



(51) International Patent Classification:
B65D 21/02 (2006.01)

(21) International Application Number:
PCT/IB2013/002941

(22) International Filing Date:
13 December 2013 (13.12.2013)

(25) Filing Language: English

(26) Publication Language: English

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(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, BN, 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, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA,
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.

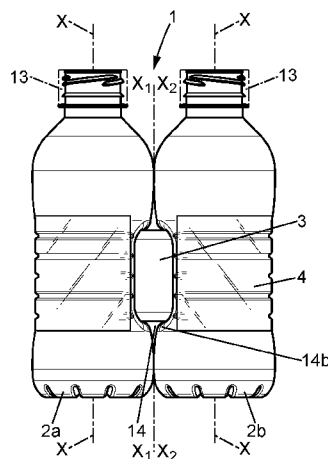
(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU,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

Published:

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

(54) Title: PACKAGING SET INCLUDING AT LEAST TWO BOTTLES NESTING AT LEAST ONE ARTICLE DIFFERENT FROM THE BOTTLES

FIG. 1A



(57) Abstract: The invention concerns a packaging set (1-100) of two plastic PET bottles (2a-2b), bundled by a heat retracted plastic sleeve 4, wherein a promotional article 3 is nested in a central recess which is formed by the gathering of two recesses 14, which are respectively designed in the wall of the bottles (2a-2b) of the packaging set 1. At least part of both recesses (14) of bottles (2a-2b), particularly the back of each recess (14) is in contact with the article (3), as the two bottles (2a-2b) are maintained compressed against each other by means of the heat retracted sleeve (4).



PACKAGING SET INCLUDING AT LEAST TWO BOTTLES NESTING AT LEAST ONE ARTICLE DIFFERENT FROM THE BOTTLES

Field of the invention

This invention relates generally to the packaging of containers, preferably bottles, more preferably plastic bottles, even more preferably blow moulded plastic bottles suitable for containing water or other liquids, especially water for human consumption (generically drinking water hereafter).

More particularly, the invention pertains to a bundle of container(s) with a promotional object nested in recess of the container, the whole being possibly wrapped in a heat retracted plastic film.

Background art and technical problems

Packaging bundles comprising each a plastic container (bottle) designed with a recess in its wall, said recess being adapted to receive an article which is fixed to the container (bottle) by means of:

- i. A volume and a shape of recess designed to almost completely encase the article, so that more than 80% of the article is inside the recess. Therefore the article can't be easily seen and extracted by the consumer, which is not actually promotional. Such a package is also difficult and hence expensive to manufacture, because of the moulding and of the packaging which requires hand assembly.
- ii. A loosely nesting of the article in the recess completed by a wrapping in a plastic film, as disclosed in WO2011/129675A1.
This packaging is also complicated and time consuming, because it cannot be automated.
- iii. Or interlocking the article in a recess of the container through sticking and/or linking of the type "lug/complementary housing" (WO2013/009202A1 - WO2009/103140A2 - WO2008/025301A1) or "guide rail/wedge" (US2004/0226904A1), and possibly through wrapping in a plastic film (WO2009/103140A2 - WO2008/025301A1).

These known packaging systems have the major drawback of being non industrial at reasonable costs.

These prior packaging systems also suffer of a lower resistance to top load, notably as the containers are stacked up for storage.

Meanwhile in bundles such those described in WO 2011/129675, WO 2009/103140 and WO 2008/25301, the nested article extends partly beyond the recess of the bottle. Such a configuration does not allow compact transportation of the bundles: the bottles cannot be transported significantly close on to the other.

In this context, it appeared suitable to the inventors to go out of this scheme of packaging, in order to remedy to the economic deficiencies of the prior art by simplifying the packaging process, without impairing the attractive effect of the promotional article attached to the container (bottle).

Objectives of the invention

The invention aims at addressing at least one of the above problems and/or needs, through fulfilling at least one of the following objectives:

1. Providing a bundle composed of plastic container(s) (*e.g.* bottle(s)) and promotional articles which is cost effective and which is easy to manufacture and to package at an industrial scale.
2. Providing a bundle composed of plastic container(s) (*e.g.* bottle(s)) and promotional articles wherein these latter are visible and accessible and which makes the package attractive for the consumers.
3. Providing a bundle composed of plastic container(s) (*e.g.* bottle(s)) and promotional articles which have a sufficiently high resistance to top load to make it possible stacked-up storage.
4. Providing a bundle composed of plastic container(s) (*e.g.* bottle(s)) and promotional articles which allows the manufacture of the containers by Injection moulding of a preform, as well as Stretching, Blowing and Moulding (ISBM)
5. Providing a cost-effective and simple method of packaging to obtain the bundle composed of plastic container(s) (*e.g.* bottle(s)) according to the above mentioned objectives.
6. Providing bundles allowing a compact transportation, and thus a cost-effective and/or eco-friendly transportation.

Brief description of the invention

The above objectives, among others, are fulfilled by the present invention which concerns, in a first aspect, a packaging set including at least two containers (*e.g.* bottles), each of axis (X), nesting at least one article of axis (X1), said article being different from the containers (*e.g.* bottles).

These containers (*e.g.* bottles) can be filled by a liquid, particularly a beverage, for example water, purified water, spring water, natural mineral water, optionally flavored, optionally carbonated. The beverage can be an alcoholic beverage such as beer. The beverage can be a soda for example a cola beverage, preferably carbonated. The beverage can be a fruit juice, optionally carbonated. The beverage can be vitamin water or an energy drink. The beverage can be a milk based product such as milk or drinking dairy fermented products such as yogurt.

