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(54) Title: ASSEMBLY AND METHOD FOR PRESERVING AND DISPENSING A CONSUMABLE FOOD SUBSTANCE

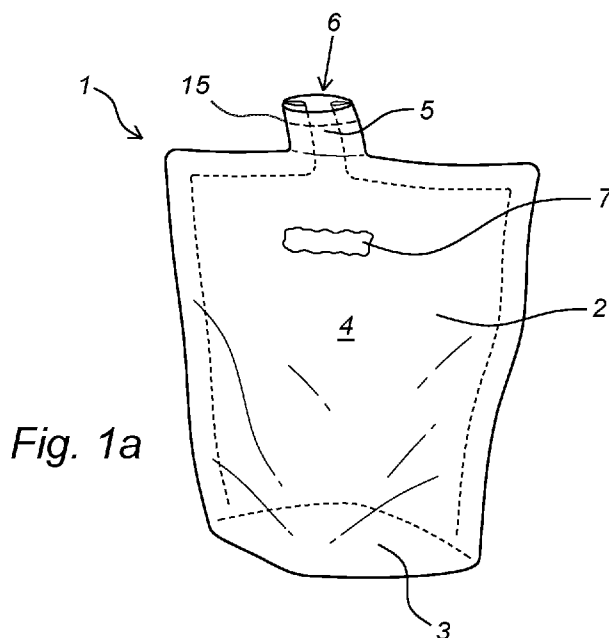


Fig. 1a

(57) Abstract: The invention relates to an assembly for preserving and dispensing a consumable food substance, in particular a substantially liquid consumable food substance, comprising at least one pouch (1) comprising a reservoir (4) for holding a consumable food substance to be dispensed, and a passage channel (5) with a passage opening (6) for dispensing consumable food substance from the reservoir and at least one carrier structure (8) configured to substantially completely enclose the at least one wall part of the pouch.



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KM, ML, MR, NE, SN, TD, TG).

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Assembly and method for preserving and dispensing a consumable food substance

5 The invention relates to an assembly for preserving and dispensing a consumable food substance, in particular a substantially liquid consumable food substance. The invention also relates to a pouch for use in such assembly. The invention furthermore relates to a method for assembling an assembly for preserving and dispensing a consumable food substance, in particular a substantially liquid consumable food substance.

10

Containers and pouches for consumable food substances are available in a wide range of varieties. Especially containers and pouches having a volume designed for one serving of a consumable food substance are popular due to their handy size and shape. Examples thereof are laminated pouches comprising a drinking straw or
15 a removable cap. A drawback of the known products is that they are relatively environmentally unfriendly due to the laminated products not being recyclable within the same chain. Even though the materials can be recycled, they are so-called downcycled into materials of lesser quality or reduced functionality and are not food grade anymore. It is therefore preferred to provide food container or pouch
20 useable in a closed-loop recycling system wherein the materials are repeatedly recycled and reused within a circular chain, which reduces the need for virgin materials while avoiding the creation of waste.

It is a goal of the invention to provide an improved and/or environmentally friendly
25 solution as packaging for consumer consumables.

The invention provided thereto an assembly according to claim 1.

30 The assembly according to the invention provides a packaging for consumable food substances which makes use of two separate assembly elements, respectively the pouch and the carrier structure, which are configured for co-action. The use of the assembly according to the invention enables that the pouch can be at least partially and preferably completely manufactured of a recycled thermoplastic polymer, in particular PET. Recycled thermoplastic polymers are environmentally friendly and
35 relatively cheap, but are often translucent for (UV)light and are often not suitable for

applying prints thereupon, wherefore application for food products is often not feasible. It is also possible that the pouch is at least partially manufactured of virgin PET. Due to the carrier structure being configured to substantially completely enclose the at least one wall part of the pouch at least partially and being
5 manufactured of an opaque second material the lack of (UV)light-barrier properties of the pouch can be overcome by using an assembly according to the invention. Furthermore, the use of recycled thermoplastic polymer, in particular PET, provides a pouch being recyclable in a circular recycling chain. Another benefit of the use of the assembly is that the wall thickness of at least one wall part of the pouch can be
10 relatively thin. The pouch is usually at least semi-flexible. It is also conceivable that the pouch at least partially retains its shape. Hence, at least part of the pouch may have a predefined shape. At least part of the pouch may for example retain its shape during use, where a further part of the pouch deforms during use. Furthermore, the printing, or labelling which is required to provide information upon
15 the consumable food product contained by the reservoir can be provided on the carrier structure. Applying a print and/or coating on the pouch can therefore be omitted. The term opaque as referred to for this invention means that the carrier structure has a (UV)light barrier. Opaque means in this context the opposite of translucent.

