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(71) Applicant: **Worldproof Iberia, S.L.**  
**33550 Cangas de Onis (Asturias) (ES)**

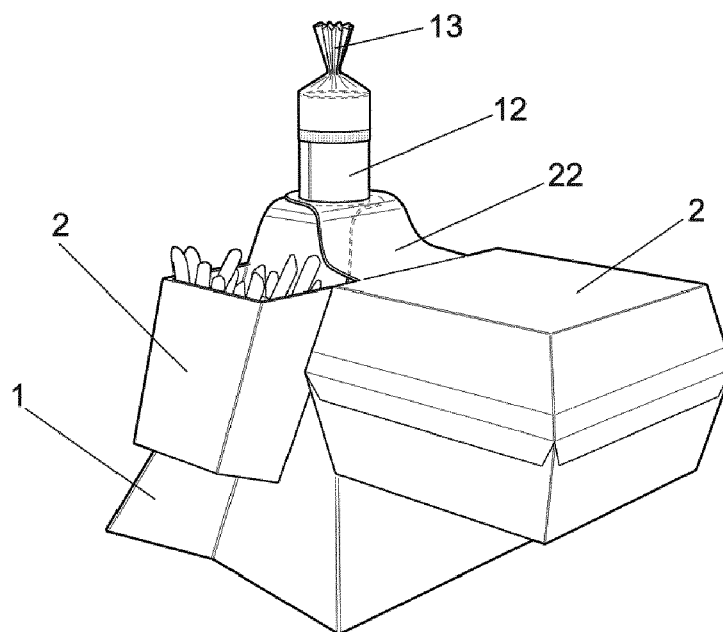
(72) Inventor: **LARIA MUÑIZ, Alfredo**  
**33550 Cangas de Onis (Asturias) (ES)**

(74) Representative: **Ungria López, Javier**  
**Avda. Ramón y Cajal, 78**  
**28043 Madrid (ES)**

(54) **SYSTEM FOR STORING AND TRANSPORTING PRODUCTS IN CONTAINERS**

(57) System for storing and transporting products, preferably food products, which comprises a first container (1), configured to hold liquids or solid granular products in an inner cavity, which comprises two portions (11 and 12). A first portion (11) with a frustoconical or pyramidal shape, which has a single opening at an apex of said first portion (11), and a second portion (12), with a tubular shape, which comprises the mouth of the first container (1), wherein the first portion (11) is configured to be fold-

ed, in a reversible manner, from the frustoconical or pyramidal shape, to a flat shape, maintaining the tightness of the first container (1). In this manner, the first container (1) can be stored or stowed in a folded shape so that it occupies a smaller space than it would occupy if it were unfolded. Furthermore, the combined pyramidal-tubular shape of the first (11) and second portion (12) enables said first container (1) to be used as a support for transferring a plurality of second containers (2).



**FIG.4**

## Description

### OBJECT AND FIELD OF THE INVENTION

**[0001]** The following invention is related to a system made up of product containers, preferably configured to store food products such as meals and beverages, especially indicated for fast food or take-out restaurants, although they can also be used for storing non-edible products such as detergents in a solid or liquid state. Said system provides a series of advantages with respect to current packaging systems, especially in terms of ease of storage, as well as the structural strength thereof, enabling a simpler and safer use for the user, as well as facilitating the transportation of the containers in a more comfortable manner than the existing ones.

**[0002]** The invention belongs to the industrial field of containers or vessels for the preservation of products in general, and preferably for food products, both solid and liquid, and more preferably in folding disposable containers as well as the assembly or connection between the different types of containers in order to ease the storage and transportation thereof.

### BACKGROUND OF THE INVENTION

**[0003]** Currently, a large number of types of disposable containers can be found on the market, configured to store or hold products therein, such as beverages or food, for a limited time. Special mention is made of the containers used in restaurants, commonly known as fast-food restaurants, or restaurants or establishments that provide take-away food, wherein containers are used that enable said food or beverage to be stored long enough for it to be transferred from the kitchen to the user, maintaining the structure and temperature of the product for a limited time.

**[0004]** Usually, the beverages sold in these establishments can be packaged in sealed bottles or vessels, as they come from the supplier, that is, without said containers or products being handled before they reach the user, or they can be packaged in different types of disposable containers, when the product does require handling. The most common disposable containers are cardboard or plastic cups, of different sizes, which comprise a concave structure, usually cylindrical or inverse frustoconical (that is, where the lower base is smaller than the upper base), and a large opening through which the liquid is introduced and extracted, said opening being able to be closed by means of a lid in a non-watertight closure.

