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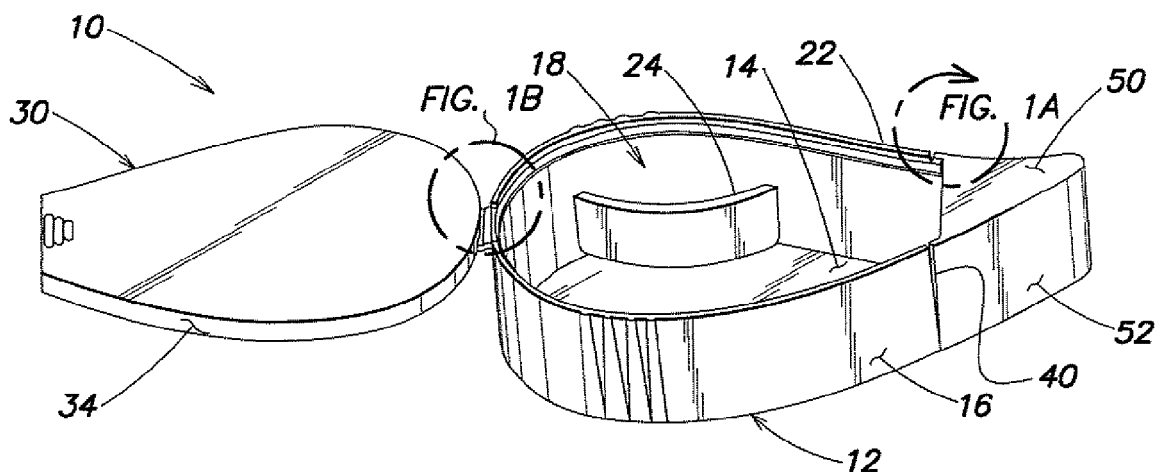
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A request for addition of a priority based on Rule 52 (2)EPC, has been filed pursuant to Rule 139 EPC and accepted.

(54) **Tamper resistant and tamper evident monolithic container**

(57) A container (10) has a base (14) and a side wall (16) defining a cavity (18) with an opening and having a rim (22). A lid (30), integrally formed with the side wall (16), is connected to the side wall by a hinge (32) adjacent the rim. Two weakened areas (40, 42) each extending along the side wall (16) from the rim (22) towards the base (14). A tab (50), integrally formed with the side wall (16), extends laterally from the side wall in a direction

outwards of the side wall and is located between the two weakened areas (40, 42). When the container (10) is closed, the lid (30) substantially fills the opening and a snap fit coupling secures the lid (30) to the side wall (16). To open the container a user exerts pressure on the tab (50) to sever the side wall (16) in the region of the weakened areas (40, 42) and release the snap fit coupling. Since the side wall (16) is severed the container (10) cannot be reclosed and is tamper evident.

**FIG. 1****EP 2 650 228 A1**

Description

TECHNICAL FIELD:

[0001] The present subject matter relates to containers for storing items of personal care such as razor cartridges.

BACKGROUND:

[0002] Many modern safety razor cartridges can be packaged individually in containers having a lid. The closed container can be at least generally splash-proof and the user can for example store a new unused razor cartridge in a shower environment for easy access if an in-use razor cartridge becomes e.g. "dull" and the user wishes to replace it.

[0003] U.S. patents number 6,499,595 and 7,172,069 disclose such lidded containers.

SUMMARY:

[0004] The present disclosure has for its objective to eliminate, or at least substantially alleviate the limitations of prior art containers for personal care items such as razor cartridges. A monolithic container has a base and a side wall extending from the base around a perimeter of the base. In combination, the base and side wall define a cavity with an opening and a rim along the edge of the side wall opposite the base. Retaining structure within the cavity for the razor cartridge can be integrally formed with the base and/or side wall. A lid is integrally formed with the side wall and hingedly connected to the side wall adjacent to the rim. The lid is shaped to substantially fill the opening when the container is closed providing at least splash-proof protection for the personal care item stored in the cavity. The lid also has a first part of a snap fit coupling at an edge of the lid, e.g. a male or female part of a snap fit coupling. Two weakened areas extend along the side wall from the rim towards the base and can extend to the base. Preferably the weakened area includes a notch in the side wall adjacent the rim. A tab is also integrally formed with the side wall. The tab is located between the weakened areas adjacent the rim and extends laterally from the side wall in a direction outwards of the side wall. An interior face of the side wall between the two weakened areas includes a second part of the snap fit coupling, e.g. the associated respective female or male part of the snap fit coupling to engage the aforementioned male or female part of the lid. Preferably the second part of the snap fit coupling is opposed the hinge of the lid relative to the periphery of the rim.

