(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
6 January 2011 (06.01.2011)

PCT

(10) International Publication Number
WO 2011/001424 A1

(51) International Patent Classification:
B65D 75/58 (2006.01) *B65D 77/20* (2006.01)

(21) International Application Number:
PCT/IL2010/000508

(22) International Filing Date:
24 June 2010 (24.06.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/221,827 30 June 2009 (30.06.2009) US

(71) Applicant *(for all designated States except US)*: **TAD-BIK LTD.** [IL/IL]; 58 Amal Street, Kiryat Arie, 49513 Petah Tikva (IL).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **CHASID, Shlomit** [IL/IL]; 34 Sigalit Street, 76804 Mazkeret Batya (IL). **ZAIDMAN, Uri** [IL/IL]; 7 Sigalon Street, 60920 Kadima (IL).

(74) Agent: **REINHOLD COHN AND PARTNERS**; P.O. Box 13239, 61131 Tel Aviv (IL).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

(54) Title: RESEALABLE DISPENSING CLOSURE DEVICE AND PACKAGE FITTED WITH SAME

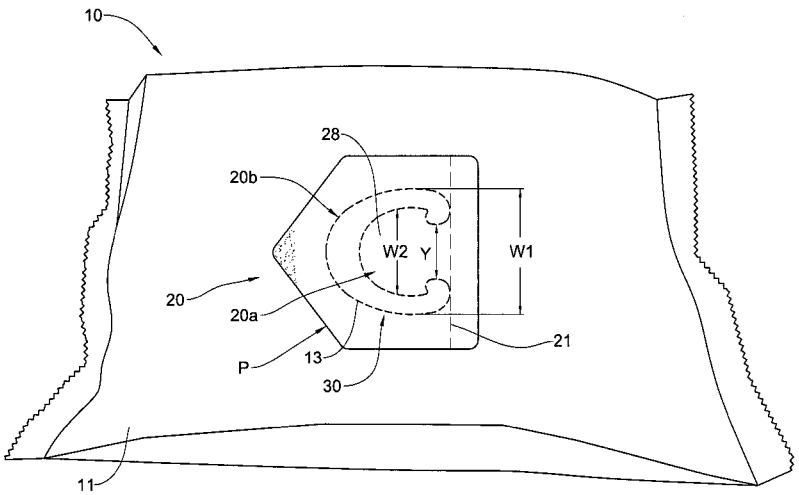

FIG. 1A

(57) Abstract: A resealable dispensing closure device for a package, comprising an adhesive patch adhered to a material having a closure with an exterior edge at its periphery and a large-arced and two opposite small-arced end portions. The adhesive patch has a base and a flap portion configured to pivot relative to the former about a pivoting axis. The material is torn along the exterior edge to separate the closure, forming an opening. Each small-arced end portion is defined by one end section of the exterior edge and by an interior edge, extending inwardly of the closure, merging on the pivoting axis

WO 2011/001424 A1

RESEALABLE DISPENSING CLOSURE DEVICE AND PACKAGE FITTED WITH SAME

FIELD OF THE INVENTION

This invention relates to a resealable dispensing closure device and to a package fitted with a resealable dispensing closure device.

BACKGROUND OF THE INVENTION

Resealable dispensing closure devices and packages using them are disclosed for example in US 4,552,269, US 4,790,436, US 4,863,064, US 5,048,718, US 5,908,246, US 6,026,953, US 6,309,105, US 6,554,134, US 2004195256, US 2004251163, US 2005284776, US 2006018569, US 2006/151515, EP 0546369, WO 05023677, WO 03/076298, WO 07013799, WO 08034539, WO 08055962, DE 20301411 and in many other documents. These packages are adapted for resealable storage of a great variety of products.

SUMMARY OF THE INVENTION

According to the subject matter of the present application, there is provided a resealable dispensing closure device for a package with a package surface having a dispensing outlet at least when the package is in use, comprising

- an adhesive patch having a base portion and an adhesive flap portion configured to pivot relative to the base portion about a pivoting axis;
- a material to which said patch is adhered at its base portion and at least a part of its flap portion, the material being configured to constitute a part of said package surface at least when the closure device is in use on said package;
- a closure in said material, to which said at least a part of said flap portion is adhered;
- an exterior edge at a periphery of said closure, along which said material is configured to tear when the flap portion pivots relative to the base portion for

a first time, separating thereby said closure along the exterior edge from the remainder of the material and forming an opening in said material configured to serve as or provide access to said outlet when the closure device is in use on said package, said exterior edge having two end sections and a intermediate section therebetween;

- a large-arced end portion in said closure, extending along the intermediate section of the exterior edge; and
- two opposite small-arced end portions in said closure each defined by one end section of the exterior edge and by an at least weakened interior edge merging with said one end section at a merging point, the merging points of the two end portions lying on said pivoting axis, the interior edges of the two end portions of the closure extending from the merging points inwardly of the closure.

According to one aspect of the subject matter of the present application, the interior edges each can have at least one distal point and at least one proximal point disposed closer to the pivoting axis than the distal point such that a distance between the two distal points of the two interior edges is greater than that between the two proximal points thereof.

The interior edges can each be considered as having a proximal section adjacent the merging points, a distal section, and an intermediate section separating therebetween, with at least the distal and proximal sections being oriented relative to the pivoting axis at angles different from 90 degrees. The angles of orientation of the distal sections of each interior edge can be different from that of the proximal sections. The interior edges can have such a shape that the distance between their distal sections, in particular, at least selected points thereon, is either greater or smaller than that between their intermediate sections. The distance between the interior edges can either increase towards their ends remote from the pivoting axis, or decrease towards these ends, or first decrease (along the proximal sections of the interior edges) and then increases (along the distal sections of the interior edges) or vice versa. The distance between the interior edges can vary along a majority of their length.

According to another aspect of the subject matter of the present application, said closure further can have an at least weakened inner edge merging at its two ends with the ends of the interior edges remote from the pivoting axis.

The inner edge can extend from its ends in the direction away from the pivoting axis, or in the direction towards the pivoting axis.

The inner edge can be disposed in or close to the large-arced portion of the closure. The inner edge and the interior edges can define an inner portion of the closure constituting an integral continuation of said material and merging therewith at said merging points between the interior and the exterior edges. The inner portion can have a width parallel to the pivoting axis that first increases in the direction away from said axis and then decreases.

In any aspect of the subject matter of the present application, each of the at least weakened interior edges of the closure, as well as the exterior edge of the closure, and its inner edge, when this exists, is at least weakened before the separation of the closure from the material surrounding it along the exterior edge. The lines that form these edges or at least a portion thereof can be in the form of one of the following line types:

a line that is pre-cut;

a line that is perforated or dotted; and

a line along at least a portion of which the material is thinner relative to those areas of the material that do not have such weakened lines.

The exterior edge and the inner edge can each have a vertex point spaced from the straight line to a maximal distance relative to other points on the corresponding edge. The vertex point of the inner edge can be located closer to the vertex point of the exterior edge than to the pivoting axis.

The adhesive flap portion can include at least one gripping tab whose adhesion to the material is weaker than that of other parts of the adhesive patch.

The adhesive flap portion can include at least one gripping tab that is not adhered to the material.

The adhesive patch can include stoppers positioned at a side of the pivoting axis opposite the closure.

The adhesive patch can be made of, at least, one or a combination of the following materials: PP, PE, PS, foam materials, laminated materials, recycled materials, cardboard, fabric, etc.

The use of the resealable dispensing closure according to any aspect of the subject matter of the present application, alone or in combination with features of the other aspects, can provide multiple advantages, some of which are as follows:

- reducing the size of resealable dispensing closures;
- increasing the minimal force required to completely detach the sealing flap of a resealable dispensing closure from a package and tear the package material (when this scenario is undesirable);
- enabling the package to be torn only by applying deliberate and substantial force to the sealing flap of a resealable dispensing closure (when this scenario is desirable);
- enabling the use of the resealable dispensing closure on smaller packages;
- enabling the positioning of the resealable dispensing closure near the edges of packages;

  enabling the use of the resealable dispensing closure on multiple types of packages, i.e. made of different materials, having different sizes, intended to be opened a small or a very large amount of times, store different types of products, including not only tissues but also food such as e.g. dried fruit, cereals, snacks, grains, wet and dry foodstuff and edible products, etc. which are currently stored in non-resealable packages or in resealable zipper storage bags, etc.;
- enabling the use of the resealable dispensing closure with temper-proof characteristics, for example for packages containing foodstuff and edible products.

