



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.12.2011 Bulletin 2011/52

(51) Int Cl.:
B65B 61/18 (2006.01) **B31B 23/00** (2006.01)
B65D 75/46 (2006.01) **B65D 75/58** (2006.01)

(21) Application number: **11005020.0**

(22) Date of filing: **21.06.2011**

(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

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(30) Priority: **22.06.2010 NL 1038061**

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(54) **A method of continually packaging products and a band for packaging products**

(57) The present invention relates to a method of continually packaging products, wherein the product is enveloped by a band (100) of sealable material having two longitudinal edges (111, 122). According to the invention, the band of sealable material used for packaging the product comprises a first strip (110) having a first longitudinal edge (111) and a second longitudinal edge (112) and a second strip (120) having a first longitudinal edge (121) and a second longitudinal edge (122), the

first strip (110) and the second strip (120) being joined in a longitudinal direction by a breakable seal (204), the breakable seal (204) being at distance of both the first and the second longitudinal edge of the first strip (110) so as to form a flap (113) for facilitating opening of the packaged product by separating the first (110) and the second strip (120) at the breakable seal (204). The invention also relates to a band (100) suitable for use in the method.

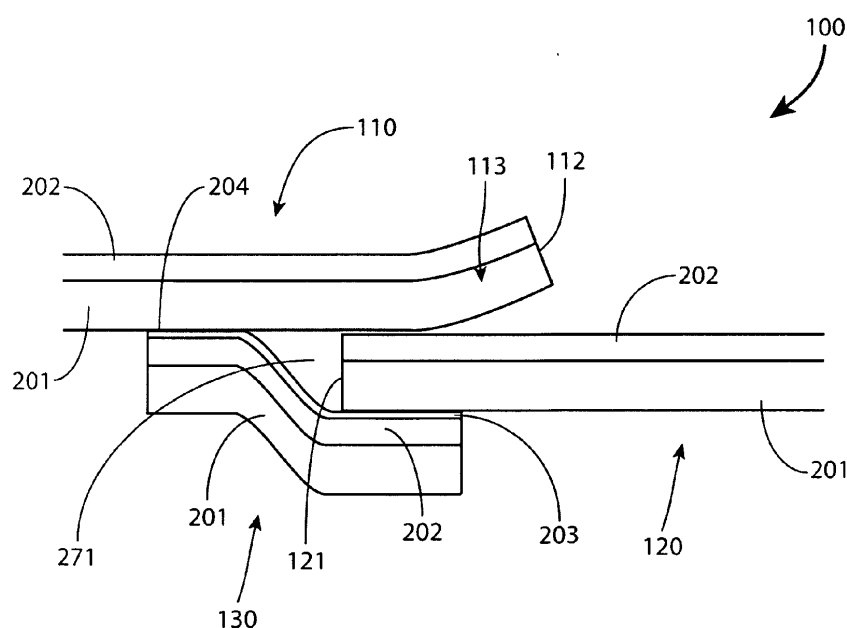


Fig. 2

Description

[0001] A method of continually packaging products and a band for packaging products

[0002] The present invention relates to a method of continually packaging products, wherein the product is enveloped by a band comprising sealable material having

- a first side and a second side, the first side being arranged so as to allow sealing using a technique chosen from thermal sealing and ultrasonic sealing; and
- two longitudinal edges;

a longitudinal first seal is made at the two longitudinal edges of the band of sealable material in a first, longitudinal direction by contacting areas of the first side at opposite longitudinal edges, and at least one second seal is made transverse to the first, longitudinal direction, the packaged product having a breakable seal formed by two overlapping layers designed to facilitate opening of the packaged product by separating the layers forming the breakable seal.

[0003] Such a method is generally known in the art. The band generally comprises thermoplastic material and sealing is performed by, for example, heat or ultrasound. The longitudinal direction is the direction of the band of sealable material. For a rectangular packaged product, this longitudinal direction does not necessarily correspond to the long side of the packaged product, but may correspond to the short side instead. The seal being designed to facilitate opening of the product is generally designed to be a joint that is weaker than the band of sealable material.

