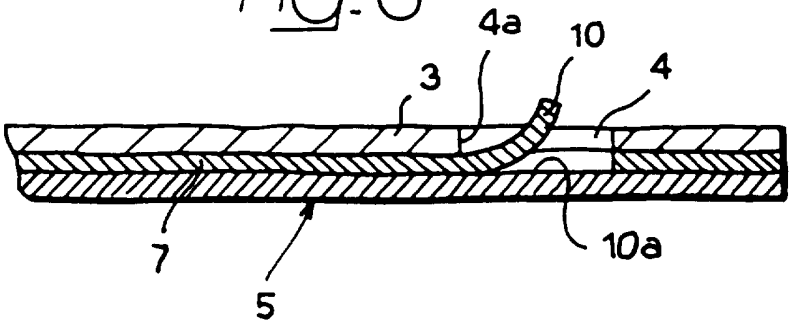



Fig. 9

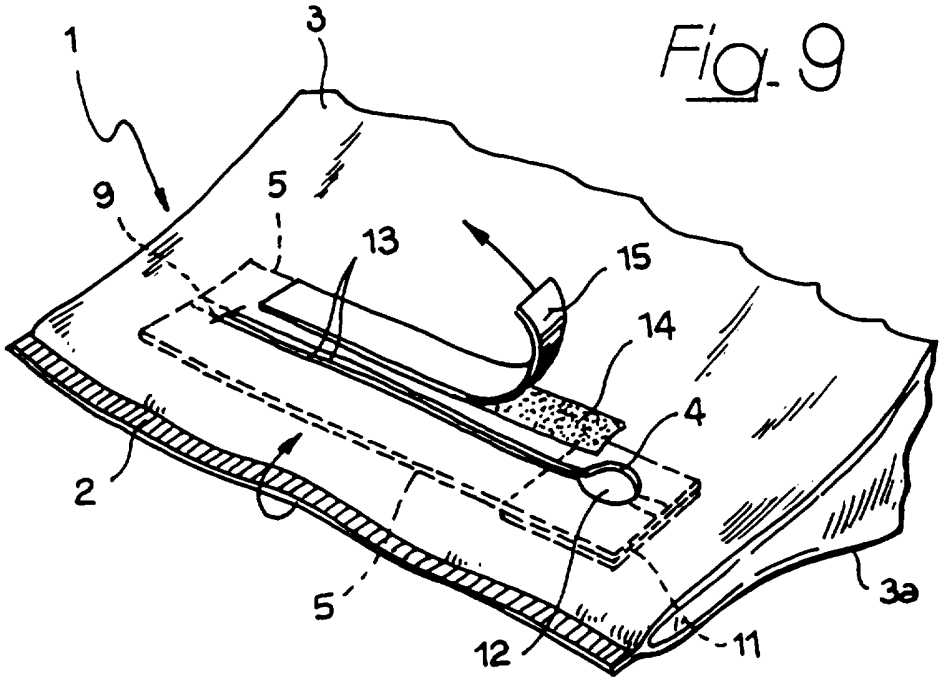


Fig. 10

