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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
11 November 2010 (11.11.2010)

PCT

(10) International Publication Number
WO 2010/129621 A1

(51) International Patent Classification:
B65D 5/38 (2006.01) *B65D 77/20* (2006.01)
B65D 51/20 (2006.01)

(21) International Application Number:
PCT/US2010/033637

(22) International Filing Date:
4 May 2010 (04.05.2010)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/175,533 5 May 2009 (05.05.2009) US
61/226,441 17 July 2009 (17.07.2009) US

(71) Applicant *(for all designated States except US)*: **MEAD-WESTVACO CORPORATION** [US/US]; 501 South 5th Street, Richmond, Virginia 23219-0501 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **THOMAS, Laurel** [US/US]; 2102 Stuart Avenue, Apt. 3, Richmond, VA 23220 (US). **FALCON, Sara** [US/US]; 815 Porter Street, Unit 221, Richmond, Virginia 23224 (US). **SIPE, Larry** [US/US]; 128 Country Lane, Clayton, North Carolina 27520 (US).

(74) Agents: **SCHEIDLER, Alison** et al.; MeadWestvaco Corporation, 1021 Main Campus Drive, Raleigh, North Carolina 27606 (US).

(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))*

[Continued on next page]

(54) Title: RESEALABLE PACKAGES

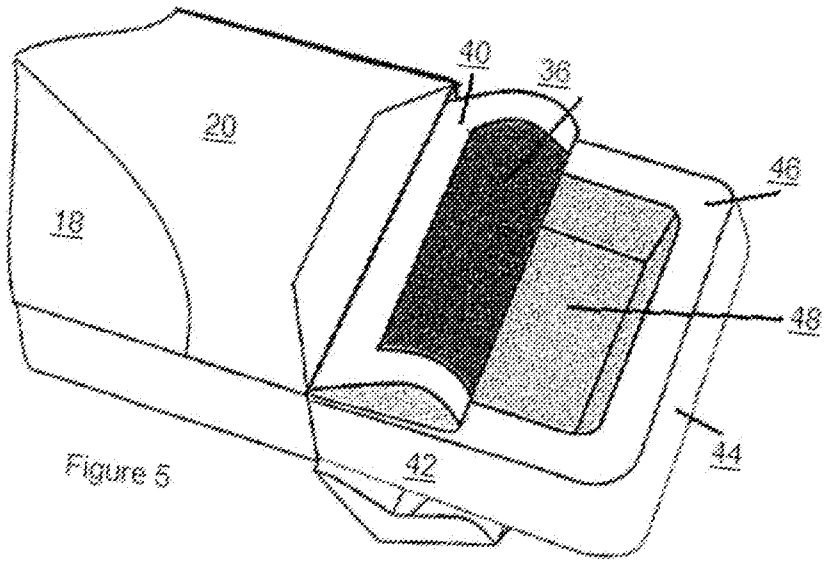


Figure 5

(57) Abstract: A resealable package is disclosed comprising a cover component, a tray component complemented in structure and coupled to the cover component, and sealing sheet disposed between the cover and tray components. The tray component includes a compartment to receive packaged goods and a flange framing the tray component. The sealing sheet includes a first portion being resealably attached to the flange of the tray component and a second portion being affixed to the cover component. The cover and tray components are movable relative to one another such that the movement automates unsealing and resealing of the resealable connection between the sealing sheet and the flange of the tray component.

WO 2010/129621 A1

Published:

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

RESEALABLE PACKAGES

CROSS REFERENCE TO RELATED APPLICATIONS

This non-provisional application relies on the filing date of provisional U.S. Application Serial Nos. 61/175533 filed on May 5, 2009 and 61/226441 filed on July 17, 2009, having been filed within twelve (12) months thereof, which are incorporated herein by reference, and priority thereto is claimed under 35 USC § 1.19(e).

BACKGROUND OF THE DISCLOSURE

[0001] Packaging container typically includes a packaging tray to receive the packaged product and a lid film sealed to the packaging tray. To gain access to the packaged goods, the sealable lid film is torn or ripped. If the lid film is broken by consumers, it cannot be used again as a useful seal to any goods remaining in the package. The packaged product is commonly not immediately consumed after opening, such as when only a portion of the goods would be used at a time. Thus, it is beneficial for the packaging container to be resealable after opening.

[0002] U.S. Patent Application No. 2007/0023435 discloses a container for food product including a film affixed to a food tray. The film functions as a lid of the container and has an access opening. The sealing label, adhesively sealed to the top around the opening, is resealable when a tab of the sealing label is pulled back. The sealing label is resealable against the top layer to seal the opening when the label is moved back against the top. When the packaged product is perishable or delicate goods, it is further desirable that the resealable packaging container provides good barrier resistance.

[0003] U.S. Patent No. 6,691,886 discloses a resealable plastic packaging container consisting of a tray and a lid film, wherein the container has a sealing area sealed to the tray such that it can be at least partly peeled back. The plastic packaging container comprises at least one hook and loop closure whose two complementary parts are arranged opposite each other on the tray and the lid

film, respectively, and by means of which the plastic packaging container can be resealed after the peel-back seal has been opened. If the sealing lid film of the resealable package is not replaced properly to fully cover the product, the packaged goods may be damaged. Furthermore, the resealing adhesive on the lid film may become deteriorated and ineffective when contacting dirt, dust and other contaminants after the container has been opened. Finally, the sealing lid film is easily punctured or torn prematurely.

[0004] Accordingly, there is a need for resealable packages with enhanced resealing and barrier performances. In addition, there is a need for resealable or re-closable packages with enhanced convenience, easier opening and improved user experience.

SUMMARY OF THE DISCLOSURE

[0005] The present disclosure relates to a resealable package comprising a cover component, a tray component complemented in structure and coupled to the cover component, and sealing sheet disposed between the cover and tray components. The tray component includes a compartment to receive packaged goods and a flange framing the tray component. The sealing sheet includes a portion being resealably attached to the flange of the tray component and a portion being affixed to the cover component. The cover and tray components are movable relative to one another such that the movement automates unsealing and resealing of the resealable connection between the sealing sheet and the flange of the tray component.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] FIG. 1 shows one embodiment of the disclosed resealable package;

[0007] FIGs. 2-5 illustrate steps in the removal and replacement of a sealing sheet contained within the disclosed package of FIG. 1;

[0008] FIGs. 6A and 6B show schematically, cross-sectional side views of the disclosed package of FIG. 1 in a closed sealed configuration and in an opened

unsealed configuration, respectively;

[0009] FIG. 7A shows one embodiment of the disclosed resealable package;

[0010] FIG. 7B shows the package of FIG. 7A in an opened position, wherein a sealing sheet automatically has been moved into an open position by means of opening the package;

[0011] FIG. 8A shows one embodiment of the disclosed resealable package;

[0012] FIG. 8B shows the package of FIG. 8A in an opened position, wherein a sealing sheet automatically has been moved into an open position by means of opening the package;

[0013] FIG. 9A shows one embodiment of the disclosed resealable package;

[0014] FIG. 9B shows the package of FIG. 9A in an opened position, wherein a sealing sheet automatically has been moved into an open position by means of opening the package;

[0015] FIG. 9C shows a package similar to FIGs. 9A and 9B but with a flange that extends along the entire inner tray;

[0016] FIG. 10A shows one embodiment of the disclosed resealable package wherein the tray component includes more than one compartment portion and ratchets between compartments;

[0017] FIG. 10B shows a variation of the package depicted in Fig. 10A without the ratchets;

[0018] FIG. 11A shows one embodiment of the disclosed resealable package wherein the compartment portion is coverable by means of a slidable cover component;

[0019] FIG. 11B shows a variation of the package disclosed in FIG. 11A namely a different shape to the package but still including a compartment portion that is coverable by means of a slidable cover component;

[0020] FIG. 12A shows one embodiment of the disclosed resealable package wherein the tray component includes two compartment portions, each resealable by means of a slidable cover component;

[0021] FIG. 12B shows the two inner trays or a two compartment inner tray of the package depicted in FIG. 12A;

[0022] FIG. 12C is a variation of the package depicted in FIG 12A and shows a longer outer sleeve covering the two compartment inner tray or two inner trays

[0023] FIG. 12D shows the package in FIG 12C in an open configuration;

[0024] FIG. 13A shows one embodiment of the disclosed resealable package wherein the cover component includes one or more openings to facilitate a slidable movement of the tray component within the cover component; and

[0025] FIG. 13B shows a view of the embodiment disclosed in FIG. 13A in an open position;

[0026] FIG. 13C shows a variation of the embodiment disclosed in FIG. 13A with a child resistant feature;

[0027] FIG. 13D shows a view of the embodiment disclosed in FIG. 13C in an open position;

[0028] FIG. 14A shows one embodiment of the disclosed resealable package wherein the unsealing and resealing of the sealing sheet to the tray component is automated by the sliding motion of the tray compartment;

[0029] FIG. 14B shows the package disclosed in FIG. 14A in the open position;

[0030] FIG. 15A shows one embodiment of the disclosed resealable package with a Z fold attachment in a closed position;

[0031] FIG. 15B shows the resealable package of FIG. 15A in an open position;

[0032] FIG. 15C shows a close-up view of the positioning of the Z fold attachment within the package of FIG. 15B in an open view;

[0033] FIG. 15D shows a top view of the inner tray of FIG. 15A with the Z fold attachment;

[0034] FIG. 16A shows another embodiment of the disclosed resealable package with a Z fold attachment;

[0035] FIG. 16B shows an open view of the package disclosed in FIG. 16A;

[0036] FIG. 16C shows a close-up of the positioning of the Z fold attachment within the package of 16B;

[0037] FIG. 16D shows a top view of the Z fold attachment as it rests atop the inner tray;

[0038] FIG. 17A shows a top view of a one piece version of the Z fold attachment plus inner tray;

[0039] FIG. 17B shows a top view of a Z fold piece to attach to the sealable sheet of an inner tray;

[0040] FIG. 17C shows the Z fold piece folded into shape before attaching to the sealable sheet.

DETAILED DESCRIPTION OF THE DISCLOSURE

[0041] The present disclosures now will be described more fully hereinafter, but not all embodiments of the disclosure are shown. Indeed, these disclosures may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy applicable legal requirements.

[0042] The resealable package of the present disclosure comprises:

(A) a cover component;

(B) a tray component complemented in structure and coupled to the cover component, the tray component being moveable relative to the cover component and including:

(i) a compartment portion to receive one or more articles,

(ii) a flange portion framing the compartment portion; and

(C) a sealing sheet including:

(a) a first portion resealably connecting to the flange portion of the tray component and

(b) a second portion connecting to the cover component,

wherein the sealing sheet being disposed between the cover and tray components such that a relative movement between the cover and tray components automates unsealing and resealing of the resealable connection between the sealing sheet and the flange portion of the tray component.

[0043] Any known packaging materials may be used for the cover component. Examples include, but are not limited to, paper-based material such as paper and paperboard; plastic; metallic material; and combinations thereof. The cover component may be in a variety of forms. Examples include, but are not limited to, a slidable cover, a liftable cover, a fully enclosed cover, and a tubular sleeve cover with opening at one or both ends.

[0044] Various materials may be used to produce the tray component. Examples of such materials include, but are not limited to, injected-mold plastic, thermoform plastic, plastic-coated paperboard, paperboard, and combinations thereof. The material used for the tray component may be the same or different from that used for the cover component. It will be understood that the tray component may comprise more than one compartment. Additionally, one skilled in the art may simply modify the compartment structure and shape to facilitate the desired end use applications of the disclosed packages.

[0045] A variety of materials are suitable as the sealing sheet. Such material may be selected based on the end use applications of the disclosed

package. For example, if the packaged goods are perishable food items, the sealing sheet material may be selected to minimize or reduce the permeability of air and other gases, water and other liquids, as well as dust and other solids. Examples of materials suitable for use as the sealing sheet include, but are not limited to, plastic film such as polyethylene, polyester, foil and other metallic material; and any combination thereof. When desired, the sealing sheet may have barrier resistant properties. When appropriate, the sealing sheet may be further provided with an antimicrobial treatment. The sealing sheet may be flexible such that it may be peeled away from and replaced back on the flange portion of the tray component.

[0046] The first portion of the sealing sheet may be resealably attached to the flange portion of the tray component by the use of resealable adhesive or other means. The adhesion of the sealing sheet to the cover component may be stronger than the adhesion to the flange portion of the tray component.

[0047] The disclosed package may include a stopping element to limit the relative movement between the cover component and the tray component and prevent the completely decoupling of the two components. Such stopping mechanisms are well known in the art, and any suitable stopping element may be used in the present disclosure. When appropriate, the mechanical stopping element may be used for such mechanism. Examples of suitable mechanical stopping elements include, but are not limited to, a sleeve lip, tail tab, flap design, side tab design, overlapping tabs, aligned tabs and slots, closed ends on the cover component, and combinations thereof. Optionally, the mechanical stopping element may comprise a tab extending inwardly from the main panel proximate to a leading portion of the cover component and an aperture disposed in the tray component proximate to a trailing edge of the tray component. The tray component may comprise an end closure structure for closing an end of the disclosed package.

[0048] In one embodiment of the disclosed package, the cover component and the tray component comprise a co-operable ratchet mechanism for effective

step-wise relative movement between the two components.

[0049] FIGs 1-5 show one embodiment of the resealable package of the present disclosure. The resealable package comprises a cover component 30 and a tray component 34. The cover component 30 comprises an end closure element 32 and a tubular structure consisted of a top panel, a base panel 14, side panels 16, and an end panel 12. When desired, the top panel may be consisting of a first ply 18 that frames the cover component 30 and a second ply 20 that overlaps the first ply 18. When desired, the end closure element 32 may take the form of hinged lid portion that may be folded to close the tubular structure.

[0050] The tray component 34 includes a compartment portion 48 framed by a side 42 wall and an end wall 44 to receive packaged goods and a flange portion 46 connecting the compartment portion 48.