BRIEF DESCRIPTION OF THE DRAWINGS

In order to understand the invention and to see how it may be carried out in practice, embodiments will now be described, by way of non-limiting examples only, with reference to the accompanying drawings, in which:

Fig. 1A shows a package using a resealable dispensing closure device according to an example of the subject matter of the present application,

Figs. 1B and 1C show only the resealable dispensing closure device in full detail at its original or closed position and its open position, respectively;

Figs. 2A to **2L** illustrate various configurations of an adhesive patch, which can be used in a resealable dispensing closure device according to the subject matter of the present application ;

Fig. 3 shows a resealable dispensing closure device according to another example of the subject matter of the present application;

Figs. 4A to **4C** show additional possible shapes of cut portions and inner portions of a closure that can constitute a part of a resealable dispensing closure device according to the subject matter of the present application;

Figs. 5A and **5B** show an example of a resealable dispensing closure device according to the subject matter of the present application, used in combination with stoppers; and.

Figs. 6A to **6D** show an example of an adhesive patch of a resealable dispensing closure device according to the subject matter of the present application, in combination with temper proof means.

DETAILED DESCRIPTION OF EMBODIMENTS

With reference first being made to **Fig. 1A**, there is shown a package generally designated **10** with a resealable dispensing closure device generally designated **20** according to one example of the presently disclosed subject matter . **Figs. 1B** and **1C** show enlarged views of only the resealable dispensing closure device 20. The package **10**, in this particular example, is adapted for storage and dispensing of tissues, one tissue at a time. The function of the resealable dispensing closure device **20** is to provide a repeatably sealable closure for the tissue outlet of the package, so as to avoid contamination and dehydration of the tissues contained therein, yet facilitate dispensing of the contained tissues, one at a time.

In this particular example, types of *tissue/s* may include, in addition to regular tissues, also wet tissues, towelettes, napkins and similar articles, whether dry or pre-moistened. The tissues may be arranged within the package as separately connected sheets (e.g. along a perforation line), or interleaved discrete sheets, stacked to ensure that as the leading tissue is removed from the package a portion of the trailing tissue passes through the outlet and releases the leading tissue once in a position to allow its (the trailing tissue) easy removal when required (and in turn becoming the leading tissue). Tissues may also be stacked simply without interleaving so the removal of the top tissue has no bearing on the positioning of those below.

The package **10** may be made from any suitable material, or a combination of materials, including synthetic resins, plastics, laminated or un-laminated cardboard etc.

and its shape and construction may vary, depending on parameters such as its intended contents, commercial considerations, shipment and storage considerations, cost, etc.

The location of the resealable dispensing closure device **20** on the package **10** in the described example is at the center of the package's front laminate surface **11**, though it may clearly be positioned at any other suitable portion of the package.

The front laminate surface **11**, in this example, constitutes a part of the resealable dispensing closure device **20**.

The resealable dispensing closure device **20** comprises an adhesive patch **P** having a base portion **25** and an adhesive flap portion **22** both adhered to the front laminate surface **11** at least along the majority of their areas. The flap portion **22** is configured to pivot relative to the base portion **25** about a pivoting axis **21** (which is an imaginary line) as will be explained in more detail below.

In **Fig. 1A**, an area **20a** of the surface **11** to which the flap portion is adhered comprises a pattern of lines generally designated as **20b**, which area **20a** together with the axis **21** defines a closure **30**, which pattern in the present example is in the form of a closed-loop line **13**.

The closed-loop line **13** can be formed as one or a combination of the following lines: a pre-cut (i.e. a full cut) line, a perforated line, a non-complete cut line (e.g. a line formed by dotted cutting, a laser weakening of the surface, etc.). For example, a part of the closed-loop line **13** can be a pre-cut and another part can be a non-complete cut.

The closed-loop line **13** on the surface **11** comprises an exterior edge **17** of the closure **30** along which the surface **11** is configured to tear when the flap portion **22** pivots relative to the base portion **25** for the first time, separating thereby the closure **30** from the remainder of the surface **11**, along the exterior edge **17** and forming an opening **33** in the surface **11** configured to serve as an outlet of the package **10** through which the content of the package **10**, namely tissues **T**, can be dispensed. The exterior edge **17** has two end sections **17b** and an intermediate section **17a** therebetween.

The closed-loop line **13** on the surface **11** further comprises an inner edge **19** and interior edges **41a** and **41b** (highlighted in **Figs. 1B** and **1C**) bridging between the exterior edge **17** and the inner edge **19**, each interior edge **41a** and **41b** merging with the adjacent one end section **17b** of the exterior edge **17** at a merging point **44a**, **44b** lying on the pivoting axis **21**.

The interior edges **41a**, **41b** each have a proximal section **41aa**, **41ba** adjacent to the corresponding merging point **44a**, **44b**, a distal section **41ac**, **41 bc** with an end point farthest from the proximal section **41aa**, **41ba** and an intermediate section **41ab**, **41bb** therebetween. In the present example, a distance **Y2** between the end points of the distal sections **41ac**, **41bs** of the interior edges **41a** and **41b** is greater than a distance **Y1** between the two proximal sections **41aa**, **41ba** thereof.

The closure **30** includes an outer (cut) portion **15** constituted by an area encompassed by the closed-loop line **13** and having, in the present example, a U-like shape, and an inner portion **28** whose exterior is defined by the inner edge **19**, the interior edges **41a** and **41b** and, symbolically by the pivoting axis **21**. The inner portion **28** constitutes an integral continuation of the surface **11**.

The outer portion **15** of the closure **30** has a first, large-arced end portion **12** extending along the intermediate section **17a** of the exterior edge **17** and the inner edge **19**, and two second, small arced end portions **14a** and **14b** extending opposite to the large-arced end **12**, each defined by one end section **17b** of the exterior edge and one interior edge **41a**, **41b**.

The inner portion **28** is oriented in the same direction as the large arced end **12** of the outer portion **15** of the closure **30**, each having a vertex **19aa**, **17aa** lying on the respective inner or exterior edge of the closure **30.** The two vertices lie on an imaginary line (not shown) perpendicular to the pivoting axis and are spaced to different distances **X1** and **X2** from the axis **21**, the former distance being shorter than the latter distance. In the present example, the difference between the distances **X2** and **X1** is smaller than the distance **X1**.

The exterior edge **17** of the closure **30** in the present example has such a shape that a width **W1** of the closure measured in the direction parallel to the axis **21** varies, e.g. decreases towards the vertex **17aa**. The inner edge **19** of the closure **30** has such a shape that a width **W2** of the inner portion **28** varies, e.g. decreases away from the interior edges towards the vertex **19aa**. The interior edges **41a, 41b** of the closure **30** have such a shape that a distance **Y** therebetween varies in the direction away from the axis **21**, i.e. first decreases and then increases in the direction away from the axis **21**.

Reverting to the adhesive patch **P** having the base portion **25** and the flap portion **22**, the latter portion with the closure **30** attached thereto (best seen in **Fig. 1C**) is pivotable about the axis **21** between:

- an original position as shown in **Figs. 1A** and **1B**, in which the entire closure is connected to the laminate surface **11** surrounding it along the entire exterior edge,
- an open position (Fig.1B) in which the flap portion **22** with the closure **30**, torn from the surface **11** along its exterior edge **17**, is pivoted about the axis **21** to project from the surface **11** and provide access to the outlet **33**, and
- a closed position (Fig. 1A) in which the flap portion **22** with the closure **30** lie flat and flush over the laminate surface **11** covering the outlet **33**.