**[0005]** One of the main problems of these containers, due to the fact that they do not ensure the tightness of the mouth, is the structural fragility they exhibit, which facilitates any impact on the upper portion causing it to tip, with the consequent risk of spillage or loss of fluid contained within. This is because the only point of contact of the cup, for example, when it is transported with other elements on a tray, is normally the base, which is usually

smaller than the opening itself, such that the bearing point is not stable enough for a safe transfer.

**[0006]** Unlike beverages, solid food products are normally packaged in easy-to-handle vessels such as paper or cardboard containers, which comprise a simple closure and are designed to be stacked and transferred in bags, on trays or directly within the container of the product itself.

**[0007]** The problem generated for the user who acquires or must transfer a complete meal, which may comprise a beverage in the vessel thereof and one or more food items in the respective containers thereof, is the need to use a third element such as a tray, a bag or similar element that enables the grouping of all the products to be consumed to be easily transferred.

### DESCRIPTION OF THE INVENTION

**[0008]** In order to solve the existing problems indicated above, the invention consists of a system for storing and transporting products in containers. Said storage system comprises a first container, in the shape of a flask, configured to store liquids or granulated solid products in an inner cavity. The fact that it is in the shape of a flask means that it comprises a body or a lower portion with a flat base and a decreasing regular cross section as it rises in height, such as a frustoconical or pyramidal shape, and that it further comprises an elongated neck with a narrow cross section, wherein the only mouth of the container is located, said neck being an extension of the lower body. The fact that it is configured to hold liquids, in addition to granulated solid products, means that it is made of an impermeable material, which has a mouth for the introduction and expulsion of liquids and that it is not possible for said liquids to leak to the outside.

**[0009]** This first container comprises:

- a first portion which comprises a frustoconical or pyramidal shape, and which comprises a single opening at an apex or cusp of said first portion; and
- a second portion, with a tubular shape, communicated with the opening of the first portion at a first end, in other words, that it is an extension of the opening of the apex of the first portion, wherein said second portion comprises, at a second end, the mouth of the first container; and

wherein the first portion is configured to be folded, in a reversible manner, from the frustoconical or pyramidal shape to a flat shape, maintaining the tightness of the first container.

**[0010]** The fact that the second portion has a tubular shape means that it comprises a constant cross section along the entire length thereof and that it is hollow, which enables the passage of fluid through the inside thereof, and further enables the first container to be carried or grasped by means of said second portion, in a more comfortable and safe manner for the user. In this regard, said

tubular shape can be cylindrical, prismatic or comprise another closed cross section that enables the operation of the container with the mentioned neck or flask shape.

**[0011]** This first container comprises a series of advantages over conventional containers, which have an inverted cylindrical or frustoconical shape like the cups. For example, since the first portion of this first container comprises a frustoconical or pyramidal shape, the first container comprises greater stability than what a normal cup may have, such that an accidental tipping and, therefore, the spillage of the fluid that it can comprise therein is more difficult to occur.

**[0012]** Vessels in the shape of a flask are especially suitable for stirring solutions, since they are configured to fill with liquid only in the first portion, located in the lower portion, and to be carried by the hands of a user, by means of the second portion, wherein the mouth is found, as if it were a handle. For this reason, the transport of the first container, if the fluid is at a very high temperature, can be carried out in a simpler and safer manner if this is carried by means of the second portion. This is an advantage that the usual cups do not have, since the stirring of the liquid inside said cup, for example, when it is transferred, is not limited or affected by a change of cross section like that exhibited by the first container. Furthermore, if the first container has crushed ice inside to maintain a cold temperature of the liquid, the geometry of said first container facilitates the ice not leaking through the second portion when drinking.

**[0013]** In one embodiment, the second portion is also configured to be folded, in a reversible manner, to a flat shape, maintaining the tightness of the first container. With this embodiment, the entire first container is able to fold and the storage thereof, when it does not comprise any product, liquid or solid, therein, can occupy less space than if it were unfolded, comprising said flat shape. The fact that it is reversible means that it can be folded and recover the unfolded state thereof without any problem, as many times as necessary. Furthermore, said folding is configured so that preferably, only a single folding movement is necessary to go from a structure prepared to be used as a container to a flat structure to be stored. The fact that it maintains the tightness means that, even with the first container completely folded, no openings or holes are created through which the fluid contained inside can escape.