20

The pouch is usually a self-standing pouch. In the folded, preserving condition, at least part of the passage channel usually engages at least part of an outer surface of the wall part. At least part of the passage channel is thereby directed towards the bottom part. The bottom part is usually uncovered in the preserving condition of the
25 assembly. This means that the bottom part of the pouch is not enclosed by the carrier structure, providing the possibility to view the content of the pouch from a bottom side of the assembly. The carrier structure can for example have the shape of a substantially rectangular pyramid, preferably enabling the carrier structure to be self-standing. The sealing element can for example be a sealing strip. The
30 sealing element is preferably configured to close the passage opening in the preserving condition, preventing contamination of the peripheral edge of the passage channel which defines the passage opening. When using the term seal of the passage opening the situation is meant wherein the passage channel is obstructed and outflow of consumable food substance through the passage
35 opening is prevented. The passage channel directly or indirectly engages the wall

part of the pouch in the area of the sealed connection. This is beneficial from hygienic point of view as the passage channel is configured as drinking spout or nozzle for the user to consume the substance. The clamping engagement of the pouch by the carrier structure provides a temporary connection between the pouch and the carrier structure. The clamping engagement is in particular present in a state wherein the reservoir of the pouch is filled with consumable food substance. In a state wherein the reservoir is filled with consumable food substance may the clamping engagement further obstruct the passage channel preventing flow of consumable food substance through the passage channel. Non-limited examples of consumable food substances are: soup, beverage, fruit juice, carbonated beverage, milk, yoghurt, tea, ice cream and/or combinations thereof. In the extended, dispensing condition, extends the passage channel at least partially from the wall part. This enables engaging of the passage channel by the user. Due to the presence of the passage channel, which is preferably an integral part of the pouch, the use of a straw can be omitted. This is beneficial from environmentally point of view as straws are generally known for their damaging impact on the environment. The passage channel is typically hingeably connected to the at least one wall part and is displaceable between a folded, preserving condition and an extended, dispensing condition. When it is referred to hingeably also the term pivotably can be used. It is also possible that the passage channel is movable, such as rotatable or twistable, connected to the at least one wall part and that the passage channel is displaceable between said conditions. During manual modification of the carrier structure to the dispensing condition of the assembly the carrier structure preferably stays in one piece. The carrier structure and the pouch should be supplied to different waste streams after use for, for example, recycling or comparable further processing.

When is referred to at least one wall part, it is meant that the wall of the pouch may comprise only one wall part but also multiple wall parts forming the wall of the pouch. The carrier structure can also be referred to as housing. The pouch is at least partially manufactured of food-grade recycled thermoplastic polymer, in particular PET. The pouch is usually manufactured of 100% PET. However it is possible that the pouch contains up to 3% polyester. The polyester fraction can comprise one or more types of polyesters.

The pouch is in a possible embodiment of the assembly manufactured of a monolayer of recycled thermoplastic polymer, in particular PET. The thickness of the monolayer is for example in the range of 40-80 micrometre. The use of a monolayer material is that it is relatively easy and less expensive to fabricate compared to laminated constructions. Furthermore recycling is significantly easier when using a monolayer material. The thickness of the monolayer should be chosen based upon the desired oxygen barrier for the specific used consumable food substance. A non-limiting example of the thickness of the wall layer of the pouch is a wall layer of at least 100 micrometre, preferably at least 150 micrometre.

It is also conceivable that the pouch is manufactured of a monomaterial. In a further possible embodiment of the assembly is the pouch manufactured of a single piece of recycled thermoplastic polymer, in particular PET. The use of a single piece, or one piece, is beneficial as this is constructively seen relatively easy to produce. The pouch can for example be manufactured of a plano. The single piece can for example be a sheet of recycled thermoplastic polymer, in particular PET. The single piece can for example be manufactured via thermoforming. The pouch can for example be manufactured via folding and subsequent welding, in particular ultrasonic welding, of the single piece. Herewith the use of glue can be omitted, which is desirable from environmental point of view, but also reduces the risk of (chemical) contamination for the consumer using the pouch. Sealing of recycled thermoplastic polymer, and in particular PET, can be performed via known polymer welding techniques. The passage channel is preferably at least partially formed of at least one inwardly folded structure. This provides a relatively strong passage channel without having to use additional materials and/or components. It is also conceivable that the passage channel is a substantially plain passage channel. The passage channel is usually present at an upper region of the reservoir at a distance of the bottom part.

