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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
25 November 2021 (25.11.2021)

WIPO | PCT

(10) International Publication Number
WO 2021/234024 A1

(51) International Patent Classification:
B65D 5/70 (2006.01) *B65D 5/06* (2006.01)

(21) International Application Number:
PCT/EP2021/063338

(22) International Filing Date:
19 May 2021 (19.05.2021)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
20200604 20 May 2020 (20.05.2020) NO

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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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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, ST, 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).

Declarations under Rule 4.17:
— *as to the identity of the inventor (Rule 4.17(i))*
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
— *of inventorship (Rule 4.17(iv))*

(54) Title: PAPER-BASED OR PAPERBOARD-BASED CONTAINER

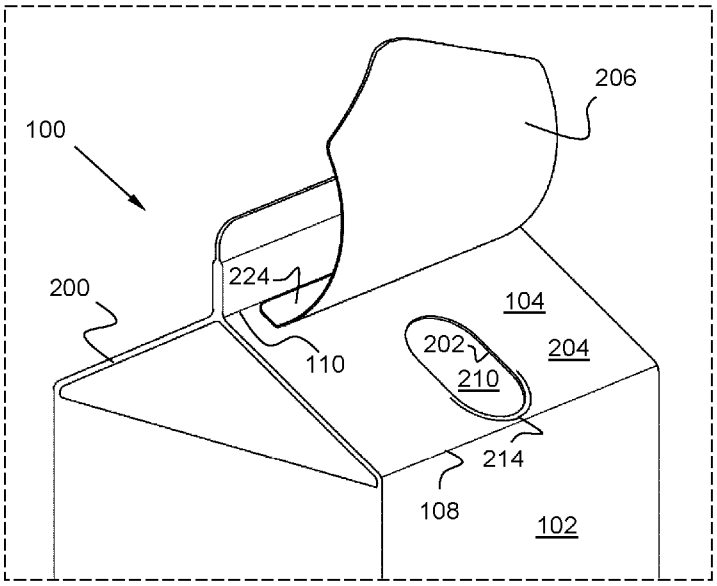

Fig. 2

(57) Abstract: A paper-based or paperboard-based container (100) for holding a pourable food product is disclosed. The container comprises a laminated packaging sheet material (200) which is folded to form the container. The sheet material comprises a cut (202) forming an opening (210) in the container and comprises an impression (214) extending adjacent the opening forming a pouring edge over which the food product is to flow when dispensed through the opening.

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[Continued on next page]

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

PAPER-BASED OR PAPERBOARD-BASED CONTAINER

Field of the invention

The present disclosure relates to a paper-based or paperboard-based container for holding a pourable food product, the container comprising a laminate packaging sheet material which is folded to form said container.

In particular, the present disclosure relates to an opening arrangement in such a container.

Background

Within the art of paperboard-based packaging, it is known to produce a blank and fold and assemble the blank to produce a container. The container may then be utilised to hold a pourable food product, e.g. a liquid, e.g. dairy products, such as milk or yoghurt, or juices.

The blank is typically produced from a laminate packaging material, which typically comprises a multi-ply paperboard sheet on which is laminated one or a plurality of barrier layers for holding the food product and/or prevent migration of air and flavours through the paperboard. A barrier layer may typically comprise a polyethylene or an aluminium layer.

A method of producing the blank from the laminate packaging material typically comprises the steps of cutting the laminate packaging material to a predefined shape, and a method of producing the container from the blank typically comprises the step of folding the blank along predefined folding lines to produce the container.

The blank may be provided with crease lines in the laminate packaging material to aid folding of the blank along the folding lines. A crease line, or crease, may be defined as an embossed or impressed depression on one side of the laminate packaging material with a corresponding raised ridge or welt, also referred to as the bead, on the other side forming a line along which the laminate packaging material is structurally weakened and along which the laminate packaging material will bend or fold when pressure is applied.

Alternatively, a paperboard-based container may be produced in a roll-fed process in which a continuous web of laminate packaging material is fed to a filling machine, folded and sealed longitudinally to form a tube. The tube is then filled with the pourable food product, sealed and cut transversally to form so called pouches. The pouches are than provided with an opening device and manipulated to obtain its final, gable-top form. Said manipulation typically involves folding down and securing gable sections of the carton to side panel section of the same.

The container may be provided with an opening arrangement allowing a consumer to open the container to access the food product. In the prior art, it is known to use plastic opening arrangement comprising plastic pour spouts. However, there is a general need for opening arrangements requiring less plastic. The present disclosure addresses this problem.