**[0014]** In one embodiment, the second portion has a cylindrical shape which comprises a diameter comprised between 1 and 12 cm, preferably between 2 and 10 cm.

**[0015]** In one embodiment, the first container is configured to store beverages and is made starting from a folded sheet of cardboard or food paper. That is, starting from a flat sheet, the portions thereof can be folded and fixed to acquire a shape like the one described above. The term food paper refers to types of paper or cardboard that can be used for wrapping foods, maintaining the state thereof, being impermeable to fats, such as Kraft paper, vegetable parchment paper, Glassine paper, or similar

papers and cardboards which comprise an impermeable layer, such as Tetra Brik. At the same time, these materials are strong enough to maintain the structural security of the first container when unfolded and with products therein.

**[0016]** In one embodiment, the first portion comprises a pyramidal shape and is configured to be folded in a reversible manner, from the pyramidal shape to a flat shape, at least by means of folding lines located on the edges of the lateral faces of said pyramidal shape. In this manner, none of the lateral faces of the first portion of the first container undergoes plastic deformations that may affect the structural resistance of the first vessel when it is unfolded and with liquid therein.

**[0017]** In one embodiment, the first container comprises a closure system configured to be assembled to the second end of the second portion and to perform the tight closure of said first vessel.

**[0018]** This closure can comprise a threaded cap that comprises means to be carried or transported, such as a ring, hoop or hole from which it can be adjusted to a flexible means such as a cord, rope, a carabiner, or simply be carried by a finger of a user.

**[0019]** In another embodiment, the first container comprises another closure system which comprises a portion of a sealing paper, preferably a wax paper, or of a paper with similar features, that is to say, impermeable, and with high resistance to deformation, which comprises a tubular shape. Said paper is assembled at the second end of the second portion and is fixed by a first edge of an internal surface to an external surface of the second portion, by means of a tight fixing, wherein said portion of paper is configured to be twisted or wrapped around the second edge not fixed to the second portion, that is to say the edge opposite from the one fixed to the second end, closing the mouth of the first container in a tight manner. The term sealing paper indicates that it is a thin sheet of any suitable material for the use of sealing the mouth of the container.

**[0020]** That is to say, this twisting or wrapping of the sealing paper over the mouth enables the tight closure of the first vessel, and further enables said first container to be carried or gripped by means of said sealing paper, enabling a user to carry more than one vessel with a single hand, since the paper is flexible and occupies a small space compared to the width of a cup.

**[0021]** The material that is similar or with similar features to the wax one, in addition to having a good resistance to deformation, can be a paper that comprises a wax or greased internal surface, which acts as an impermeable layer, that is to say, which prevents the fluid from penetrating the paper. This type of material is used due to the ideal properties thereof for the use for which it has been configured in the invention, such as the flexibility thereof, which enables it to be easily deformed when it is twisted, wrapping the mouthpiece, which enables a plug to be created for the first vessel, without altering the impermeable state thereof.

**[0022]** The fixing between the portion of paper and the second end of the second portion of the first container is preferably done by means of heat sealing, which prevents leaks from occurring between said attachment, that is to say, that it is tight.

**[0023]** This closure means of the sealing paper is incorporated into the first container itself, for which reason it is not necessary to add any additional lid, since the twisting or wrapping generates an tight closure due to the tension generated in the tightening.

**[0024]** In one embodiment, the sealing paper has a tubular-shaped cross section complementary to the tubular-shaped cross section of the second portion, and a length comprised between 1 and 20 cm, preferably between 2 and 10 cm. This size will depend on the cross section of the mouth, such that the larger the mouth, the greater the length of the portion of paper.

**[0025]** In a particular embodiment, the portion of sealing paper of the closure means comprises an adhesive on an inner surface of the tubular shape, said adhesive configured to tightly seal the first container by folding the sealing paper on itself. Said adhesive can be food adhesive, such that, if the first container holds an edible product, the state and taste thereof are not affected. This adhesive enables a different closure to the twisting of the paper, by folding the wall or walls thereof in a flat state.