In a further embodiment, the passage channel may comprise at least one primary weakened tear line for manually tearing at least part of the passage channel along the primary tear line. Subsequently, the passage channel can be brought into the extended, dispensing condition allowing food substance to be dispensed from the pouch via the passage opening. Hence, the primary tear line may at least partially define the location of the passage opening. This embodiment is desirable from

hygienic point of view. In a further possible embodiment, it is conceivable that the sealing element is formed by the outer end of the passage channel which is connected to the at least one wall part. Hence, the part of the passage channel which can be removed from the further part of the passage channel via the primary
5 tear line may form a sealing element according to the present invention.

The pouch is in a preferred embodiment free of colouring agents and/or free of prints. As outlined above can the carrier structure be provided with prints and/or labels in order to provide information of the consumables contained in the reservoir. The pouch being free of colouring agents and/or free of prints results in that
10 contamination of the consumable food substance due to ink or the like can be prevented.

The carrier structure is usually configured to clampingly engage at least a part of a peripheral edge of an upper region of the pouch. The upper region of the pouch is
15 present in the upper half of pouch, whereas the bottom part is present in the bottom half of the pouch. Due to the self-standing ability of the pouch and the flared or conical shape of the pouch towards the bottom part it is possibly that the clamping engagement is only present in an upper region of the pouch wherein the pouch can be initially substantially held by the carrier structure.

20 In a preferred embodiment is the carrier structure manufactured of recycled material, such as paper, in particular seed enriched plantable paper. It is for example possible that the recycled material is recyclable within a circular recycling chain. It is, however, also possible that the recycled material is a biodegradable
25 material. Plantable paper is an example of a biodegradable material whereof the carrier structure can be manufactured. The plantable paper of seed paper can for example contain seeds of flowers and/or herbs. The use of a biodegradable carrier structure can even further improve the environmental friendly character of the assembly. Paper or derivatives thereof may provide a sufficient (UV)light barrier.

30 The reservoir can preferably hold consumable food substance volumes up to 0.75 litre, preferably up to 0.5 litre and more preferably up to 0.33 litre. The dimensions of the reservoir are preferably chosen such that the pouch is arranged for serving one dosing of consumable food substance. The reservoir can for example be
35 configured to hold 0.2 litre of consumable food substance.

The sealing element is preferably initially connected to at least one wall part. The sealing element can for example be welded and/or glued to at least one wall part.

- 5 It is possible that the sealing element consists at least partially and preferably wholly of a polymer, in particular an elastomer and/or rubber. Herewith is a sealing element provided which adheres relatively easy to the recycled thermoplastic polymer, in particular PET, whereof the pouch is manufactured. Another benefit is that such sealing element is relatively flexible, wherefore manually breaking of the
10 sealing connection can be done relatively easy.

- In a possible embodiment of the assembly the carrier structure comprises at least one weakened tear line for manually tearing the carrier structure along the tear line such that the carrier structure can be removed and/or modified to gain access to
15 the initial sealed connection between the passage channel and the at least one wall part. The presence of a tearing structure is relatively simple to construct during manufacturing of the carrier structure and it enables easy removal and/or modification of the carrier structure in order to gain access to the passage channel.

- 20 The invention also relates to a pouch for use in an assembly according to one of the previous claims and to such pouch at least partially filled with consumable food substance, in particular a substantially liquid consumable food substance. The pouch can have any of the above described embodiments.

- 25 The invention furthermore relates to a method for assembling an assembly for preserving and dispensing a consumable food substance, in particular a substantially liquid consumable food substance, in particular an assembly according to the invention as outlined above, comprising the steps of providing at least one pouch at least partially manufactured of a preferably recycled
30 thermoplastic polymer, in particular PET, comprising at least one wall part and at least one bottom part which enclose a reservoir for holding a consumable food substance to be dispensed, and the pouch further comprising at least one passage channel with a passage opening for dispensing consumable food substance from the reservoir, preferably at least partially, and preferably substantially wholly, filling
35 the reservoir of the pouch with consumable food substance, folding the passage

channel into a preserving condition, wherein at least a part of the passage channel faces at least one wall part, sealing the passage opening of the passage channel is by means of a sealing element, wherein the sealing element is attached to at least one wall part, and providing a carrier structure at least partially manufactured of an opaque second material, substantially completely enclose the at least one wall part of the pouch by the carrier structure and providing a clamping engagement of the pouch by the carrier structure, such that the pouch is substantially held by the carrier structure and such that the initial seal of the pouch is substantially covered by the carrier structure. The assembly obtained by the method enables that the carrier structure can be removed and/or modified manually by a user to gain access to the initial sealed connection between the passage channel and the at least one wall part, allowing said user to break the sealed connection and to hinge the passage channel from the preserved condition to the dispensing condition.