Summary of the invention

With the abovementioned challenges and known solutions in mind, and according to a first example aspect, the present disclosure provides a paper-based or paperboard-based container for holding a pourable food product, the container comprising a laminated packaging sheet material which is folded to form said container and the sheet material comprises a cut forming an opening in the container. The sheet material further comprises a linear impression, i.e. a rectilinear or curvilinear impression, extending adjacent the opening forming a pouring edge of the opening, over which pouring edge the food product is to flow when dispensed through the opening.

The impression facilitates pouring of the food product through the opening by deforming the sheet material locally around the opening forming a small pouring edge, thereby at least partially preventing in particular liquid food products from sullying the outside of the container when the food product is poured through the opening.

The impression may be curvilinear and extend parallel to the cut.

Preferably, the impression extends within a distance of 10 mm from the opening, or more preferably within a distance of 5 mm from the opening, or even more preferably within a distance of 2 mm from the opening.

The impression may comprise any one of a crease line and a male impression.

The opening may be being positioned in a top panel section of the container located between a top fin and a front panel section of the container, and the impression may extend between the opening and the front panel section.

The container may comprise a pliable cover panel being attached to an outside surface of the container. The cover panel may be operable between a first, closed position in which the opening is covered by the cover panel, and a second, open position in which the food product is free to be dispensed through the opening. The cover panel may comprise a paper or paperboard sheet.

The cover panel may, prior to a first opening of the container, be sealingly attached to the outside surface of the container in the closed position. After the first opening the cover panel may be hingedly attached to the outside surface of the container.

The above-discussed impression may be applied to any type of container made from a laminated packaging sheet material and comprising a cut opening therein, thus dispensing of the need to use a plastic pour spout in the container, including openings being covered by a pre-laminated membrane prior to a first opening, e.g. pre-laminated hole (PLH) openings.

Above-discussed preferred and/or optional features of each aspect of the invention may be used, alone or in appropriate combination, in the other aspects of the invention.

Description of the drawings

Following drawings are appended to facilitate the understanding of the disclosure:

Fig. 1 is a part-view of a container comprising an opening arrangement in a closed position.

Figs. 2 a part-view of the container according to Fig. 1 showing the opening arrangement in an open position.

It should be understood that the drawings are not intended to limit the invention to the subject-matter depicted in the drawings.

In the drawings, like reference numerals have been used to indicate common parts, elements or features unless otherwise explicitly stated or implicitly understood by the context.

Detailed description

In the following embodiments of containers will be described in more detail with reference to the drawings. However, it is specifically intended that the invention as defined in the claims is not limited to the embodiments and illustrations contained herein but includes modified forms of the embodiments including portions of the embodiments and combinations of elements of different embodiments as come within the scope of the claims.

Figs. 1 and 2 are a part-views showing a paper-based or paperboard-based container 100 configured for holding a pourable food product. The food product may typically be a pourable liquid, e.g. a fruit juice or a dairy product, e.g. milk.

The container of the type illustrated in Figs. 1 and 2 is typically referred to as a gable-top carton.

The container 100 is generally produced by folding and sealing a laminate packaging sheet material 200. The container may be produced by providing individual sheets of the sheet material to a filing machine in which the individual sheets, which are commonly referred to as blanks, are folded, filled and sealed. Sealing is typically effectuated by hot-sealing or hot-welding polymer layers in the sheet material, e.g. polyethylene (PE) layers. Sealing may alternatively be effectuated by applying an adhesive, i.e. gluing. The process of folding, filling and sealing a blank is known as such and will not be discussed further in any detail here.

The container 100 comprises a front panel section 102, a top panel section 104 and a top fin 106. In the present embodiment, a first crease line 108 provides a border between the front panel section 102 and the top panel section 104 (see Fig. 2). Also, a second crease line 110 forms a border between the top panel section 104 and the top fin 106.

The container 100 displays an opening arrangement comprising a cut 202 extending through the sheet material 200 orthogonally from an outside surface 204 of the sheet material 200 -

in this case from an outside surface of the top panel section 104. The cut 202 defines an opening 210 in the container 100 and, after a first opening of the container, allows access to a product contained therein.

The opening arrangement further comprises a pliable cover panel 206 which is attached to the top panel section 102. The cover panel 206 may be made from a paper or paperboard sheet, e.g. a laminate packaging sheet material. In particular, the cover panel 206 may preferably be made from a paper or paperboard sheet comprising outer polymer layers. This will allow the cover panel 206 to be hot-sealed or hot-welded to the sheet material 200 of the container, e.g. using an ultrasonic welding technique.

In the present embodiment, the cover panel 206, when in a first, closed position as is illustrated in Fig. 1, extends from the top fin 106, over the top panel section 104 (covering the opening 210), and down onto the front panel section 102. Prior to a first opening of the container 100, the cover panel 206 will be sealingly attached to the sheet material 200 in this position, e.g. hot-sealed to the outside surface 204 (see Fig. 2).