The article can be for example a capsule, preferably comprising inside a product such as a toy, a flexible such as a piece of paper, or an edible composition, for example that can be added to or diluted in the content of the container.

Preferably, the nested article is substantially symmetric with respect to (X1), said nested article preferably comprising a circular section of largest dimension in the direction of an axis (Y) perpendicular to (X1), said nested article being more preferably a capsule.

In a preferred embodiment, the containers (*e.g.* bottles) are filled and packed against each other, preferably by means of at least one wrapping film, which is more preferably not in contact with the nested article.

Advantageously, each container has a recess, each of the recesses contributing to nest a part of the article (3-30) and at least one part of the surfaces of the recesses which is intended to be in contact with the nested article encased therein, presents retention means, said retention means preferably comprising friction elements.

According to a remarkable feature of the invention, the shape and the dimensions of the nested article are chosen so that the minimal distance between the wall of the recess and the axis of the container (*e.g.* bottle) be sufficient not to impede the movement of the blowing pipe during the blowing phase of the ISBM process for manufacturing the containers.

Outstandingly, each container (*e.g.* bottle) comprises a recess which is intended to receive a part of the nested article corresponding to at most $1/N^{\text{th}}$ of the nested article, N being the number of containers (*e.g.* bottles) of the set, this latter being symmetrical with respect to the axis (X2).

According to a possibility P1, the nested article can be in the core of the packaging set.

According to another possibility P2, combined or not to P1, the nested article can be inserted and/or extracted from the top or the bottom of the set of containers (*e.g.* bottles), by a translation movement along the axis (X2) of symmetry of said set.

In a first embodiment, $N = 2$.

According to a particular variant of this preferred embodiment, wherein the nested article is encased, preferably in abutment, into the recess of a first container (*e.g.* bottle), before being bundled with a second container (*e.g.* bottle) of the set, the retention means of said recess, which are preferably located respectively at the top and at the bottom of the recess, clamp the nested article which holds itself alone fixed to the container.

Preferably, the retention means comprise at least one boss, preferably a lip, close to the rim of the recess.

In a second embodiment, $N > 2$. For example $N = 3$ or $N = 4$.

As the packaging set is bundled by means of a plastic wrapping film, preferably a sleeve, the nested article is preferably visible through said film, on one side of the set, said film including preferably on one side of the set at least one transparent window through which the nested article is visible, the rest of the film being non transparent.

In another aspect, the invention pertains to a container (*e.g.* bottle) intended to be part of the packaging set according to the invention.

In a further aspect, the invention concerns:

- 1- a method for producing the packaging set according to the first embodiment of the present invention. Said method consists essentially in:
 - (a) Encasing the nested article into the recess of a first container (*e.g.* bottle) of the set, so that the nested article remains embedded into it;

- (b) Facing the empty recess of a second container of the set, to the nested article already embedded in the first container;
 - (c) Driving into each other the empty recess of the second container and the non-embedded part of the nested article fixed into the first container;
 - (d) Bundling the containers with a plastic sleeve which is heat retracted in order to compress the containers against each other, with the nested article inside the respective recesses.
- 2- and a method for producing the packaging set according to the second embodiment of the present invention. Said method consists essentially in:
- (i) Bundling and maintaining the containers (*e.g.* bottles) of the set compressed against each other, so that the empty recesses of the containers (*e.g.* bottles) face to each other and form together a common recess which is intended to receive the nested article;
 - (ii) Wrapping the containers (*e.g.* bottles) with a plastic film, preferably a sleeve;
 - (iii) Introducing the nested article is into the common recess, before or after the heat retraction of the sleeve.

Detailed description of the invention

Further objects and advantages of the invention will emerge from the following disclosure of a 2 embodiments of the invention given as a non limitative example, the disclosure being made in reference to the enclosed drawings in which:

- Figure 1A is a front view of a first embodiment of a packaging set of two bottles, according to the invention;
- Figure 1B is rear view of Figure 1A;
- Figure 1C is top view of Figure 1A;
- Figure 1D is bottom view of Figure 1A;
- Figure 2 is a front view of one of the bottles of the packaging set shown on Figures 1A-1D;
- Figure 3 is a side view of Figure 2;
- Figure 3A is a diametral section along the section line IIIA of figure 3;
- Figure 3B is a bottom view of Figure 3;
- Figure 4 is a perspective view of the bottle of Figures 2-3-3A-3B;
- Figure 5A is a perspective view of a second embodiment of a packaging set of four bottles, according to the invention;
- Figure 5B is a side view of figure 5A;
- Figure 5C is a top view of figure 5A;
- Figure 5D is a bottom view of figure 5A.

On the Figures, the same reference numbers refer to the same or similar elements.

In the following of the description, the terms “inside”, “inwards”, “inwardly” and similar will refer to an element situated close to or directed towards the axis of the set or the container, and the terms “outside”, “outwards”, “outwardly” and similar will refer to an element situated apart from or directed opposite to the housing and the axis.

Figures 1A-1B-1C-1D represent a packaging set 1 of two plastic containers, namely two bottles 2a-2b, which can be obtained by ISBM of a preform made of at least one thermoplastic polymer such as PolyEthylenTerephthalate (PET) or PolyEthylene Furanoate (PEF).

An article 3 is nested between the bottles 2a-2b. This article 3 is promotional and is for instance a capsule containing a gift, a goodie, a toy... for the consumer.

These bottles 2a-2b are bundled by a heat retracted plastic sleeve 4 *e.g.* made for instance of any suitable polymer film.