[0004] A problem with the above method is that it can not be used for continually packaging products on an existing production line that is suitable for packaging products using a band of sealable material having two longitudinal edges, where a first seal is made at the two longitudinal edges of the band of sealable material in a first, longitudinal direction, and at least one second seal is made transverse to the first direction, but without any of the seals of the packaged product being designed to facilitate opening of the packaged product.

[0005] An object of the present invention is to provide a method that allows such a production line to be used for providing a packaged product having a breakable seal.

[0006] To this end, the invention according to the preamble is characterized in that the band comprising a first strip having a first longitudinal edge and a second longitudinal edge and a second strip having a first longitudinal edge and a second longitudinal edge, the first strip and the second strip being joined in a longitudinal direction by a breakable seal, the breakable seal being at a distance of both the first and the second longitudinal edge of the first strip so as to form a flap at the second side of

the band for facilitating opening of the packaged product by separating the first and the second strip at the breakable seal is used for packaging the product.

[0007] The breakable seal runs in the longitudinal direction and is, as will be clear, already present and a characteristic of the band before the product is being packaged. In general, if the product to be packaged is a bulk material such as screws, sweets etc the product will be placed on top of the band of sealable material and the longitudinal first seal will be made above the product. This is more important for products that come with dust, chaff etc than it is for products where the risk of product material ending up at the location where the first, longitudinal seal is made is reduced. If the product is provided in a tray, such as cookies, the longitudinal first seal will generally be made below the tray, as this improves the presentation of the product. For a bulk product, the packaged product will, in general, be turned over to present it to the customer, as the bottom side (having the breakable seal) is the most attractive, lacking the longitudinal first seal. In the present application, in relationship with seal or sealing the terms "first", "second" etc. are used for reference only, not to indicate any particular order in which the seals are made, unless indicated otherwise. If the band used in accordance with the invention is a laminate, it at least comprises sealable material at the (first) side of the band opposite to the (second) side of the band comprising the flap for opening the packaged product. The band used in the method according to the present invention will generally be supplied as a roll, just like the plain bands (i.e. not composed of joined strips) used in the prior art method. Even though the thickness of the band in the direction transverse to the longitudinal direction is not uniform, this does not give a problem although some care is recommended when handling a roll so as not to damage the edges. The flap will, in general, have a width (in the transverse direction) of at least 1 cm, preferably at least 2 cm so as to provide sufficient grip for fingers. An advantage of a packaged product according to the present invention having a wide flap is that it can be opened without thumbs. Often, packaged products require an amount of dexterity that even able-bodied people find difficult to provide. In the present application, the term "band" means a foil or film. A band will in general have a width of at least 10 cm, such as at least 20 cm, but a suitable width will of course be chosen depending on the product to be packaged. Generally, the band will be sealable using a technique chosen from thermal sealing and ultrasonic sealing over the full width of the band.

[0008] According to a preferred embodiment, the breakable seal comprises a pressure sensitive adhesive (PSA).

[0009] Thus a re-sealable breakable seal is provided, allowing the user of the package to easily open and easily close the package containing the product. Re-sealing does not require peeling away a protective strip so as to expose an adhesive patch, as is known for re-sealable packaged products known in the art.

[0010] According to a preferred embodiment, the first strip and the second strip are joined using tape having a first side and a second side, and comprising a support, the support being provided at the second side with the pressure sensitive adhesive, and the first side of the support opposite to the second side comprising sealable material.

[0011] Tape comprises a support provided with the PSA. The support may be chosen such that the PSA adheres better to the support than to the strips, in particular than to the first side of the first strip, facilitating proper opening. The first side of the tape, i.e. its backside, is sealable using a method chosen from sealing using heat or ultrasound so as to provide a properly closed second (transverse) seal. For this embodiment of the invention, the band used in the method comprises tape having its second side, i.e. the side provided with PSA, applied to the first sides of the first strip and the second strip in the longitudinal direction of the band, effectively joining them together.