From the closed position illustrated in Fig. 1, the cover panel 206 can be brought to a second, open position, which is illustrated in Fig. 2, by an operator manually manipulating the cover panel 206 by lifting a bottom edge 246 of the cover panel 206 and pulling the cover panel 206 outwards and upwards. In the open position, the cover panel 206 remains attached to the sheet material 200 in a region 224 adjacent the top fin 106 (see Fig. 2).

In order to facilitate pouring of the food product through the opening 210, a linear impression 214 extends between the cut 202 and the front panel 102 and forms the top panel section 104 locally around the opening 210 forming a pouring edge in the opening. In the present embodiment, the impression 214 is curvilinear and extend substantially parallel to the cut 202, which arrangement has proved to prevent in particular liquid food products from sullying the outside of the top panel section 104 when the food product is poured from the container.

Preferably, the impression 214 extends, i.e. is arranged, within a distance of 10 mm from the opening 210, or more preferably within a distance of 5 mm from the opening, or even more preferably within a distance of 2 mm from the opening. The impression may comprise any one of a crease line and a male impression.

It is appreciated that certain features of the invention, which, for clarity, have been described above in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features of the invention, which, for brevity, have been described in the context of a single embodiment, may also be provided separately or in any suitable sub-combination.

In the preceding description, various aspects of the blank and container according to the invention have been described with reference to the illustrative embodiment. For purposes of explanation, specific numbers, systems and configurations were set forth in order to

provide a thorough understanding of the apparatus and its workings. However, this description is not intended to be construed in a limiting sense. Various modifications and variations of the illustrative embodiment, as well as other embodiments of the apparatus, which are apparent to person skilled in the art to which the disclosed subject-matter pertains, may lie within the scope of the present invention as defined by the following claims.

Claims

1. A paper-based or paperboard-based container (100) for holding a pourable food product, the container (100) comprising a laminated packaging sheet material (200) which is folded to form said container (100), the sheet material (200) comprising a cut (202) forming an opening (210) in the container (100), **characterised by** the sheet material (200) comprising a linear impression (214) extending adjacent the opening (210) forming a pouring edge over which the food product is to flow when dispensed through the opening (210).

2. The container (100) according to claim 1, **characterised by** the impression (214) being curvilinear and extending parallel to the cut (202).

3. The container (100) according to any one according to any one of the preceding claims, **characterised by** the impression (214) extending within a distance of 10 mm from the opening (210), or within a distance of 5 mm from the opening (210), or within a distance of 2 mm from the opening (210).

4. The container (100) according to any one according to any one of the preceding claims, **characterised by** the impression (214) comprising any one of a crease line and a male impression.

5. The container (100) according to any one of the preceding claims, **characterised by** the opening (210) being positioned in a top panel section (104) of the container (100) located between a top fin (106) and a front panel section (102) of the container (100), and by the impression (214) extending between the opening (210) and the front panel section (102).

6. The container (100) according to any one of the preceding claims, **characterised by** the container (100) comprising a pliable cover panel (206) being attached to an outside surface (204) of the container (100), the cover panel (206) being operable between a first, closed position in which the opening (210) is covered by the cover panel (206), and a second, open position in which the food product is free to be dispensed through the opening (210).

7. The container (100) according to claim 6, **characterised by** the cover panel (206) comprising a paper or paperboard sheet.

8. The container (100) according to any one claims 6 and 7, **characterised by** the cover panel (206), prior to a first opening of the container (100), being sealingly attached to the outside surface (204) of the container (100) in the closed position, and by the cover panel (206), after the first opening, being hingedly attached to the outside surface (204) of the container (100).