As shown on Figures 2-3-3A-3B-4, the bottle 2a-2b is cylindrical along an axis X, of circular cross section, and comprises:

- a neck 5,
- a neck support ring 6,
- a neck extension 7,
- a shoulder 8,
- a tubular body portion 9, the wall of which is designated by the reference 10 and includes imprints 11,
- and a bottom 12.

The bottles 2a-2b of the packaging set 1 shown on Figure 1 are filled with a beverage and closed by a cap 13.

The bottles 2a-2b also comprises each an inwardly recess 14 wherein a part of the article 3 is lodged. Said part corresponds at most to $1/N^{\text{th}}$ of the nested article 3, N being equal to 2 in this first embodiment. At least part of both recesses 14 of bottles 2a-2b, particularly the back of each recess is in contact with the article 3, as the two bottles 2a-2b are maintained compressed against each other by means of the sleeve 4.

The bottom and the top surfaces of the recess 14, which are substantially perpendicular to the axis X, comprise areas 15 of contact with the end faces of the article 3. Said areas 15 of contact have advantageously a high friction coefficient, in order to improve the linkage between the article 3 and the bottle 2a-2b. Said areas 15 of contact can be granite-like surfaces.

The article 3 to be nested in the packaging set 1 is a capsule substantially symmetric with respect to one axis (X1), said capsule comprising a circular section of largest dimension (diameter D) in the direction of an axis (Y) perpendicular to (X1).

The shape and the dimensions of the article or capsule 3 and of the recess 14 are determined so as the article or capsule 3 be gripped into the recess 14, at least by its upper and lower areas 15 of contact.

As shown on Figures 2-3-3A-3B, the capsule 3 is encased in abutment into the back of the recess 14 of the bottle 2a, before being bundled with a second bottle 2b of the set. This is possible thanks to retention means of said recess, which are located respectively at the top and at the bottom of the recess and which correspond to the areas 15 of contact.

These retention means also designated by the reference 15 on the Figures 2-3 & 4 comprise a boss, close to the rim of the recess 14. These upper & lower bosses make it possible to clamp the nested article 3 which holds itself alone fixed to the bottle 2a.

Therefore, it highly facilitates the packaging of the set of bottles 2a-2b, since there is no need to maintain the article 3 during the operation of facing and driving the bottles 2a-2b towards each other.

It also prevents the formation of remaining void after the interlocking of the second bottle 2a-2b and the bundling of the two bottles 2a-2b under pressure. The resistance of the packaging set to the top load is so maintained to a sufficient level.

The sleeve 4 is non-transparent except on a window 16 on one side of the set 1. The sleeve 5 is not in contact with the article.

The sleeve 4 is suitable support for any commercial communication.

Figures 5A-5B-5C-5D represent a packaging set 100 of four plastic containers, namely four bottles 20a-20b-20c-20d, which can be made of PET or PEF.

An article 30 is nested between the bottles 20a-20b-20c-20d. This article 30 is the same promotional item as article 3, which is hereinabove described.

These bottles 20a-20b-20c-20d are bundled by a plastic sleeve 40 *e.g.* made of polyethylene or PET.

As shown on Figures 5A-5B-5C-5D, the bottle 20a-20b-20c-20d is has a substantially triangular transversal right section and comprises:

- a neck 50,
- a neck support ring 60,
- a neck extension 70,
- a shoulder 80,
- a triangular tubular body portion 90,
- and a bottom 100.

The bottles 20a-20b-20c-20d of the packaging set 1 shown on Figure 1 are filled with a beverage and closed by a cap 130.

The upper region of bottles 20a-20b-20c-20d also comprises each an inwardly recess 140 wherein a part of the article 30 is lodged. Said recess 140 truncates a corner of the triangular tubular body portion 90. Said part corresponds at most to $1/N^{\text{th}}$ of the nested article 30, N being equal to 4 in this second embodiment. At least part of both recesses 14 of bottles 20a-20b-20c-20d, particularly the back of each recess is in contact with the article 30, as the two bottles 20a-20b are maintained compressed against each other by means of the sleeve 40.

The article 30 to be nested in the packaging set 10 is a capsule similar to the capsule as described in relation with the first embodiment.

The shape and the dimensions of the capsule 30 and of the recesses 140 are determined so as the article or capsule 30 can be inserted and/or extracted from the top or the bottom, by a translation movement along an axis substantially parallel to the axes of the bottles 20a-20b-20c-20d, as these latter are maintained compressed against each other, by the sleeve 40.

This feature enables the article 30 to be wedged into the central recess 141 defined by the gathering of the recesses 140 of the bottles 20a-20b-20c-20d.

According to an advantageous feature of the invention, the article 30 is encased in force into the common recess 141.

There is an interstitial central space 150 between the four bottles 20a-20b-20c-20d.

The so defined conduct makes it possible to introduce a stick to push the capsule 30 out of the central recess 140.

The sleeve 40 is non-transparent and is a suitable support for any commercial communication.

Although the invention has been disclosed with a cylindrical bottle and a triangular section bottle comprising several grooves as imprints, the invention is not limited thereto. In particular, the bottle could be of any other suitable shape, such as cylindrical or elliptic, polygonal or other cross-section. Besides, the envelop could be provided with one or several imprints consisting in a local deformation in recess, as previously disclosed in relation with grooves, or in a local deformation in relief, i.e. protruding, with respect to the two adjacent portions. In the latter case, the intermediate portion of such imprint presents an apex shifted outwardly, i.e. opposite to the axis A, with respect to the two edges. Thus, the imprint could be of any kind, especially selected from the group consisting of splines, grooves, ribs, embossings, decorative patterns, gripping elements, trademark indications, production indications, Braille characters and a combination thereof.