[0012] According to a preferred embodiment, the second side of the second strip comprises sealable material, wherein providing the transverse second seal includes sealing the first side of the first strip to the second side of the second strip.

[0013] In particular in case of re-sealable packaged products, this allows the sealing of the flap to the second strip to serve as a marker that the packaged product has not been opened before. It also helps to prevent the flap from creasing, improving the presentation of the packaged product. Such a marker will also result if the strips used for manufacturing the band are not laminates, and the strips consist entirely of sealable material.

[0014] According to a preferred embodiment, a band is used wherein the first longitudinal edge of the second strip tapers towards the first strip.

[0015] Thus a smooth transition for the tape is provided helping to prevent the occurrence of a pinhole pore at the second seal in case the band comprises a tape to join the first and the second strips, or irrespective of the way the first and second strips are sealed at least a reduction of the size of the pinhole.

[0016] Finally, the present invention relates to a band comprising sealable material

- a first side and a second side, the first side of the band being arranged so as to allow sealing using a technique chosen from thermal sealing and ultrasonic sealing; and
- having two longitudinal edges, wherein the band comprising sealable material comprises a first strip having a first longitudinal edge and a second longitudinal edge and a second strip having a first longitudinal edge and a second longitudinal edge, the first strip and the second strip being joined in a longitudinal direction by a breakable seal, the breakable seal being at a distance of both the first and the second longitudinal edge of the first strip so as to form

a flap at the second side for facilitating breaking of the seal by separating the first and the second strip at the breakable seal.

[0017] Generally the band will at least partially be transparent so as to allow a consumer to view the contents of a packaged product. In general, the band will be in the form of a roll. The flap will for example have a width of at least 1 cm, such as at least 2 cm.

[0018] According to a preferred embodiment, the breakable seal comprises a pressure sensitive adhesive (PSA).

[0019] Thus a re-sealable seal is provided, allowing the user of the package to easily open and easily close the package containing the product. Re-sealing of a product packaged using the band according to the invention will not require peeling away a protective strip so as to expose an adhesive patch, as is known for re-sealable packaged products known in the art.

[0020] According to a preferred embodiment, the first strip and the second strip are joined using tape having a first side and a second side, and comprising a support, the support being provided at the second side with the pressure sensitive adhesive, and the first side of the support opposite to the second side comprising sealable material.

[0021] Tape comprises a support provided with the PSA. The support may be chosen such that the PSA adheres better to the support than to the strips, in particular than to the first side of the first strip, facilitating proper opening. The first side of the tape, i.e. its backside, is sealable using a method chosen from sealing using heat or ultrasound so as to provide a properly closed second (transverse) seal. For this embodiment of the invention, the band comprises tape having its second side, i.e. the side provided with PSA, applied to the first sides of the first strip and the second strip in the longitudinal direction of the band, effectively joining both strips together.

[0022] According to a preferred embodiment, the second side of the second strip comprises sealable material.

[0023] In particular in case of re-sealable bands used for packaging products, this allows the sealing of the flap to the second strip to serve as a marker that the packaged product has not been opened before.

[0024] According to a preferred embodiment, the first longitudinal edge of the second strip tapers towards the first strip.

[0025] This reduces the chance of the occurrence of a pinhole that might occur at an end of a packaged product packaged using the method according to the invention.

[0026] The present invention will now be illustrated with reference to the drawing where

fig. 1 shows diagrammatically the components of a band of sealable material according to the invention; fig. 2 shows a detail of the band of fig. 1 in a cross-sectional view;

fig. 3 shows a cross-sectional view through a packaged product packaged using the method according to the invention;

fig. 4 shows a packaged product; and

fig. 5 shows a detail of an alternative band according to the invention in a cross-sectional view.