[0051] The sealing sheet 36 has a first portion 40 that is resealably affixed to the flange portion 46 of the tray component 34, and a second portion 38 affixing to the cover component 30. As shown in FIG. 4, the second portion 38 of the sealing sheet 36 may be sandwiched between the first ply 18 and the second ply 20 of the cover component 30.

[0052] As illustrated in FIG. 2, the tray component 34 may be housed inside the cover component 30 by inserting in a directional arrow 'I' into an open end 'O' of the cover component 30. The stopping element 78 acts to limit the distance wherein the tray component 34 may be separated from the cover component 30 without being completely decoupled. The stopping element 78 couples a rear portion of the tray component 34 to a front inner portion of the cover component 30 toward the end panel 12.

[0053] As shown in FIG. 5, the end closure element 32 is opened to open the package and retrieve the packaged goods from the compartment portion 48 of the tray component 34. The cover component 30 and the tray 34 component are moved relative to one another so that the tray component 34 is slided out of the cover component 30. As this happens, the sealing sheet 36 with its portion 40 resealably affixed to the flange portion 46 is automatically and progressively

detached or peeled away from the flange portion 46, thus exposing the compartment portion 48 of the tray component 34 and allowing the packaged goods to be retrieved. It may be required that the strength of the attachment between the second affixing portion 38 and the cover component outer 30 is greater than the strength of the attachment between the first affixing portion 40 and the tray component 34. Accordingly, the sealing sheet 36 is automatically and progressively pulled or peeled away from the tray component 34 by simply sliding the tray component 34 from the cover component 30 and no other effort is required upon the part of the consumers to tear or open the compartment portion to retrieve the packaged goods. A shearing force imparted as the tray component 34 and the cover component 30 are separated may sufficiently facilitate the release of the bond between the portion 40 of the sealing sheet 36 and the flange 46 of the tray component 34. When the tray component reaches its travel limit in relative to the cover component 30 as being controlled by the stopping element 78, the peeling away of the sealing sheet 36 is completed.

[0054] The first affixing portion 40 of the sealing sheet 36 may be attached to the tray 34 by means of a resealable adhesive. Any known resealable adhesives in the art may be used. For example, "Peel 'n Re-seal" adhesive available from Spear Inc. may be used. Therefore, the sealing sheet 36 may be readhered to the tray component 34, resulting in a resealing and closing of the compartment portion 48 of the tray component 34 once again. As such, only some the packaged goods in the compartment portion 48 of the tray 34 may be removed, while the remaining goods are still being kept fresh. Examples of such packaged goods include, but are not limited to, loose tobacco or food.

[0055] Additionally, the reinsertion of the tray component 34 within the cover component 30 automatically causes the portion 40 of the sealing sheet 36 to be resealed to the flange portion 46 of the tray component 34. The tray component 34 may be designed to tightly fit within the cover component 30, such that the seal between the portion 40 of the sealing sheet 36 and the flange portion 46 of the tray component 34 is formed once the top panel 18 contacts with the sealing sheet 36. When desired, the resealable adhesive provided on the first

affixing portion 40 may be activated to reseal by an application of pressure between the affixing portion 40 and the flanged portion 46 of the tray component 34. In certain embodiment of the present disclosure, it is not necessary for the consumers to apply pressure because the sandwiching of the first affixing portion 40 between the top panel 18 of the cover component 30 and the flange portion 40 as the tray component 34 is reinserted into the cover component 30 provides sufficient pressure to reseal the compartment portion 48. The space between the top panel 18 of the cover component 30 and the flanged portion 46 of the tray component 34 may be sized to receive only the thickness of the sealing sheet 36, since this promotes replacement of the sealing sheet 36 in flat form and wrinkling or creasing of the sealing sheet 36 may be prevented. The tightness of the space between the top panel 18 and the flanged portion 46 may also ensure that the sealing sheet 36 is aligned correctly along the flange portion 40 of the tray component 34.

[0056] The package of the present disclosure may allow for an automatic resealing of the compartment portion 48. This reduces the possibility of contaminants being transferred from the users to the resealable adhesive on the first affixing portion 40 of the sealing sheet 36, thus increasing the lifetime of the resealing adhesive and the disclosed resealable package.

[0057] FIGs 6A and 6B illustrate the movement of the tray component 34 within the cover component 30, as well as the position of the sealing sheet 36 when the tray component 34 is moved outwardly of the cover component 30. The sealing sheet 36 fits as a single layer between the flange portion 46 of the tray component 34 and a lower surface of the first ply 18 of the cover component 30. The second affixing portion 38 of the sealing sheet is positioned between the second ply 20 and an upper surface of the first ply 18 of the cover component 30.

[0058] A completely decoupling of the tray component 34 from the cover component 30 may be prevented through the use of stopping elements such as any mechanical stopping element known in the art. Alternatively, the trailing edge of the sealing sheet 36 that is closest to the end panel 12 of the cover component 30

in the closed position, may be strongly attached or permanently affixed to the tray component 34, so that a complete detachment of the sealing sheet 36 from the tray component 34 is avoided and consequently a decoupling of the cover component 30 and the tray 34 component is prevented.

[0059] FIGs. 7A and 7B show one embodiment of the disclosed resealable package with a cover component 130 and the tray component 134 slidably housing within the cover component 130. The tray component 134 includes a compartment portion 148, a side wall 142, a flange portion 146, and an end closure structure 132 that completely closes the package once the tray component is placed within the cover component 130. A sealing sheet 136 has a first portion resealably affixed to the flange portion 146 and a second portion secured to the cover component 130. The second portion of the sealing sheet 136 may be affixed to the top panel 120 of the cover component 130. As before, moving the tray component from the cover component causes the first portion of the sealing sheet 136 to be automatically detached from the flange portion 146, and consequently the compartment portion 148 of the tray component 134 or half carton 134 is exposed to allow for a retrieval of packaged goods. The reinserting of the tray component into the cover component automatically causes the first portion of the sealing film 136 to be reattached to the flange portion 146 of the tray component 134, and consequently the compartment portion 148 is sealed once again. It is to be understood that cover compartment 130 and half carton 134 may be symmetrical and either may be pulled by the user to open the package or to automatically detach the sealing sheet 136 from the flange portion 146.

[0060] In one embodiment of the present disclosure, the package includes a first component being a pouch compartment and a second component being a tubular carton structure and coupled to the first component. The tubular carton structure includes a lid connected and hinged to a top panel of the carton structure such that when the lid is pulled to an open position, the relative movement between the pouch compartment and carton structure automates an unsealing of the bond between the sealing sheet and the flange portion of the compartment. FIGs. 8A and 8B show the disclosed resealable package capable of

housing a primary package. The sealing sheet 236 is attached to a lid flap 220 of the disclosed package. Optionally, the sealing sheet 236 may be provided as a part of the primary package and frangibly connected thereto. The pull tab 250 may be used to disconnect the lid flap 220 from the remainder of the top panel 218 of the disclosed package. This action causes the sealing sheet that is frangibly connected to the primary package to be disconnected from the primary package, and consequently an opening into the primary package is created such that the packaged goods inside may be accessed. A flange portion or first affixing portion 240 disposed around the perimeter of the opening is repositionable to reseal the primary package. This is achieved by replacing the lid 220 into planar alignment with the top panel 218 and applying pressure to adhere the first affixing portion 240 to an underlying edge portion 246 of the primary package. Whereas in this embodiment, the consumer applies the pressure to effect the reseal, the use of the liftable lid portion 220 with the pull tab 250 facilitates the opening of the primary package. The presence of a full structure outer carton with base wall provides structural strength to facilitate the resealing by application of some pressure. This is particularly useful where the primary package is a soft flexible pouch which lacks compression strength. It is envisaged that the disclosed package may include multiple flanges to improve sealability. The first affixing portion 240, which is coupled to the lid 220 once resealed and attached to flange 246, may assist in holding the disclosed package in a closed or locked position. Nonetheless, when desired, an additional external mechanical lock may be provided to maintain the lid 220 in the closed position.

[0061] FIGs. 9A and 9B show one embodiment of the disclosed resealable package having a sealing sheet 336 affixed by a strong attachment to a flip-top portion 320 of the package 334. A portion 340 of the package 334 is resealably affixable to a flange portion 346 of the package. When desired, a sleeve 330 may be included to further provide protection to the package 334. In addition sleeve 330 may be designed to catch on an inner flap and allow the flip-top portion 320 to open. FIG. 9C shows a similar embodiment as FIGs. 9A and 9B, but including a flange portion 346 that extends around the interior of the package to surround

product containment area 348.

[0062] FIGs. 10A and 10B show one embodiment of the disclosed resealable package wherein a tray component 434 has multiple compartments: 448a, 448b, and 448c. In the illustrated example four compartments are shown, but it will be understood that any number of compartments greater than one may be used. The multiple- compartment package may incorporate a ratcheting system that enables a limited and controllably unsealing of the sealing sheet from the tray component. For example, the compartment 448a may be exposed by slidably separating the tray component from the cover component, while the compartments 448b and 448c may remain sealed. Later, when it is required to access the packaged goods contained in the compartments 448b or 448c, and the cover component may be withdrawn further and the sealing sheet 436 peeled further from the tray component. The disclosed package with multiple compartments may be particularly useful in healthcare, personal care, and tobacco packaging applications. The side "wings" 460a, 460b and 460c as shown in FIG. 10A may be included to facilitate a ratchet mechanism along cutouts or indentions provided on the inside of the side panel 416 of the cover component 430 to assist in the step-wise withdrawal of the tray component 434 from the cover component 430.

[0063] In one embodiment, the disclosed package comprises a tray component that includes a flange portion and a compartment portion, a slidable cover component being coupled to the tray component by means of a folded portion engaging an underside of the flange, and a sealing sheet being sandwiched between the flange portion of the tray component and the slidable cover component. In FIGs. 11B and 11A, the tray component 534 is coverable by means of a slidable lid 520 and automatically sealable by means of the sealing sheet 536. The tray component 534 comprises a flanged portion 546 extending about the perimeter of the tray component. The lid 520 includes rails that are folded under the flange portion of the tray component. The sealing sheet 536 is attached to the flange portion 546 and the lid 520 to create an automatic opening and closing “peeling” or “roll” effect. The reseal feature enables consumers to easily store and later access leftovers or unused packaged goods within the compartment

portion 548 of the tray component.

[0064] FIGs. 12A, 12B, 12C and 12D show one embodiment of the disclosed resealable package, wherein a tray component 634 comprises two compartments 648, slidable cover component 630, and a sealing film 636 affixed to the tray and the slidable cover components. Each compartment 648 is resealable by the sealing sheet 636 (636a and 636b, respectively) by a relative movement of a single slidable cover component 630. In FIG. 12A, the compartment 648a has been opened as the sealing sheet 636a is progressively peeled away by sliding the cover component 630 away from an end wall 644a of the tray component and towards the second compartment. In this position, the second compartment remains sealed by a portion 636b of the sealing film. The relative sliding movement of the tray and the cover components, depending upon the direction which cover component is moved, causes either the resealing of the sealing sheet 636a portion to the compartment 648a or the further peeling of the sealing sheet such that the 636b portion becomes unsealed from the second compartment. One end of the sealing sheet may be permanently affixed to an end wall 644b of the tray component to prevent a complete decoupling of the tray component and the sealing sheet. In addition, two separate trays may be within slidable cover component 630. Both trays or both compartments of the tray component 634 may rest under the slidable cover component 630. Either tray may slide out leaving the other tray under slidable component or one compartment of tray component 634 may be slid out to peel away the sealing sheet 636 and allow access to the product inside. The two trays may be attached by the films to the slidable cover. The two trays may have a frangible connection at line 680.

[0065] FIGs. 13A, 13B, 13C and 13D show one embodiment of the disclosed resealable package, wherein the cover component 730 includes one or more end openings 770, and the tray component 740 is housed inside the cover component 730. The stopping mechanism are the two closed ends of the cover component 730: a closed end 774 functions as the mechanical stopping mechanism on the front end of the cover component 730, and a closed end 776 as the mechanical stopping mechanism on the rear end of the cover component 730. When the tray

component 734 is slide toward the opening 770, the sealing sheet 736 is peeled back to expose the compartment area 734, thus allowing the consumers an access to the packaged products in the compartment area. When desired, the cover component 730 may further include side openings 772 to assist the consumers in sliding the tray component within the cover component to the open or closed positions. It is to be understood that such one or more openings could also be positioned in other areas of the cover component, including but not limited to the bottom, the sides, the front, or the rear of the cover component. It is further understood that either the front 774 or rear wall 776 may be removed to allow the tray component 740 to slide out of the outer package comprising cover component 730 rather than adding opening 770. There are a variety of ways that the tray component 740 can be prevented from fully exiting the outer package that are known in the art. One such example is an internal retaining mechanism such as placing one or more flaps on the outer package that interlock with one or more flaps on the interior tray component 740 to prevent the end of the tray from being pulled out of the package. FIGs 13C and 13D add a child resistant feature such as a push button release 778. A variety of child resistant mechanisms are known in the art and may be added to the package to limit access to the contents. These include locking mechanisms and release mechanisms. Manufacturing preferences will indicate on which areas of the package it is appropriate to place child resistant locking and releasing features.