**[0026]** In one embodiment, the container system for food products comprises at least one second container configured to hold a product, preferably a food product, in a cavity of said second container, which comprises an end attached by means of a first end to said cavity and which comprises, at a second end, a hole configured to fit the second portion of the first container. Said fitting can have a clearance that enables the second container to pivot with respect to the first one, or it can be by tightening, fixing the second container with respect to the first one.

**[0027]** In this manner, second containers can be hooked or assembled to the first container, enabling the user to hold and carry the entire assembly with a single hand, by means of the second portion of the first container, or by means of the sealing paper if said closure system is available. Furthermore, the structure in the shape of a flask of the first container helps the distribution of loads generated by the support of the second containers to be balanced.

**[0028]** In one embodiment, the second container is made of cardboard or food paper, which may be the same or different from the material of the first container.

**[0029]** In one embodiment, the system comprises a handle which comprises two openings located in two opposite portions of said handle, each of said openings configured to fit by means of tightening, to a second portion of a first container, wherein said handle is configured to support two first containers, said first containers being able to comprise second containers coupled by means of the second portion.

**[0030]** Preferably, the handle comprises only an an-

gled plate that stiffens when the second portions of the first container are inserted into the holes, which may comprise flaps that enable or facilitate the necessary tightening.

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## BRIEF DESCRIPTION OF THE DESIGNS

### [0031]

10 Figure 1a shows a perspective view of the first container, wherein the first portion is unfolded in a pyramidal shape.

Figure 1b shows a perspective view of the first container shown in Figure 1a, wherein the first portion is folded by at least folding lines located on the edges of said first portion.

15 Figure 2 shows a perspective view of the first container, wherein the first portion is unfolded in a frustoconical shape.

20 Figure 3a shows a perspective view of a type of second container, which comprises an end configured to couple said second container to the first portion of the first container.

25 Figure 3b shows a perspective view of another type of second container, different from the one shown in Figure 3a, which comprises an end configured to couple said second container to the first portion of the first container.

30 Figure 4 shows a perspective view of an assembly made up of a first container and second containers coupled to the second portion of said first container, the sealing paper being twisted, wrapping the mouth of the first container, comprising an tight closure.

35 Figure 5 shows a perspective view of two assemblies, each of them made up of a first container and second containers coupled to the second portion of the first containers, the first two containers attached by a handle and both first containers being tightly closed by means of twisting the sealing paper.

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## DESCRIPTION OF A PREFERRED EMBODIMENT

**[0032]** As seen in the figures, the preferred embodiment of the invention consists of a first container (1) configured to package or retain liquids or solid elements therein, and which comprises a flask shape. More specifically, it comprises a first portion (11) located in the lower portion of said first container (1), which has a pyramidal shape, with six lateral surfaces, and a second portion (12) located in the upper portion, which has a cylindrical tubular shape, known as the neck of the flask, wherein the mouth of the first container (1) is located.

**[0033]** An important feature of this first container (1) is the ability of the first portion (11) to fold from the described pyramidal shape to a flat shape wherein the walls of the pyramidal shape are in one same plane, as shown in figure 2, wherein fluid cannot be housed therein, as well as the ability thereof to unfold from said flat shape to the

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pyramidal shape, as shown in figure 1. This configuration enables the first containers (1) to be stored, in the folded form, when they are not being used for retaining fluids therein, taking up much less space by eliminating the internal volume.

**[0034]** This folding and unfolding is produced only by means of one folding movement of two facing walls of the pyramidal shape, it not being necessary to perform any secondary folding in order to go from one form to the other, which makes it have a simple and fast operation, which does not require the use of adhesives or reinforcing elements to maintain any of the shapes. Furthermore, when the first portion (11) is kept folded, the inside of the container (1), despite comprising a flat structure, remains tight, in other words, no holes or openings are generated that are closed during the folding. To do so, the pyramidal shape has a suitable configuration for this purpose, wherein in addition to the six lateral walls, it also comprises a base that is divided into four surfaces when the first portion is folded. In this manner, the folding can be performed by folding lines located on the edges of the pyramidal shape as well as in the lines wherein the base is divided into in said four surfaces.

**[0035]** In addition to the foldability of the first portion (11), the second portion (12), which preferably comprises a cylindrical tubular shape, is also configured to be folded into a flat shape, facilitating the storage of the first container (1). This folding is also reversible, in other words, the first container (1) can be stowed completely flat in order to then be unfolded to be used as a vessel.

