

BEVERAGE CONTAINER

The present invention relates to a liquid container for containing therein beverage such as orange juice and  
05 sport drink.

A liquid container is known which is formed of flexible sheet arranged in a bag shaped configuration and provided with an upper opening. Such a container  
10 may be used for a beverage, for example, such as orange juice. The container is filled with the beverage through its upper opening which is thermally sealed. A wall of the container is formed with a hole which is normally closed by an adhesive sheet. To drink the  
15 beverage, the adhesive sheet is peeled from the wall and a sealing film at the hole is broken by the insertion of a straw into the interior of the container.

Another known liquid container includes an upwardly  
20 open bag-shaped main body made of a flexible film and a beverage delivery unit secured to the upper opening. The beverage delivery unit is provided with a mouth portion and a conduit extending into an interior of the container body.  
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However, these known liquid containers have a uniform cross-section and are incapable of self-standing. Generally, to inject beverage into a plurality of the liquid containers, it is preferred to  
30 align the containers in a row so that a smooth and effective filling operation can be performed. This is not possible with containers which are not self-standing. It is also rather difficult to pack a plurality of such containers in a box or a package. In  
35 reality, the containers are packed randomly in the box, and corner portions of the containers may easily become

damaged during transportation due to their irregular packing.

Where the container does not have self-  
05 standability, it cannot be set on a dining table or the like.

It is an object of the present invention to reduce the drawbacks of the prior art.

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According to the present invention there is provided a liquid container comprising:

a) a container body formed of a flexible material and having an opening therein, and

15 b) a liquid delivery unit sealingly secured to said opening and arranged to allow a liquid, when within the container body, to pass therethrough,

wherein said container body has front and rear walls and a pair of folded side walls, each said side  
20 wall being substantially V-shaped in cross-section prior to filling the container body with liquid, and each said side wall being thermally sealed to both the front and rear walls along respective ones of four side seams of the container body, and wherein lower end portions of  
25 said front and rear walls are thermally sealed together to define a substantially flat base portion for said container when the container body has been filled with liquid.

30 The lower end portion of each side wall portion may be modified to improve the self-standing of the liquid container when filled. In this respect, the lower end corners of the container body may be cut away, and the cut away edges heat-sealed together.

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Preferably, four substantially triangular corner regions

of the container body are cutaway, each said corner region being defined by adjacent lower portions of a side wall and a front or rear wall, and a respective thermal seal is formed at each cutaway corner region to  
05 seal a cut edge of the side wall to the adjacent cut edge of the associated front or rear wall.

The invention also extends to a liquid container comprising:

- 10 a) a container body formed of a flexible material, and  
b) a liquid delivery unit sealingly secured to said container body,

wherein said container body has front and rear  
15 walls and a pair of folded side walls, said side walls being substantially V-shaped in cross-section prior to filling the container body with liquid, and each said side wall being thermally sealed to both the front and rear walls along respective ones of four side seams of  
20 the container body, and wherein said front and rear walls are thermally sealed together at their lower end portions to define a substantially flat base portion for said container, when the container body has been filled with liquid, and wherein four substantially triangular  
25 corner regions of the container body are cutaway, each said corner region being defined by adjacent lower portions of a side wall and a front or rear wall, and a respective thermal seal is formed at each cutaway corner region to seal a cut edge of the side wall to the  
30 adjacent cut edge of the associated front or rear wall.

In an embodiment, the delivery unit comprises a mouth portion positioned outside said container body, and at least two flanges arranged on said mouth portion  
35 outwardly of said container body. Between the flanges, a plurality of ribs are provided each projecting in a

direction substantially perpendicular to the front and rear walls of the container body.

The ribs can prevent the flanges of one liquid  
05 container from becoming engaged with the flanges of a neighbouring container so that a plurality of containers can be regularly arranged in a row. This enables, for example, continuous liquid injection to the respective containers.