[0066] In one embodiment of the disclosed package, the sealing sheet may be sealed to the outer edge of the flange portion of the tray component. Further, the resealable adhesive and removable portion of the sealing sheet may be located inside the perimeter of the sealed area. In the alternative a heat sealable film and a resealable film may be precombined and then applied to tray component 834. The heat sealable film may extend to the end of the flange portion 884. FIGs. 14A and 14B show the disclosed package with a sealable sheet resealably affixed to the sides of the tray component at a flange portion 884. The sealable sheet 836 may extend to the edge of the flange portion 884. The sealable sheet 836 may be heat sealed to the flange portion 884. The end portion 838 of the

sealing sheet 836 is affixed to lid element 832 of the cover component 830 at adhesive areas 882 as illustrated in FIG. 14A. Upon lifting the lid element 832 of the cover component 830, the end portion 838 of the sealing sheet 836 is also lifted such that resealable portion 840 is peeled away and unsealed from the flange portion 884 of the tray component. It is to be understood that sliding the tray component 834 out of the outer structure 833 may lift the lid element 832 and pull back the sealable film portion 836. The tray component 834 may be pulled out of the outer package 833 or may be pushed out of the outer package 833 through an opening at the back of the outer package 833. Lid element 832 may assist the pulling back of sealable sheet 836. The resealable portion 840 of the sealing sheet 836 may be further removed or pulled back as the tray component 834 is pulled or pushed out of the cover component 830. The resealable portion 840 may be perforated or pre-cut such that it can be separated from the rest of the sealing sheet. The resealable portion 840 of the sealing sheet 836 may be inside the sealed portion of the flange area 884, so that neither the resealing adhesive nor the removable sealing 840 would be denatured or destroyed during the production process. Furthermore, for similar reasons it may be beneficial for the end portion 838 of the sealing sheet 836 to be set inside the parameters of the heat sealed flange 884.

[0067] FIGs. 15A, 15B, 15C, 15D, 16A, 16B, 16C, and 16D show an embodiment of the present invention including a slidable tray 903 with a sealable film 910 attached to a Z fold 905. The Z fold 905 may be a three piece structure comprising of pieces 906, 907 and 908 where the lower end 908 is connected to the sealable film 910 as a single piece or through the use of adhesives. The adhesive used to hold the Z fold 905 at attachment point 908 to the sealable film 910 may be stronger than that used to hold the sealable film 910 to the top of the tray 912 such that when the tray 903 is slid out the z fold 905 is not pulled off of the sealable film 910, but rather the sealable film 910 is lifted off of the tray 903. The upper end of the Z fold 906 is folded such that it catches on flap 904 of the outer sleeve 902. As the inner tray 903 is pulled or pushed out of the package Z fold flap 906 catches on inner flap 904 and the z fold 905 lifts the sealable film 910 off the

top of the tray 912 such that the product contained inside inner tray 903 may be accessed at point 920.

[0068] FIGs. 17A, 17B and 17C show a sample Z fold. FIG 17 A shows a single piece tray plus Z fold. The fold line between the last portion of the Z fold 908 and the inner tray 903 may be frangible such that it breaks upon folding or breaks upon the consumer opening the package by pushing the inner tray 903 out of the sleeve 902. FIGs. 17B and 17C show sample separate Z fold pieces that may be adhered or connected by other means to the sealable sheet.

[0069] The Z fold piece 905 may be paperboard. The board may be treated. To get the folds between pieces 906, 907 and 908 the sections may be scored. The may be all one piece with a paperboard inner tray 903 molded or folded and the Z fold attached on one end to be folded into shape. In such a design, there may be a perforated edge between the Z fold end piece 908 and the end of the inner tray 903 such that the connection may break upon folding or upon the user first opening the package. In addition as shown in Fig 16C the end piece 908 of the Z fold piece 905 may be folded up on itself to provide additional strength when 906 catches on 904. This may prevent the inner carton 903 from fully exiting the outer package 902 both because of the extra length and the force to unfold it. Extra adhesive may be located between this fold on 908 to add additional strength to this component.

[0070] In the alternative, the Z fold piece may be a plastic material adhered to the sealable film or may be a piece folded off of the film cover. The film cover may be a film, paperboard or plastic combination to give the Z fold the strength needed to maintain its shape and lift the sealable film. In addition the Z fold may be formed with the tray and folded into place over the sealable film. In such a design, the Z fold may have a perforated edge allowing it to break off from the inner tray when folded into position. Upon folding, the lower part of the Z fold 908 may be adhered to the sealable film 902. The top of the inner tray 912 may have a flange surrounding the inner compartment for holding the product.

[0071] It will be understood that the present disclosure is applicable to the

packaging, storing and dispensing of various items or products. Accordingly, the terms "goods", "contents", "articles", "item" and "product" as used herein includes all kinds of packagable objects. Examples of such objects may include, but are not limited to, medicaments; food; electrical items; perishable goods of any sort such as tobacco; media products; and other personal or healthcare items such as contact lenses. It is envisaged that the present disclosure may be applied to provide an automatic seal for a jar-type container to preserve active ingredients in cream, lotion or ointment from deteriorating.

[0072] One skilled in the art will appreciate that various changes may be made within the scope of the present disclosure. For example, the size and shape of the tray component, the cover component and the compartment portion may be adjusted to accommodate articles of differing size or shape. Additionally, the word "seal" may mean a vacuum/hermetic seal or a mere sufficient seal to preserve the quality and limit the degradation of the packaged products.

[0073] Furthermore, it is envisaged that the application of the automated unsealing and resealing mechanism of the present disclosure may be applied to a number of package configurations, including the one-hand opening cartons that are known in the art and provide a simple-to-use package. The disclosed resealing mechanism may also be incorporated into the automated opening containers including those with child resistant features.

[0074] Moreover, the disclosed automatic resealing mechanism may be applied to a carton housing an inhaler or other medical device where a specific portion of the device or a nose or a mouth portion of an inhaler is covered by the sealing sheet. As such the flange edge to which the sealing sheet is attached and reattached may not surround the entire cavity of a carton, but rather may surround a section of the cavity. In any such application, the sealing sheet may also comprise an antimicrobial treatment.

[0075] It is to be understood that on any embodiment disclosed herein, manufacturing preferences may indicate whether a single layer of film or multiple layers of film, two or more, may be preferred. With one or more layers it may be

appropriate to have a perforated or cut out portion of the film that acts as the sealable portion. The one film layer may be a material that is both heat sealable and resealable after the initial peel back from the flange area. The multi layer film solution may include at least one heat sealable film and at least one resealable film that would then be adhered in combination to the tray structure. It is also to be understood, that the one or more films may have barrier properties or may simply close the opening. Any film layers in the industry or later developed may be adapted to work with this application. In general the films tend to have a base film that may be metalized or may be polypropylene or another type of plastic that may or may not have a metalized coating with heat seal and resealable adhesive layers extruded onto the film. In the alternative, the film could be combined with paperboard that may or may not be treated. The one layer option may be a film that is resealable to the flange area without being initially heat sealed. The heat seal requirement is dependent upon the needs of the product in the package. The heat sealing may provide increased initial barrier protection. The films will vary as different products will require different barriers needs. In a one layer solution the film may be fully rolled away from the flange area when the package has been opened. In the two layer solution the film would most likely be a combination of precombined materials which may include a heat sealable film and a resealable film that would then be adhered to the tray structure in combination. The resealable film would overlap a section of the heat sealed film that would be lifted when the resealable film is rolled away as the package is opened. The action of the top layer lifting a portion of the bottom layer allows access to the compartment containing the product when the package has been opened. The base layer which may be the heat sealed film will have a lock seal to the tray flange, which may improve barrier and the lock seal may prevent the heat seal layer from being lifted from the tray. In some embodiments, the resealable layer may reseal on the heat sealed layer. It is to be understood, that the material that the resealable film attaches to will determine the appropriate adhesive material to use.

[0076] The adhesive used for the applications herein may be glue, tape, heat

sealing, adhesive strips, adhesive dots, combinations thereof and any other suitable adhesive materials. It is to be understood that manufacturing preferences will indicate the appropriate adhesive to use for various applications of the package. For example stronger adhesive materials should be used to connect the sealable sheet to the outer package, lid or the Z fold and weaker adhesive should be used on the sealable portion such that a user is able to open the package when the tray is slid or rotated or moved away from the lid portion without disconnecting the attachment to the lid, outer package or Z fold.

[0077] It will be recognized that as used herein, directional references such as "top", "bottom", "front", "back", "end", "side", "inner", "outer", "upper" and "lower" do not limit the respective panels to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only. Rather, it is envisaged that hinged connection can be formed from one or more of the following, a short slit, a frangible line or a fold line without departing from the scope of the invention.

[0078] The foregoing description relates to embodiments are exemplary and explanatory only and are not restrictive of the disclosure. Any changes and modifications may be made therein as will be apparent to those skilled in the art. Such variations are to be considered within the scope of the disclosure as defined in the following claims.

We claim:

1. A package comprising:
   (A) a cover component;
   (B) a tray component complemented in structure and coupled to the cover component, the tray component being moveable relative to the cover component and including:
      (iii) one or more compartment portion(s) to receive one or more articles,
      (iv) a flange edge framing the compartment portion; and
   (C) a sealing sheet including:
      (c) a first portion resealably connecting to the flange edge of the tray component, and
      (d) a second portion connecting to the cover component,
   wherein the sealing sheet being disposed between the cover and tray components such that a relative movement between the cover and tray components automates unsealing and resealing of the resealable connection between the sealing sheet and the flange edge of the tray component.

2. The package of Claim 1, wherein the sealing sheet includes a barrier film.

3. The package of Claim 1, wherein the connection between the second portion of the sealing sheet and the cover component is stronger than the connection between the first portion of the sealing sheet and the flange edge of the tray component.

4. The package of Claim 1, further comprising a mechanical stopping element to prevent a decoupling of the tray component from the cover component.

5. The package of Claim 4, wherein the mechanical stopping element includes a member selected from a group consisting of sleeve lip, tail tab, flap design,

side tab design, overlapping tab, aligned tab and slot, closed end on the sleeve, and combinations thereof.

6. The package of Claim 1, wherein the tray component is moveable relative to the cover component in a sliding motion.

7. The package of Claim 1, wherein the tray component includes more than one compartment.

8. The package of Claim 1, wherein the tray component further comprises an end closure structure for closing the package.

9. The package of Claim 1, wherein the cover component includes a top panel, a bottom panel, and two side walls connecting the top and the bottom panels.

10. The package of Claim 9, wherein the top panel includes:

(a) a first ply being a frame panel of the cover component, and

(b) a second ply being an overlapping panel for the first ply,

wherein the second portion of the sealing sheet is bonded between the first and the second plies of the cover component.

11. The package of Claim 1, wherein the cover component is a slidable lid.

12. The package of Claim 1, wherein the cover component and the tray component further comprise a co-operable ratchet mechanism for effective step-wise relative movement.

13. A package comprising:

(A) a tray component including:

(i) a compartment portion to receive one or more articles, and

(ii) a flange edge connecting to the compartment portion;

(B) a lid component coupling to the tray component and including a flip-top opening feature; and

(C) a sealing sheet including:

(a) a first surface being permanently affixed to the lid component, and

(b) a second surface being resealably connected to the flange edge of the tray component,

wherein a flip-opening movement of the lid component automates unsealing and resealing of the resealable connection between the second surface of the sealing sheet and the flange edge of the tray component.

14. The package of Claim 13, further comprising a sleeve component being complemented in structure to the tray component such that the tray component being slidable within the sleeve compartment.

15. A package comprising:

(A) a cover component;

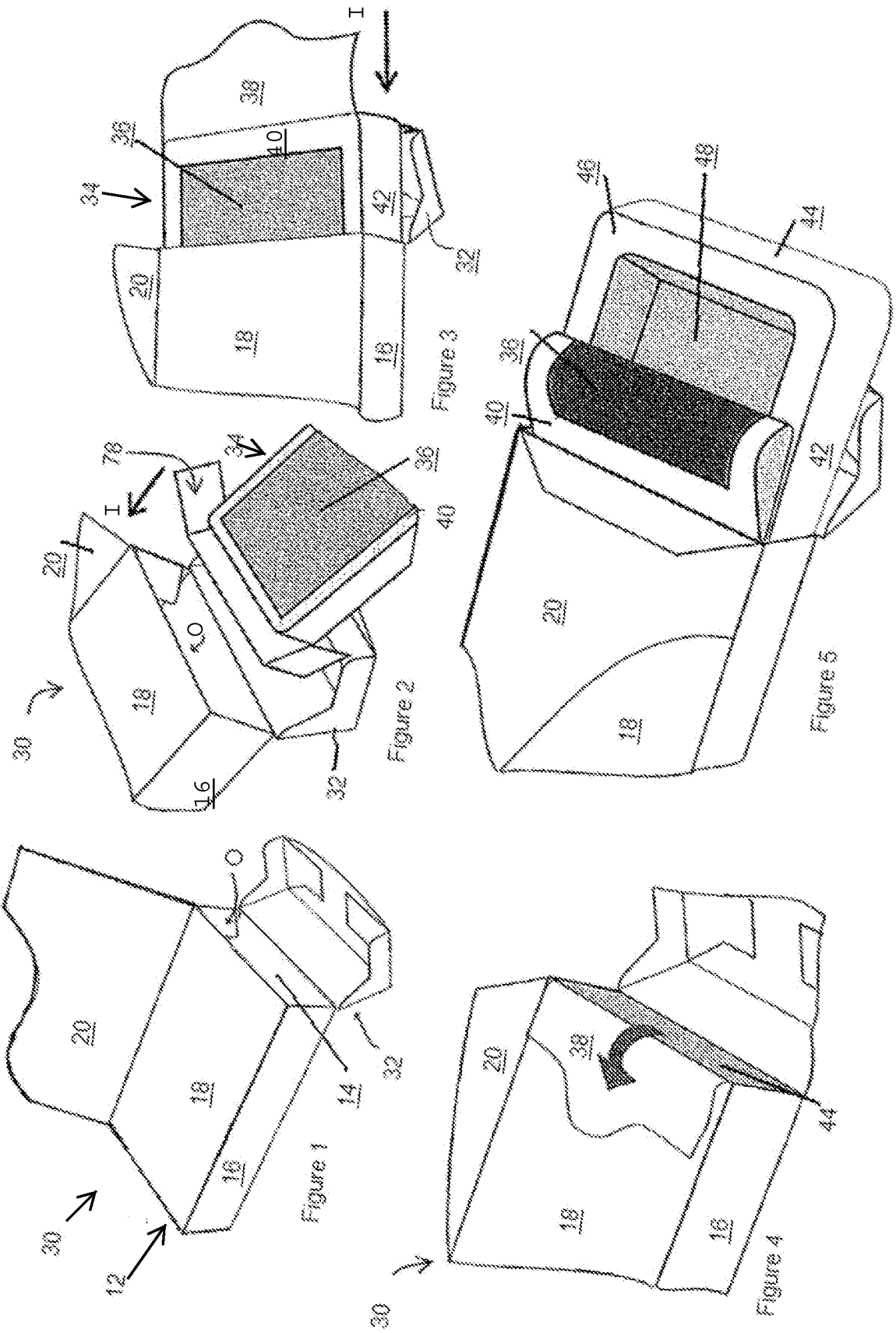
(B) a tray component complemented in structure and coupled to the cover component, the tray component being moveable relative to the cover component and including, one or more compartment portion(s) to receive one or more articles; and

(C) a sealing sheet including:

(e) a first portion resealably connecting to the flange edge of the tray component, and

(f) a second portion connecting to the cover component,

wherein the sealing sheet being disposed between the cover and tray components such that a relative movement between the cover and tray components automates unsealing and resealing of the resealable connection between the sealing sheet and the tray component.