[0005] When the container is closed, the lid substantially fills the opening and the first part of the snap fit coupling of the lid engages the second part of the snap fit coupling of the side wall securing the lid in this position. When a user wishes to open the container, the user exerts pressure on the tab thereby severing the side wall

in the region of the weakened areas and releasing the second part of the snap fit coupling of the side wall from the first part of the snap fit coupling of the lid wall thus releasing the lid. The container thus opened cannot be reclosed and is tamper evident. If the user chooses to replace a partially used razor cartridge in the container it cannot be reclosed trapping moisture in the container that might prematurely degrade a shaving aid component part of the razor cartridge.

[0006] In some embodiments, when the container is closed, the lid is within the cavity, no part of the lid extends outward of the rim and lid is free of elements that can be used by the user to manually open the lid. The lid cannot be readily opened manually by the user without operating the tab to sever the weakened areas of the side wall. The container is tamper resistant.

[0007] The container is monolithic, i.e. it is a single body preferably comprising a single material for benefits of manufacturing and easy recyclability.

[0008] These and other advantages of the present disclosure will be apparent to one of ordinary skill in the art in light of the following Detailed Description and Drawings.

BRIEF DESCRIPTION OF THE DRAWINGS:

[0009] Reference is made to the attached drawings, wherein elements having the same reference numeral designations represent like elements throughout, and wherein:

[0010] Fig. 1 is a perspective view of an embodiment of an open container;

[0011] Fig. 1A is an enlarged view of a portion of Fig. 1;

[0012] Fig. 1B is an enlarged view of another portion of Fig. 1;

[0013] Fig. 2 is a plan view of the container of Fig. 1;

[0014] Fig. 2A is an enlarged view of a portion of Fig. 2;

[0015] Fig. 3 is a side view of the container of Fig. 1;

[0016] Fig. 3A is an enlarged view of a portion of Fig. 3;

[0017] Fig. 3B is an enlarged view of another portion of Fig. 3;

[0018] Fig. 4 is an underside view of the container of Fig. 1;

[0019] Fig. 5 is a perspective view of the container of Fig. 1 in the closed position;

[0020] Fig. 6 is a sectional view of Fig. 5 taken along lines 6-6;

[0021] Fig. 6A is an enlarged view of a portion of Fig. 6;

[0022] Fig. 7 is a sectional view of Fig. 5 taken along lines 7-7;

[0023] Fig. 7A is an enlarged view of a portion of Fig. 7;

[0024] Fig. 8 is a side view of the container of Fig. 1 after it is closed and subsequently opened by a user; and

[0025] Fig. 9 is a plan view of another open container.

DETAILED DESCRIPTION:

[0026] Referring now to the drawings in general and in

particular Figs. 1-3, a monolithic container 10 for an item of personal care, preferably a razor cartridge, is depicted. In the context of the present disclosure the term "monolithic" is intended to describe a one-piece part that is preferably made of a single or mono-material. The container comprises a body part 12 having a base 14 and a side wall 16 extending from the base 14 around the perimeter of the base. The base and side wall define a cavity 18 having an opening surrounded by a rim 22. Within the cavity, retaining structure 24 to retain the item of personal care is integrally formed with the base 14 and / or side wall 16. A typical item of personal care, e.g. a razor cartridge 26 is shown in dashed line in the cavity 18.

[0027] A lid 30 is attached to the side wall 16 at or adjacent the rim 22 by a flexible hinge 32 (see Fig. 3A), also known in the art as a film hinge or living-hinge. Referring to Fig. 1B, the rim 22 can include a local gap or interruption 20 to accommodate the hinge 32 when the lid is closed and the hinge is folded over. Referring additionally to Figs 5 and 6A, the lid 30 has a perimeter 34 that is sized to closely fit the opening when the container is closed. In the context of the present disclosure, the container is intended to be tamper-resistant when closed, that is, it cannot readily be opened manually by a user. In that respect "closely fit" as mentioned above is intended to mean that a user cannot insert e.g. a fingernail into any gap between the perimeter 34 of lid 30 and rim 22 to pry open the container by methods other than described later in the present disclosure. The container will also be generally splash-proof in a typical shower environment.

