(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 3 028 958 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.06.2016 Bulletin 2016/23

(21) Application number: **15003402.3**

(22) Date of filing: **30.11.2015**

(51) Int Cl.:
B65D 85/72 *(2006.01)* ***B65D 25/36*** *(2006.01)*
B65D 1/46 *(2006.01)* ***B65D 77/20*** *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(30) Priority: **02.12.2014 ES 201400998**

(71) Applicant: **Mecánica y Tecnología Alimentaria, S.L.**
28043 Madrid (ES)

(72) Inventor: **Hernández Socastro, José Manuel**
28043 Madrid (ES)

(74) Representative: **Maldonado Jordan, Julia**
Linares, 7 - 3
46018 Valencia (ES)

(54) THERMOFORMED CONTAINER

(57) The container has a hollow body (1) with a flat base (11), a sidewall with an upper end delimitating the mouth (12) and extending towards the outside of the container in form of a perimetric flange (13); the hollow body (1) having an upper portion (14) with a constant cross section, bearing an external decoration web (2) and a lower portion (15) with decreasing cross section. The sidewall of the container has wedge like recesses (16) arranged in correspondence with the upper end of the lower portion (15) and distributed around the body of the container; and groups of reinforcement embossments (17) which are hollow and elongated and protrude from the body of the container, being vertically oriented. The reinforcement embossments (17) start from the upper portion (14) of the container and finish in an intermediate area of the lower portion (15).

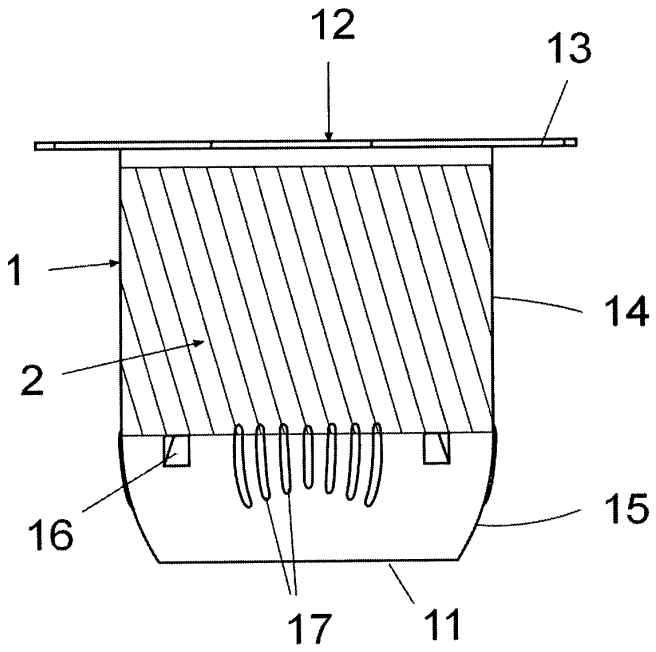

Fig. 1

EP 3 028 958 A1

Description

Object of the invention.

[0001] The object of the invention is a thermoformed container with a hollow body which has a flat base, a sidewall extending from the periphery of the base, having said sidewall an upper end delimitating the mouth of the container and extending towards the exterior of the container in form of a perimetric flange; having the hollow body of the container an upper portion with a constant cross section, bearing an external decoration web, and a lower portion comprised between the upper portion and the base of the container having a tapering structure in descending direction.

Field of application of the invention

[0002] The thermoformed container of the invention is preferably, although not exclusively, applicable to the packing of food products.

State of the art

[0003] Currently, different types of plastic thermoformed containers are known in the market aimed at the food packing field, for packing various food products, such as yogurt or dairy dessert products.

[0004] A previous embodiment of this type of containers, described in document CA 2830032 A1 has a hollow body with a flat base, its periphery extending in a sidewall which has an upper end delimitating the mouth of the container and extending towards the exterior of the container in form a perimetric flange. Said container, the same as other existing in the market, has in its hollow body an upper portion with constant cross section bearing an external decoration web and a lower portion with tapering cross section in descending direction, comprised between the mentioned upper portion and the base of the container.

[0005] In this type of containers, it is known the lower portion to have a curved profile to facilitate the extraction of most of the product contained within the container by means of a small spoon.

[0006] These type of thermoformed containers, made out from a sheet of plastic material, have a lower strength in the transition area between the upper portion and the lower portion of the container, being necessary to oversize the thickness of the plastic sheet in order that said transition area has the sufficient strength to permit the nesting and transport of the containers in a safe form.