**[0036]** The size of the second portion (12), that is to say of the neck of the first container (1), has a long enough length to enable the user to hold said first container (1), filled with liquid, by means of said second portion (12), without damaging the container (1), and a diameter suitable for use thereof as a mouth, between 4 and 8 cm.

**[0037]** The first container (1) is made of food or cardboard paper, in other words, of a material that enables it to be easily folded but that in the unfolded state maintains sufficient structural strength to be used as a vessel for beverages.

**[0038]** To close the first container (1), the system has closure means (13) consisting of a portion or a piece of sealing paper, specifically a wax and/or paraffin paper, arranged in a tubular shape in the mouth of said first container (1). More specifically, said wax paper is glued by means of heat sealing in a first edge or end, by means of an inner surface to an outer surface of the second portion (12), wherein the mouth is located. Said piece of wax paper comprises an extension that protrudes from the mouth of the first container (1), wherein said extension is configured so that, when twisted, it creates an tight closure in the first container (1). This closure means (13) can be used as many times as necessary, since the state thereof is not affected by the use thereof, and it has an extension long enough to perform the closure by means of the twisting of the paper until it is tight, as well as to enable the first container (1) to be carried with one

hand of the user, said length also being dependent on the width size of the mouth. That is to say, that due to the extension of this sealing paper, the first container (1) can also be gripped by means of the same, as well as by means of the second portion (12), in this manner, a user can pick up or grip several first containers (1) with a single hand due to the little space comprised by a paper twisted on itself and the structural resistance it exhibits.

**[0039]** In addition to the first container (1), the system comprises a plurality of second containers (2), shown in figures 3a and 3b, configured to fit, or be coupled to the second portion of the first container (1), in order to be able to transport or handle an assembly made up of a first container (1) and said second containers (2) with a single hand.

**[0040]** In order to perform said couplings, the second container (2) comprises a cavity (21), which can be open, as shown in figure 3A, or be configured to close, as shown in figure 3B, which comprises an end (22) fixed to said cavity (21), at a first end, and which comprises a hole (23) configured to fit the second portion (12) of the first container (1), at the second end. In this manner, as many second containers (2) can be connected to the second portion (12) of the first container (1) as desired.

**[0041]** In order to be able to carry more than one assembly made up of a first container (1) and second containers (2) in a single hand, the system comprises a handle (3) which comprises at least two openings (31) that can each be fitted by tightening to a first portion (11) of a first container (1).

**[0042]** The following advantages stand out of the first container (1) compared to a traditional cup with a plastic lid:

- 35 - The recycling of the entire first container (1) can be done jointly, depositing it in one same receptacle, since it is not necessary to recycle the cup on one hand and the lid on the other, which are usually made of different materials.
- 40 - Once the first container (1) is closed, by means of the closure means, being watertight, in case of tipping, it would be more difficult for the content to be poured.
- 45 - It is not necessary to use a spoon to mix the contents with the first container (1), as it is specially configured to shake the contents inside without spilling them on the outside.
- The shape of the first container (1) makes it difficult for the ice to float on the surface.
- 50 - The first container (1) enables the transportation of several filled second containers (2) with a single hand.
- By using a first container, the need to use a tray or bag to transfer meals is eliminated, thereby reducing the amount of material used.