[0028] Two weakened areas 40, 42, e.g. regions of reduced wall thickness extend along the side wall 16 from the rim 22 towards the base 14. Preferably the weakened areas 40, 42 extend from the rim 22 to the base 14 as depicted. Preferably also each weakened area has a notch 44, e.g. a V-shaped notch (see Fig. 1A) at its respective outer region in the vicinity of the rim 22. The notch acts as a stress concentration to initiate fracture or severing of the weakened area when the container is opened as described later in the present disclosure. As depicted each weakened area comprises a groove along the outer surface of the side wall thus locally weakening the side wall. A weakened area can also comprise a groove along the interior surface of the side wall and/or another feature such as a series of perforations in the side wall and/or a locally different material having preferred fracture or severable characteristics as is also described later in the present disclosure.

[0029] In embodiments where the weakened areas 40, 42 extend to the base 14, a groove 60 preferably extends between respective ends of each weakened area at the base preferably along the outer surface of the base as depicted in Fig. 3B.

[0030] A tab 50 extends outwardly from the side wall 16 from a region between the weakened areas 40, 42 and is preferably located adjacent the rim 22. Webs 52, 54 extend from the side wall 16 to the tab 50 to provide

structural stability to the tab to limit flexure of the tab relative to the side wall when the tab 50 is operated as described later in the present disclosure.

[0031] The lid 30 includes a first part 36 of a snap fit coupling. Referring additionally to Fig. 7A the first part 36 is a male feature or protrusion. When the container 10 is closed (as depicted in Figs. 5-7) the first part (protrusion) 36 engages a second part 56 of a snap fit coupling to secure the lid 30 in its closed position. Again referring to Fig. 7A the second part 56 is a female feature or undercut or recess in the side wall 16 between the weakened areas 40, 42. The snap fit features can also be provided by a female feature in the lid and a male feature on the side wall.

[0032] The container 10 is preferably made by an injection molding process. Any suitable (first) thermoplastic material can be employed. Preferably the material is an olefin, e.g. polypropylene (PP) or (low-density) polyethylene (LDPE). In particular the PP designated P5M6K-048 supplied by FLINT HILLS and the LDPE designated KN226 supplied by CHEVRON have particular utility. These materials are selected for a number of beneficial properties including chemical resistance to typical substances typically found in e.g. a bathroom environment; dimensional stability; impact resistance and the ability for the molten material to flow through the cross section of the film hinge during the manufacturing process. Alternatively, a multi-shot injection molding process can be used so that the hinge 32 and/or weakened areas 40, 42 can comprise a second material having different properties to the above mentioned first material. For example the hinge can comprise a TPE for benefits of increased flexibility or the weakened areas can comprise a more readily fracturable or severable material.

[0033] As previously mentioned, the perimeter 34 of the lid 30 is a close fit within the rim 22 of the side wall 16 preventing the user from inserting a finger nail into any gap therebetween in order to attempt to pry the lid open. In addition, referring to Figs. 6 and 6A, preferably no part of the lid 30 extends above the rim 22 (i.e. in a direction outwardly of the container) and the outer surface of the lid is free of ribs or undercuts of sufficient size that can be readily gripped or otherwise used to open the lid. In this manner the container, when closed, is generally tamper-resistant.

[0034] When a user wishes to open the container he or she manually presses down on tab 50 (in the direction of arrow "A" in Figs. 3 and 5. If the user exerts sufficient force the weakened areas 40, 42 will sever along their length, the fracture being initiated at respective notches 44. Since the user cannot readily control the force applied to the tab generally the base 14, e.g. in the area above the groove 60, will be over-strained and will undergo plastic(permanent) deformation. As a consequence, after operation the tab 50 (and associated webs 52, 54) will appear generally as depicted in side view Fig. 8. The snap fit coupling will be released allowing the lid to be opened. Since the side wall between the weakened areas is per-

manently deflected the snap fit coupling cannot be re-engaged, the container cannot be reclosed and is tamper-evident. A further benefit of the weakened areas severing along their respective lengths to the base is that the resultant cavity cannot retain water in any substantial volume. If a user chooses to temporarily replace a partially used razor cartridge in the cavity it will not be partially immersed, that might lead e.g. to premature degradation or loss of any water soluble shaving aid on the razor cartridge.

[0035] In Fig. 2 the hinge 32 is depicted diametrically opposed the second part of the snap fit coupling 56, relative to the course of the rim 22. In another embodiment depicted in Fig. 9 the hinge is disposed at a different location around the course of the rim.

[0036] While it is preferred that the side wall has two weakened areas with the tab located between the weakened areas, in further embodiments a single weakened area can be provided with the tab and second part of the snap fit coupling both adjacent the single weakened area. In this embodiment, when the tab is operated, tamper-evidence is achieved by a permanent deflection of the side wall.