The flap portion **22** of the adhesive patch **P** has an apex **23** lying on the same imaginary line (not shown) as the vertexes **19aa** and **17aa** of the closure **30**, and a gripping tab **26** occupying an area adjacent the apex **23**, and configured to facilitate gripping the flap portion **22** by the fingers of a user, to pivot it between the above described positions thereof.

The resealable dispensing closure device **20**, in particular its adhesive patch **30** may be produced from any material used for packaging or that can be adapted for use in conjunction with a package, either flexible, semi-rigid, or rigid materials e.g. cardboard (laminated or not), tape, plastic (e.g. a rigid closure may include a folding axle or e.g. include weakening of the axis) etc.

The adhesive agent applied to the adhesive patch **30** can be the same at its base and flap portions, or different adhesive agents can be applied to these portions. In any case, the adhesive agent applied over the flap portion **22** can be selected so as to be repeatedly detachably attachable to the laminate surface **11** of the package **10** in a sealing tight fashion. Alternatively, or in addition, the adhesive patch **P** can include a locking arrangement of the kind described in the applicant's US provisional Patent application US 61/136,426 (based on which a PCT application WO 2010/026584 was filed), whose description from that publication is incorporated herewith by reference.

In any case, the gripping tab **26** of the flap portion **22** can be either devoid of adhesive agent at its surface facing the laminate surface **11** or have such agent weaker than that applied to the rest of the adhesive patch **P**, allowing easy peeling of the gripping tab **26**.

The manner of opening of the dispensing closure device **20** is illustrated in **Fig. 1B.** The resealable dispensing closure device **20** is opened by gripping the gripping tab **26** with finger-tips **C** so as to progressively peel-open the adhesive patch **P**, detaching the adhered flap portion **22** and closure **30** from the laminate surface **11** of the package **10**,

such that adhesive patch **P** is partially detached from the laminate surface **11**, but along the pivoting axis **21**, until adhesive patch **P** is prevented from further detachment by the interior edges **41a** and **41b** of the closure **30**, which function as stoppers. When the flap portion **22** is raised so that the resealable dispensing closure device **20** is in the open position, the outer portion **15** and the inner portion **28** of the closure **30** remain adhesively attached to the adhesive patch **P**, the merging points **44a,44b** between the interior edges **41a** and **41b** and the end sections **41aa,41ba** of the exterior edge **17** separating between the portions of the package **10** that are raised together with the adhesive patch **P** and the rest of the package, and the axis **21** serving as a peal-away stop line.

The above design increases the pulling force required to be applied to the flap portion **22**, to lead to the above undesirable scenario. Thus, in fact, only intentional action will eventually cause the material of the package **10** to tear.

The resealable dispensing closure device can have different shapes of its components, and some examples of these are shown in **Fig. 2A** to **2L**.

In particular, **Figs. 2A** to **2L** demonstrate various examples of adhesive patches **100** to **210** having external different shapes, different closure designs including the designs of the outer and inner portions thereof, different gripping tabs, etc., that can be used in any combination.

Thus, the shapes of the adhesive patches shown in **Figs. 2A** to **2F**, is essentially pentagon, whilst the adhesive patches shown in **Figs. 2G** to **2I** are substantially square with rounded corners, and those shown in Figs. **2J** to **2L** have a 'heart'-line shape. The adhesive patches may have a depression **133, 143, 153** at the base of the closure, as shown in **Figs. 2D** to **2F**, and also shown (without numeral markings) in **Figs. 2J** to **2L**. The depressions **133**, **143** and **153** may extend through the axis **21** into the inner portions **134**, **144** and **154**, respectively, as shown in **Fig. 2D** to **2F**. Some of the closures comprise a gripping tab **G**, similar to the gripping tab **26** mentioned above, and substantially devoid of adhesive agent. In **Figs. 2D** to **2F** the gripping tab is visually indistinguishable and also has an adhesive agent applied to it, thus requiring it to be manually peeled off a surface of a package.

The outer, cut portions **101** to **211**, and consequently the inner portions **104** to **214** can also vary in their shape. In particular, with reference to **Figs. 2A** to **2C**, the inner portion **104** has the smallest depth, while the inner portion **124** has the largest depth. In other words, in **Fig. 2A** the vertex of the inner edge of the closure is farther from the

vertex of the exterior edge than from the pivoting axis; in **Fig. 2B** the vertex of the inner edge of the closure is about equally spaced from the vertex of the exterior edge and the pivoting axis; and in **Fig. 2C**, the vertex of the inner edge of the closure is closer to the vertex of the exterior edge than to the pivoting axis **21**. The outer, cut portions may further vary in the arc shape of their small arced ends **105** to **215.** In particular, with reference to Figs. **2A** to **2C**, the small arced ends **125** are more inwardly directed than the small arced ends **105.** It should be understood that the shape of the small arced ends, together with the depth of the inner portion, largely depend on the shape of the interior edges **41a** and **41b**, which as shown can be such that the distance therebetween either increases towards their distal ends remote from the pivoting axis, or decreases towards these ends, or first decreases and then increases or vice versa. As seen in the presented examples, the distance between the interior edges varies along a majority of their length.

The above described varying geometry can allow to prevent pulling of the flap portion to an extent more than designed, providing thereby controlled tearing the material of the package.

With reference to **Fig. 3**, there is shown a resealable dispensing closure device **320** for a package **310** with a package surface **311** having a dispensing outlet **333** at least when the package **310** is in use. The device comprises an adhesive patch **30P** having an adhesive flap portion **322** and a base portion **327**, both adhered to the package surface **311**, the former being pivotable relative to the latter about a pivoting axis **321**. The surface **311** is formed with a closure **330** configured to be disposed between the flap portion **322** of the adhesive patch **30P** and the outlet **333** at least when the outlet **333** is closed, and separable from the remainder of the material surrounding it along a exterior edge **317** to provide access to the interior of the package **310** via the outlet **333**. The exterior edge **317** has two end sections **337a**, **337b** and an intermediate section **337c** therebetween.

The closure **330** has a large-arced end portion **312** extending along the intermediate section **337c** of the exterior edge **317**, and two opposite small-arced end portions **314a**, **314b** defined by interior edges **341a**, **341b** merging, at two merging points **344a**, **344b** with the end sections **337a**, **337b** of the exterior edge **317**. The two merging points **344a**, **344b** lie on the axis **321**.

The interior edges **341a**, **341b** extend from the merging points **344a**, **344b** inwardly of the closure **330** and have a distance **Y** therebetween first decreasing and then

increasing in the direction away from the axis **321**. More particularly, a distance **Y3** between most distal points of distal sections **341ac**, **341bc** of the interior edges **341a**,**341b** is greater than a distance **Y4** between the most proximal points thereof.

With reference to **Figs. 4A** to **4C**, additional possible shapes of outer (cut) portions **415** and inner portions **428** of the closure **30** of the device **10**, as shown in **Figs. 1A** to **1C**, are shown, together with the position of pivoting axis **421** with respect thereto.

In **Fig. 4A** the inner portion **428** has interior edges each including a proximal section **441aa**, **441ba** an intermediate section **441ab**,**441bb** and a distal section **441ac**, **441bc** that are straight and are connected with arcs. The proximal sections **441aa**, **441ba** of the two interior edges **441a**, **441b** extend towards each other so that a distance therebetween decreases in a direction away from the pivoting axis **421**. The distal sections **441ac**, **441bc** of the interior edges **441a**, **441b** extend away from each other so that a distance therebetween increases in a direction away from the pivoting axis **421**. The intermediate sections **441ab**,**441bb** of the interior edges **441a**, **441b** are oriented so that at least a part thereof is perpendicular to the pivoting axis. **Figs. 4B** and **4C** show designs that differ from that shown in **Fig. 4A** in that all sections of their interior edges are curved and in that the distal sections **441ac**, **441bc** of their interior edges are oriented so that their distal ends - points **442ab**, **442bb** are closer to the pivoting axis **421** than their points **442aa**, **442ba** of merger with the intermediate sections **441ab**, **441bb**. In addition, the design of **Fig. 4B** differs from that of **Figs. 4A** and **4C** in that in the latter figures, in that tangents **471**, **472** to the interior edges **441a**, **441b** at their points **441ad**, **441bd** closest to each other intersect the pivoting axis **421** at locations that are closer to each other than to the merging points **444a**, **444b**of the interior edges **441a**, **441b** with the exterior edge **417**.