I
38
36
40
34
42
32
20
18
16
Figure 3
76
34
36
40
I
20
10
18
30
16
32
Figure 2
46
48
44
36
40
42
20
18
Figure 5
O
20
18
14
32
16
30
12
Figure 1
38
20
44
18
16
30
Figure 4

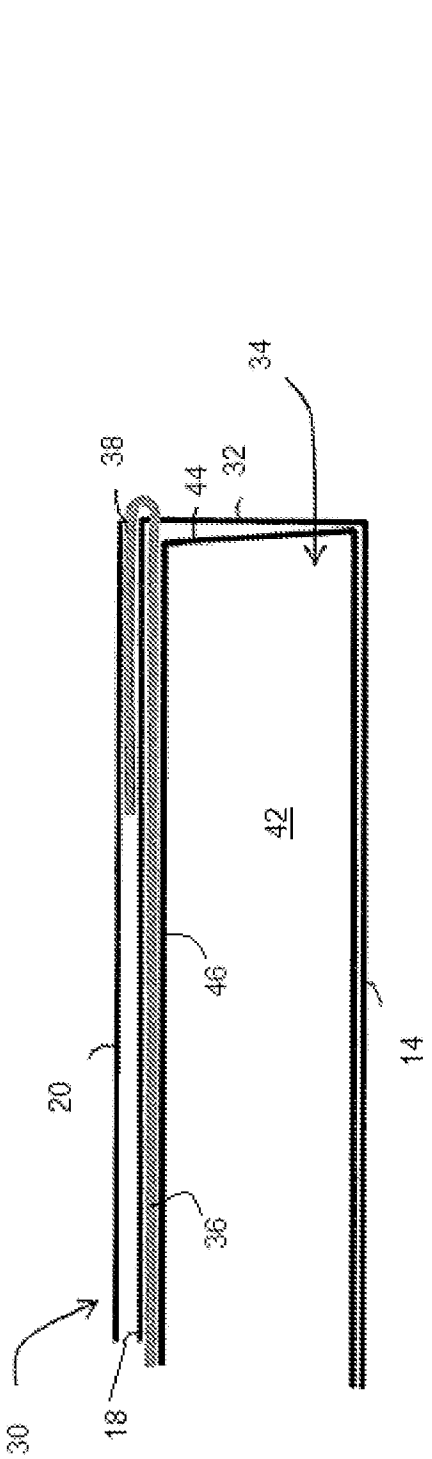


Figure 6A

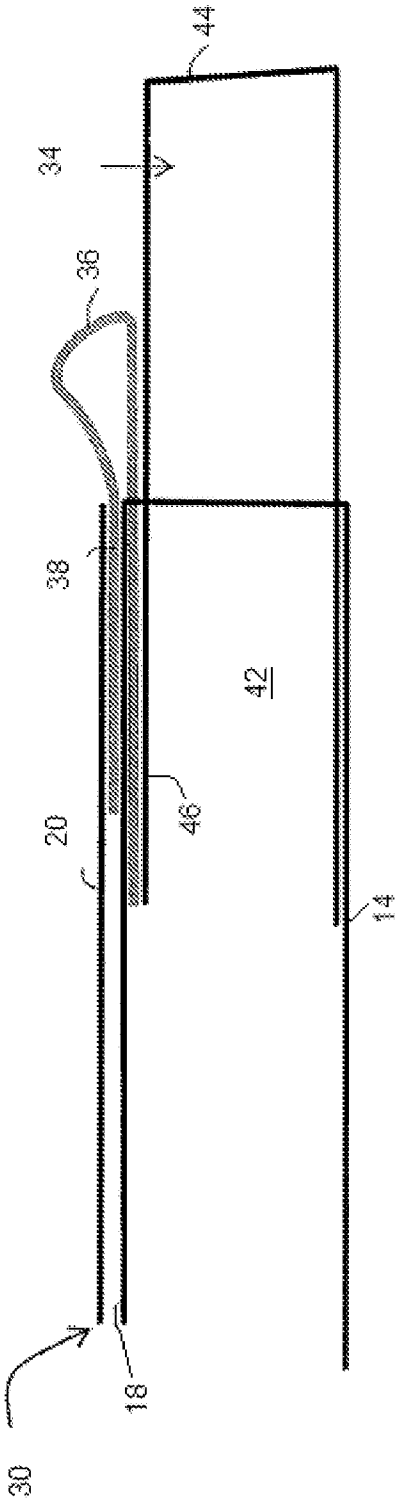


Figure 6B

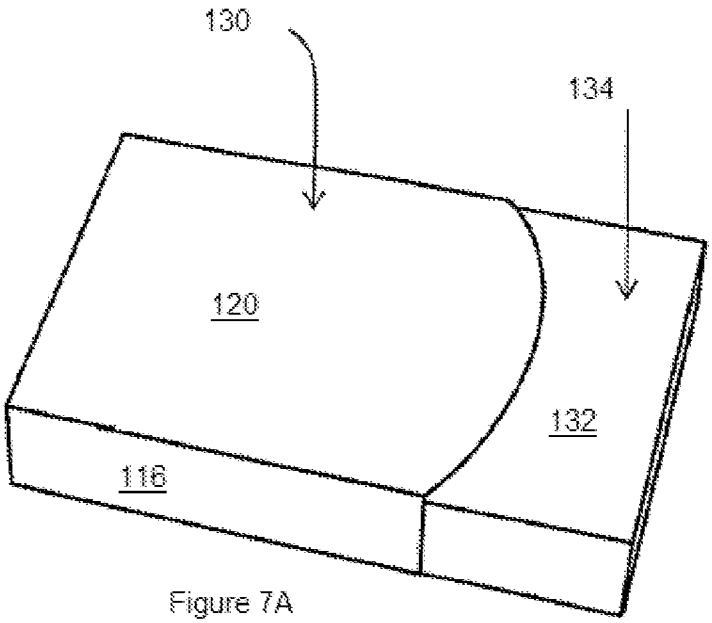


Figure 7A

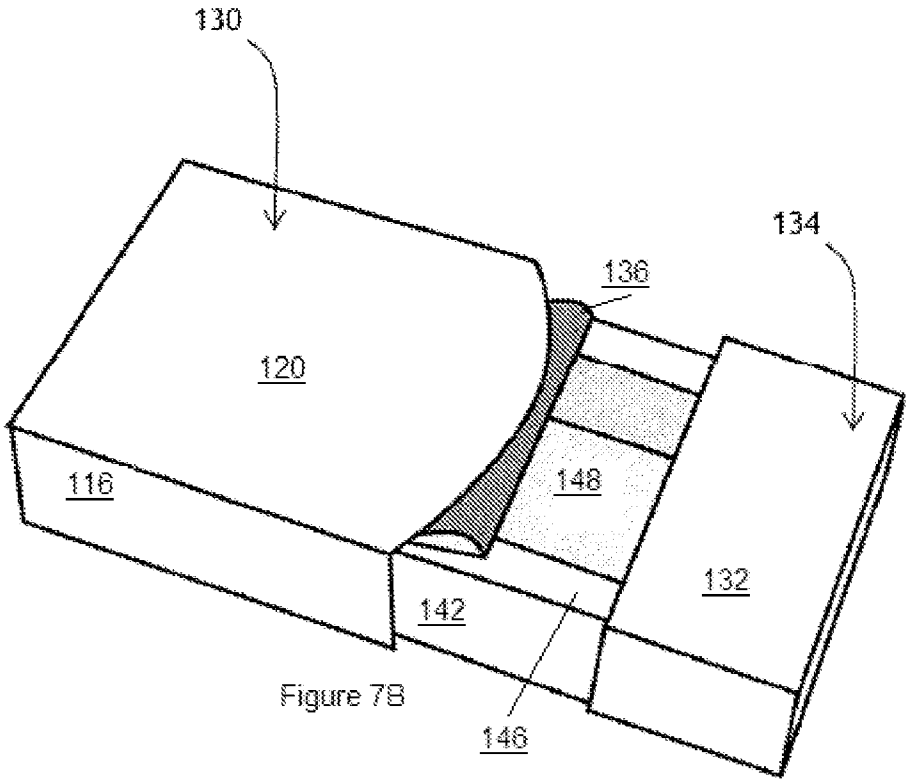


Figure 7B

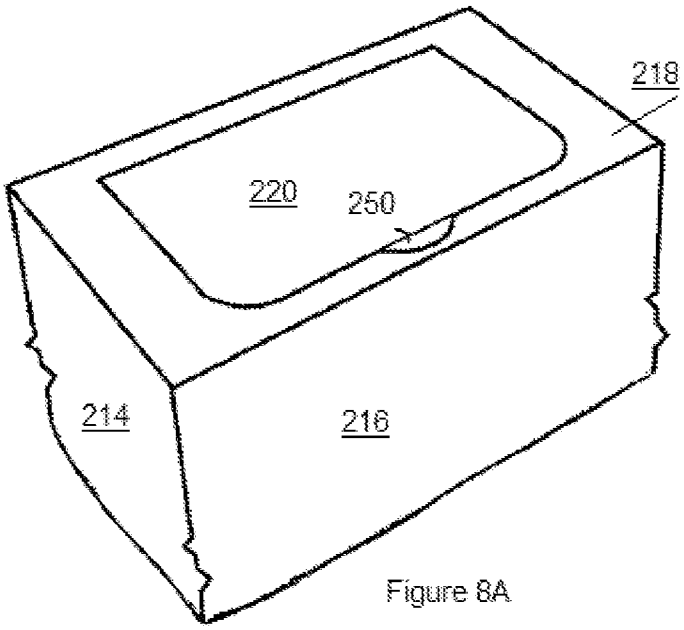


Figure 8A