[0037] While the foregoing has described what are considered to be the best mode and/or other examples, it is understood that various modifications can be made therein and that the subject matter disclosed herein can be implemented in various forms and examples, and that the teachings can be applied in numerous applications, only some of which have been described herein. For instance, features disclosed in connection with any one embodiment can be used alone or in combination with each feature of the respective other embodiments. It is intended by the following claims to claim any and all applications, modifications and variations that fall within the true scope of the present teachings.

Claims

1. A container (10) for an item of personal care particularly a razor cartridge (26), the container comprising:

a base (14),
 a side wall (16) extending from the base around a perimeter of the base and defining in combination with the base a cavity (18) sized to receive the item of personal care, the cavity having an opening, the side wall further defining a rim (22) around the opening;
 a lid (30) integrally formed with the side wall and connected to the side wall by a hinge (32) adjacent the rim, the lid being shaped to substantially fill the opening when the container is closed, the lid further comprising a first part (36) of a snap fit coupling at an edge of the lid;
 two weakened areas (40, 42) each extending

along the side wall from the rim towards the base;

a tab (50) integrally formed with the side wall and extending laterally from the side wall in a direction outwards of the side wall and located between the two weakened areas;

wherein an interior surface of the side wall between the two weakened areas includes a second part (56) of the snap fit coupling;
 whereby, when the container is closed, the lid substantially fills the opening and the first part of the snap fit coupling of the lid engages the second part of the snap fit coupling of the side wall to secure the lid;

wherein, to open the container, a user exerts pressure on the tab thereby severing the side wall in the region of the weakened areas, releasing the second part of the snap fit coupling of the side wall from the first part of the snap fit coupling of the lid wall and permanently deforming the base; and

wherein, the container thus opened cannot be reclosed and is tamper evident.

2. The container of claim 1, further comprising retaining structure (24) for the item of personal care integrally formed with at least one of the base and the side wall and located within the cavity.
3. The container of claim 1, wherein, when the container is closed no part of the lid extends outward of the rim.
4. The container of any preceding claim, wherein, when the container is closed, the lid is free of elements that can be used by the user to manually open the lid.
5. The container of any preceding claim, wherein each weakened area comprises at least one of: a groove along an outer surface of the side wall; a groove along an inner surface of the side wall and a series of perforations along the side wall.
6. The container of any preceding claim, wherein each weakened area extends to the base.
7. The container of claim 6, wherein the base has a groove (60) extending between respective ends of each weakened area at the base.
8. The container of claim 7, wherein the groove extends along an outer surface of the base, opposite the cavity.
9. The container of any of claims 1-6, wherein the hinged connection of the lid is opposed the second part of the snap fit coupling.

10. The container of any of claims 1-6 and 9, wherein each weakened area includes a notch (44) in the side wall adjacent the rim.
11. The container of claim 10, wherein the notch is V-shaped. 5
12. The container of any of claims 1-6 and 9-10, wherein the container comprises a first material. 10
13. The container of claim 12, wherein the hinged connection comprises a second material that is different to the first material.
14. The container of claim 12, wherein each weakened area comprises a second material that is different to the first material. 15
15. The container of any of claims 1-6, 9-10 and 12, wherein the rim includes an interruption (20) to accommodate the hinge when the lid is closed and the hinge is folded over. 20