[0007] Said oversizing determines the rest of the parts of the container to have a larger thickness than necessary, deriving therefrom an increase of the plastic material necessary for the manufacture of the container.

[0008] The present inventor does not know the existence of prior embodiments permitting to solve in a satisfactory way the above mentioned drawback.

Description of the invention

[0009] The thermoformed object of this invention, of the type described in the precharacterizing part of the main claim, has technical characteristics aimed at solving the above mentioned drawback and to provide the body of the container with a higher strength to compression in the weakest area, which is the transition area between the upper portion with an uniform cross section and the lower portion with a tapering cross section, making the use of an oversized plastic sheet for the manufacture of the container unnecessary.

[0010] Another objective of the invention is to obtain the reduction of the quantity of plastic material for the manufacture of the container, for needing a lesser thickness of the material in the less weak areas of the same.

[0011] To that end and according to the invention, the sidewall of the container has wedge like recesses arranged in correspondence with the upper end of the lower portion of the container and distributed around the body of the container; and groups of reinforcement hollow embossements which protrude from the body of the container and are vertically oriented.

[0012] The mentioned reinforcement embossments start from the upper portion of the container and end in an intermediate area of the lower portion of the container, being the upper ends of said reinforcements embossments arranged under the external decoration web.

[0013] The wedge like recesses, in number of three or more, arranged at the same distance to one another, have the object to reinforce the weakest part of the container, which is precisely the lower end of the upper portion, that is, the place in which the decoration web ends up, beginning the lower portion of the container.

[0014] These wedge like recesses have an effect similar to load beams in the weaker part of the container, transmitting a part of the loads to a lower area of the container, which has a smaller section and therefore, is stronger.

[0015] The above mentioned reinforcement embossments, have as well the object of reinforcing the container as they start from the upper portion of the container, so that the decoration web overlaps them extending said embossments along the lower portion up to an area with a higher resistance.

[0016] This features bring about improvements in respect to the current containers as they improve the resistance to compression of the container (manufacture, nesting for transport and storage, etc) and bring savings of the plastic material for its manufacture of about 10%.

Description of the drawings

[0017] To complete the description and with the aim to facilitate the understanding of the features of the invention a set of drawings is annexed to this description in which in an illustrative, but not limiting way, the follow has been shown:

- Figure 1 shows a diagrammatic front view of a thermoformed container, according to the invention.

Preferred embodiment of the invention

[0018] The thermoformed container shown in Figure 1 comprises a hollow body (1) with a flat base (11) a lateral wall delimitating in the end opposite to the base the mouth (12) of the container. The container shows a perimetric flange (13) around the mouth (12). The hollow body (1) has an upper portion (14) with a constant cross section, for example cylindrical cross section, bearing an external decoration web (2) and a lower portion (15) with tapering cross section in descending direction, comprised between the upper portion (14) and the base (11).

[0019] In this case, the said lower portion (15) has a curved convex profile in its external face.

[0020] In the example which has been shown the lateral wall of the container has wedge like recesses (16) arranged in correspondence with the upper end of the lower portion (15) and distributed around the body of the container.

[0021] Said lateral wall has as well groups of reinforcement embossments (17) which are hollow, elongated, protruding from the hollow body (1) of the container.

[0022] The above mentioned reinforcement embossments (17) are directed vertically starting from the upper portion (14) of the container and extending to an intermediate area of the lower portion (15), increasing the resistance to the compression of the container.

[0023] It has been foreseen that the container has three or more wedge like recesses (16) and a similar number of groups of reinforcement embossments (17) regularly distributed around the container.

[0024] As can be observed in the annexed figure, the external decoration web (2) covers the part of the reinforcement embossments (17) defined in the upper portion (14) of the container.

[0025] After having sufficiently described the nature of the invention, as well as a preferred embodiment of the same, it is stated to all effects that the materials, shape, size and arrangement of the described elements can be modified, whenever the changes do not mean the alteration of the essential characteristics of the invention, which is claimed as follows.