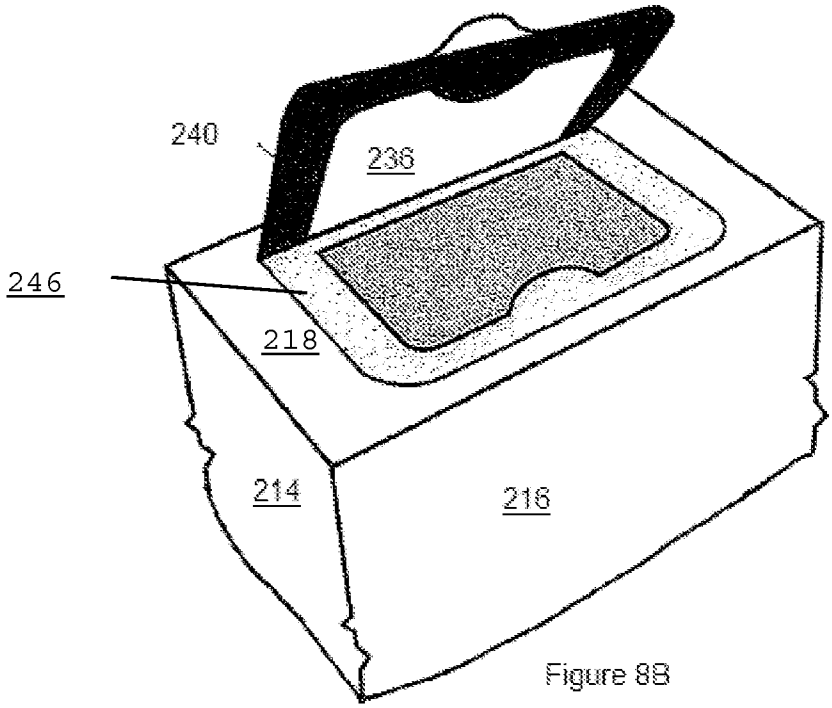


Figure 8B

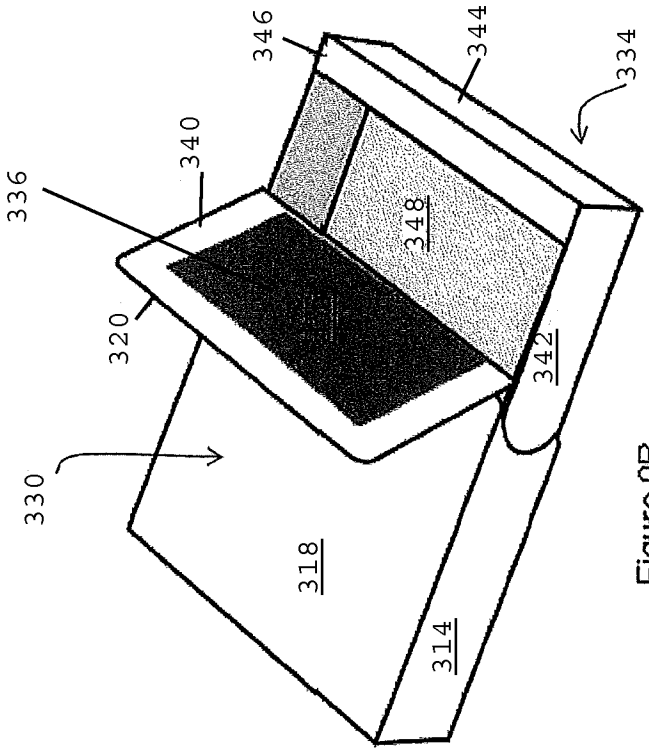


Figure 9B

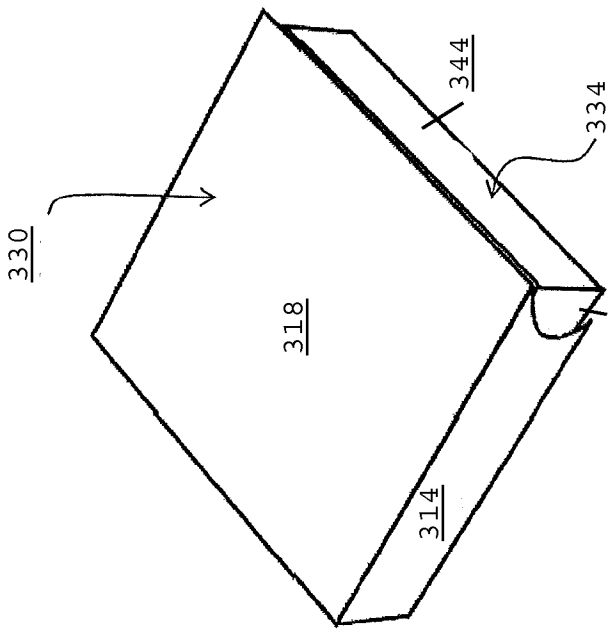


Figure 9A

FIGURE 9C

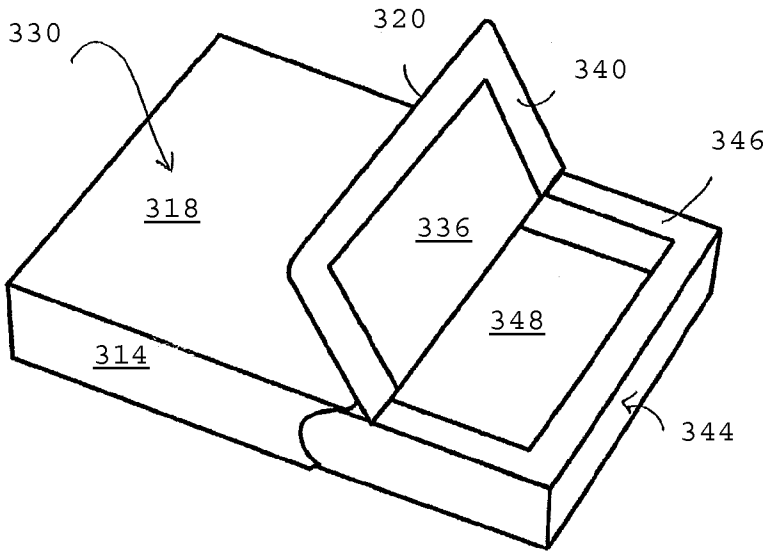
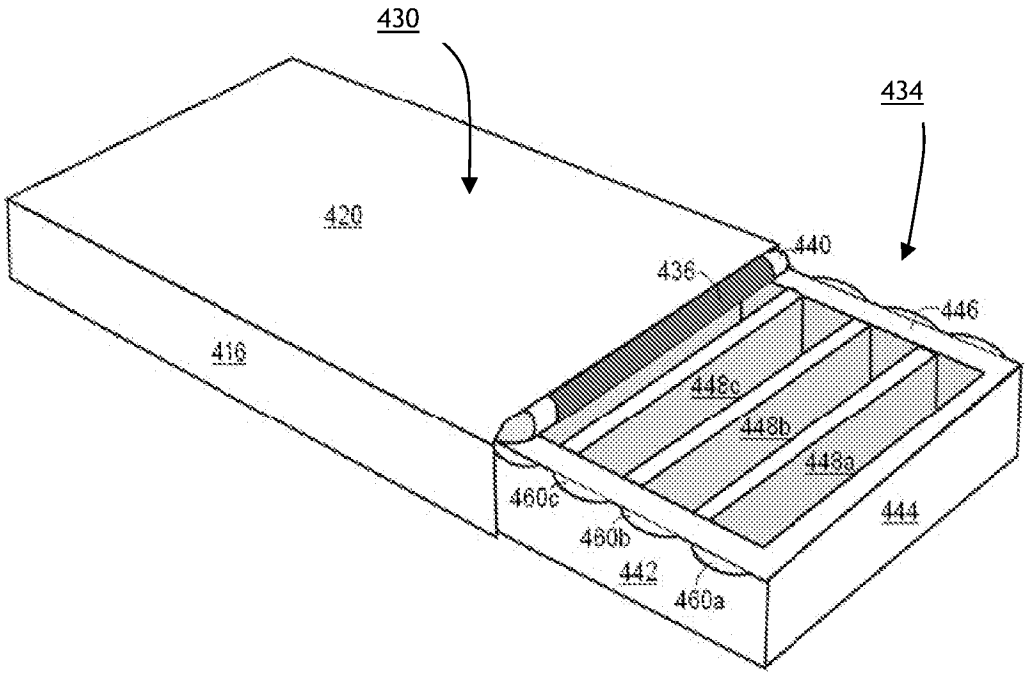


Figure 10A


430
434
420
440
436
446
416
448c
448b
448a
460c
460b
442
460a
444

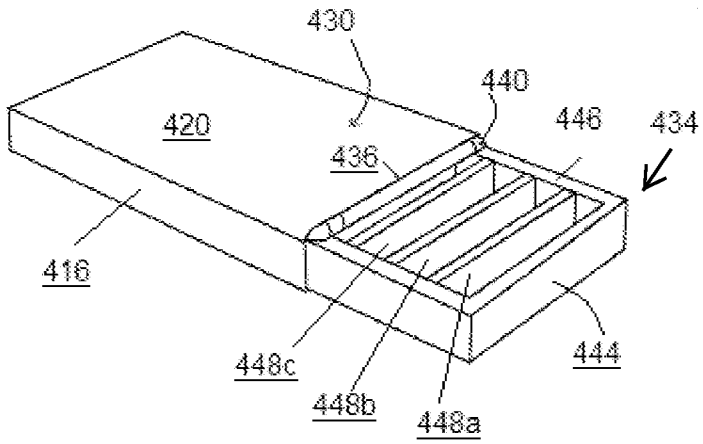


Figure 10B

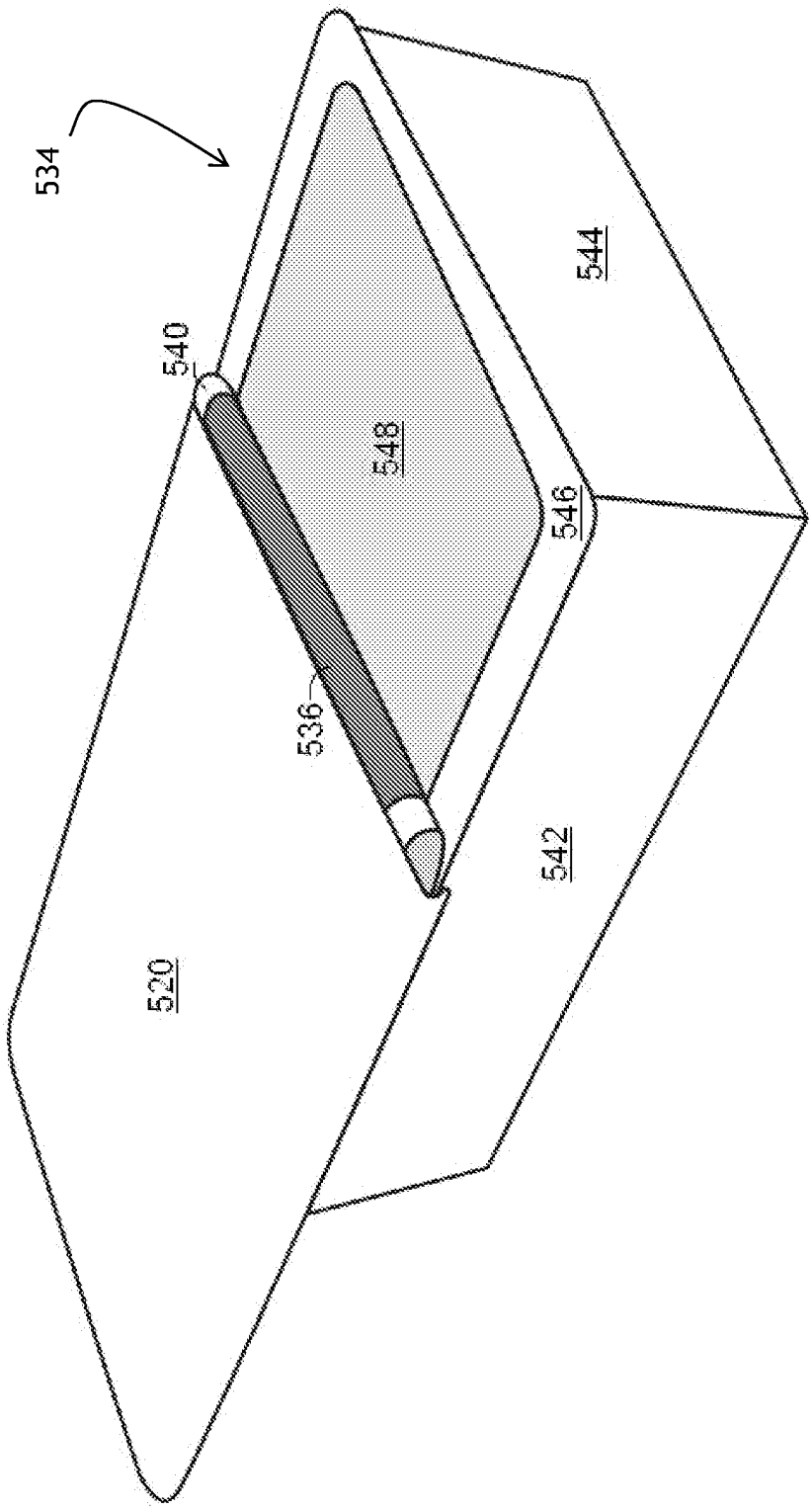
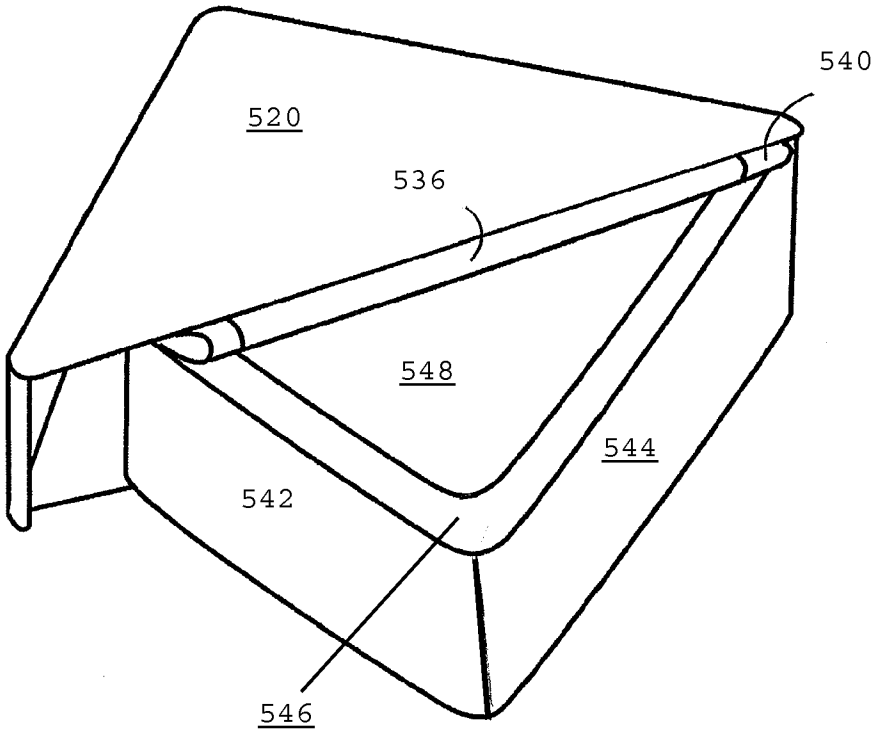