In general, in **Figs. 4A** to **4C**, as well as in **Figs. 1A** and **1B**, the inner portion **428** can be seen as having a mushroom-like shape with a head **428a** defined by the inner edge **419** and the distal sections **441ac**, **441bc** of the interior edges **441a**, **441b**, which extend away from each other from their points **442aa**, **442ba** of merger with the intermediate sections **441ab**,**441bb** of the interior edges **441a**, **441b**.

With reference to **Figs. 5A** and **5B**, the resealable dispensing closure device of the present subject matter is shown in combination with stoppers **550** of exemplary types that are known in the art per se. The stoppers **550** are positioned slightly behind the axis **521**, thus only becoming relevant if flaps **511**, that are part of adhesive patches **510**, are pulled

too hard and begin tearing the material of their respective packages (not shown) past the axis **521**. In such case, further tearing may be prevented, by the stoppers **550**, past axis **551** that form new roll-pivot lines for the parts of adhesive patches **510** that are detached from the surfaces (i.e. surfaces of packages) to which they were initially adhered.

With reference to **Figs. 6A** to **6D**, the resealable dispensing closure device of the present subject matter is shown in combination with temper proof means of exemplary types.

Specifically with reference to **Fig. 6A**, the adhesive patch initially includes a main part **610**, adhered to the closure (not shown) of the resealable dispensing closure device of the presently disclosed subject matter and to the surface of a package (not shown), and part **620** that is also attached to the surface of a package (not shown). Upon detachment of the main part **610** from the surface of a package, part **620** is torn away along weakened tearing line **622** and remains adhered to the surface of the package. Thus, it can be determined that a package was previously opened if the part **620** is no longer attached to the main part **610** of the adhesive patch.

Specifically with reference to **Fig. 6B**, the tearing line **622** of **Fig. 6A** has been altered to tearing line **624**. The tearing line **624** is of a generally more complex shape than a standard, i.e. straight, tearing line and is configured so that tearing main part **610** away from part **620** leaves cuts and small protruding pieces in one or both part **620** and main part **610**, thus making it clearly visible, even after main part **610** is again adhered to the package, that the tearing of tearing line **624** has already occurred.

Specifically with reference to **Fig. 6C**, the adhesive patch initially comprises main part **610**, part **620** and a middle part **630**. The middle part **630** is essentially devoid of adhesive agent, while the main part **610** and part **620** are fully or mostly adhered to the surface of a package (not shown). Tearing lines **632** and **626** divide, respectively, the middle part **630** from the main part **610** and the part **620** from the middle part **630**. Upon detachment of the middle part **630**, by gripping its upper left corner and pulling on it out-of-plane of the adhesive patch, the middle part **630** is torn away from the rest of the adhesive patch along tearing line **632** (which could be, for example, a weakened line, a perforated line, etc.) and from the part **620** along tearing line **626**. Thus, the main part **610** and the part **630** remain adhered to the surface of the package whereas the middle part **620** is detached from them and it's absence serves proof to the fact that the package

might have been previously opened. Auxiliary stoppers **650** are also shown in **Fig. 6C** and correspond to stoppers **550** shown in **Fig. 5A**.

Specifically with reference to **Fig. 6D**, main part **610** is separated by tearing line **666** from a top part **660**, and by tearing lines **648** from middle parts **640**. The middle parts **640** are also separated from the top part **660** by tearing lines **648**. The main part **610** has a gripping tab **611** and the top part **660** has a gripping tab **661**. The top part **660** further has an upper part **665** and a lower part **663** that extends slightly above the gripping tab **611** before continuing as the upper part **665**. The lower part **663** and the gripping tabs **611** and **661** are essentially devoid of adhesive agent, while the rest of main part **610** and the middle parts **640** and the upper part **665** of top part **663** are fully or mostly adhered to a surface of a package. In order to peel off the main part **610** off a surface of a package for the first time, a user must first remove the top part **660** by peeling it off the surface of a package, i.e. by pulling on gripping tab **661** out-of-plane of the adhesive patch with his fingers, thus tearing it away from the main part **610** and the middle parts **640** along respective tearing lines **666** and **664**. After that, the main part **610** can be peeled off (partially, as already described above for the resealable dispensing closure device of the presently disclosed subject matter) by gripping the gripping tab **611** and pulling on it, thus also tearing the main part **610** from the middle parts **640** along the respective tearing lines **648**. Thus, absence of the top part **660** and permanently remaining visible effects of tearing of the tearing lines **648** and **664** that are of a generally more complex shape as already explained with regard to **Fig. 6B**, prove that the main part **610** of the adhesive patch was previously peeled off and thus the resealable dispensing closure device was already opened at least once.

As previously mentioned herein above, the package in which the closure device of the subject matter of the present application is to be used, can be utilized for storage and dispensing of a variety of products such as, for example, foodstuff (e.g. cereals, dried food in loose form, liquid food and/or bottles, etc.). Likewise, the package can be designed in many different shapes and sizes, depending among others on its contents, and accordingly, the location of the dispensing closure device is selected so as to serve for efficient dispensing of the relevant content within the package. For example, in case of a package intended for dried food stuff, it may sometimes be desired that the package be a self standing type in which case the dispensing opening is typically fitted at or near an

upper-most end thereof. However, there is no limitation regarding the shape and features of the package as it may be also a soft pack.

It is further appreciated that the invention is concerned with a resealable dispensing closure device as illustrated and discussed herein above, which may be manufactured separately and applied to the package at any stage.

CLAIMS

1. A resealable dispensing closure device for a package with a package surface having a dispensing outlet at least when the package is in use, comprising
   - an adhesive patch having a base portion and an adhesive flap portion configured to pivot relative to the base portion about a pivoting axis;
   - a material to which said patch is adhered at its base portion and at least a part of its flap portion, the material being configured to constitute a part of said package surface at least when the closure device is in use on said package;
   - a closure in said material, to which said at least a part of said flap portion is adhered;
   - an exterior edge at a periphery of said closure, along which said material is configured to tear when the flap portion pivots relative to the base portion for a first time, separating thereby said closure along said exterior edge from the remainder of the material and forming an opening in said material configured to serve as or provide access to said outlet when the closure device is in use on said package, said exterior edge having two end sections and an intermediate section therebetween;
   - a large-arced end portion in said closure, extending along the intermediate section of the exterior edge;
   - two opposite small-arced end portions in said closure each defined by one end section of the exterior edge and by an at least weakened interior edge merging with said one end section at a merging point, the merging points of the two end portions lying on said pivoting axis,
   - the interior edges of the two end portions of the closure extending from the merging points inwardly of the closure; and
   - the interior edges each having at least one distal point and at least one proximal point disposed closer to the pivoting axis than the distal point such that a distance between the two distal points of the two interior edges is greater than that between the two proximal points thereof.
2. The resealable dispensing closure device of Claim 1, wherein the interior edges have such a shape that the distance therebetween first decreases and then increases in the direction away from the pivoting axis.

3. The resealable dispensing closure device of Claim 1 or 2, wherein said closure further has at least weakened inner edge merging at its two ends with the ends of the interior edges remote from the pivoting axis.

4. The resealable dispensing closure device of any one of Claims 1 to 3, wherein lines in said material constituting at least the exterior edge and the interior edges of the closure, are in at least one of the following forms:
a line that is pre-cut;
a line that is perforated or dotted; and
a line that along which said material is thinner than at its areas surrounding this line.

5. The resealable dispensing closure device of Claim 4, wherein the exterior edge and the interior edges are differently formed lines.

6. The resealable dispensing closure device according to any one of Claims 1 to 5, wherein the interior edges merge via an inner edge and form together therewith and with the exterior edge a closed-loop line.

7. The resealable dispensing closure device of Claim 6, wherein the exterior edge and the inner edge have vertex points spaced from the pivoting axis to a maximal distance relative to other points on said edges, and the vertex point of the inner edge is located closer to the vertex point of the exterior edge than to the pivoting axis.