## Claims

1. A system for storing and transporting products in containers, which comprises a first container (1), that has a flask shape, configured to store liquids or granulated solid products in an inner cavity, **characterised in that** said first container (1) comprises:
- a first portion (11), which comprises a frustoconical or pyramidal shape, and which comprises a single opening at an apex of said first portion (11); and
  - a second portion (12), which comprises a tubular shape, communicated with the opening of the first portion (11), at a first end, wherein said second portion (12) comprises at a second end the mouth of the first container (1);
- wherein the first portion (11) is configured to be folded, in a reversible manner, from the frustoconical or pyramidal shape, to a flat shape, maintaining the tightness of the first container (1).
2. The system for storing in containers, according to the preceding claim, wherein the second portion (12) is configured to be folded, in a reversible manner, to a flat shape, maintaining the tightness of the first container (1).
3. The system for storing in containers, according to any of the preceding claims, wherein the second portion (12) has a cylindrical shape which comprises a diameter comprised between 1 and 12 cm, preferably between 2 and 10 cm.
4. The system for storing in containers, according to any of the preceding claims, wherein the first container (1) is configured to store beverages therein and is made starting from a folded sheet of food paper or cardboard.
5. The system for storing in containers, according to any of the preceding claims, wherein the first portion (11) comprises a pyramidal shape and is configured to be folded, in a reversible manner, from the pyramidal shape to a flat shape, at least by means of folding lines located on the edges of the lateral faces of said pyramidal shape.
6. The system for storing in containers, according to any of the preceding claims, wherein the first container (1) comprises a closure system (13) configured to be assembled to the second end of the second portion (12), by the mouth, and to perform a tight closure of said first container (1).
7. The system for storing in containers, according to any of claims 1 to 5, wherein the first container (1) comprises a closure system (13), assembled in the second portion (12), wherein said closure system (13) comprises a portion of sealing paper, preferably wax paper, which comprises a tubular shape, it is arranged wrapped around the second end of the second portion (12), and is fixed by a first edge of an inner surface of said portion of paper to an outer surface of the second portion (12), wherein said paper is configured to be twisted by a second edge not fixed to the second portion (12) tightly closing, wrapping, the mouth of the first container (1).
8. The system for storing in containers, according to the preceding claim, wherein the sealing paper is configured so that the first container (1) is gripped or carried by said sealing paper.
9. The system for storing in containers, according to claim 7 or 8, wherein the closure system (13) has a tubular-shaped cross section complementary to the tubular-shaped cross section of the second portion (12), and a length comprised between 1 and 20 cm, preferably between 2 and 10 cm.
10. The system for storing in containers, according to any of claims 7 to 9, wherein the portion of sealing paper of the closure means (13) comprises an adhesive on an inner surface of the tubular shape, said adhesive configured to tightly seal the first container (1) by folding the sealing paper on itself.
11. The system for storing in containers, according to any of the preceding claims, which comprises at least one second container (2), configured to hold a product in a cavity (21) of said second container (2), which comprises an end (22) attached at a first end to said cavity (21) and which comprises a hole (23), at a second end, configured to be fitted into the second portion (12) of the first container (1).
12. The system for storing in containers, according to the preceding claim, wherein the second container (1) is made of a material selected from the group consisting of cardboard, food paper, vinyl and polypropylene.
13. The system for storing in containers, according to any of the preceding claims, which comprises a handle (3) which comprises two openings (31) located at two opposite ends of said handle (3), being configured each of said openings (31) to fit, by means of tightening, a second portion (12) of a first container (1), wherein said handle (3) is configured to support two first containers (1).