[0027] Reference is made to fig. 1 schematically showing a band 100 comprising a first strip 110 and a second strip 120. The first strip has two longitudinal edges 111 and 112. Similarly the second strip 120 has two longitudinal edges 121 and 122. The first strip 110 and the second strip 120 overlap partially, and are joined using tape 130 at a first side of the band 100. This leaves a part of the first strip 110 extending beyond the first longitudinal edge 121 of the second strip 120 free, and will be available as a lip (or flap) 113 that will allow easy opening of a packaged product packaged using the band 100, as will be explained later.

[0028] The strips 110 and 120 of the embodiment of Fig. 1 were 191 mm wide. The flap 113 had a width of 57 mm so as to provide ample grip when used as a lip for opening. So, the total width of the band was 325 mm. The width of the tape was 26 mm, 16 mm of which were in contact with strip 120.

[0029] Fig. 2 shows the area of the band 100 comprising the tape 130 in detail (but, like the other figures, not true to scale).

[0030] The first strip 110 and the second strip 120 both consist of two layers. A first layer 201 and a second layer 202. The first layer is made of a heat-sealable material, in this case cast polypropylene (CPP) with a thickness of 25 micrometers. It will be used to close the package once the product has been enveloped by the band 100, as explained later. The second layer 202 is an air-impermeable layer, in this case polyethyleneterephthalate (PET) with a thickness of 12 micrometers. Actually the CPP and PET are separated by a layer of polyvinyl alcohol with a thickness of 1 μ m, but this is not of importance for the method and left out for reasons of clarity. The person skilled in the art is all too familiar with the choice of packaging material and may consider non-olefinic materials such as aluminum and paper as a non-sealable layer of a strip as well. The important aspect of the present invention is not the choice of material but the structure of the band, i.e. a band comprising two overlapping strips joined by a breakable seal, allowing the strips to be separated from each other.

[0031] In the embodiment discussed here, the tape 130 is made of the same material as the first and second strips, but also provided with a Pressure Sensitive Adhesive layer 203. The tape 130 serves two functions. Firstly, it keeps the first and second strips 110, 120 of the band 100 together. Once the product has been packaged, it not only allows the packaged product to be opened easily (using the lip 113), but also to be closed again as it forms a breakable seal 204.

[0032] The band 100 may be manufactured as follows.

Two separate reels of plastic packaging film 110, 120 are unwound on a designated production machine and re-wound again in a partially overlapping manner. With a tape dispenser attached to the production machine, the two individual films 110, 120 are taped together using tape 130 at one side of the band 100 before winding up. This results in the easy-opening lip 113 at the opposite side of the band 100.

[0033] The tape 130 comprises sealable material at the (first) side opposite to the side of the tape 130 comprising the PSA layer 203. The reason is that once on a packaging machine the backside of the tape will be part of the end seals of the packaged product when heated. This creates a hermetically closed end (heat) seal. An important advantage is that the band 100 according to the invention can be used using the same machines and the same packaging processes that currently use a band made of a single strip (of the same width as the band 100). But where such prior methods result in hard to open packaged products, the use of the band 100 according to the invention results in an easy to open product, which is even re-closeable if a PSA was used to join the first strip 110 and the second strip 120 to form the seal 204 instead of a seal 204 formed by ultrasound.

[0034] The closing of the ends of the packages takes place by a combination of heat, pressure and time, depending on the size of the packs and the speed of the machine etc, and requires no detailed discussion. Briefly and with reference to fig. 3 and 4, the band 100 is folded around a product P to be packaged, and a longitudinal seal 301 is made by applying heat and pressure. Subsequently heat and pressure are applied in a transverse direction over the full width so as to provide second transverse (end) seals 401, 402. Average sealing temperatures are usually between 120 and 180°C. Suitable sealable materials are, for example, cast polypropylene and polyethylene.