8. The resealable dispensing closure device of ..., wherein the adhesive patch includes stoppers positioned at a side of the pivoting axis opposite the closure.

9. The resealable dispensing closure device of any one of Claims 1 to 8, wherein the resealable dispensing closure device includes temper proof means.

10. The resealable dispensing closure device of Claim 9, wherein the temper proof means is formed by a part of the adhesive flap portion that is separatable therefrom by a tearing line.

11. A resealable dispensing closure device for a package with a package surface having a dispensing outlet at least when the package is in use, comprising
- an adhesive patch having a base portion and an adhesive flap portion configured to pivot relative to the base portion about a pivoting axis;

- a material to which said patch is adhered at its base portion and at least a part of its flap portion, the material being configured to constitute a part of said package surface at least when the closure device is in use on said package;
- a closure in said material, to which said at least a part of said flap portion is adhered;
- an exterior edge at a periphery of said closure, along which said material is configured to tear when the flap portion pivots relative to the base portion for a first time, separating thereby said closure along said exterior edge from the remainder of the material and forming an opening in said material configured to serve as or provide access to said outlet when the closure device is in use on said package, said exterior edge having two end sections and a intermediate section therebetween;
- a large-arced end portion in said closure, extending along the intermediate section of the exterior edge; and
- two opposite small-arced end portions in said closure each defined by one end section of the exterior edge and by an at least weakened interior edge merging with said one end section at a merging point, the merging points of the two end portions lying on said pivoting axis, the interior edges of the two end portions of the closure extending from the merging points inwardly of the closure; and
- an at least weakened inner edge merging at its two ends with the ends of the interior edges remote from the pivoting axis, forming with said exterior and interior edges a closed-loop line.

12. The resealable dispensing closure device of Claim 11, wherein lines in said material constituting the exterior edge, the inner edge and the interior edges of the closure, are in at least one of the following forms:

a line that is pre-cut;

a line that is perforated or dotted; and

a line that along which said material is thinner than at its areas surrounding this line.

13. The resealable dispensing closure device of Claim 12, wherein the exterior edge, inner edge and interior edges are differently formed lines.

14. The resealable dispensing closure device of any one of Claims 11 to 13, wherein the interior edges extend from the merging points inwardly of the closure and have a distance therebetween first decreasing and then increasing in the direction away from said pivoting axis.
15. The resealable dispensing closure device of any one of Claims 11 to 14, wherein the exterior edge and the inner edge have vertex points spaced from the pivoting axis to a maximal distance relative to other points on said edges, and the vertex point of the inner edge is located closer to the vertex point of the exterior edge than to the pivoting axis.
16. The resealable dispensing closure device of any one of Claims 11 to 14, wherein the exterior edge and the inner edge can have vertex points spaced from the pivoting axis to a maximal distance relative to other points on said edges, and the vertex point of the inner edge is located closer to said axis line than to the vertex point of the exterior edge.
17. The resealable dispensing closure device of any one of Claims 11 to 16, wherein the adhesive flap portion includes at least one gripping tab that is adhered to the material weaker than other parts of the adhesive patch.
18. The resealable dispensing closure device of any one of Claims 11 to 17, wherein the adhesive flap portion includes at least one gripping tab that is not adhered to the material.
19. The resealable dispensing closure device of any one of Claims 11 to 18, wherein the adhesive patch includes stoppers positioned at a side of the pivoting axis opposite the closure.
20. The resealable dispensing closure device of any one of Claims 11 to 19, wherein the resealable dispensing closure device includes temper proof means.
21. The resealable dispensing closure device of Claim 21, wherein the temper proof means is formed by a part of the adhesive flap portion that is separatable therefrom by a tearing line.
22. The resealable dispensing closure device of any one of Claims 11 to 21, wherein the adhesive patch is made of one or a combination of the following materials: PP, PE, PS, foam materials, laminated materials, recycled materials, cardboard, fabric.
23. A package comprising a package surface and a resealable dispensing closure device according to any one of the preceding claims.