The invention will be further elucidated herein below on the basis of the non-limitative exemplary embodiments shown in the following figures. Herein shows; figure 1a a schematic representation of a pouch for use in an assembly according to the invention; figure 1b a schematic representation of a carrier structure for use in an assembly according to the invention; figure 2a a schematic representation of a plano whereof the pouch as shown in figure 1a can be manufactured; and figure 2b a schematic representation of a plano whereof the carrier structure as shown in figure 1b can be manufactured.

Figure 1a show a schematic representation of a pouch 1 for use in an assembly according to the invention. The pouch is manufactured of a recycled thermoplastic polymer, in particular PET. The material and therefore the pouch 1 is translucent. The pouch 1 comprises a wall part 2 and a bottom part 3 which enclose a reservoir 4 for holding a consumable food substance (not shown) to be dispensed. The pouch 1 furthermore comprises a passage channel 5 with a passage opening 6 for dispensing consumable food substance from the reservoir 4. The passage channel 5 is hingeably connected to the wall part 5. In figure 1a is the passage channel 5 in an extended, dispensing condition. The pouch 1 comprises a sealing element 7, however in the shown embodiment is the initial sealing connection between the

passage channel 5 and the wall part 2 broken. The passage channel 5 is positioned at a distance from the wall part 2, allowing food substance to be dispensed from the pouch 1. In the folded, preserving condition, faces at least a part of the passage channel 5 towards the wall part 2, and is the passage opening
5 6 of the passage channel 5 initially sealed by means of the sealing element 7. The pouch 1 is manufactured via folding and subsequent welding, in particular ultrasonic welding, of a single piece material. The dotted lines show where the material is welded. It can be seen in the figure that the passage channel 5 is at least partially formed of at least one inwardly folded and welded structure. The
10 interrupted line on the passage channel 5 shows an optionally primary tear line 15. The primary weakened tear line 15 is configured for manually tearing at least part of the passage channel 5 along the primary tear line 15. The primary tear line 15 is preferably configured such that the primary tear line 15 is positioned at a predetermined distance from the sealing element 7 in a folded condition.

15

Figure 1b a schematic representation of a carrier structure 8 for use in an assembly according to the invention. The carrier structure 8 is in particular configured to co-act with the pouch 1 as shown in figure 1a. The carrier structure 8 is manufactured of an opaque second material. In the shown embodiment is the carrier structure 8
20 manufactured of seed enriched plantable paper and is the carrier structure 8 provided with a print. The carrier structure 8 is configured to substantially completely enclose the wall part 2 of the pouch 1, wherein the carrier structure 8 is configured to clampingly engage the pouch 1. In order to gain access to the initial sealed connection between the passage channel 5 and the wall part 2 of the pouch
25 1 in an assembly consisting of the pouch 1 as shown in figure 1a and the carrier structure 8 as shown in figure 1b, the carrier structure 8 can be removed and/or modified manually by a user such that the sealed connection is broken away and the passage channel 5 can be hinged from the preserved condition to the dispensing condition. The carrier structure 8 comprises weakened tear lines 9 for enabling easier manual tearing of the carrier structure 8. In de shown embodiment
30 has the carrier structure 8 the shape of a substantially rectangular pyramid. It is however, possible that the carrier structure 8 has a different shape. Preferably the shape of the carrier structure 8 corresponds to the shape of the pouch 1. The carrier structure 8 furthermore comprises an engament element 10 for providing
35 simplified engament of the carrier structure 8 by a user.

Figure 2a shows a schematic representation of a plano whereof the pouch 1 as shown in figure 1a can be manufactured. Similar references therefore correspond to similar or equivalent elements or features. The figure shows the plano having two wall parts 2a, 2b configured to form the wall 2 or wall part 2 of the pouch 1. The bottom part 3 is formed by the material in between the wall parts 2a, 2b. The plano furthermore shows the elements whereof the passage channel 5 is formed. The shape and dimensions such as the height H and the width W shown in the figure are only indicative, the pouch 1 is not limited to the shape and dimensions shown.

Figure 2b shows a schematic representation of a plano whereof the carrier structure 8 as shown in figure 1b can be manufactured. Similar references therefore correspond to similar or equivalent elements or features. The tear lines 9, are however, not shown in the figure. The shape and dimensions such as the height Hc and the width Wc shown in the figure are only indicative, the carrier structure 8 is not limited to the shape and dimensions shown. However, the dimensions of the carrier structure 8 are such that the carrier structure 8 can substantially completely enclose the at least one wall part 2 of the pouch 1. The carrier structure 8 is configured to substantially have the shape of a rectangular pyramid. The carrier structure 8 therefore comprises a front wall 8a, a back wall 8b and two side walls 8c, 8d, which are connected, for example glued, via hingeable folding strips 11a, 11b.