[0035] The method in accordance with the present invention is suitable for products that require a controlled-gas atmosphere, in particular if the band used comprises a tape, because the adhesive will fill the void 271 (fig. 2) that might otherwise result in a pinhole-sized pore at the seals 401 and 402 if the material of the band at the second side is not sealable as may be the case for a laminate such as discussed above (fig. 2). To further reduce the chance of such a pore at the seals 401 and 402, the first longitudinal edge 121 of the second strip 120 may be tapered towards the first strip of the band 100, as shown in fig. 5. Generally speaking, a band comprising such a tapered edge may for example be made from foil material, that upon production thereof - or if in the form of a roll after unrolling - is cut using a tilted cutting device such as a rotating knife, a water jet or a laser so as to form a tapered second longitudinal edge 512 of a first strip 510 and a first longitudinal edge 521 of a second strip 520. The two resulting strips 510, 520 are then partially superimposed and joined using tape 130 so as to result in band 500 of fig. 5. Other reference numbers in Fig. 5

correspond to their counterparts having the same number but starting with a 1 or 2 discussed for Fig. 1 and 2.

[0036] The choice of the adhesive will be made depending on the type of material constituting the first and second strip. Generally, it will be desirable that the adhesive sticks better to the surface at the second side than for the surface of the strips at the first side, and that the adhesive has sufficient internal strength so as to avoid transfer of adhesive to the first strip upon opening of the package. However, this is not a strict requirement. If the adhesive is to fill a void such as void 271 as is desired for controlled gas-atmosphere packaging, an adhesive layer of sufficient thickness and suitable flow-properties under the circumstances of sealing (heat and pressure) will be chosen.

Claims

1. A method of continually packaging products, wherein the product is enveloped by a band (100) comprising sealable material having

- a first side and a second side, the first side being arranged so as to allow sealing using a technique chosen from thermal sealing and ultrasonic sealing; and
- two longitudinal edges (111, 122);

a longitudinal first seal is made at the two longitudinal edges of the band (100) of sealable material in a first, longitudinal direction by contacting areas of the first side at opposite longitudinal edges, and at least one second seal (401, 402) is made transverse to the first, longitudinal direction, the packaged product having a breakable seal (204) formed by two overlapping layers designed to facilitate opening of the packaged product by separating the layers forming the breakable seal (204), **characterized in that** the band (100) comprising a first strip (110) having a first longitudinal edge (111) and a second longitudinal edge (112) and a second strip (120) having a first longitudinal edge (121) and a second longitudinal edge (122), the first strip (110) and the second strip (120) being joined in a longitudinal direction by a breakable seal (204), the breakable seal (204) being at a distance of both the first and the second longitudinal edge (111, 112) of the first strip (110) so as to form a flap (113) at the second side of the band (100) for facilitating opening of the packaged product by separating the first and the second strip (120) at the breakable seal (204) is used for packaging the product.

2. The method according to claim 1, wherein the breakable seal (204) comprises a pressure sensitive adhesive (PSA) (203).

3. The method according to claim 1 or 2, wherein the first strip (110) and the second strip (120) are joined using tape (130) having a first side and a second side, and comprising a support, the support being provided at the second side with the pressure sensitive adhesive, and the first side of the support opposite to the second side comprising sealable material.

4. The method according to any of the preceding claims, wherein the second side of the second strip (120) comprises sealable material (201), wherein providing the transverse second seal (301) includes sealing the first side of the first strip (110) to the second side of the second strip (120).

5. The method according to any of the preceding claims, wherein a band (100) is used wherein the first longitudinal edge (121) of the second strip tapers towards the first strip (110).

6. A band (100) comprising sealable material

- a first side and a second side, the first side of the band (100) being arranged so as to allow sealing using a technique chosen from thermal sealing and ultrasonic sealing; and

- having two longitudinal edges (111, 122), **characterized in that** the band (100) comprising sealable material comprises a first strip (110) having a first longitudinal edge (111) and a second longitudinal edge (112) and a second strip (120) having a first longitudinal edge (121) and a second longitudinal edge (122), the first strip (110) and the second strip (120) being joined in a longitudinal direction by a breakable seal (204), the breakable seal (204) being at a distance of both the first and the second longitudinal edge of the first strip (110) so as to form a flap (113) at the second side for facilitating breaking of the seal (204) by separating the first and the second strip (120) at the breakable seal (204).