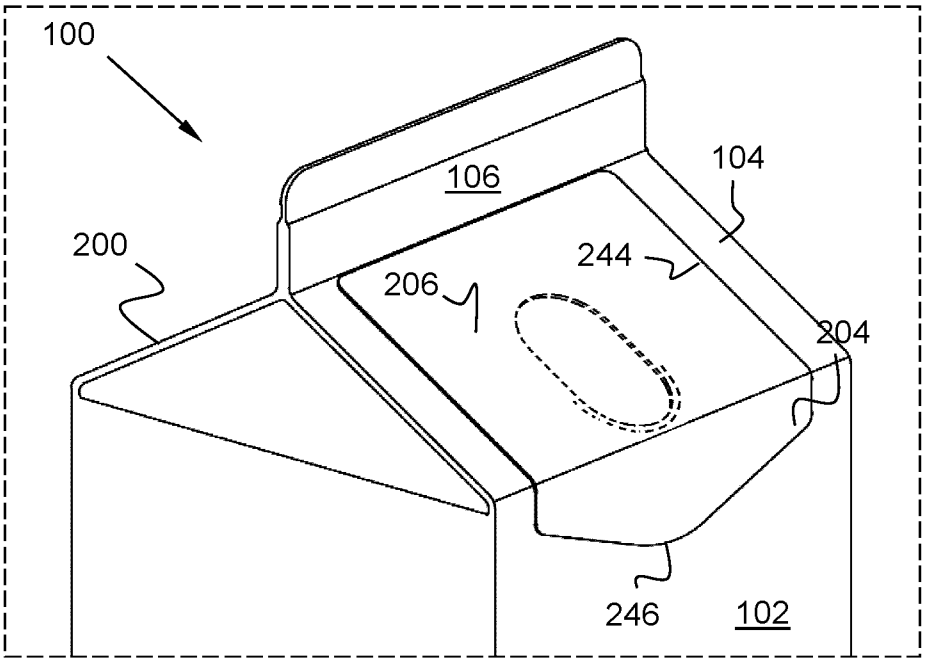
100
106
104
200
244
206
204
246
102

Fig. 1

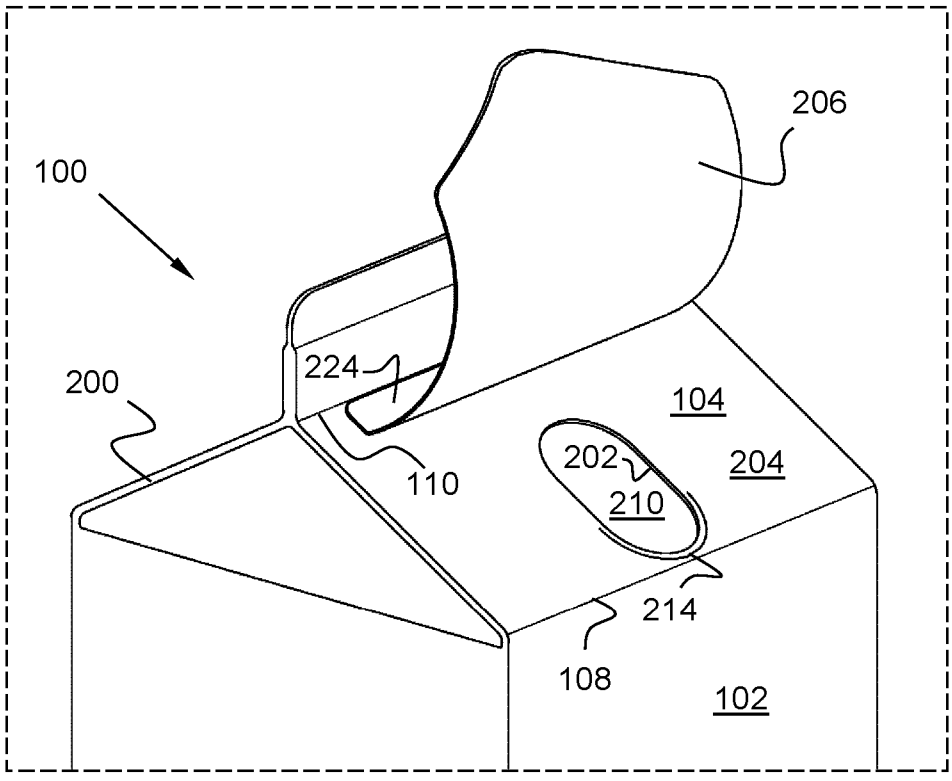
206
100
224
200
104
202
204
110
210
214
108
102

Fig. 2

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2021/063338

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D5/70
ADD. B65D5/06

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	GB 1 581 711 A (TETRA PAK DEV) 17 December 1980 (1980-12-17) page 2, line 107 - page 6, line 14 figures 1,2	1,3,4,6, 8 2,5,7
X Y	US 4 887 765 A (RAUSING HANS [GB]) 19 December 1989 (1989-12-19) column 4, line 3 - column 5, line 20; figures 1,2	1,3,4 2,5
Y	JP S62 179925 U (**) 14 November 1987 (1987-11-14) figures 5,8	2,5
Y	US 2 731 188 A (ALDEN CARROLL R) 17 January 1956 (1956-01-17) column 2, line 27 - column 4, line 23; figures 1-5	5,7

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
30 July 2021	12/08/2021

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	Fitterer, Johann

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2021/063338

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2004 058595 A (TETRA PAK JAPAN) 26 February 2004 (2004-02-26) abstract; figures 1-4 -----	1-8

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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