It will be apparent that the invention is not limited to the working examples shown and described herein, but that numerous variants are possible within the scope of the attached claims that will be obvious to a person skilled in the art.

The above-described inventive concepts are illustrated by several illustrative embodiments. It is conceivable that individual inventive concepts may be applied without, in so doing, also applying other details of the described example. It is not necessary to elaborate on examples of all conceivable combinations of the above-described inventive concepts, as a person skilled in the art will understand numerous inventive concepts can be (re)combined in order to arrive at a specific application.

The verb "comprise" and conjugations thereof used in this patent publication are understood to mean not only "comprise", but are also understood to mean the phrases "contain", "substantially consist of", "formed by" and conjugations thereof.

- 5 Furthermore, the term welding or ultrasonic welding can also be understood as sealing or ultrasonic sealing.

Claims

1. Assembly for preserving and dispensing a consumable food substance, in particular a substantially liquid consumable food substance, comprising:

- 5 – at least one pouch at least partially manufactured of a thermoplastic polymer, preferably a recycled thermoplastic polymer, in particular PET, comprising at least one wall part and at least one bottom part which enclose a reservoir for holding a consumable food substance to be dispensed, and the pouch further comprising at least one passage channel
- 10 with a passage opening for dispensing consumable food substance from the reservoir, said passage channel being hingeably connected to the at least one wall part, wherein the passage channel is displaceable between:
- 15 (i) a folded, preserving condition, wherein at least a part of the passage channel faces at least one wall part, and wherein the passage opening of the passage channel is initially sealed by means of a sealing element, said sealing element being attached to at least one wall part, and
- 20 (ii) an extended, dispensing condition, after breaking the initial sealing connection between the passage channel and the at least one wall part, wherein at least a part of the passage channel is positioned at a distance from the at least one wall part, allowing food substance to be dispensed from the pouch via the passage opening, and
- 25 – at least one carrier structure at least partially manufactured of an opaque second material, wherein the carrier structure is configured to substantially completely enclose the at least one wall part of the pouch,
- 30 wherein the carrier structure is configured to clampingly engage the pouch, such that the pouch is initially substantially held by the carrier structure and such that the initial seal of the passage opening is substantially covered by the carrier structure, wherein the carrier structure can be removed manually from the pouch and/or can be modified manually by a user to gain access to the initial sealed connection between the passage channel and the at least one wall part, allowing said user to break the initial seal of the passage opening, and to subsequently hinge the passage channel from the preserved condition to the dispensing condition.
- 35

2. Assembly according to claim 1, wherein the pouch is manufactured of a monolayer and/or monomaterial of recycled thermoplastic polymer, in particular PET.
- 5 3. Assembly according to one of the previous claims, wherein the pouch is manufactured of a single piece of recycled thermoplastic polymer, in particular PET.
- 10 4. Assembly according to claim 3, wherein the pouch is manufactured via folding and subsequent welding, in particular ultrasonic welding, of the single piece.
5. Assembly according to claim 4, wherein the passage channel is at least partially formed of at least one inwardly folded structure.
- 15 6. Assembly according to one of the previous claims, wherein the pouch is free of colouring agents and/or free of prints.
7. Assembly according to one of the previous claims, wherein an inner side of the carrier structure is configured to clampingly engage at least a part of a
20 peripheral outer edge of an upper region of the pouch.
8. Assembly according to one of the previous claims, wherein the carrier structure is manufactured of recycled and/or biodegradable material, such as paper, in particular seed enriched plantable paper.
25
9. Assembly according to one of the previous claims, wherein the reservoir can hold consumable food substance volumes up to 0.75 litre, preferably up to 0.5 litre and more preferably up to 0.33 litre.
- 30 10. Assembly according to one of the previous claims, wherein the sealing element is initially connected to at least one wall part.
11. Assembly according to one of the previous claims, wherein the sealing element consists at least partially and preferably wholly of a polymer, in particular
35 an elastomer and/or rubber.

12 Assembly according to one of the previous claims, wherein the carrier
structure comprises at least one weakened tear line for manually tearing the carrier
structure along the tear line such that the carrier structure can be removed and/or
5 modified to gain access to the initial sealed connection between the passage
channel and the at least one wall part.