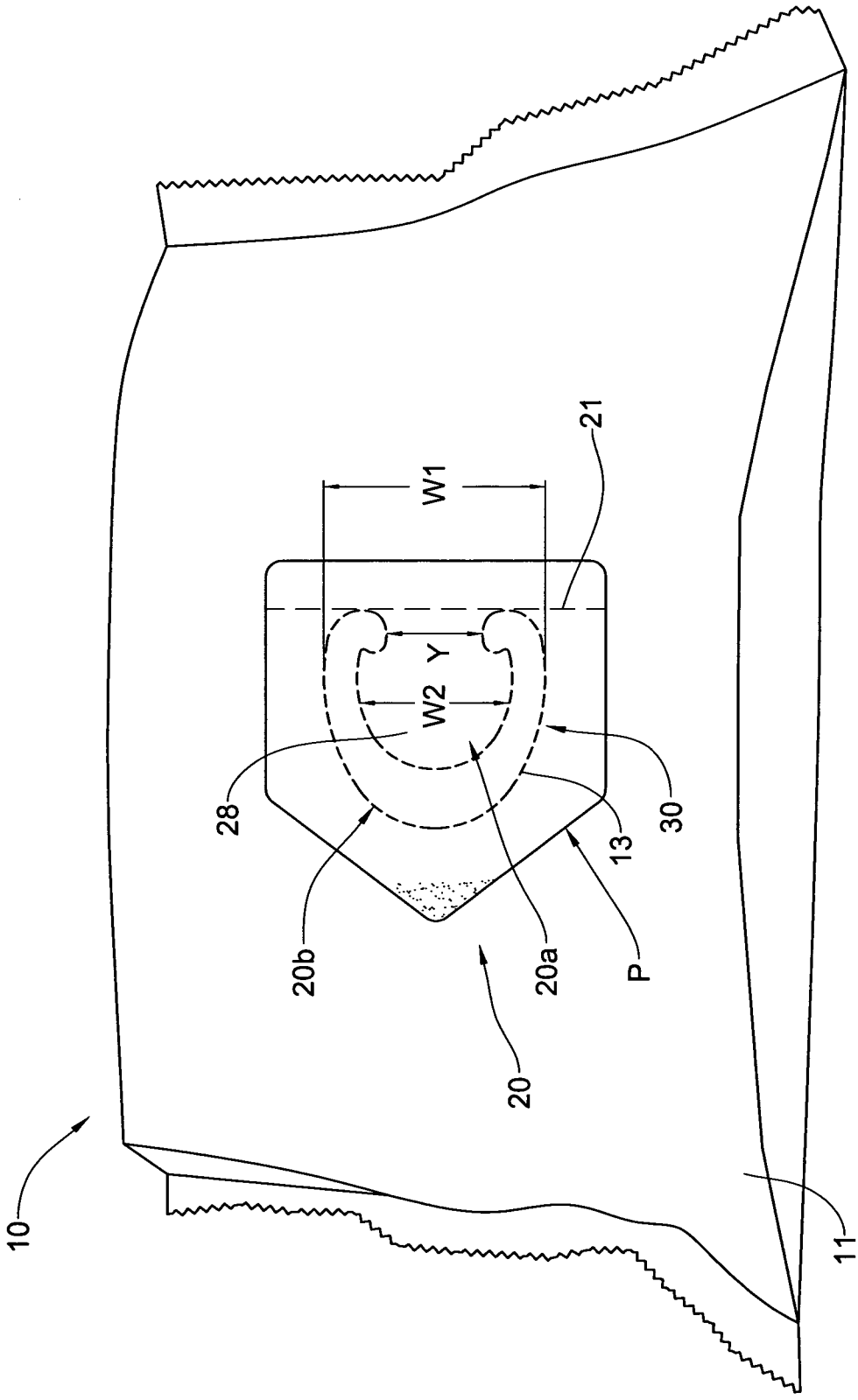

FIG. 1A

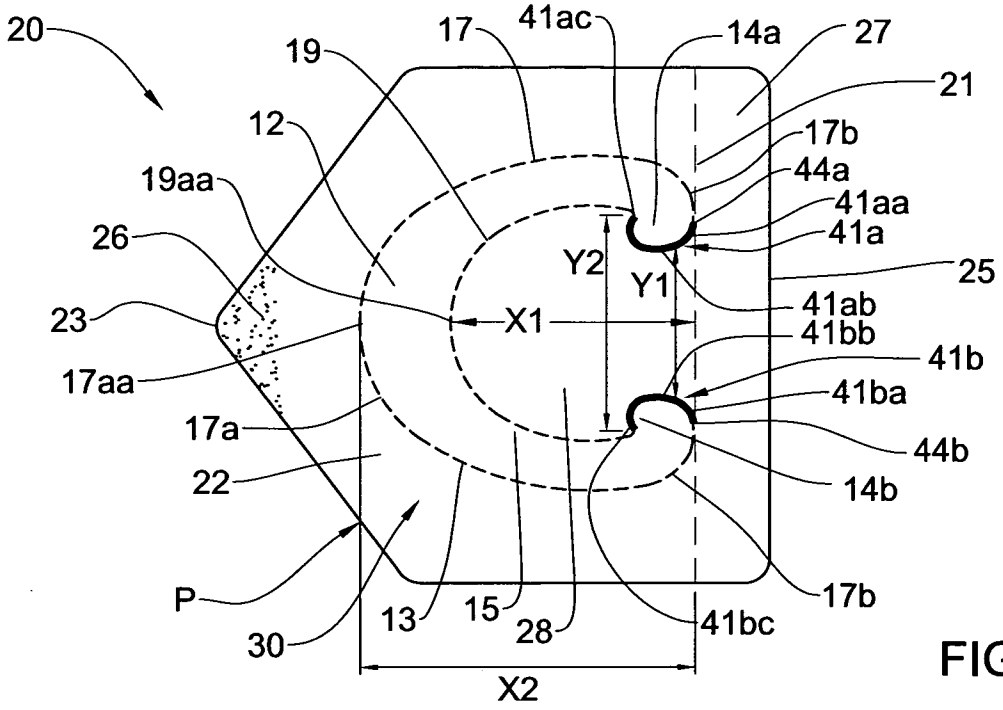
20
19
17
41ac
14a
27
21
12
17b
44a
19aa
41aa
26
41a
Y2
Y1
25
23
X1
41ab
41bb
41b
17aa
41ba
17a
44b
22
14b
P
17b
13
15
28
41bc
30
X2

FIG. 1B

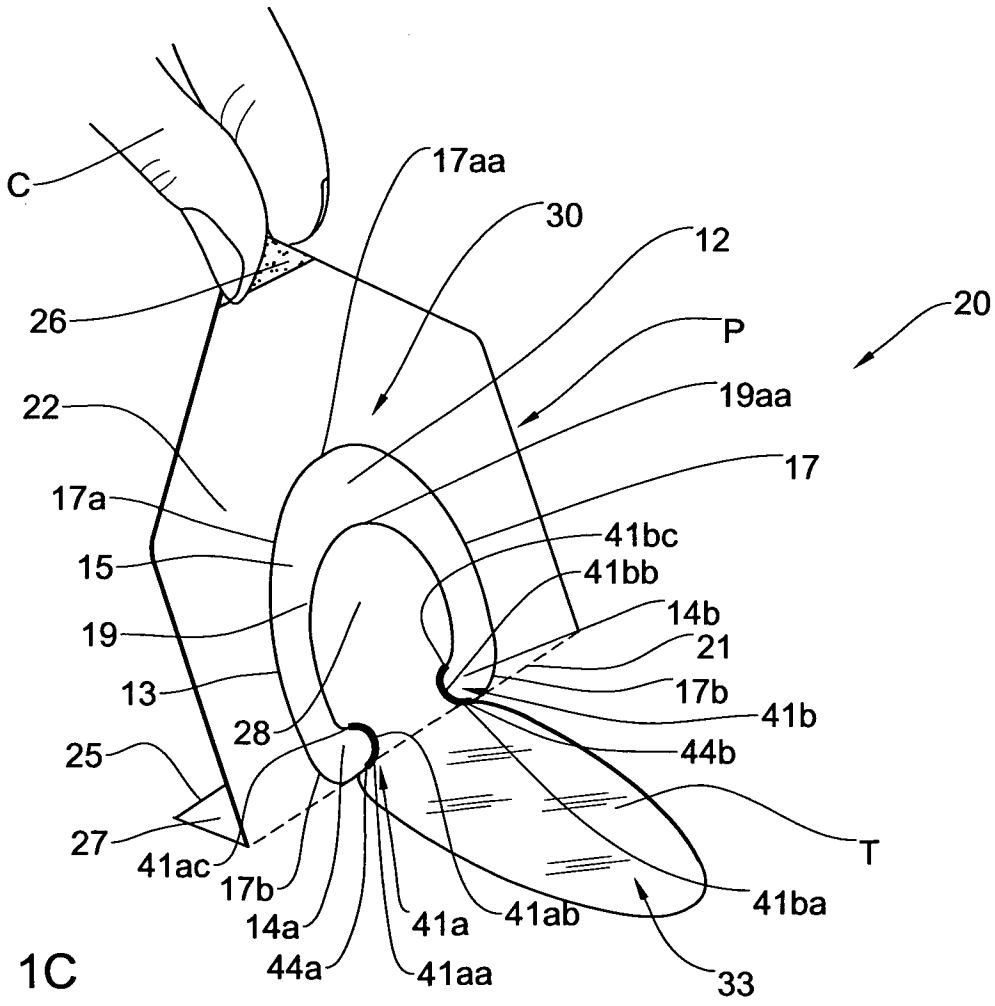
C
17aa
30
12
20
26
P
22
19aa
17
17a
41bc
15
41bb
19
14b
21
13
17b
28
41b
25
44b
27
T
41ac
17b
41ba
14a
41a
41ab
44a
41aa
33