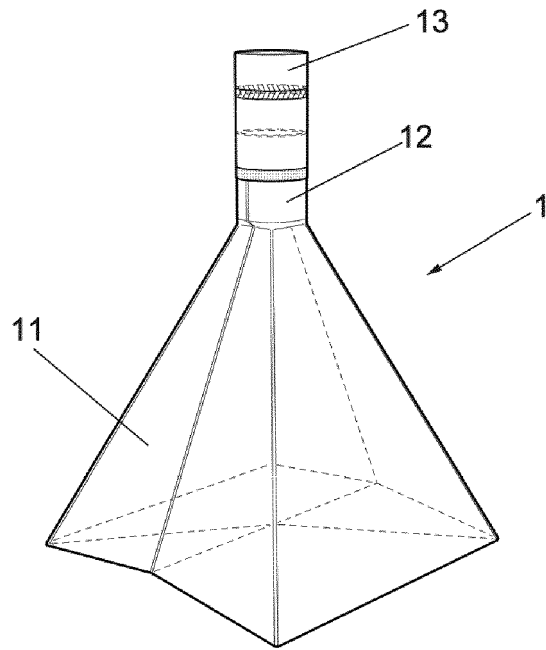


FIG.1A

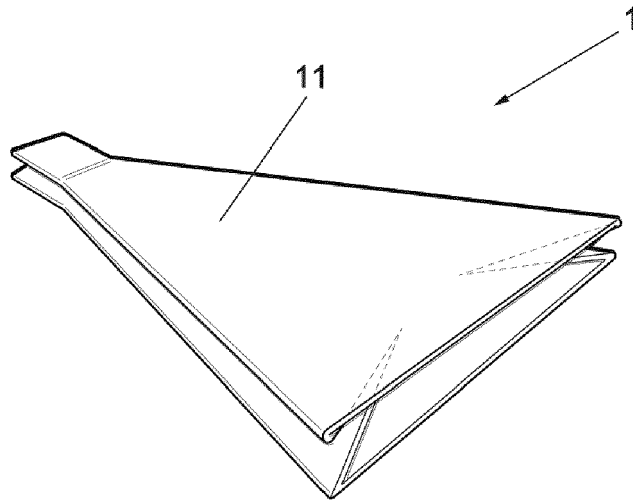


FIG.1B

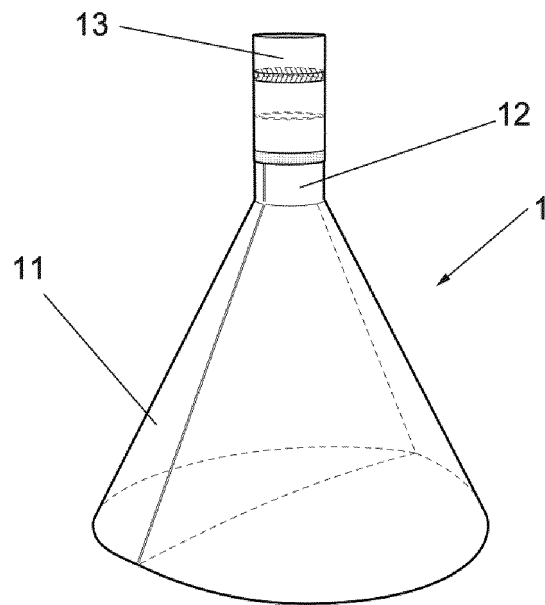


FIG. 2

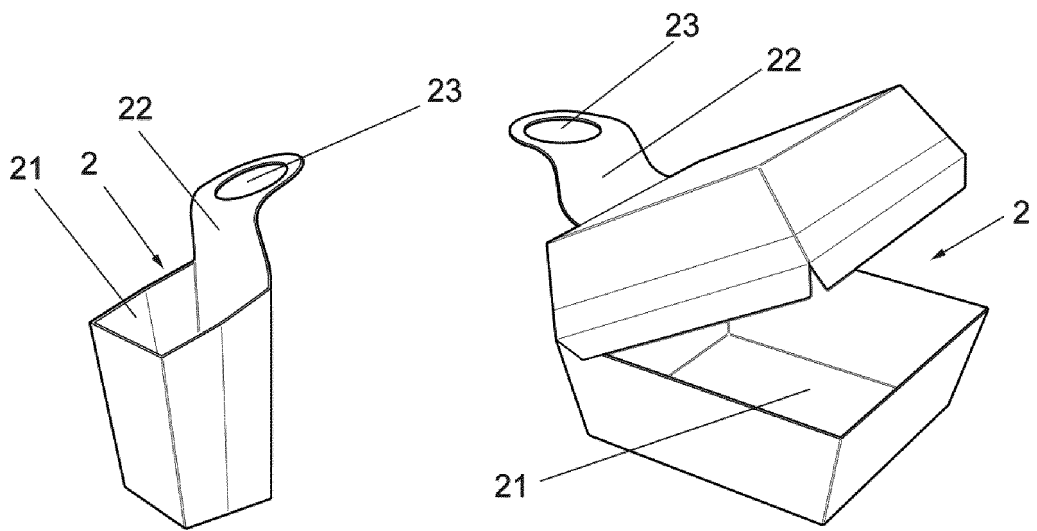


FIG. 3A

FIG. 3B

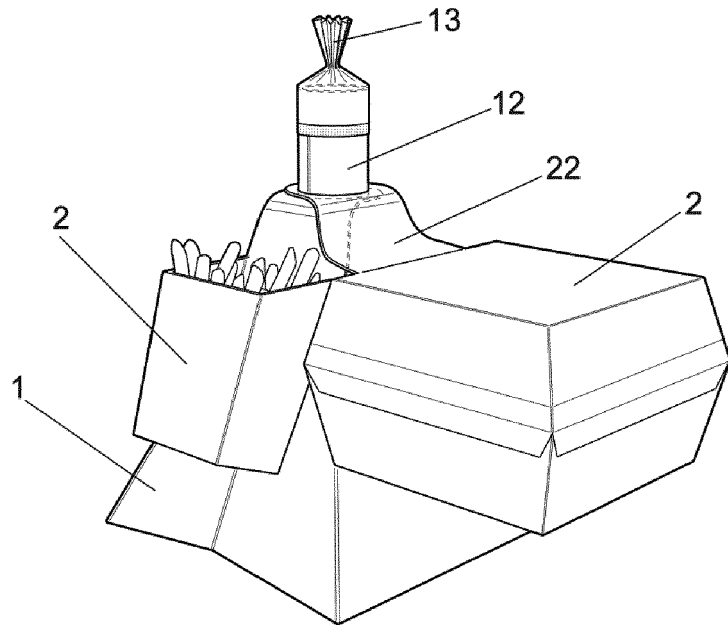


FIG. 4

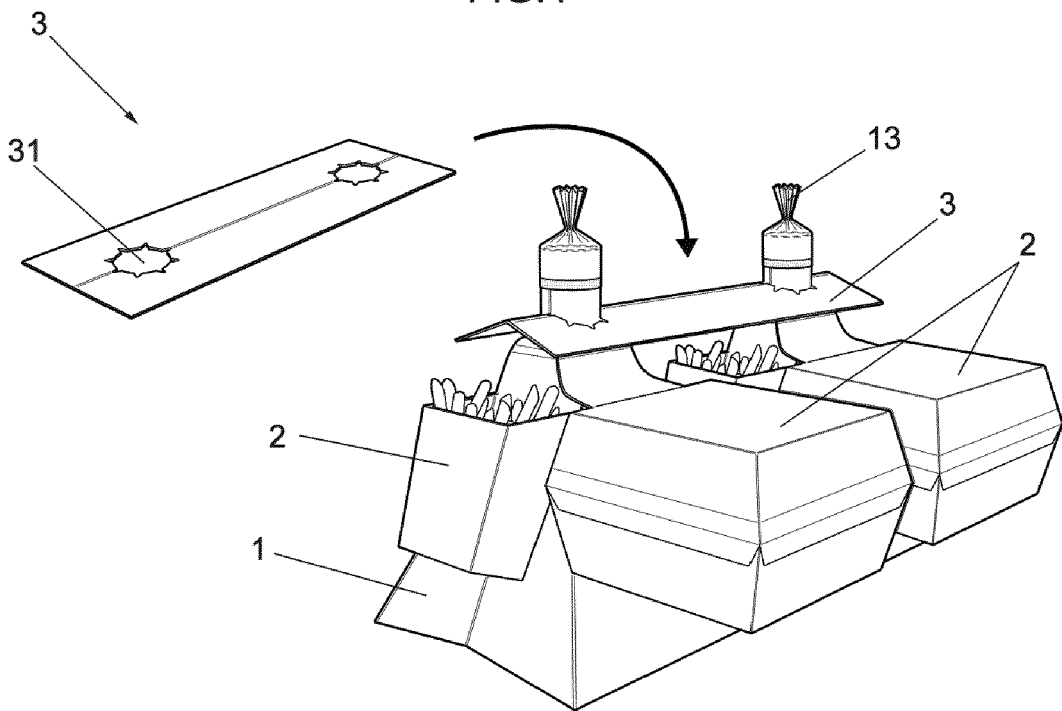


FIG. 5



EUROPEAN SEARCH REPORT

Application Number  
EP 20 38 2865

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2006/057511 A1 (LEE JEONG-MIN [KR]; LEE SEONG-JAE [KR]) 1 June 2006 (2006-06-01) * page 4, line 2 - line 20; figures 7-12 * -----	1,3-6, 11-13	INV. B65D3/06 B65D5/00 B65D5/42
A	US 2 363 148 A (ROSEN SAMUEL S) 21 November 1944 (1944-11-21) * column 1, line 47 - column 2, line 42; figures 1-2 * -----	1-13	B65D5/46 B65D21/02 B65D77/16
A	GB 502 266 A (KENNETH BERTRAM JAMES BLAKEMOR) 15 March 1939 (1939-03-15) * page 2, line 74 - line 113; figures 1-5 * -----	1-13	
A	US 2 935 238 A (ERIC KOEHLER KARL) 3 May 1960 (1960-05-03) * column 2, line 46 - line 63 * -----	1-13	
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A	US 2015/201781 A1 (JIA PENGFEI [CN]) 23 July 2015 (2015-07-23) * paragraph [0014]; figures 1-2 * -----	11	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) B65D
Place of search Munich		Date of completion of the search 6 April 2021	Examiner Derrien, Yannick
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.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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