13. Pouch for use in an assembly according to one of the previous claims.

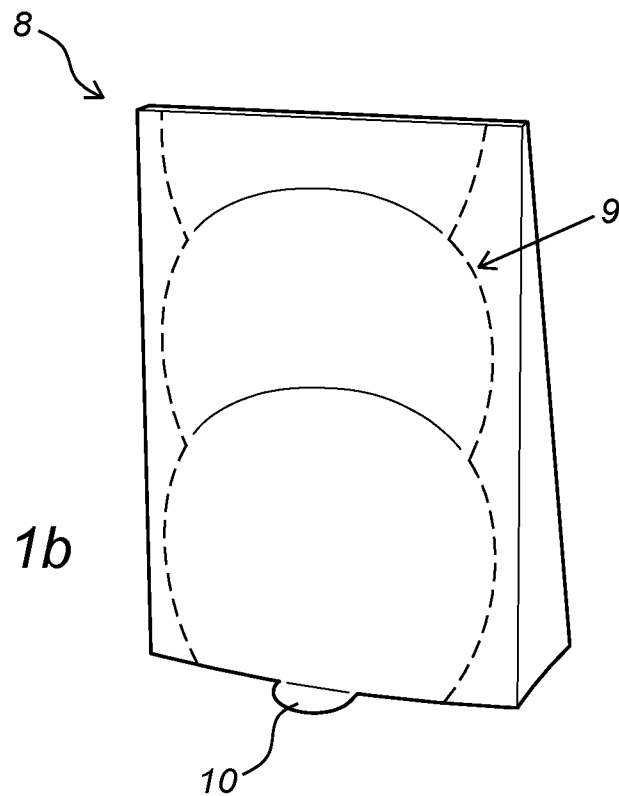
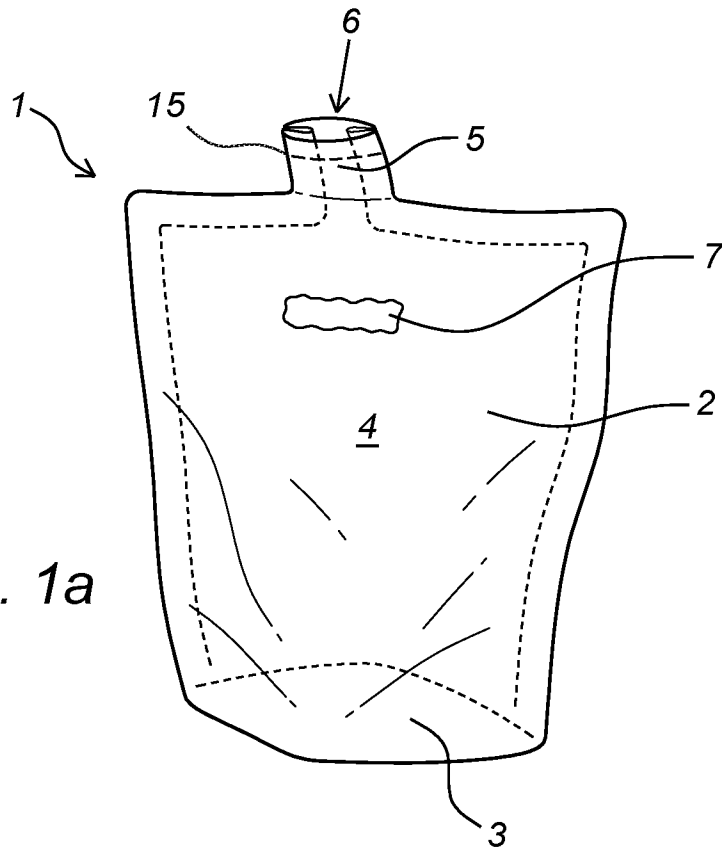
10 14. Pouch according to claim 13, at least partially filled with consumable food
substance, in particular a substantially liquid consumable food substance, such as
beverage or soup.

15 15. Method for assembling an assembly for preserving and dispensing a
consumable food substance, in particular a substantially liquid consumable food
substance, in particular an assembly according to one of claims 1- 12, comprising
the steps of:

- providing at least one pouch at least partially manufactured of a
thermoplastic polymer, preferably a recycled thermoplastic polymer, in
20 particular PET, comprising at least one wall part and at least one bottom
part which enclose a reservoir for holding a consumable food substance to
be dispensed, and the pouch further comprising at least one passage
channel with a passage opening for dispensing consumable food substance
from the reservoir,
- 25 – preferably at least partially, and preferably substantially wholly, filling the
reservoir of the pouch with consumable food substance,
- folding the passage channel into a preserving condition, wherein at least a
part of the passage channel faces at least one wall part,
- sealing the passage opening of the passage channel is by means of a
30 sealing element, wherein the sealing element is attached to at least one
wall part, and
- providing a carrier structure at least partially manufactured of an opaque
second material,
- substantially completely enclose the at least one wall part of the pouch by
35 the carrier structure,

- providing a clamping engagement of the pouch by the carrier structure, such that the pouch is substantially held by the carrier structure and such that the initial seal of the pouch is substantially covered by the carrier structure.