FIG. 1C

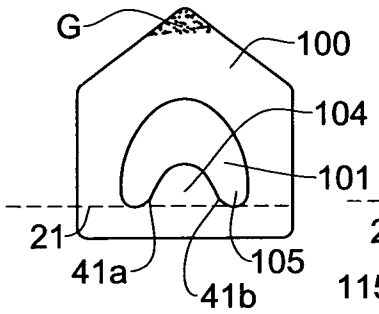

FIG. 2A

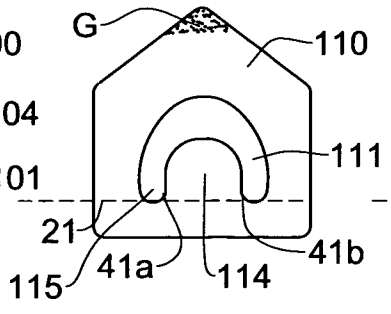

FIG. 2B

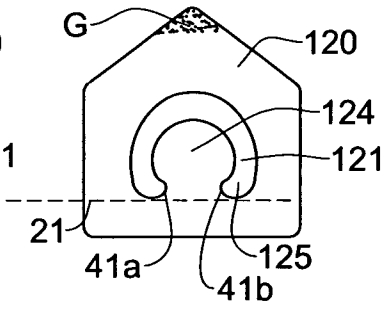

FIG. 2C

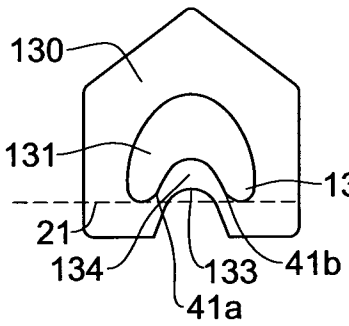

FIG. 2D

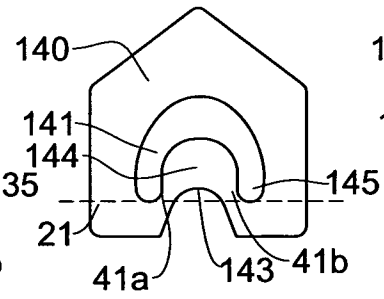

FIG. 2E

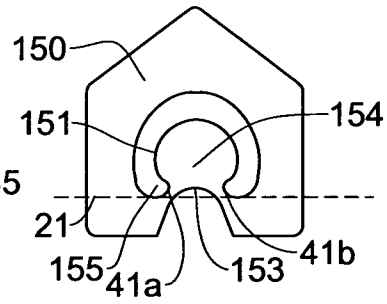

FIG. 2F

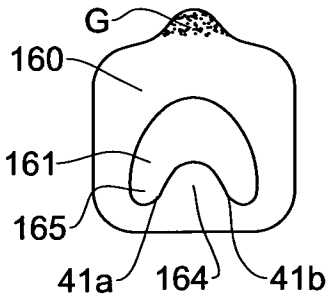

FIG. 2G

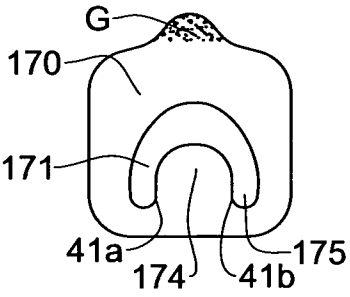

FIG. 2H

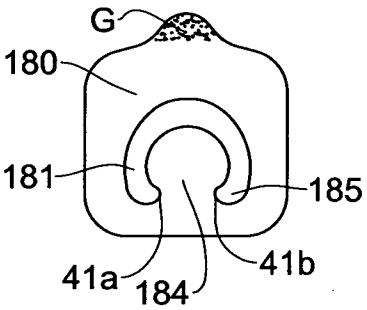

FIG. 2I

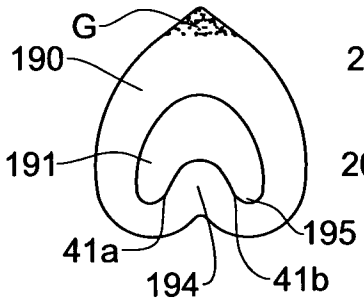

FIG. 2J

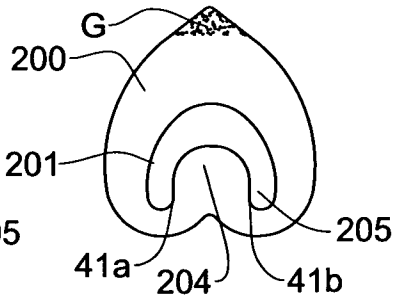

FIG. 2K

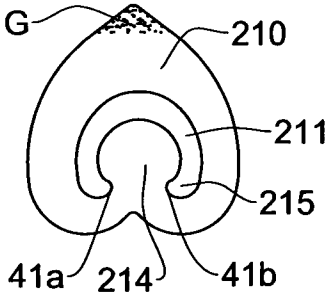

FIG. 2L

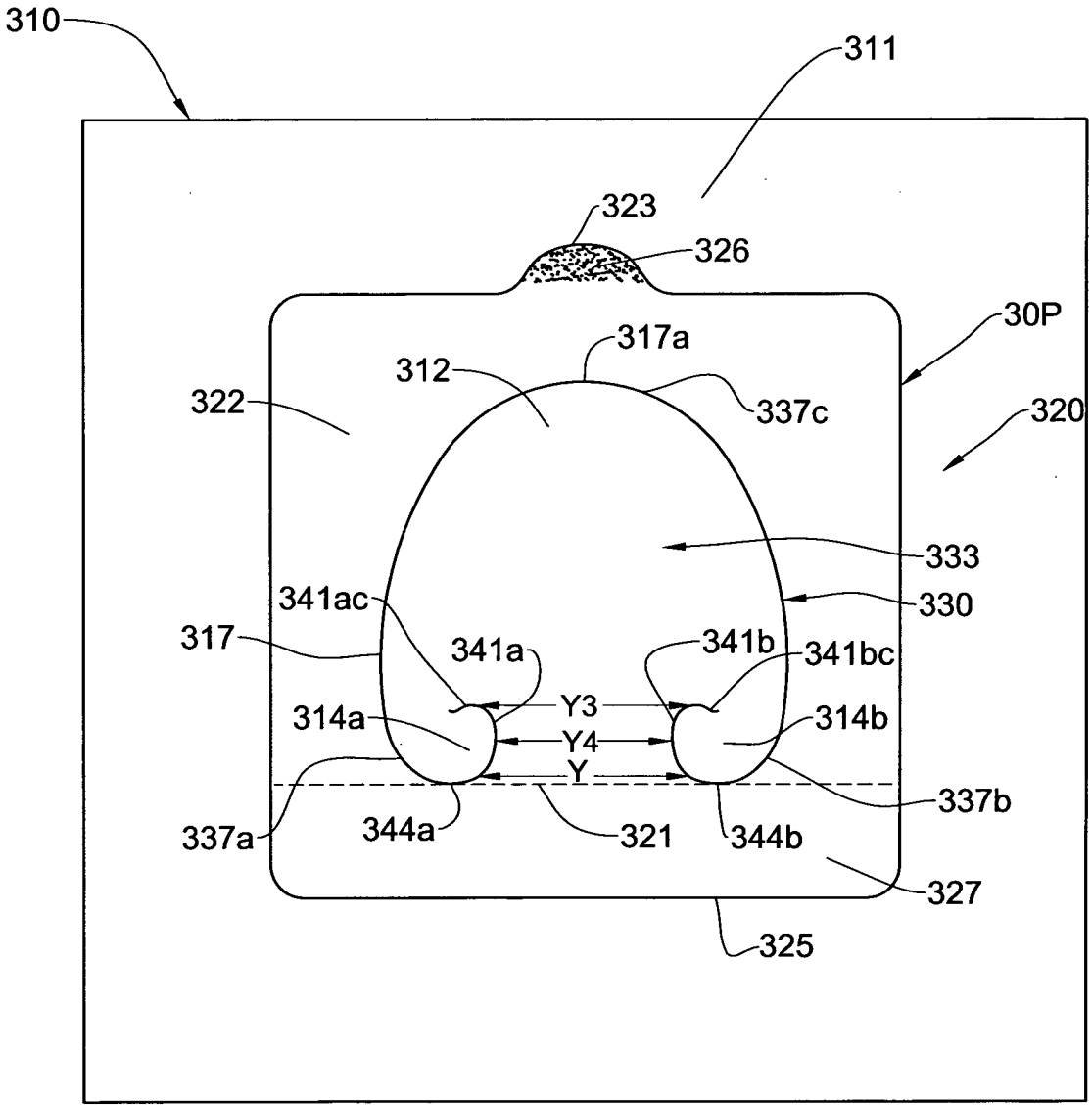
310
311
323
326
30P
317a
312
322
337c
320
333
341ac
330
317
341a
341b
341bc
Y3
314a
Y4
314b
Y
337b
337a
344a
321
344b
327
325