CLAIMS

1. A packaging set (1-100) including at least two containers (2a-2b-20a-20b-20c-20d), each of axis (X), nesting at least one article (3-30) of axis (X1), said article (3-30) being different from the containers.

2. A packaging set (1-100) according to claim 1, wherein the nested article (3-30) is substantially symmetric with respect to (X1), said nested article (3-30) preferably comprising a circular section of largest dimension in the direction of an axis (Y) perpendicular to (X1), said nested article (3-30) being more preferably a capsule.

3. A packaging set (1-100) according to claim 1 or 2, wherein the containers (2a-2b-20a-20b-20c-20d) are filled and packed against each other, preferably by means of at least one wrapping film (4-40), which is more preferably not in contact with the nested article (3-30).

4. A packaging set (1-100) according to at least one of the preceding claims, each container has a recess (14-140-141), each of the recesses contributing to nest a part of the article (3-30), wherein at least one part of the surface of the recesses (14-140-141), which is intended to be in contact with the nested article (3-30) encased therein, presents retention means (15), said retention means (15) preferably comprising friction elements.

5. A packaging set (1-100) according to at least one of the preceding claims, wherein each container (2a-2b-20a-20b-20c-20d) comprises a recess (14-140-141) which is intended to receive a part of the nested article (3-30) corresponding to at most $1/N^{\text{th}}$ of the nested article, N being the number of containers of the set (1-100), this latter being symmetrical with respect to the axis (X2) parallel to the axes (X) of the containers (2a-2b-20a-20b-20c-20d).

6. A packaging set (100) according to at least one of the preceding claims, wherein the nested article (30) can be inserted and/or extracted from the top or the bottom of the set (100), by a translation movement along the axis (X2) of symmetry of the set (100).

7. A packaging set (1) according to claim 5 wherein $N = 2$.

8. A packaging set (100) according to claim 5 and 6 wherein $N > 2$.

9. A packaging set (1) according to claims 4 and 7 wherein, when the nested article (3) is encased into the recess (14) of a first container (2a), before being bundled with a second container (2b) of the set (1), the retention means (15) of said recess (14), which are

preferably located respectively at the top and at the bottom of the recess (14), clamp the nested article (3) which holds itself alone fixed to the container (2a).

10. A packaging set (1) according to claim 9 wherein the retention means comprise at least one boss (15) close to the rim of the recess.

11. A packaging set (1) according to claim 3 and possibly at least one of the claims 1, 2, 4-10, bundled by means of a plastic film (4-40), preferably a sleeve, through which the nested article (3-30) is visible, said film including preferably on one side of the set at least one transparent window through which the nested article is visible, the rest of the film being non transparent.

12. A container (2a-2b-20a-20b-20c-20d) intended to be part of the packaging set according to at least one of the preceding claims.

13. A method for producing the packaging set (1) according to claim 7 and possibly at least one of the claims 1-6, 9-10, consisting essentially in:

- a) Encasing the nested article (3) into the recess (14) of a first container (2a) of the set (1), so that the nested article (3) remains embedded into it;
- b) Facing the empty recess(14) of a second container (2b) of the set (1), to the nested article (3) already embedded in the first container (2a);
- c) Driving into each other the empty recess (14) of the second container (2b) and the non-embedded part of the nested article (3) fixed into the first container (2a);
- d) Bundling the containers (2a-2b) with a plastic sleeve (4) which is heat retracted in order to compress the containers (2a-2b) against each other, with the nested article inside the respective recesses (14).

14. A method for producing the packaging set (100) according to claim 8 and possibly at least one of the claims 1-6, 9,10 consisting essentially in:

- i. Bundling and maintaining the containers (20a-20b-20c-20d) of the set (100) in contact against each other, so that the empty recesses (140) of the containers (20a-20b-20c-20d) face to each other and form together a common recess (141) which is intended to receive the nested article (30);
- ii. Wrapping the containers (20a-20b-20c-20d) with a plastic film (40), preferably a sleeve, which is heat retracted to compress the containers (20a-20b-20c-20d);
- iii. Introducing the nested article (30) is into the common recess (141), before or after the heat retraction of the sleeve (40).