1/3



2/3

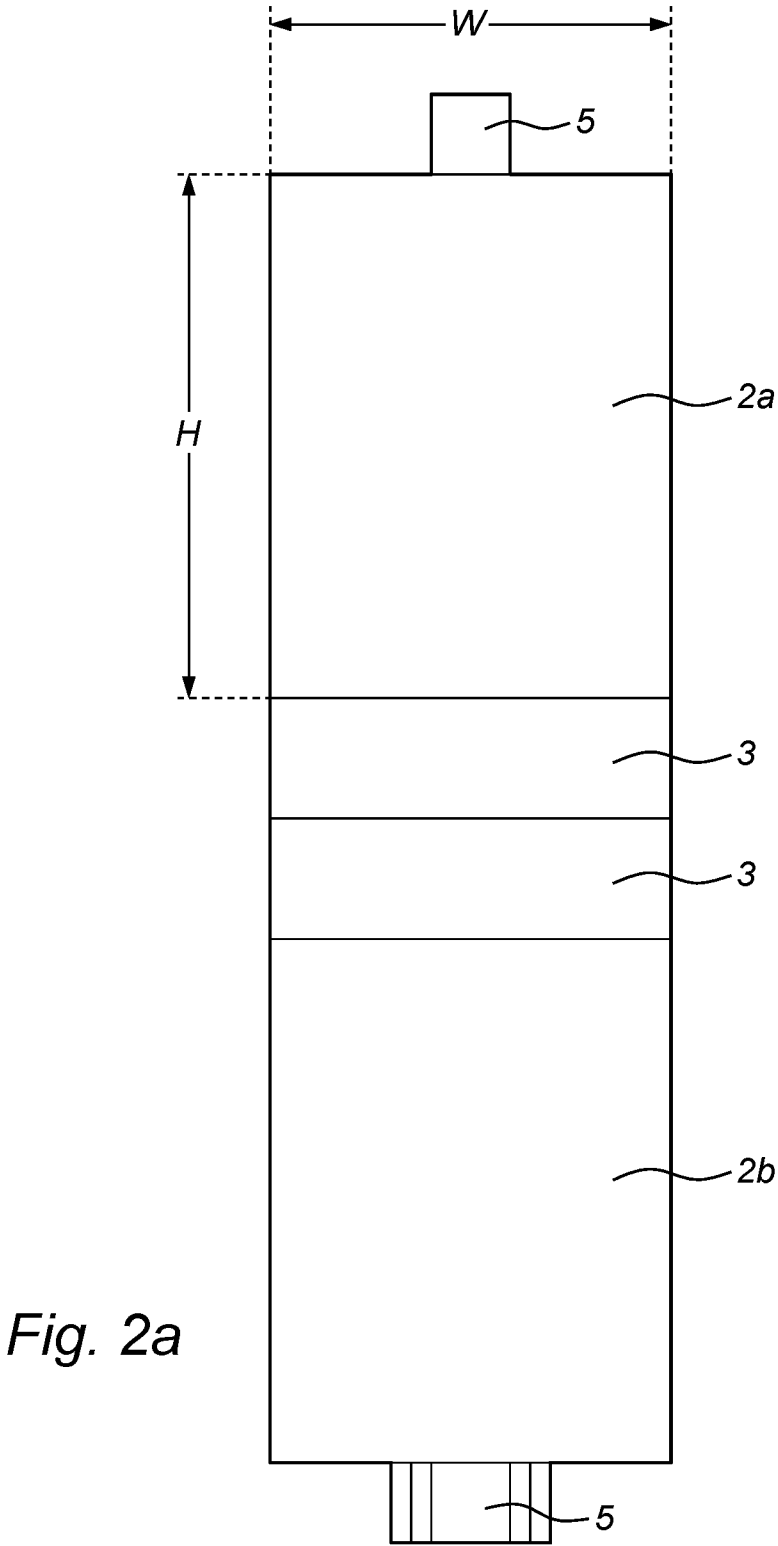
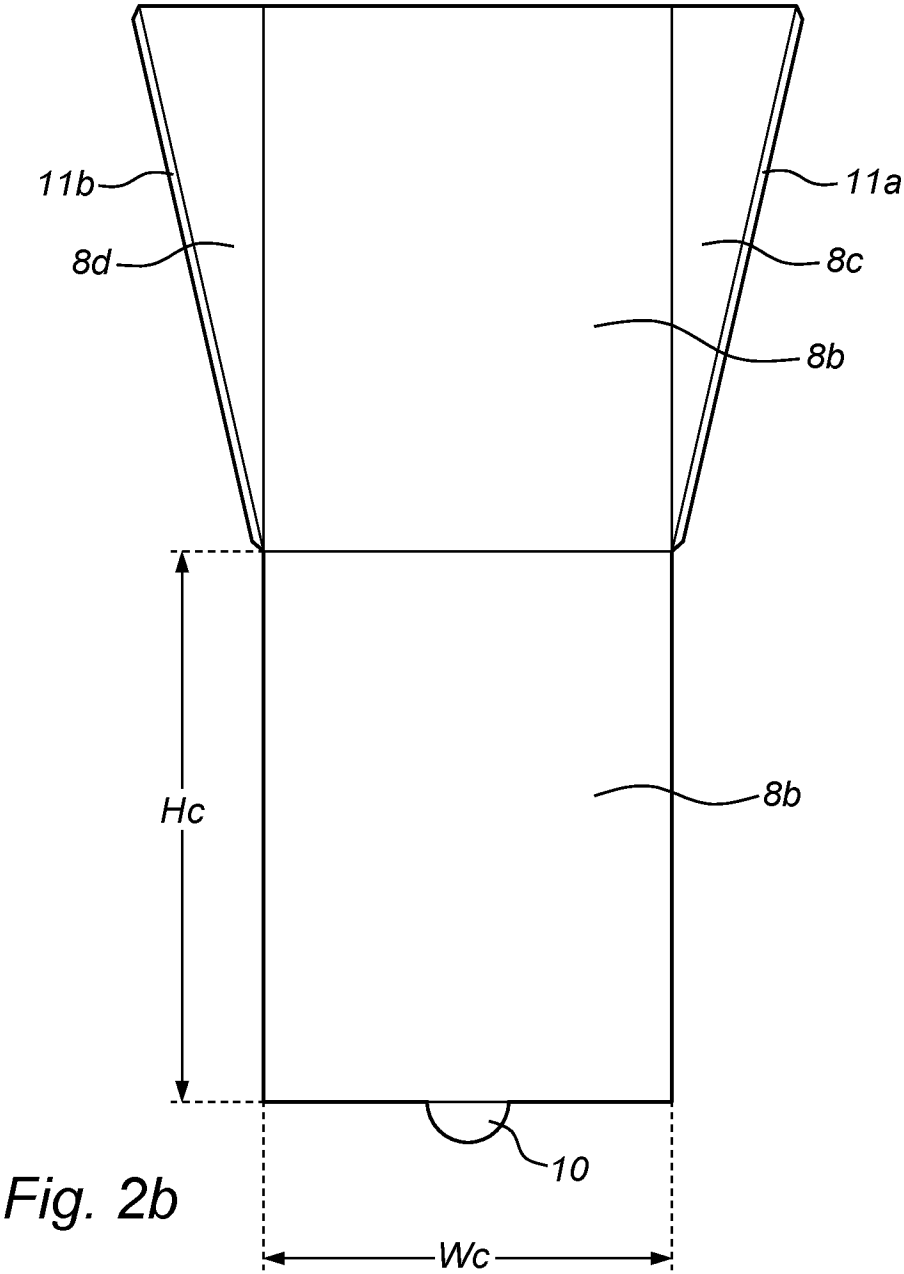