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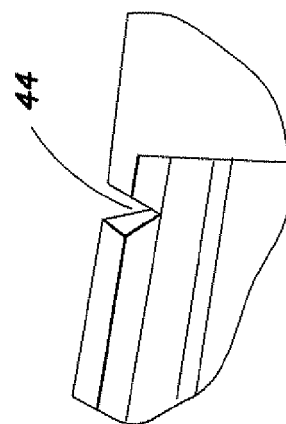
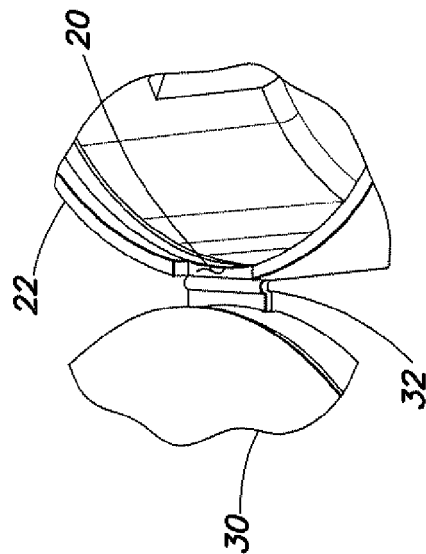
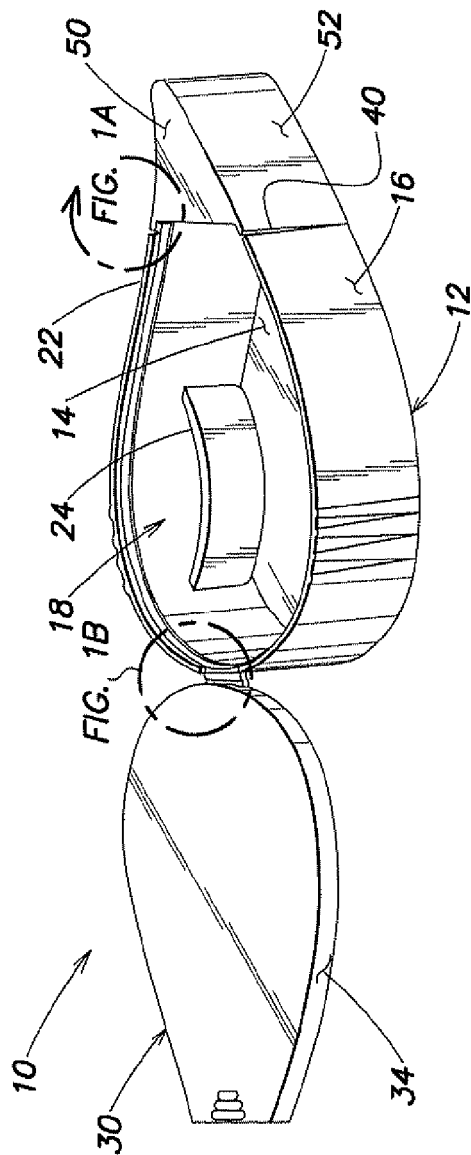
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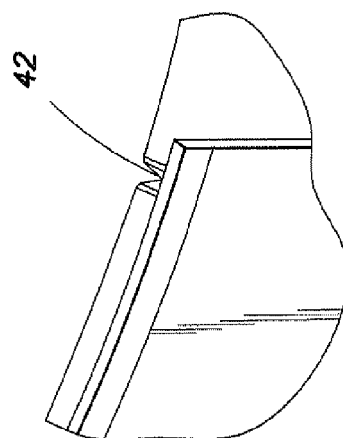
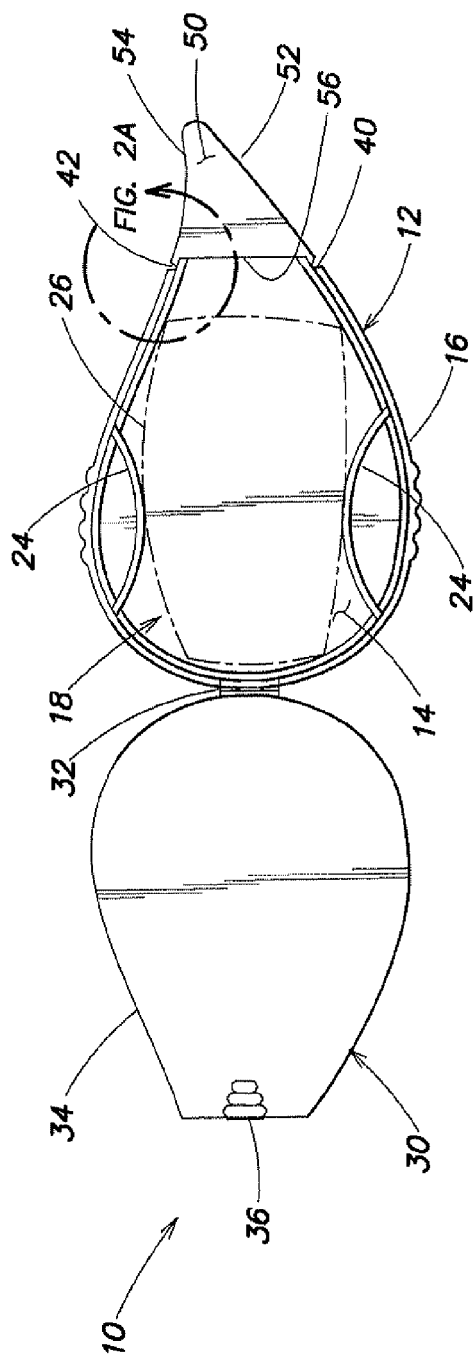