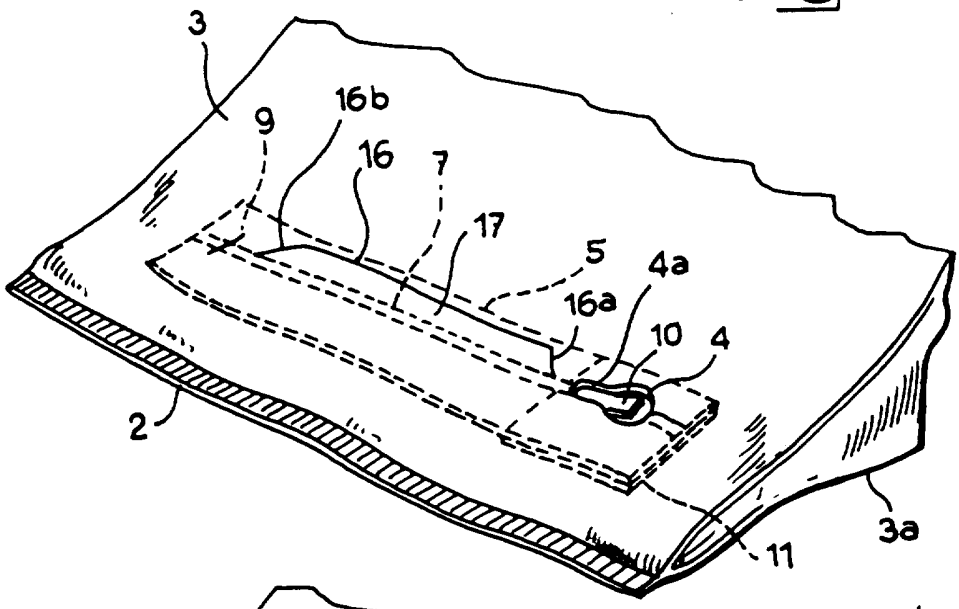



Fig. 11

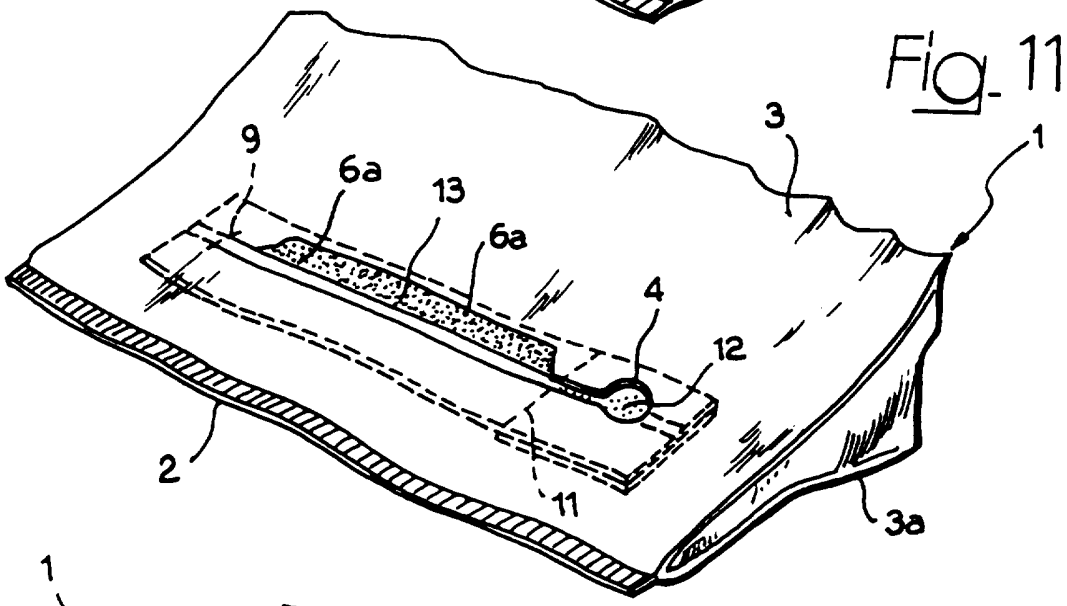



Fig. 12