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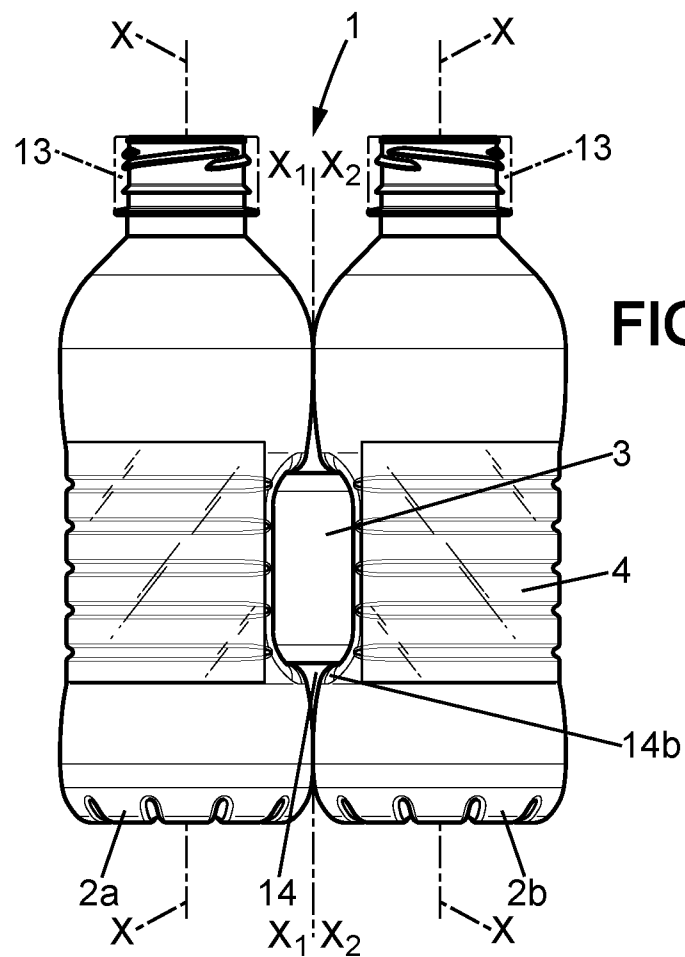
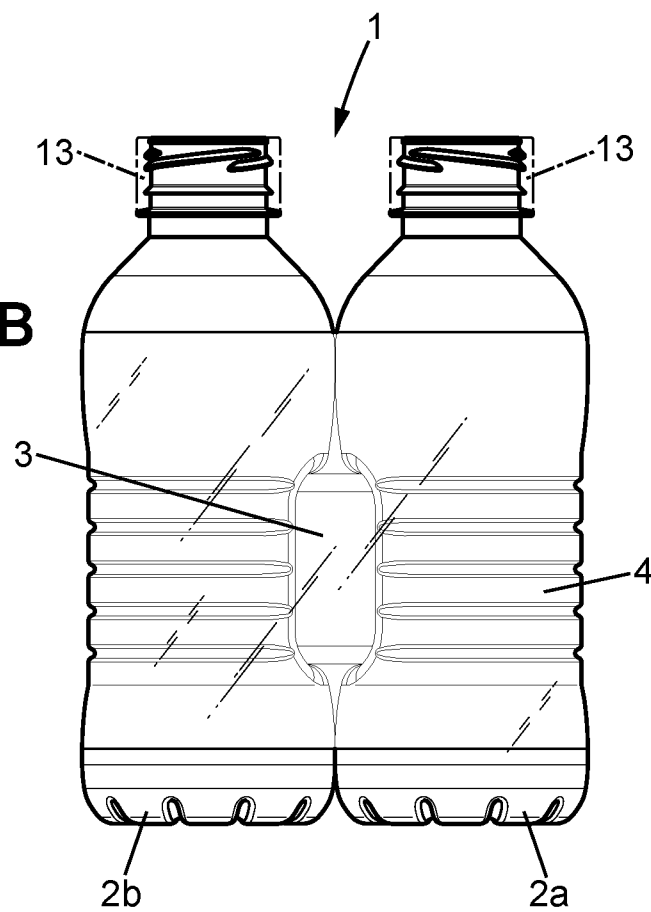