Fig. 2a



INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2019/050400

A. CLASSIFICATION OF SUBJECT MATTER

INV. B65D75/52 B65D75/58
ADD. B65D75/00

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	WO 2008/001829 A1 (TOYO SEIKAN KAISHA LTD [JP]; AIKAWA TAKAYUKI [JP]; OZAWA KAZUMI [JP];) 3 January 2008 (2008-01-03) paragraphs [0106], [0110]; figure 8 -----	14,15
X	WO 2018/075992 A1 (STEELE MARK [US]) 26 April 2018 (2018-04-26) page 1, line 12 - page 2, line 21; figures 1-13 -----	14,15
X	US 4 312 689 A (AMNEUS JOHN S) 26 January 1982 (1982-01-26) column 8, lines 37-55; figure 5 ----- -/--	14,15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"E" earlier application or patent but published on or after the international filing date

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"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

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Date of the actual completion of the international search

3 September 2019

Date of mailing of the international search report

16/09/2019

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No
PCT/NL2019/050400

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 20 2004 000591 U1 (KLOCKE VERPACKUNGS SERVICE [DE]) 18 March 2004 (2004-03-18) abstract paragraphs [0007] - [0011], [0033], [0034]; figure 6 -----	14,15
X	US 5 000 350 A (THOMSEN PETER N [US]) 19 March 1991 (1991-03-19) column 3, lines 50-59; figures 1-3 -----	14,15
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