Figure 11A

FIGURE 11B



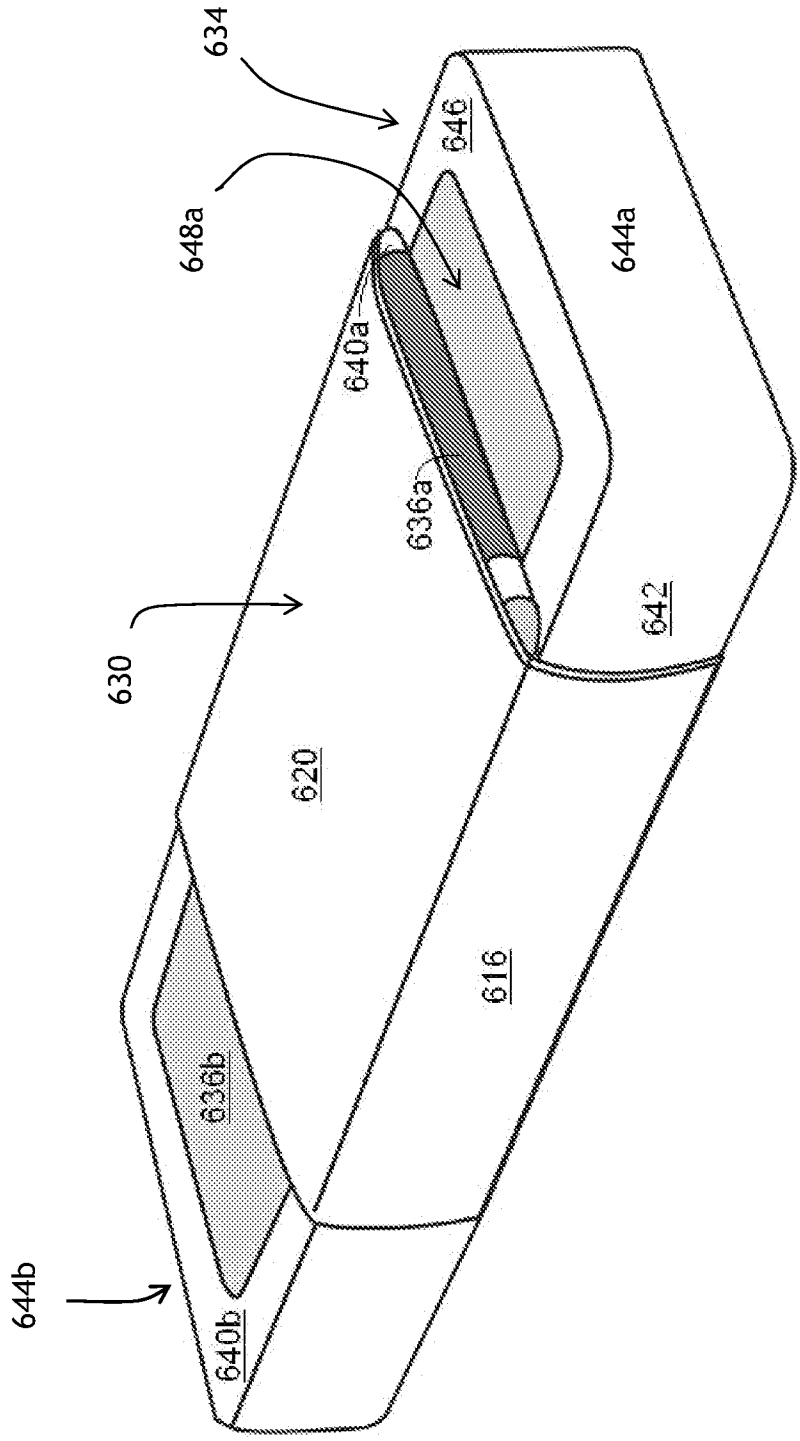


Figure 12A

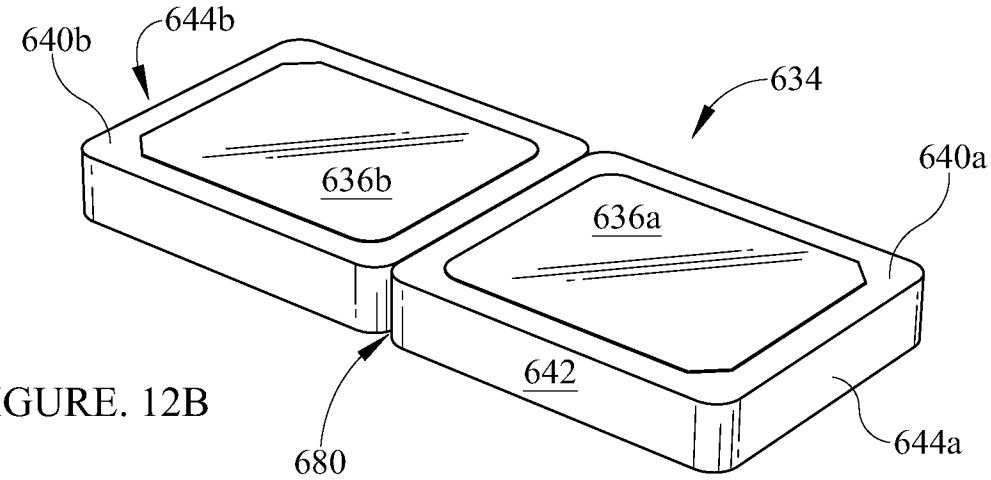


FIGURE. 12B

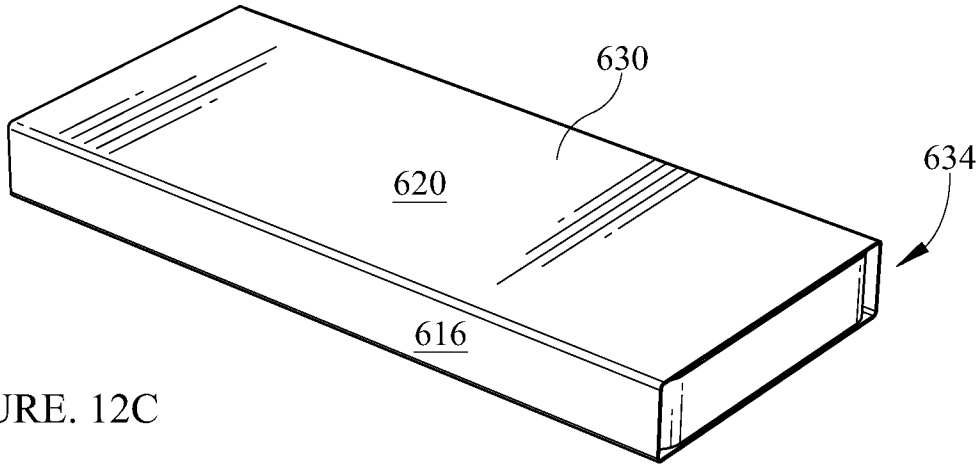


FIGURE. 12C

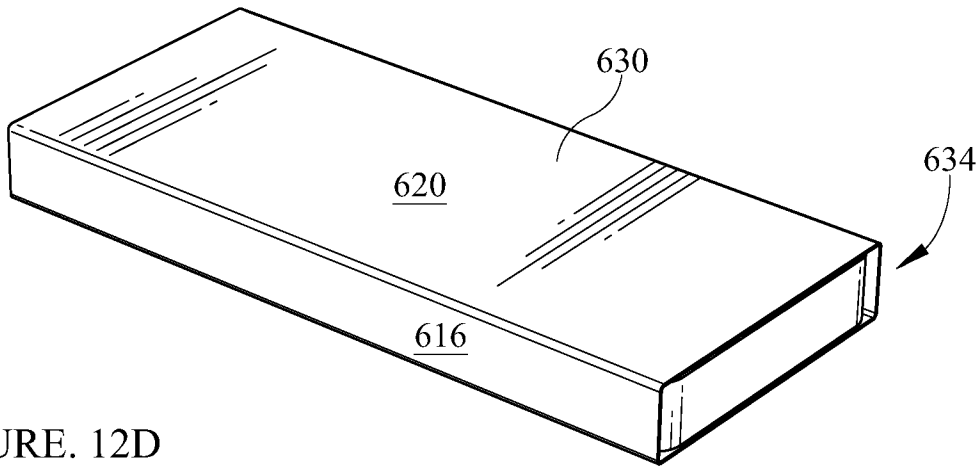


FIGURE. 12D

Figure 13B

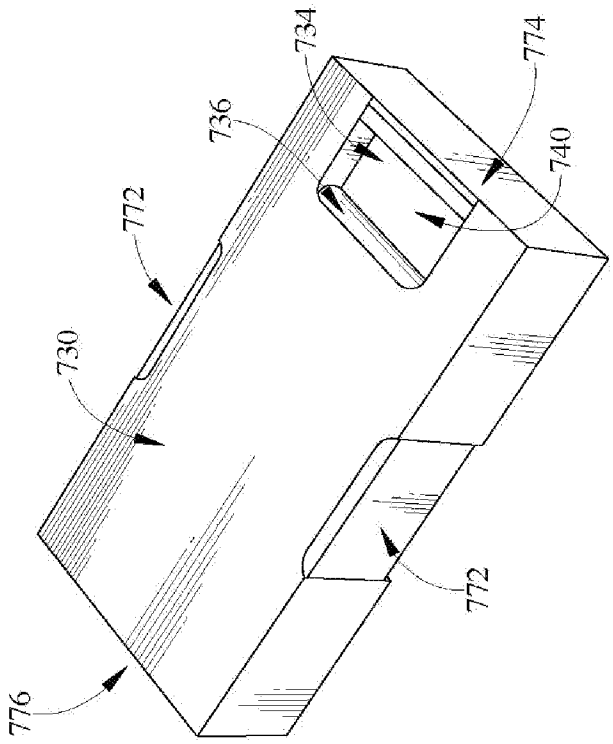


Figure 13A

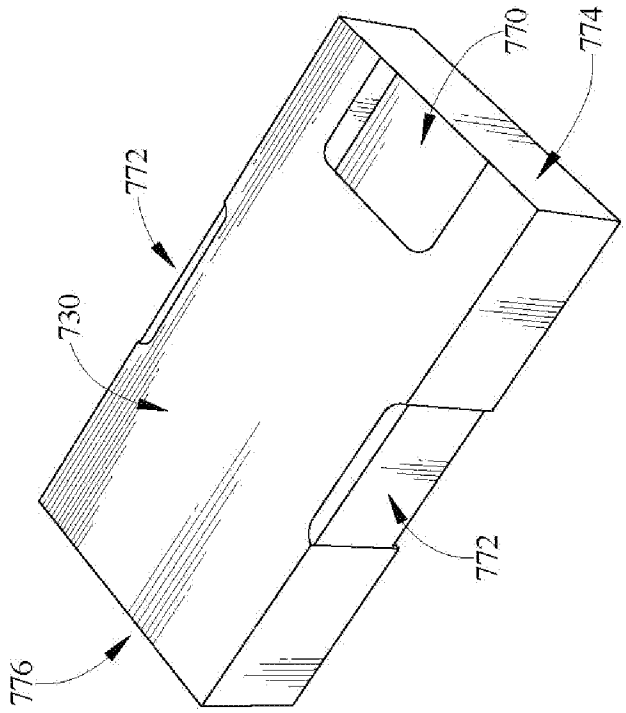


FIGURE 13C

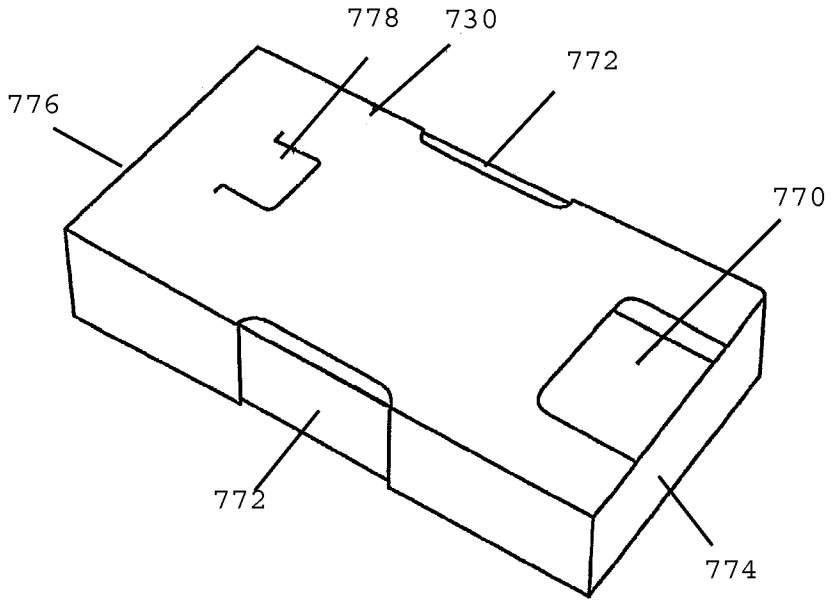


FIGURE 13D

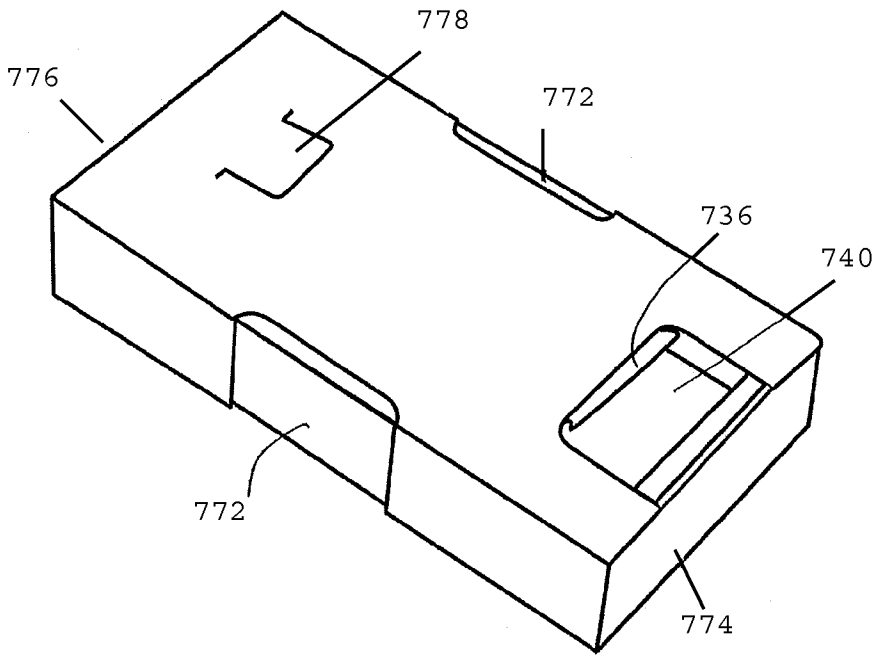


Figure 14B

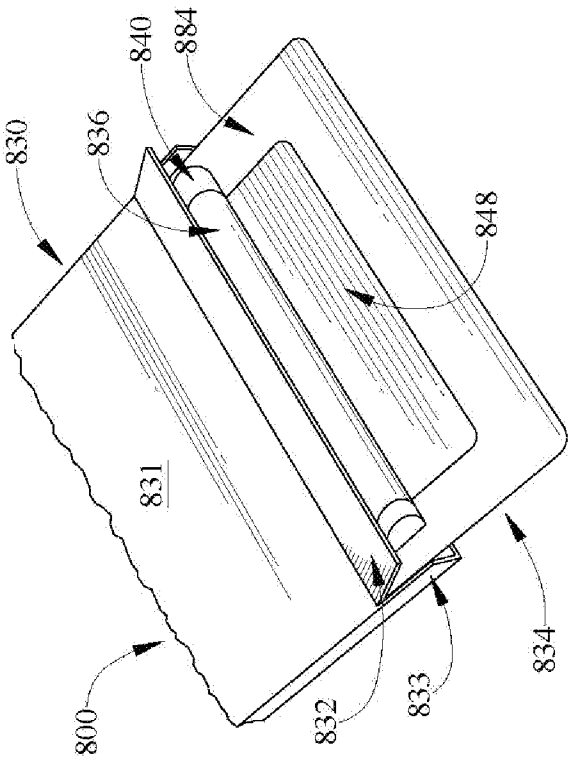


Figure 14A

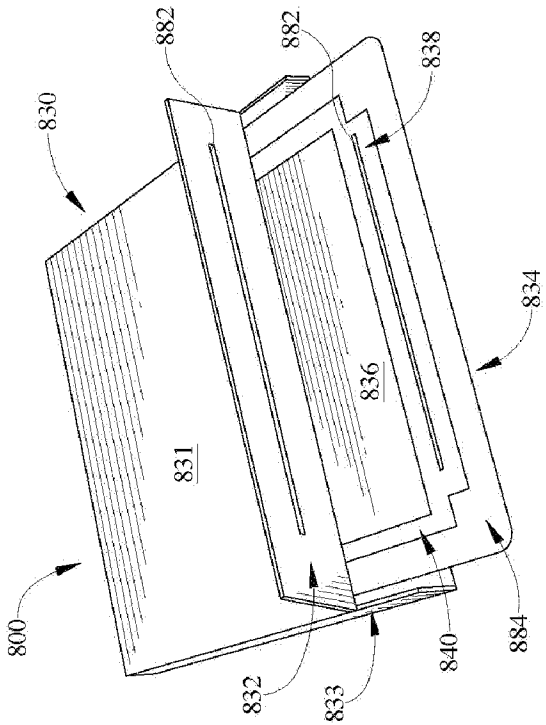


FIGURE. 15A

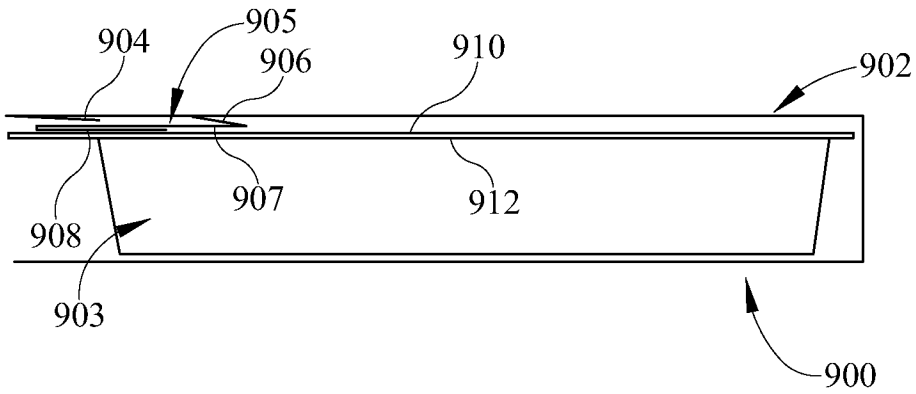


FIGURE. 15B

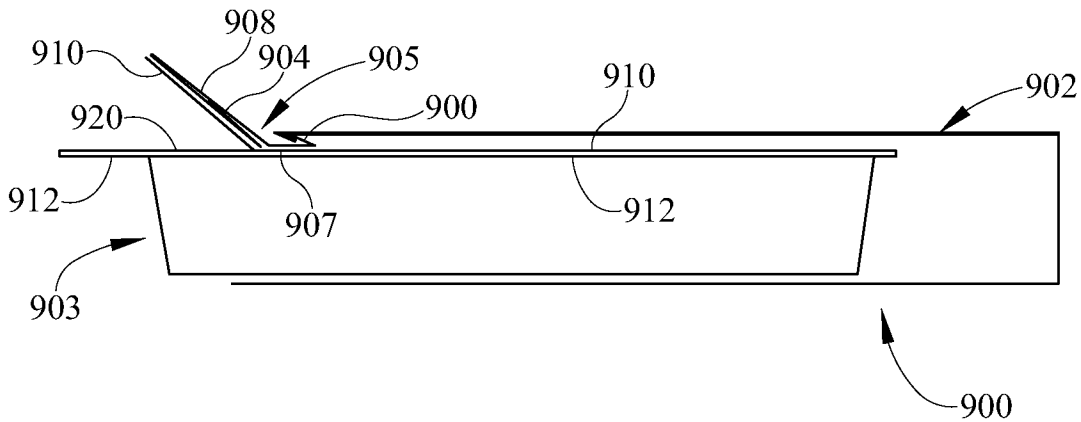


FIGURE. 15C

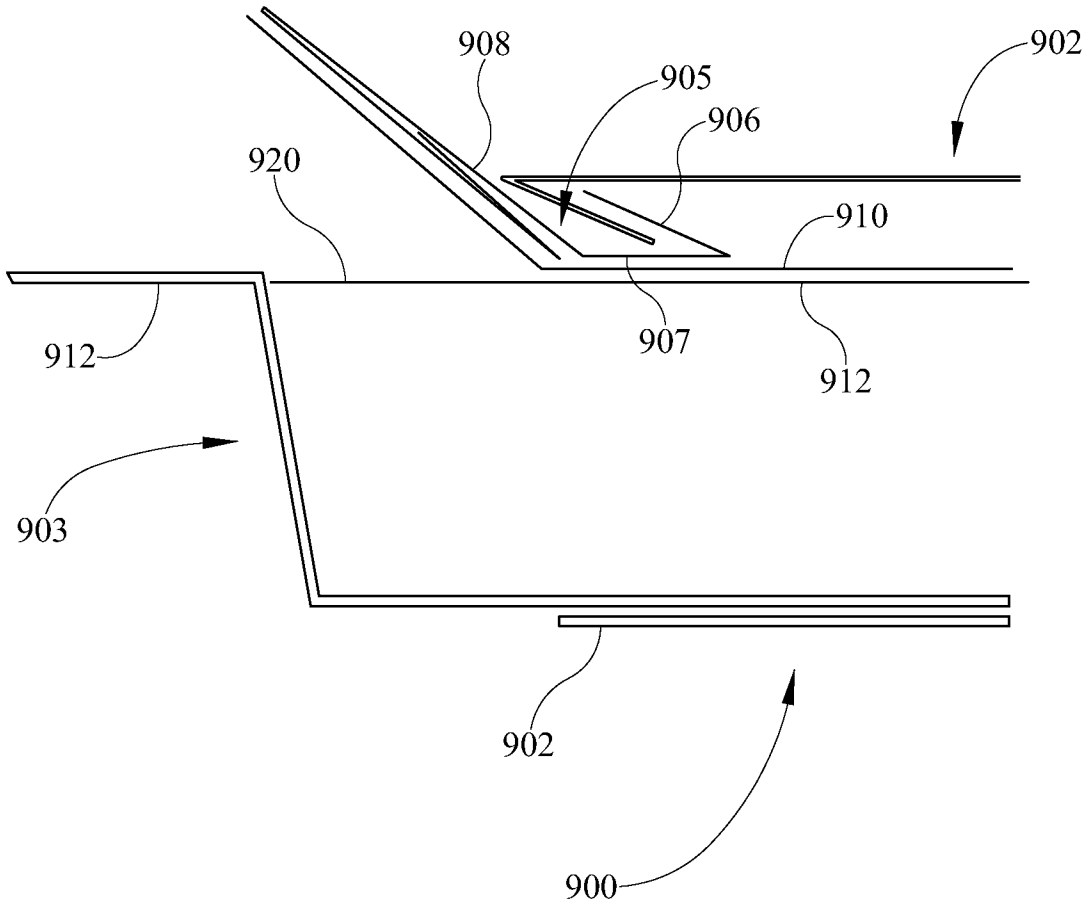