FIG. 1B



2/6

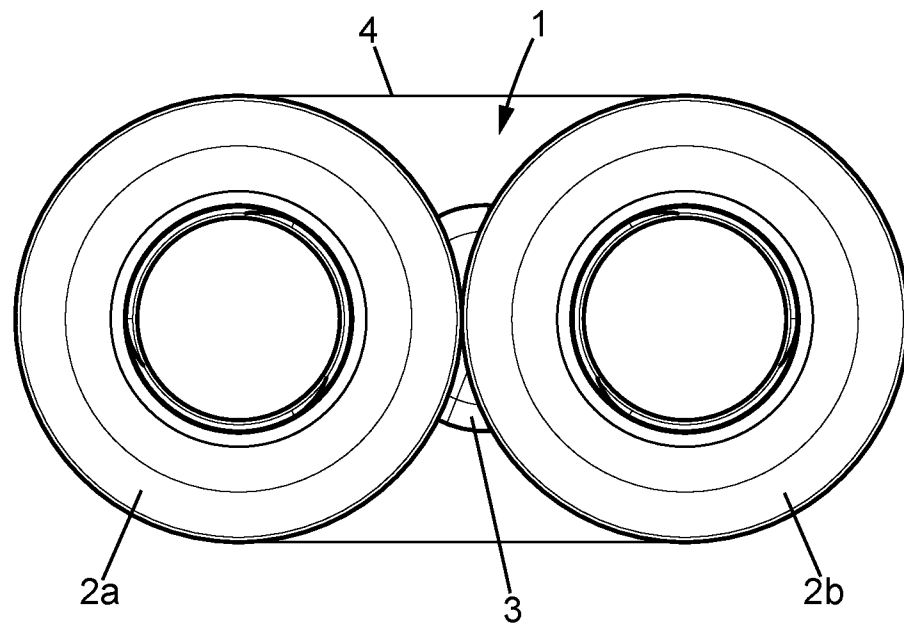


FIG. 1C

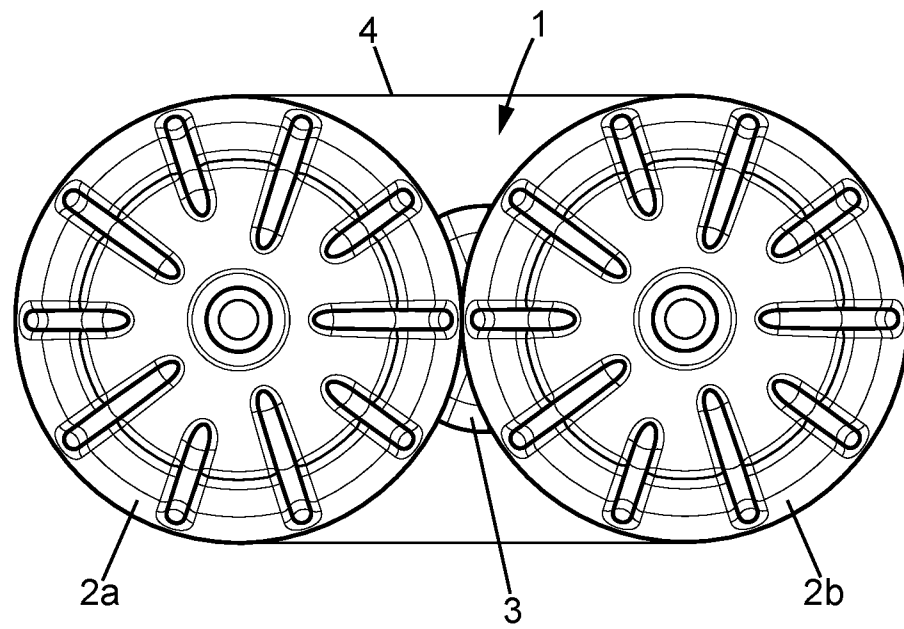


FIG. 1D

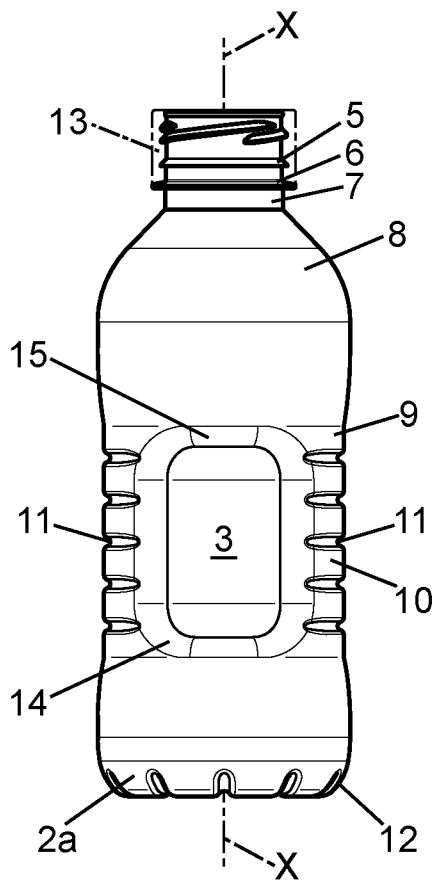


FIG. 2

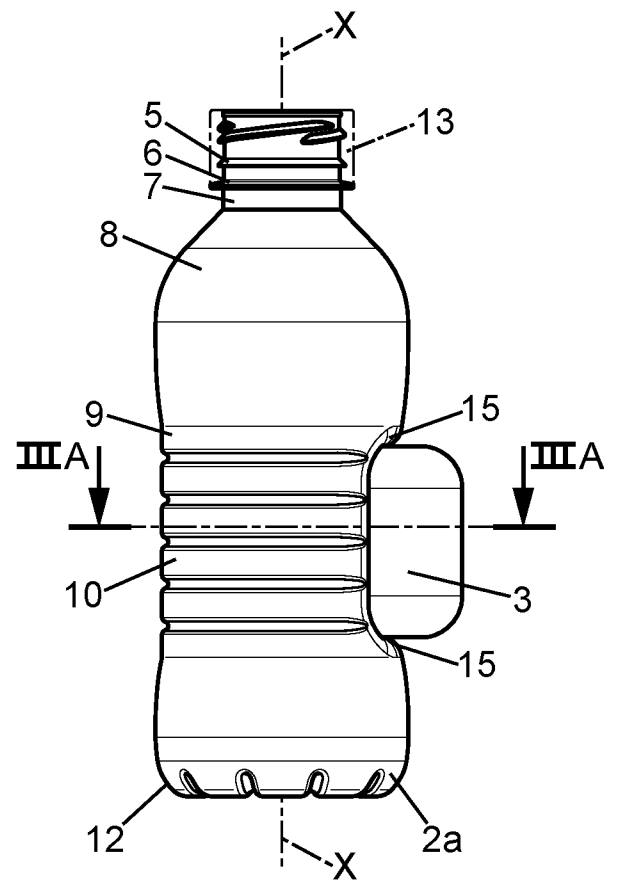


FIG. 3

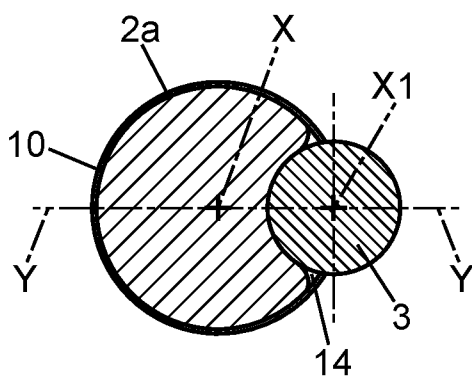