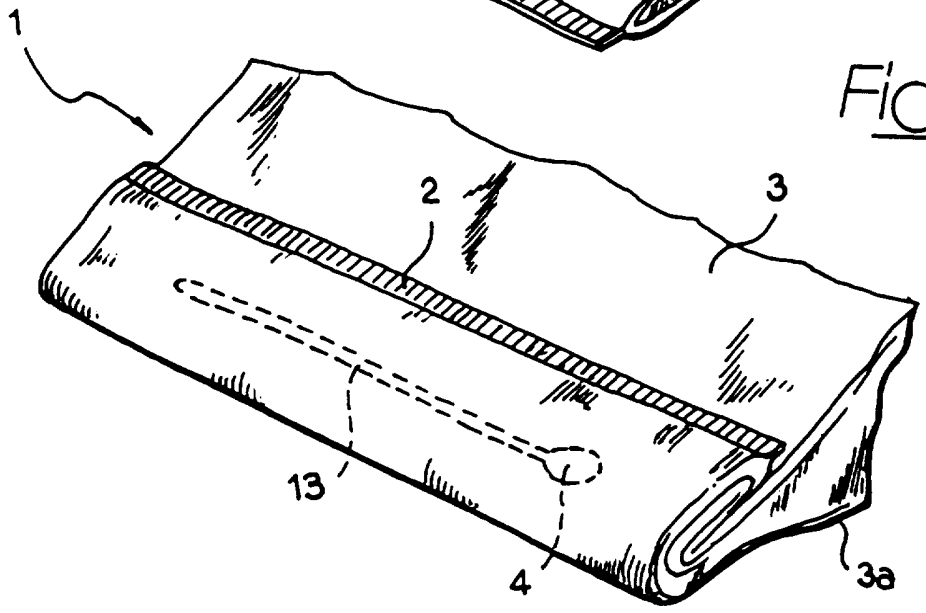


Fig. 13

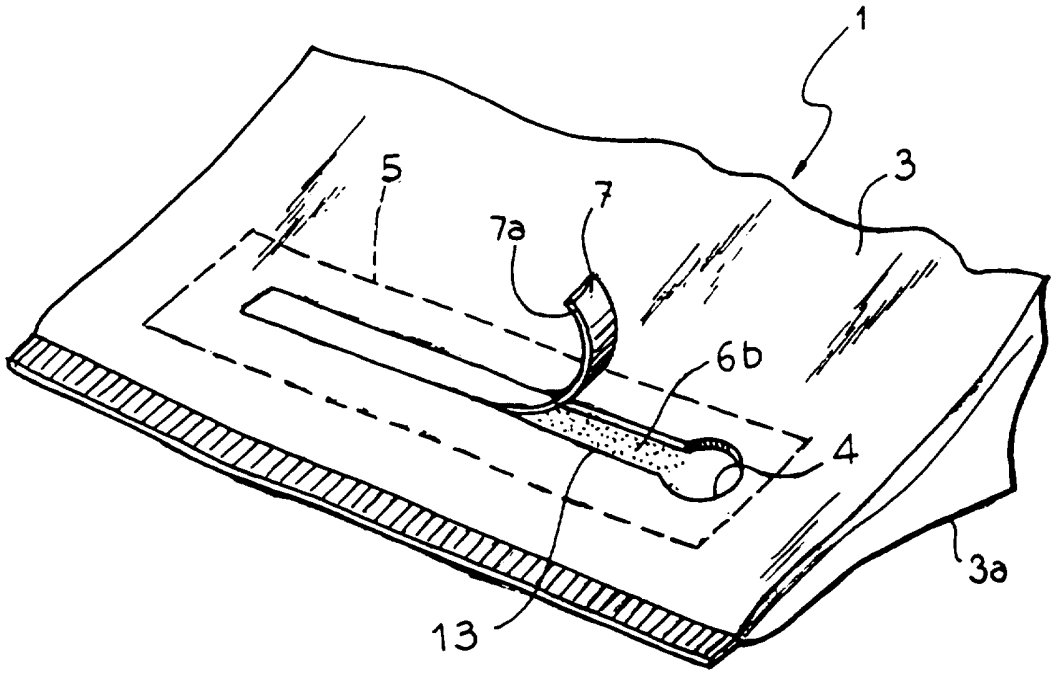



Fig. 14

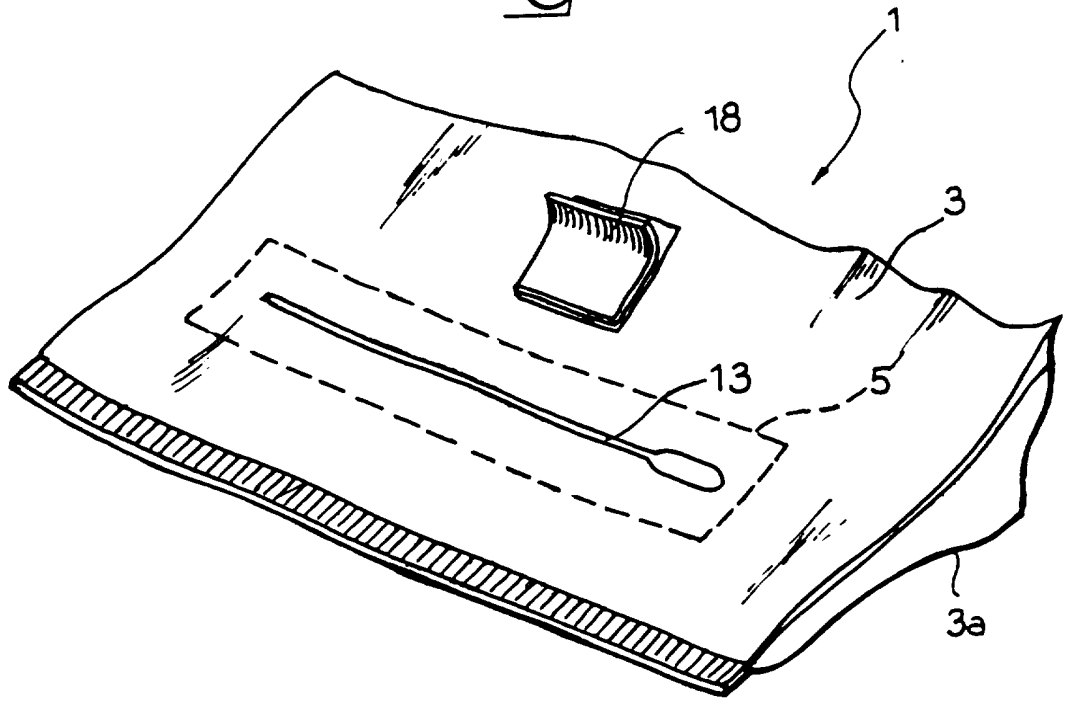