FIG. 3

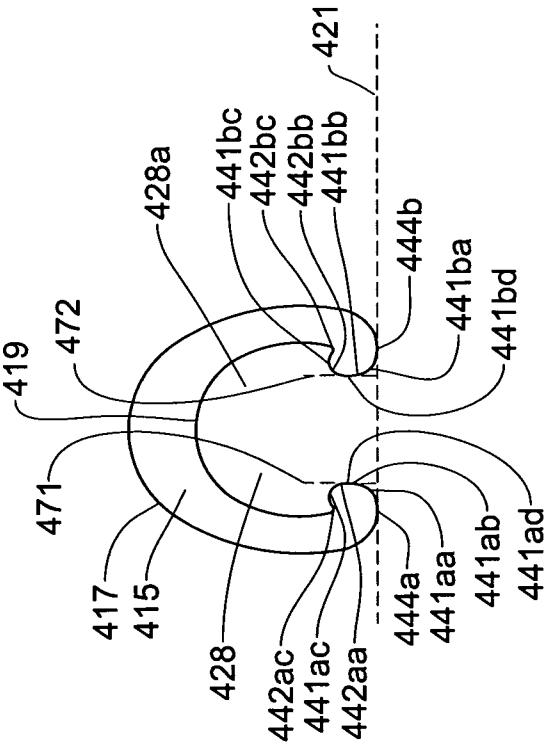

FIG. 4B

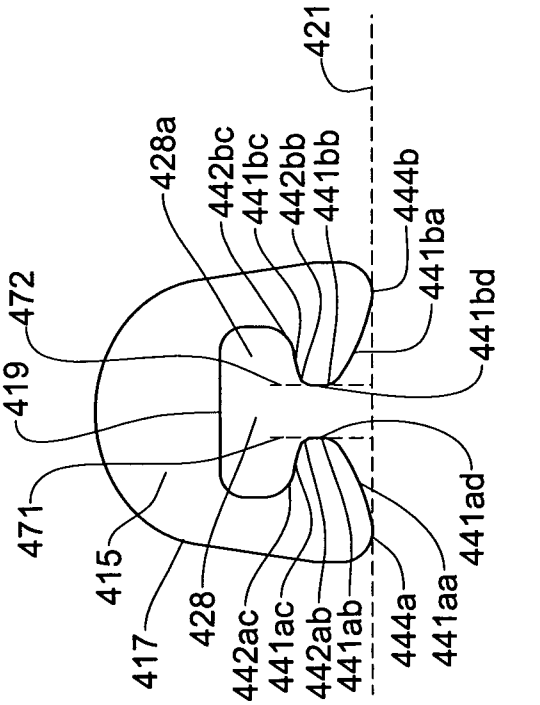

FIG. 4A

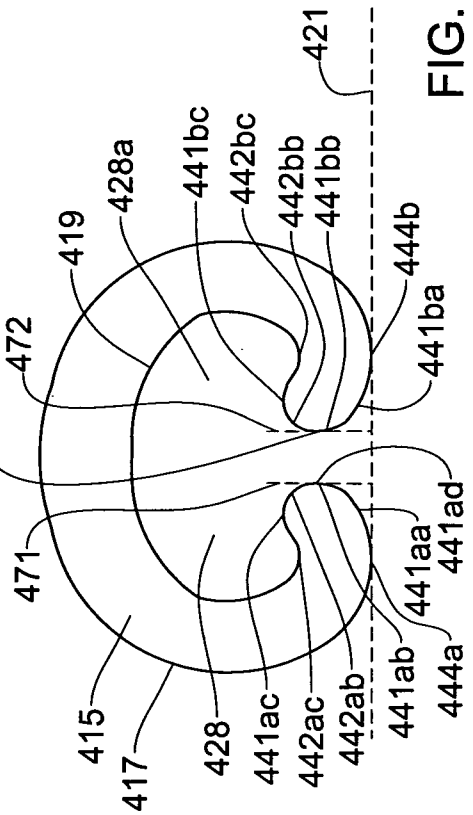

FIG. 4C

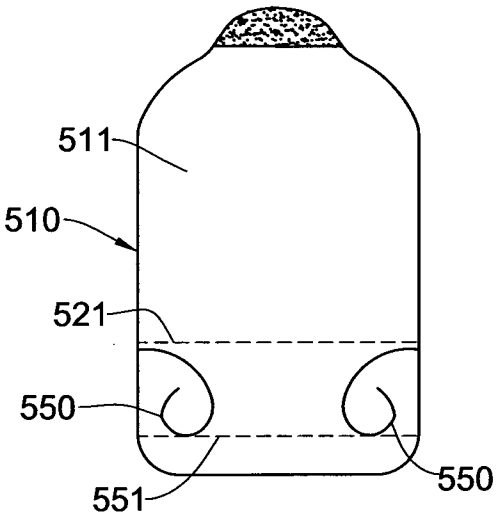

FIG. 5A

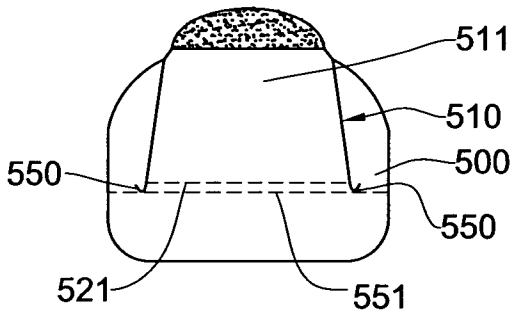

FIG. 5B

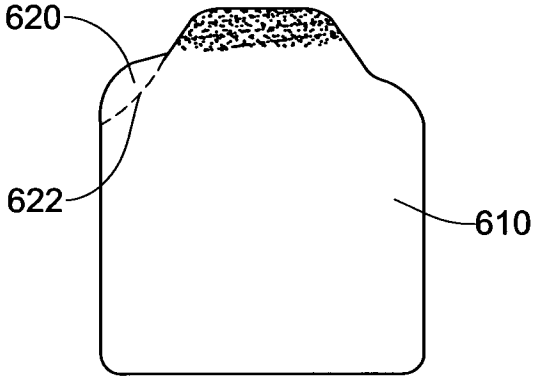

FIG. 6A

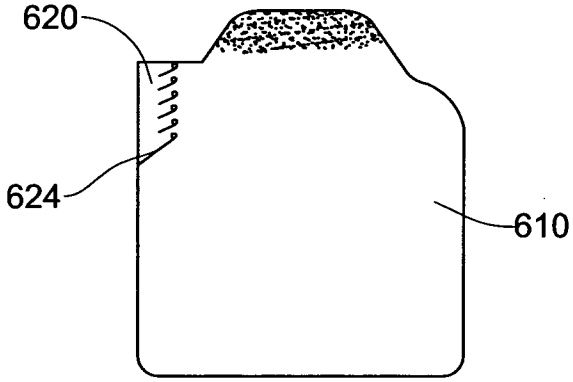

FIG. 6B

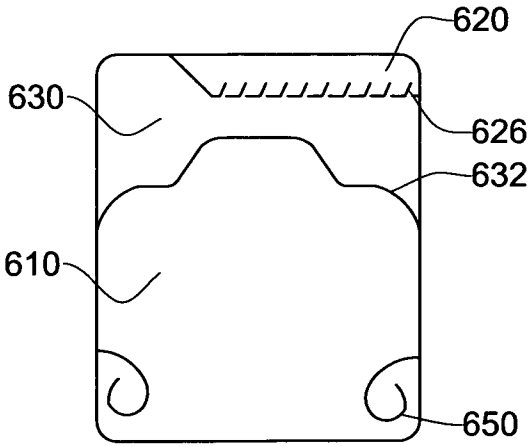

FIG. 6C

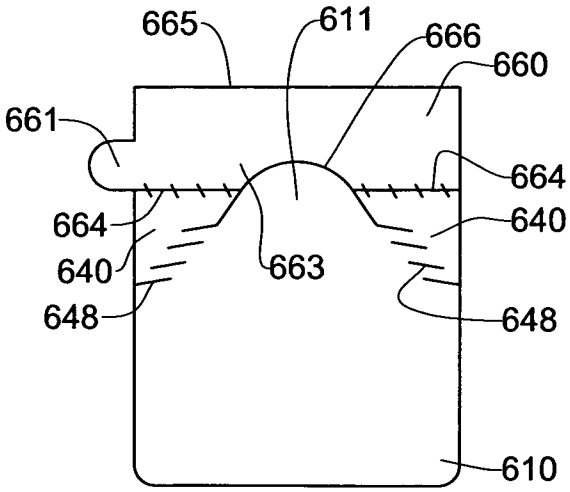

FIG. 6D

INTERNATIONAL SEARCH REPORT

International application No
PCT/IL2010/000508

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D75/58 B65D77/20
ADD.

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)
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)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	IL 89 886 A (TADBIK LTD [IL]) 15 April 1991 (1991-04-15) page 2, line 22 - page 3, line 9; figures 2, 3	1-23
A	US 5 908 246 A (ARIMURA YOSHIHARU [JP] ET AL) 1 June 1999 (1999-06-01) column 2, line 54 - column 3, line 67	1-23

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
1 September 2010	14/09/2010

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Fax: (+31–70) 340–3016	Cazacu, Corneliu

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IL2010/000508

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
IL 89886 A	15-04-1991	NONE	
US 5908246 A	01-06-1999	JP 10081361 A	31-03-1998