7. The band according to claim 6, wherein the breakable seal (204) comprises a pressure sensitive adhesive (PSA) (203).

8. The band according to claim 6 or 7, wherein the first strip (110) and the second strip (120) are joined using tape (130) having a first side and a second side, and comprising a support, the support being provided at the second side with the pressure sensitive adhesive, and the first side of the support opposite to the second side comprising sealable material.

9. The band according to any of the claims 6 to 8, wherein the second side of the second strip (120)

comprises sealable material.

10. The band according to any of the claims 6 to 9, wherein the first longitudinal edge (121) of the second strip tapers towards the first strip (110).

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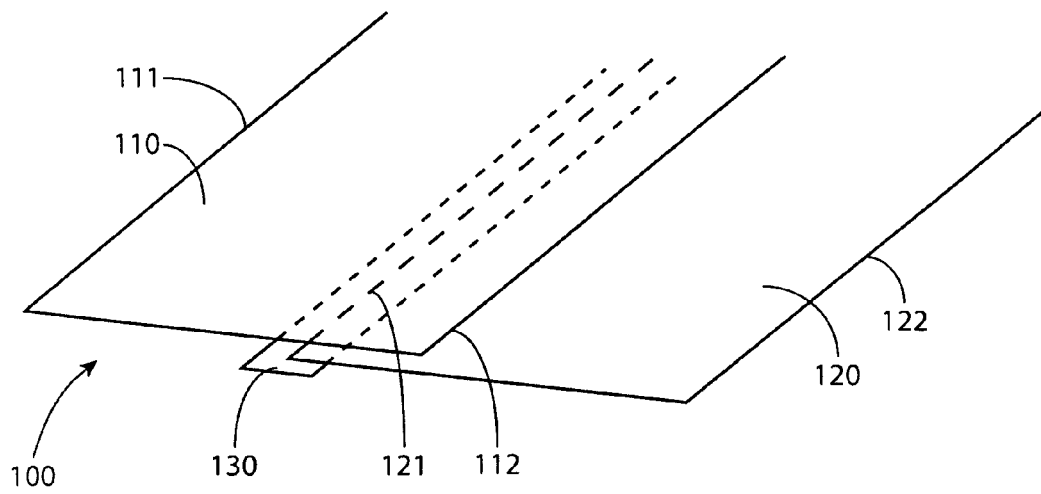