Fig. 15

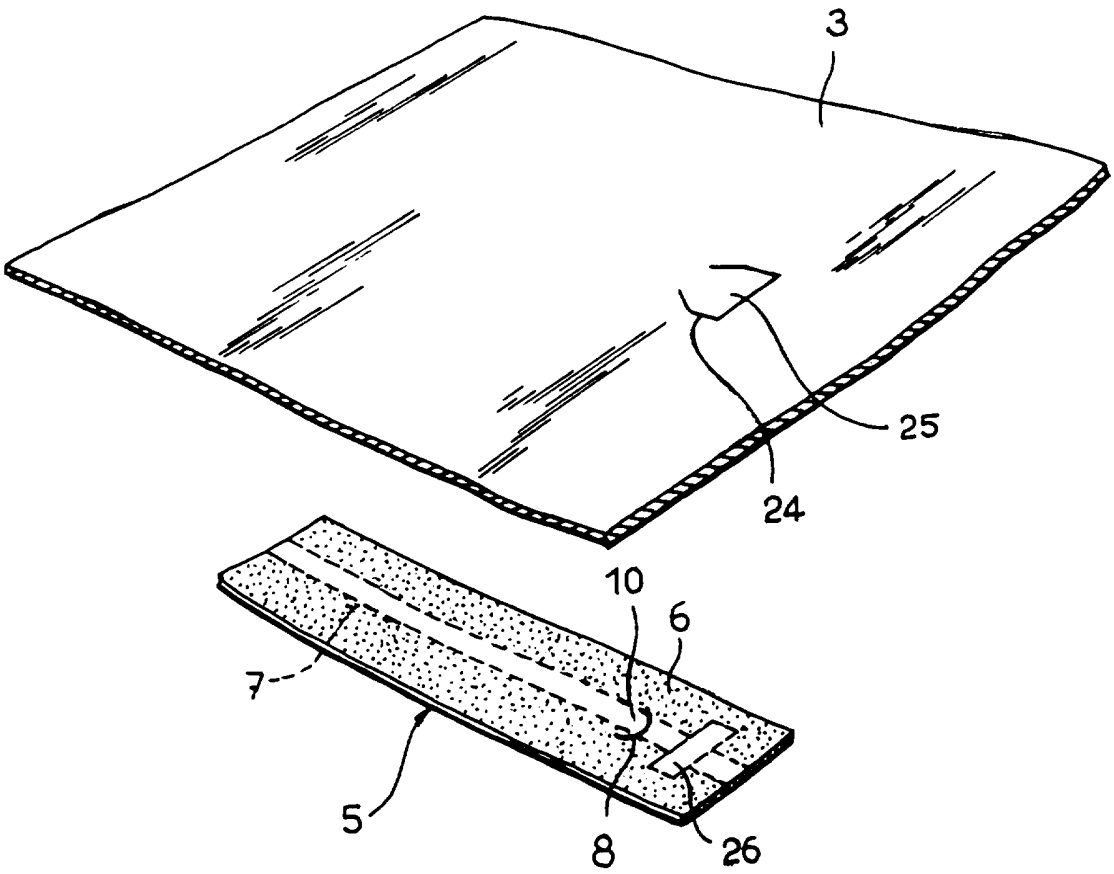
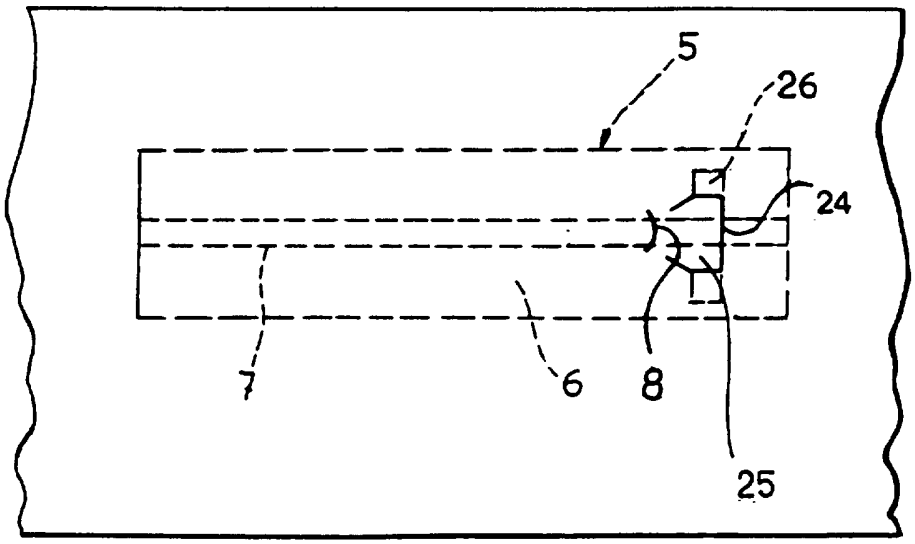