FIG. 3A

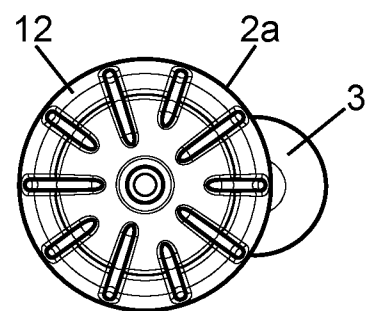
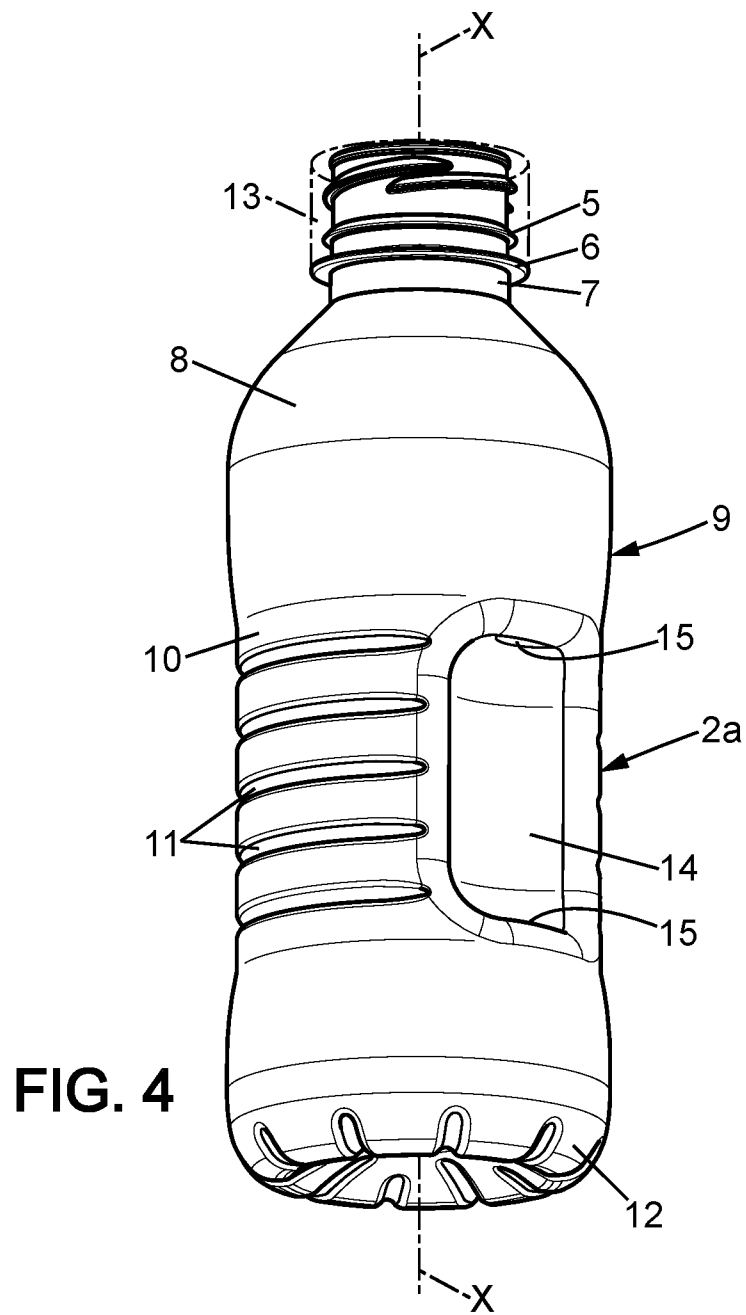


FIG. 3B

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FIG. 5A

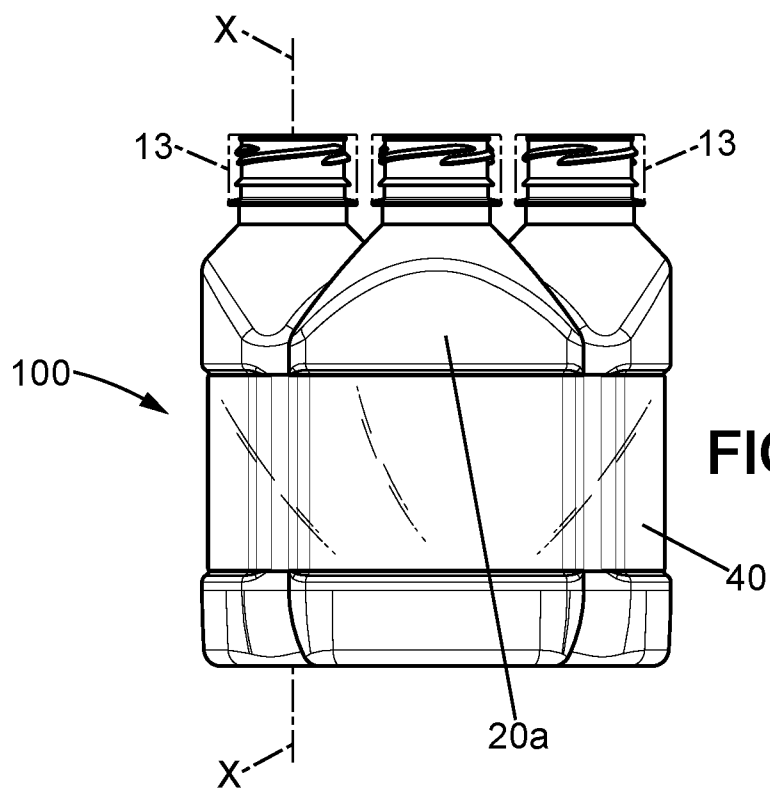
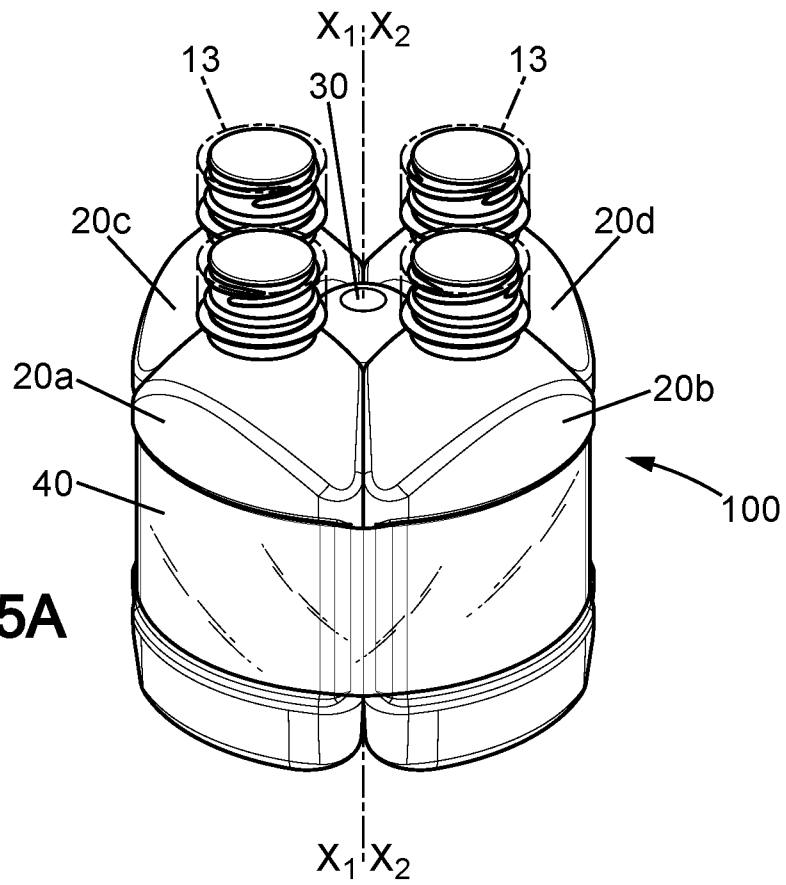