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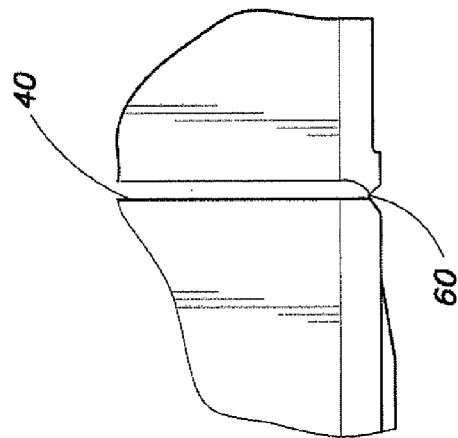
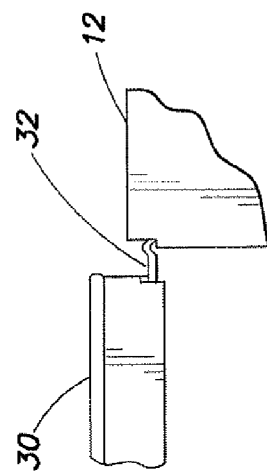
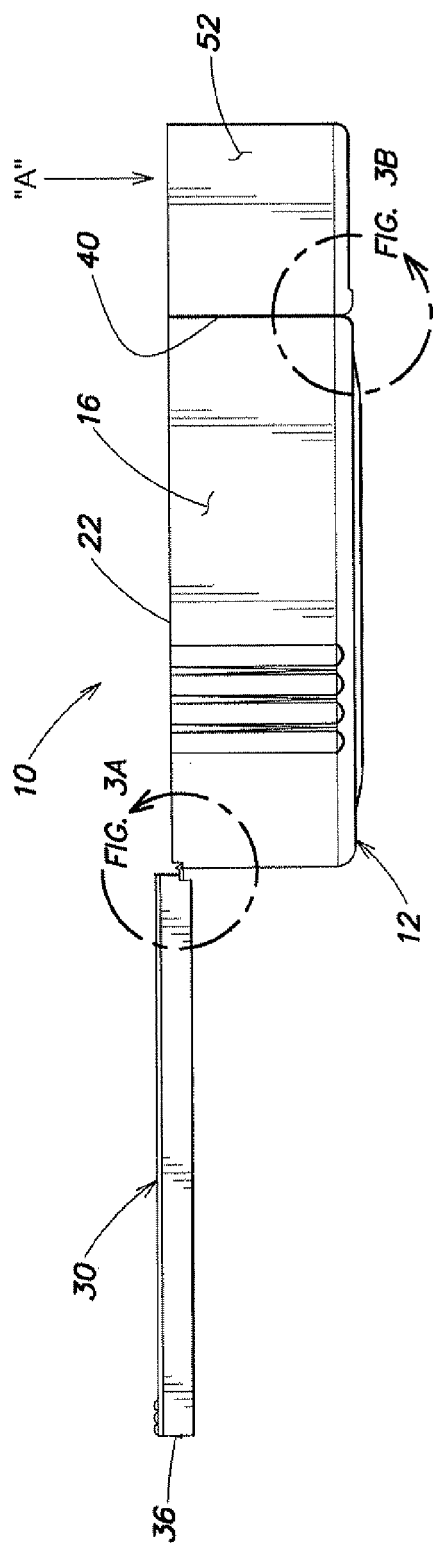
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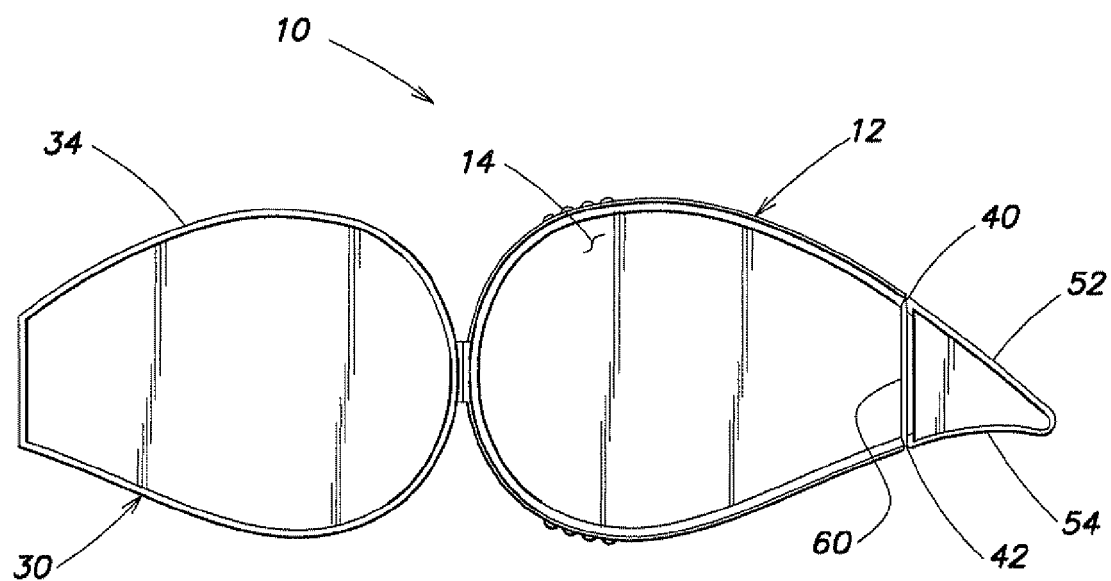