Claims

1. Thermoformed container; comprising a hollow body (1) having a flat base (11), extending around its periphery in a sidewall with an upper end delimitating the mouth (12) of the container which extends towards the exterior of the container in form of a perimetric flange (13); the hollow body (1) having an upper portion (14) with a constant cross section bearing an external decoration web (2); and a lower portion (15) comprised between the upper portion (14) and the base (11), having a tapering cross section in descending direction; **characterized in that** the sidewall of the container, has wedge like recesses (16) arranged in correspondence with the upper end of the lower portion (15) and arranged around the body of the container and groups of reinforcement embossments (17) which are hollow and elongated, protruding from the body of the container being oriented vertically; starting said reinforcement embossments (17) from the upper portion (14) of the container and ending in an intermediate area of the lower portion (15), being the upper ends of said reinforcement embossments (17) located under the external decoration web (2).

2. Container, according to claim 1, **characterized in that** the wedge like recesses (16) have a depth which decreases towards the lower area.

3. Container, according to any of the previous claims, **characterized** for comprising three or more wedge like recesses (16) and a similar number of group of reinforcement embossments (17) regularly distributed on the periphery of the container.

4. Container, according to any of the previous claims, **characterized in that** the lower portion (15) has a curved convex profile in its external face.

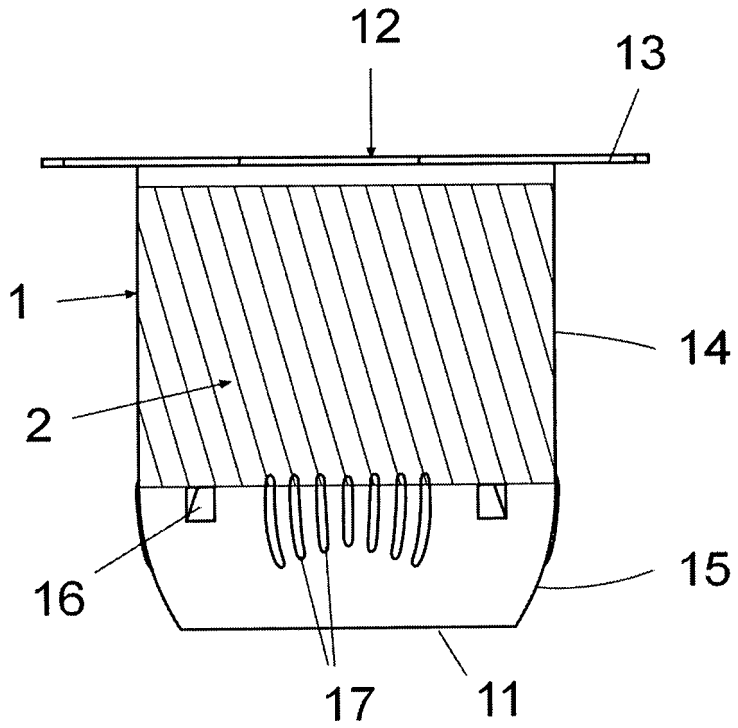

Fig. 1

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 15 00 3402

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,D	CA 2 830 032 A1 (GERVAIS DANONE SA [FR]) 20 September 2012 (2012-09-20) * page 9, line 27; figures 3,4 * -----	1-4	INV. B65D85/72 B65D25/36 B65D1/46
A	DE 27 55 996 A1 (BAUER KG J) 21 June 1979 (1979-06-21) * page 5, line 19 - line 22; figure 2 * -----	1-4	B65D77/20
A	DE 20 2007 016006 U1 (OPTIPACK GMBH [DE]) 30 April 2008 (2008-04-30) * figures 1,3a,3b * -----	1-4	
A	US 2007/017920 A1 (DAVIS WARREN B [US]) 25 January 2007 (2007-01-25) * paragraph [0044]; figure 9 * -----	1-4	

TECHNICAL FIELDS SEARCHED (IPC)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	14 April 2016	Sundell, Olli

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 00 3402

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

14-04-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CA 2830032 A1	20-09-2012	CA 2830032 A1	20-09-2012
		CN 103562077 A	05-02-2014
		EA 201301028 A1	30-01-2014
		EP 2686246 A1	22-01-2014
		JP 5727632 B2	03-06-2015
		JP 2014508081 A	03-04-2014
		KR 20130140146 A	23-12-2013
		MA 35386 B1	01-09-2014
		US 2012251679 A1	04-10-2012
		US 2014004233 A1	02-01-2014
		US 2015079239 A1	19-03-2015
		WO 2012123775 A1	20-09-2012
DE 2755996 A1	21-06-1979	NONE	
DE 202007016006 U1	30-04-2008	NONE	
US 2007017920 A1	25-01-2007	CA 2553077 A1	25-01-2007
		US 2007017920 A1	25-01-2007

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

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CA 2830032 A1 **[0004]**