FIG. 5B

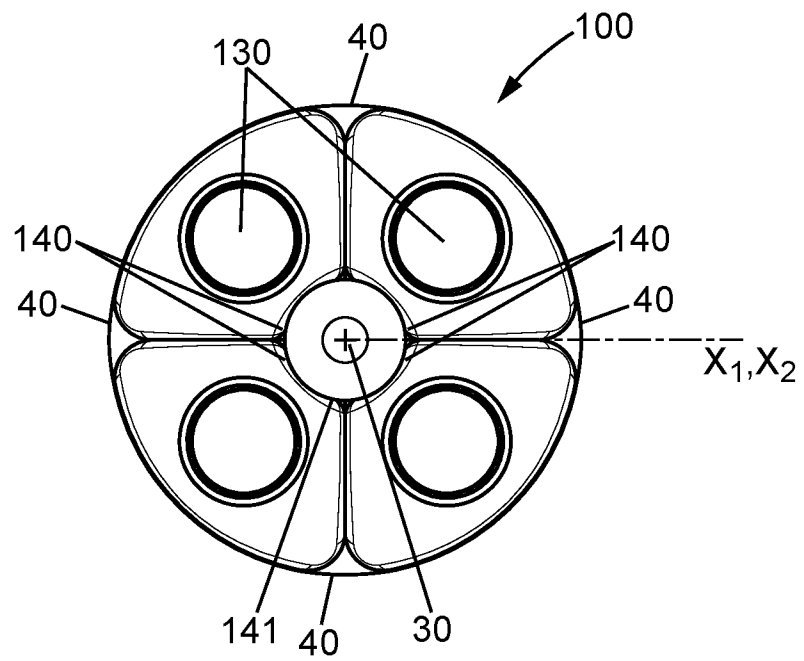


FIG. 5C

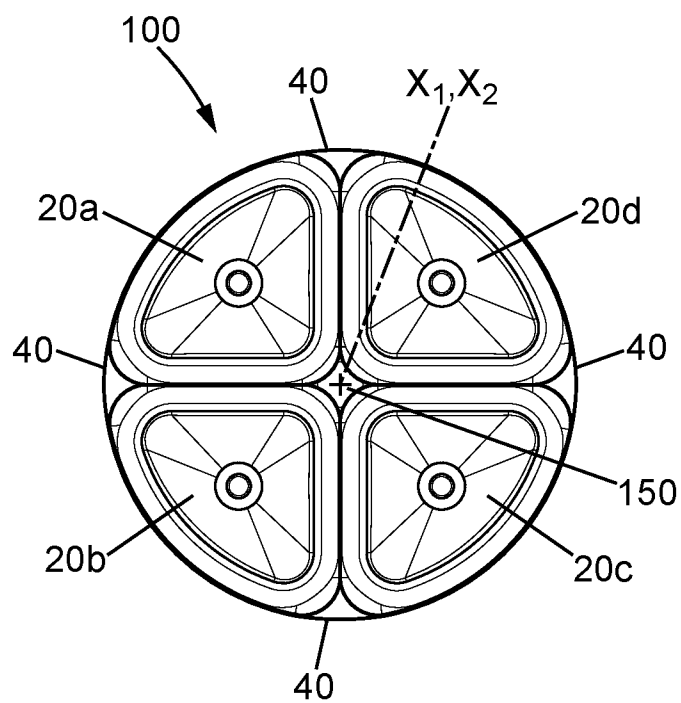


FIG. 5D

INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2013/002941

A. CLASSIFICATION OF SUBJECT MATTER

INV. B65D21/02
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 practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2006/131188 A1 (LINDEMANN DONALD C [US]) 22 June 2006 (2006-06-22) paragraph [0005] paragraph [0043] - paragraph [0051]; figures 10, 11 -----	1-3,5,7, 12,13 4,6,9,11
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Further documents are listed in the continuation of Box C.



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26 August 2014

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09/09/2014

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