FIG. 4

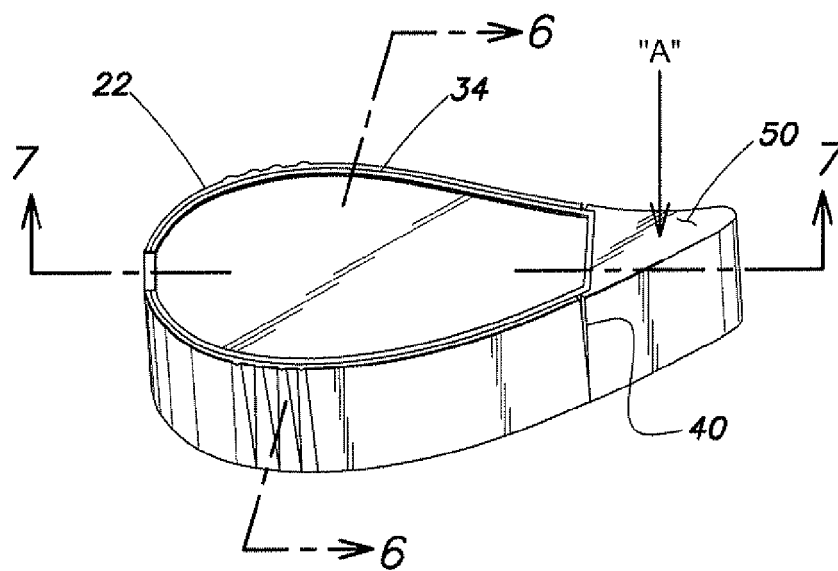


FIG. 5

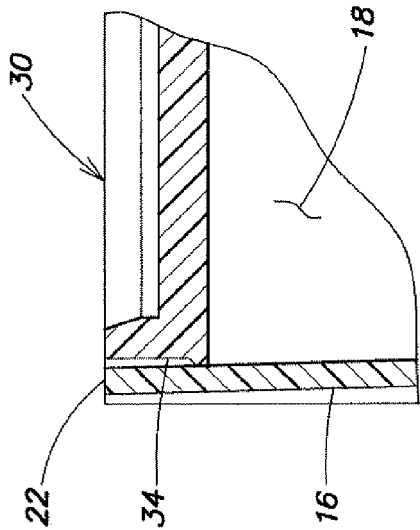


FIG. 6A

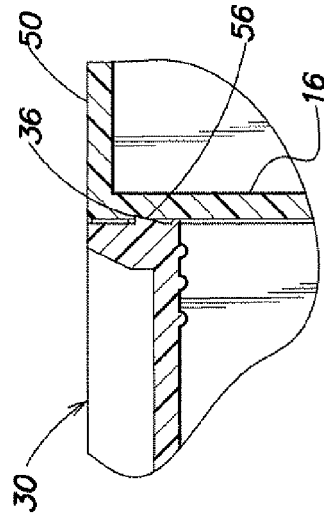


FIG. 7A

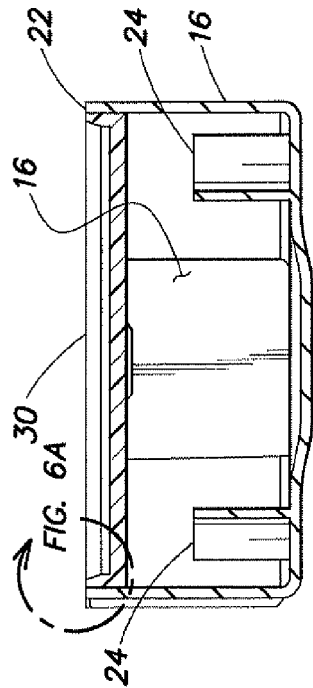


FIG. 6

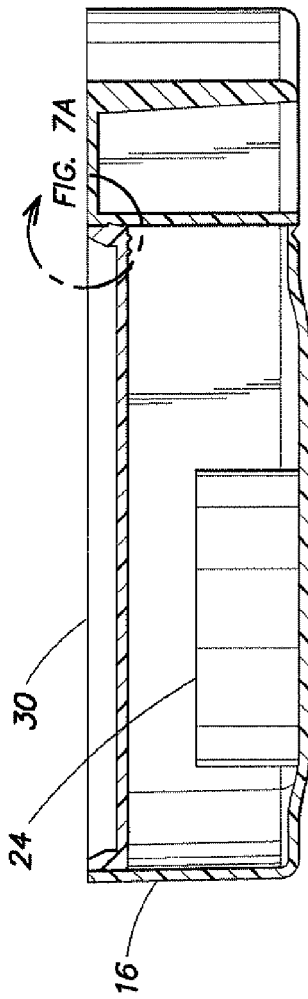


FIG. 7

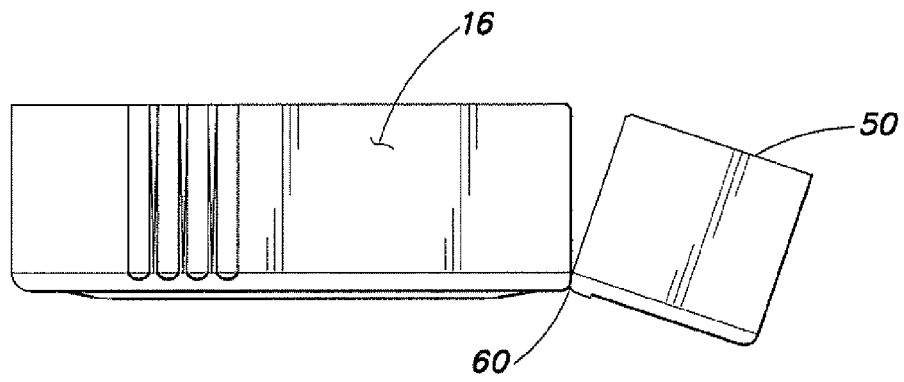


FIG. 8

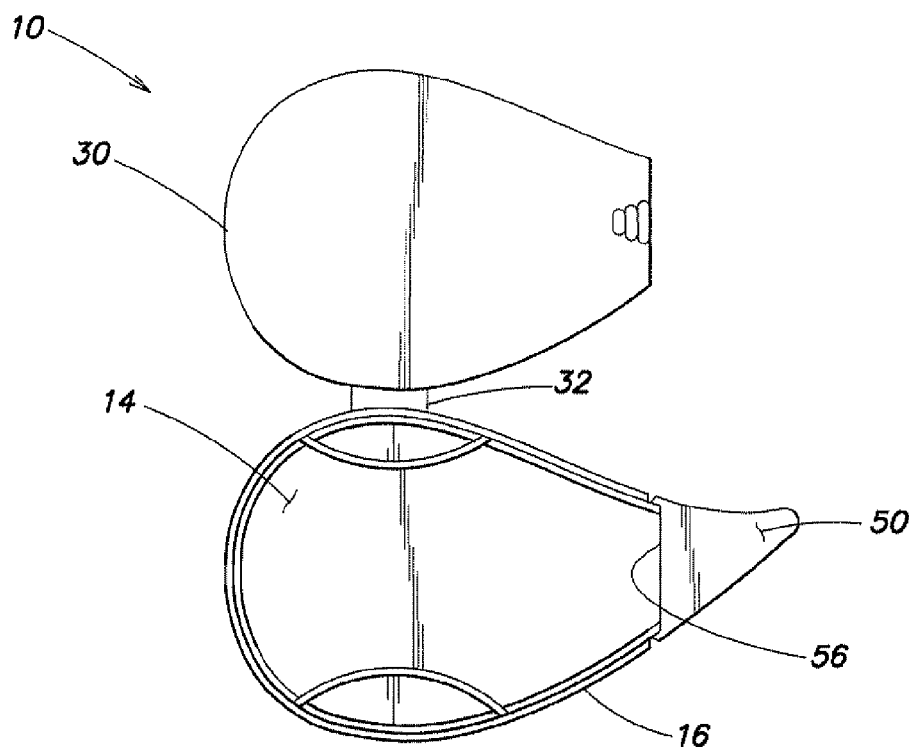


FIG. 9



EUROPEAN SEARCH REPORT

Application Number
EP 12 16 5445

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	GB 2 298 413 A (BODY SHOP INT PLC [GB]) 4 September 1996 (1996-09-04) * the whole document * -----	1-8, 12, 14	INV. B65D43/16
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 2 August 2012	Examiner Bridault, Alain
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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ON EUROPEAN PATENT APPLICATION NO.**

EP 12 16 5445

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02-08-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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		WO 9627537 A1	12-09-1996

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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