Fig. 16



# INTERNATIONAL SEARCH REPORT

International 'ication No
PCT/EP 95/01665

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65D75/66

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)
IPC 6 B65D

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

Electronic data base consulted during the international search (name of data base and, where practical, 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 | US-A-3 266 965 (SPEES) 16 August 1966<br><br>see column 2, line 15 - column 3, line 10;<br>figures 1-8 | 1,3-5,<br>14-17 |
| A | --- | 2,3,6-8 |
| A | GB-A-2 172 545 (KANARI TANI) 24 September 1986<br><br>see page 1, line 213 - page 2, line 18<br>see page 2, line 31 - line 59<br>see page 2, line 80 - line 113 | 4,5,<br>14-16,<br>18-22 |
| A | --- | 3,18,19 |
| A | US-A-4 328 924 (NEFF) 11 May 1982<br>see column 1, line 58 - column 2, line 16;<br>figures | |
| A | --- | |
| | US-A-4 773 541 (RIDDELL) 27 September 1988 | |
| | ----- | |

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 13 September 1995 | 05 m 95 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. ( + 31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax ( + 31-70) 340-3016 | SERRANO GALARRAGA, J |

# INTERNATIONAL SEARCH REPORT

International 'ication No
PCT/EP 95/01665

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|---|---|---|---|---|
| US-A-3266965 | 16-08-66 | NONE | | |
| GB-A-2172545 | 24-09-86 | GB-A- | 2135651 | 05-09-84 |
| | | AU-B- | 556666 | 13-11-86 |
| | | AU-B- | 1121583 | 16-08-84 |
| | | CH-A- | 659446 | 30-01-87 |
| | | FR-A,B | 2541652 | 31-08-84 |
| US-A-4328924 | 11-05-82 | NONE | | |
| US-A-4773541 | 27-09-88 | AU-B- | 1253688 | 08-09-88 |
| | | CA-A- | 1305079 | 14-07-92 |