Fig. 1

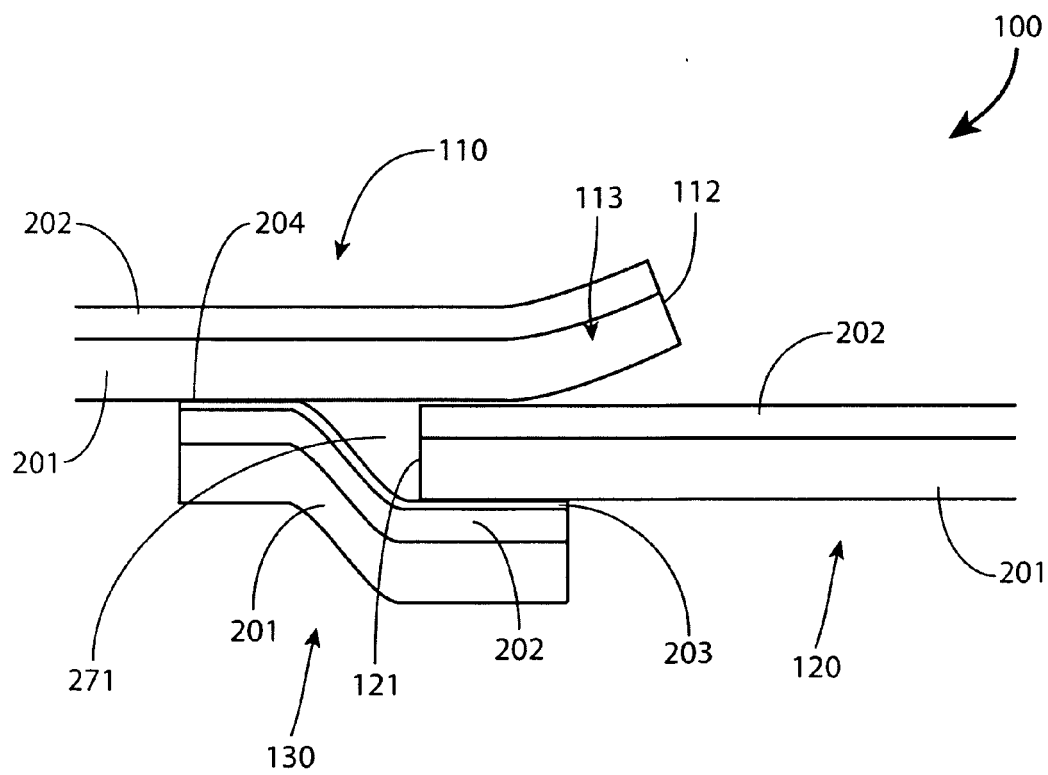


Fig. 2

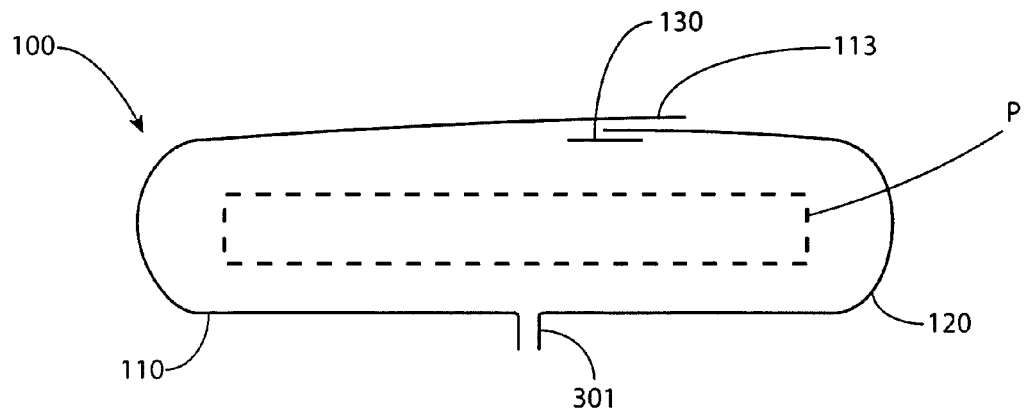


Fig. 3

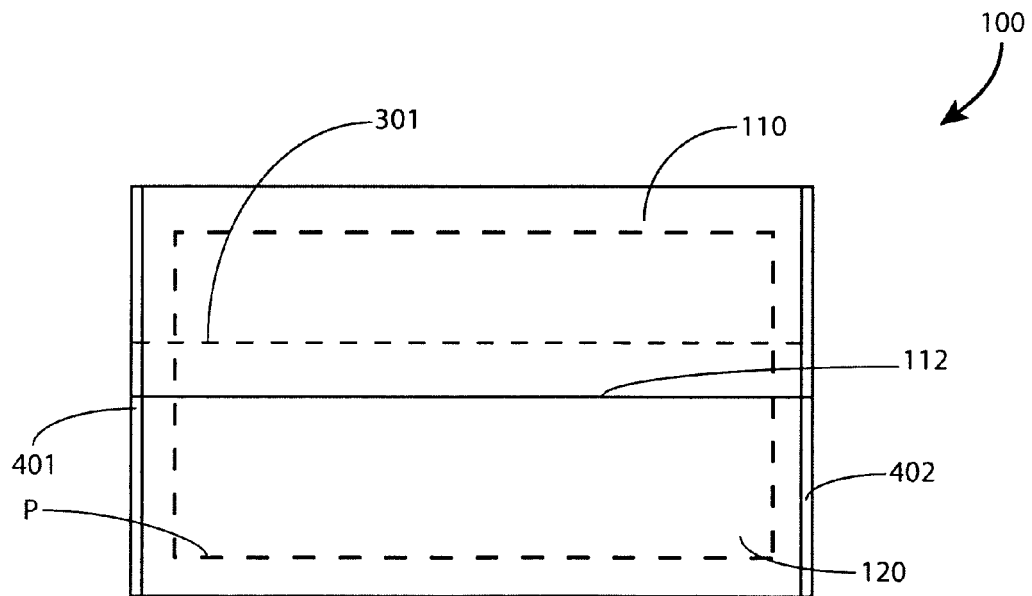


Fig. 4

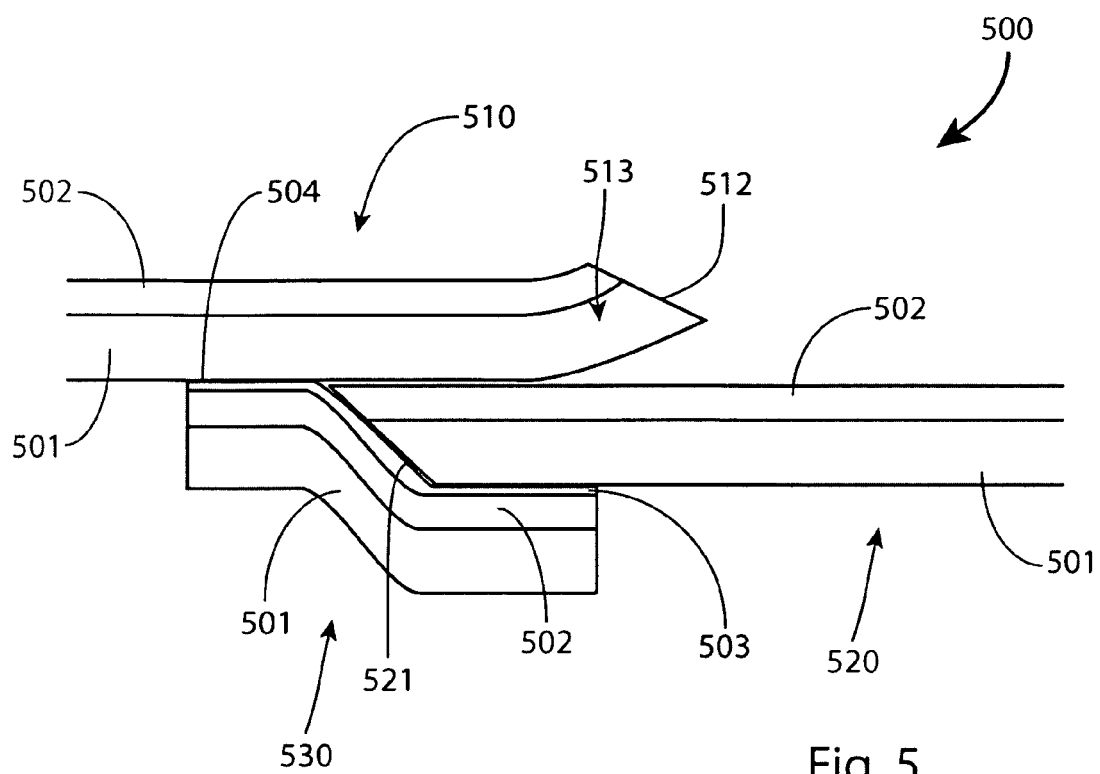


Fig. 5



EUROPEAN SEARCH REPORT

Application Number
EP 11 00 5020

DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (IPC)
			B65D B65B B31B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 29 September 2011	Examiner Schelle, Joseph
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			

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EPO FORM 1503 03.82 (P04C01)

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

EP 11 00 5020

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
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