Figure 15D

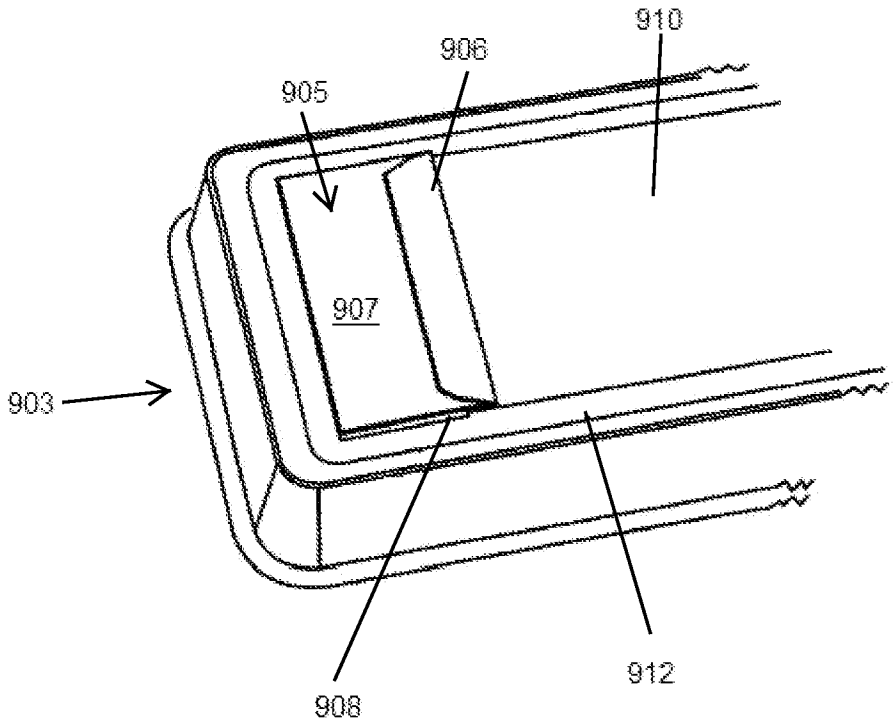


Figure 16A

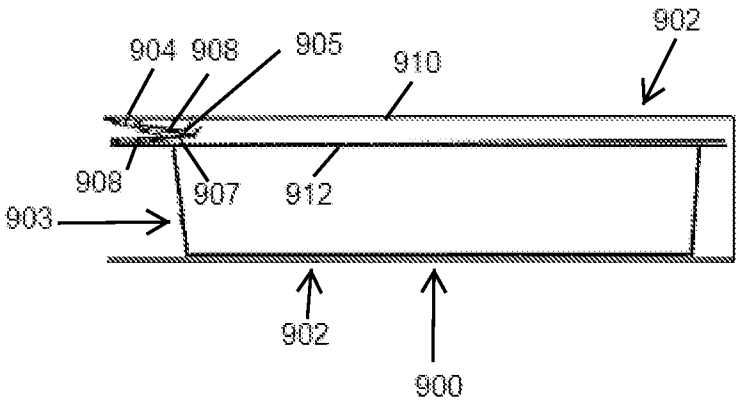


Figure 16B

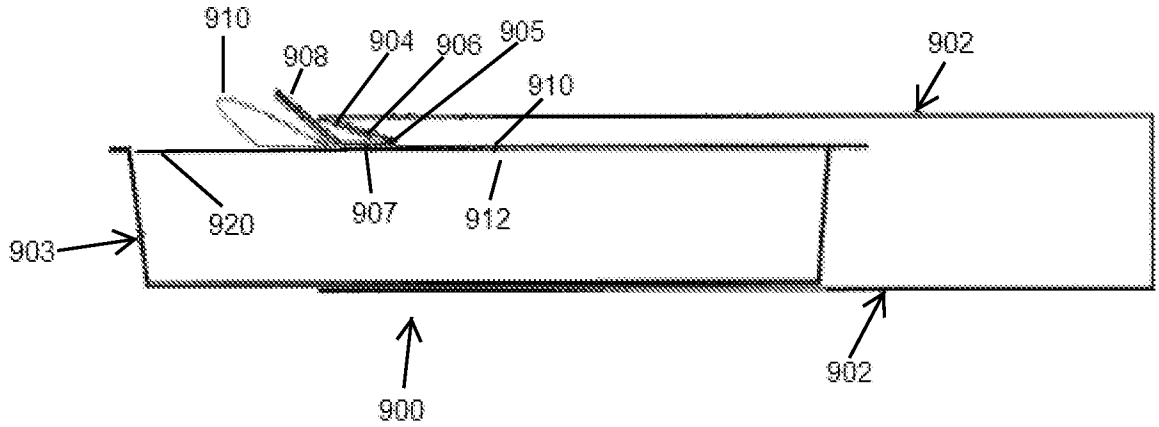


FIGURE 16C

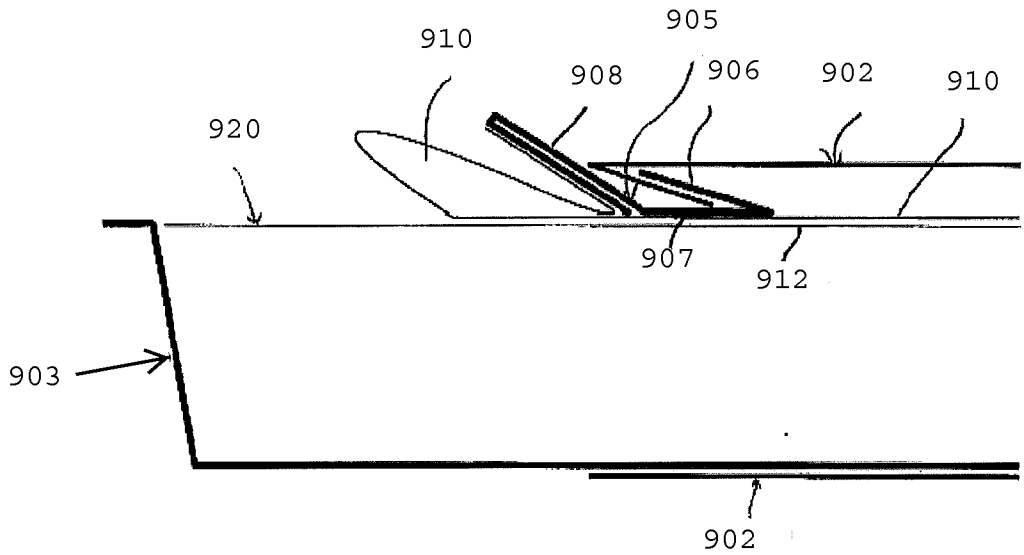


FIGURE. 16D

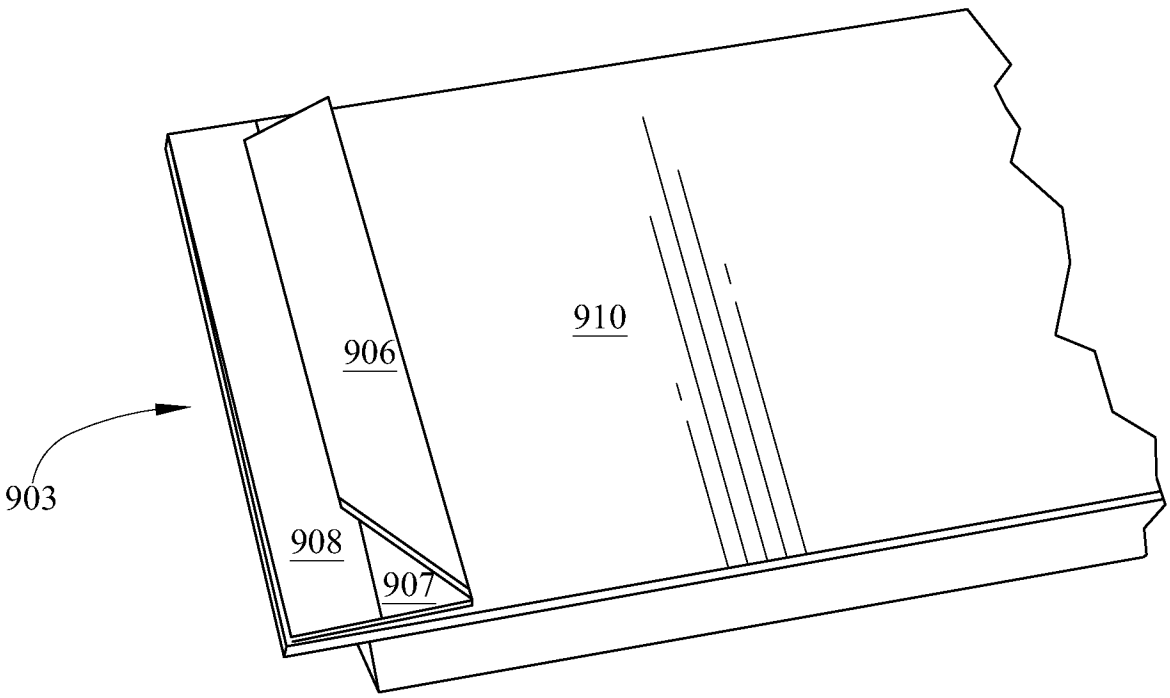


FIGURE 17A

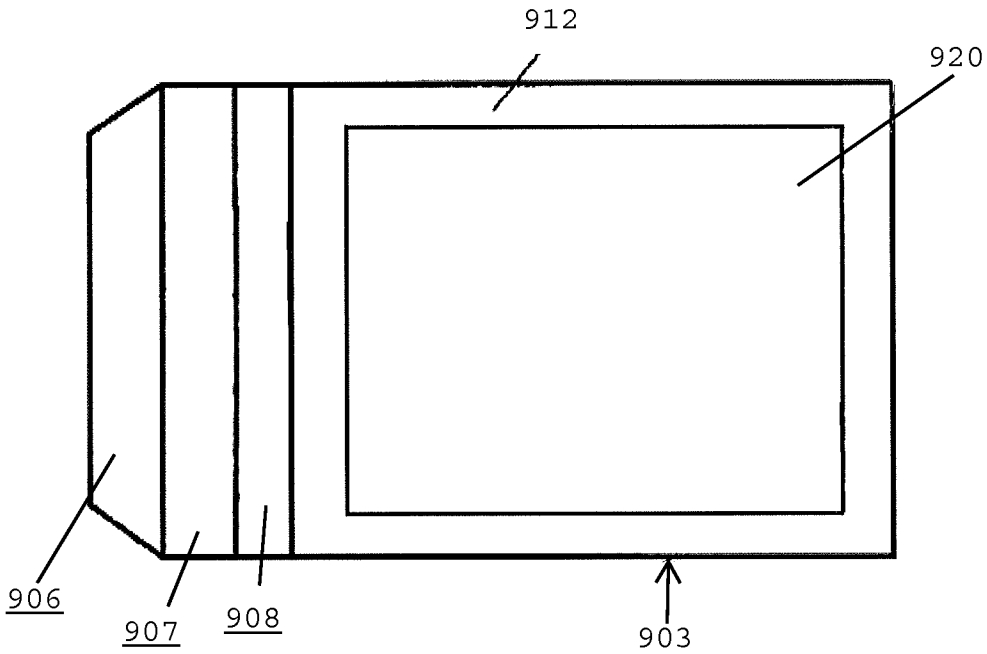


FIGURE. 17B

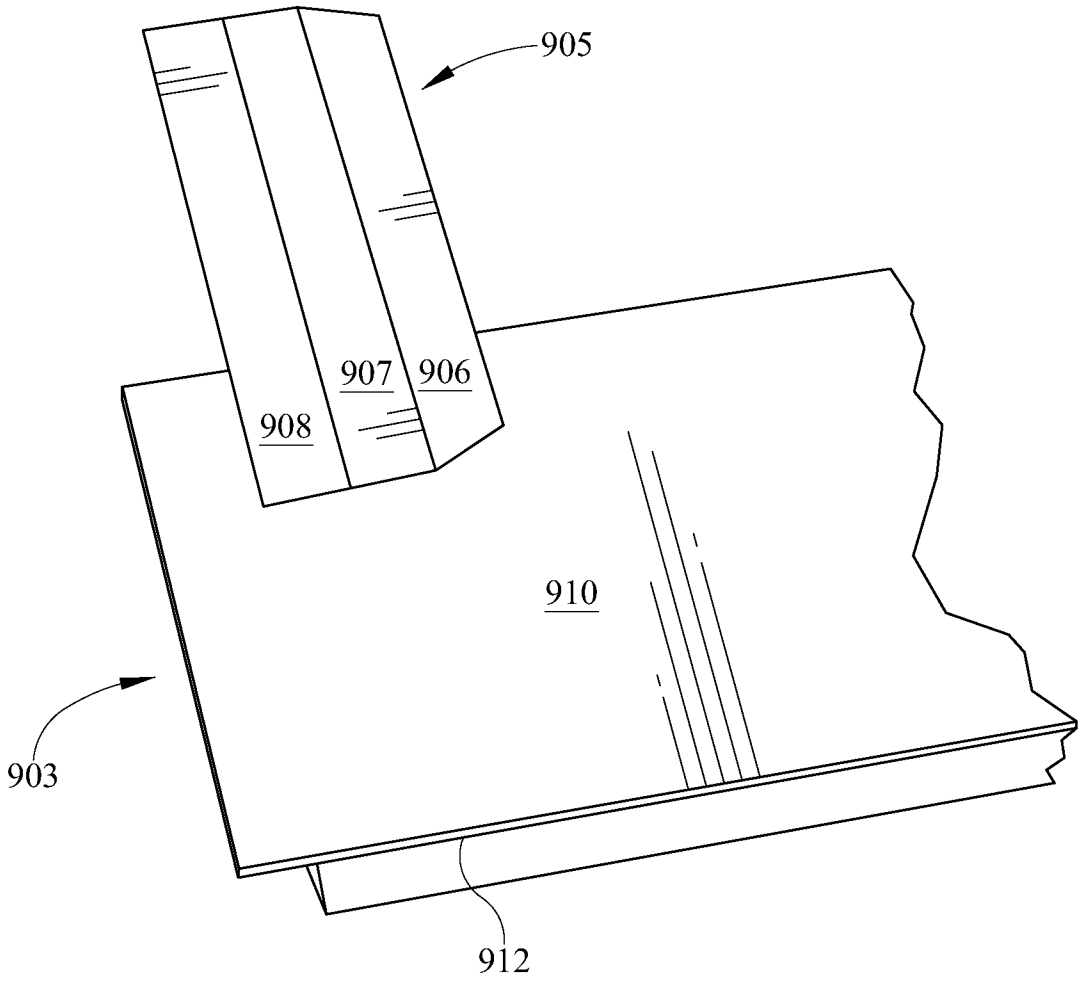
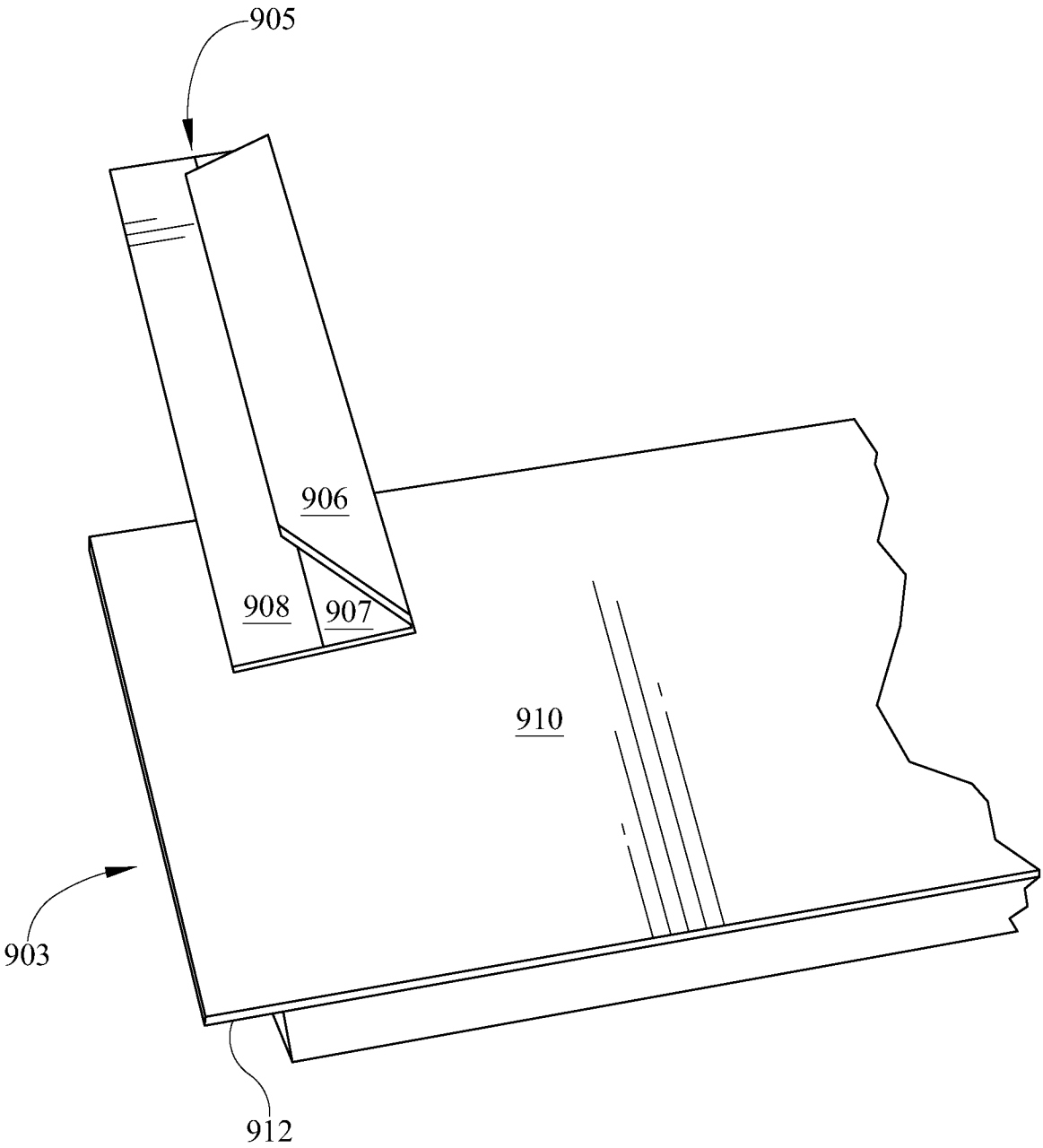


FIGURE. 17C



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2010/033637

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D5/38 B65D51/20 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.
X	US 5 269 404 A (WISCHUSEN III HENRY [US] ET AL) 14 December 1993 (1993-12-14) column 4, line 21 - line 46; figures 1-5 column 5, line 58 - column 6, line 22; figure 13	1-11, 13-15
X	EP 0 403 393 A1 (MECAPLASTIC SOCIETE ANONYME FR [FR]) 19 December 1990 (1990-12-19) column 3, line 31 - column 4, line 21; figures 1-4	13
A	DE 10 2007 030267 A1 (FOCKE & CO [DE]) 8 January 2009 (2009-01-08) paragraph [0037]; figures 1-24	1-15

☐ 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
6 July 2010	19/07/2010

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	Derrien, Yannick

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2010/033637

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5269404 A	14-12-1993	NONE	
EP 0403393 A1	19-12-1990	FR 2648433 A1	21-12-1990
DE 102007030267 A1	08-01-2009	EP 2170728 A1	07-04-2010
		WO 2009000427 A1	31-12-2008