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Embodiments of the present invention will hereinafter be described, by way of example, with reference to the accompanying drawings, in which:

15 Figure 1 shows a perspective view, partly broken away, of one embodiment of a liquid container of the invention.

Figure 2 shows a side view of a delivery unit of  
20 the container of Figure 1,

Figure 3a shows a side view of an alternative delivery unit,

25 Figure 3b shows a side view of another embodiment of a delivery unit,

Figure 4 is a front view of a delivery unit,

30 Figure 5 is a side view showing parts of two delivery units movable along a guide member;

Figure 6 is a top view of a liquid container,

35 Figure 7 shows part of a flexible material used to make a liquid container body as shown in Figure 1,

Figure 8 shows a cross-section through a container body,

Figure 9 shows a front view of another embodiment  
05 of a container body of the invention,

Figure 10 shows a side view of a container body illustrating the cutting away of corners thereof, and

10 Figure 11 is a bottom view of a container body after beverage injection.

In the drawings, the same reference numerals have been used to refer to the same or similar features.  
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Figure 1 shows an embodiment of a liquid container comprising a container body 1 formed with an opening 1a at its top. The container body 1 has a flexible structure and is made of flexible material. As shown in  
20 Figure 7, the flexible material comprises a polyester film 2 having a thickness of 12  $\mu$ , a layer of aluminum foil 3 which is 9  $\mu$  thick, a layer of stretched nylon film 4 which is 15  $\mu$  thick, and a polyethylene film 5 having a thickness in the range 60-120  $\mu$ . A content  
25 delivery unit 7 is secured to the upper opening 1a of the container body 1. The content delivery unit 7 is integrally connected to the container body 1 upon sealing of the upper opening 1a.

30 As can be seen from Figure 1, the container body 1 has front and rear walls connected by a pair of folded side walls. These side walls are substantially V-shaped in cross-section prior to filling the container body with liquid. The side walls are each thermally  
35 sealed to the front and rear walls. In addition, the lower end portions of the front and rear walls are

thermally sealed, as indicated at 32 in Figure 9.

Before the container body is filled with liquid it is generally flat. However, after filling it attains the filled shape illustrated in Figure 1. As can be seen,  
05 in this condition the lower end portions of the front and rear walls define a substantially flat base portion for the container body. The container body can clearly be stood on this base portion.

10 As shown in Figure 2, the content delivery unit 7 includes a mouth portion 9, which has a threaded portion 8, and a conduit portion 10, which is integral with the mouth portion 9. The mouth portion 9 is positioned outside of the container body 1 when the content  
15 delivery unit 7 is secured to the opening 1a of the container body 1. A cap holding member 9a is formed on the delivery unit 7 near to the mouth portion 9 and is arranged to hold the lower end of a cap 16 threadingly engaged on the threaded portion 8. The conduit portion  
20 10 extends from a joining portion 11 which joins the conduit portion 10 and the mouth portion 9. The upper opening 1a is in sealing contact with an outer peripheral surface of the joining portion 11 when the upper opening 1a is thermally sealed. A hole 12 is  
25 formed at an upper portion of the conduit portion 10. The hole is formed by partially cutting the cylindrical wall of the conduit portion 10 of the delivery unit. Upon assembly, the hole 12 is positioned inside the container body 1 and adjacent the joining portion 11 and  
30 the opening 1a.

Figures 3 to 6 illustrate alternative constructions of the delivery unit 7 in which two supporting flanges

are arranged on the mouth portion 9 outwardly of the container body 1. The flanges 14 extend generally transversely relative to the axial extent of said delivery unit 7 and are positioned between the threaded portion 8 and the joining portion 11. The flanges 14 are spaced relative to each other in the axial direction of the delivery unit 7, and each is generally octogonal in shape. The container body has a three dimensional shape upon injection of the beverage, and two sides of each octogonal flange 14 extend substantially parallel to the front and rear surfaces of the container, while two sides of the remaining six sides extend substantially perpendicular to the front and rear surfaces of the container body 1.

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Ribs 15 project from an outer peripheral surface of the mouth portion 9 in a direction substantially perpendicular to the front and rear surfaces of the container body 1 and extend in the axial direction of the delivery unit 7. These ribs 15 are positioned between the flanges 14. As best shown in Figure 5, the ribs 15 extend to the free ends of the flanges 14, and lower end portions of the ribs 15 are cut away as shown in Figure 4. These ribs 15 are provided in order to prevent the flanges 14 of one liquid container (A) from engaging the flanges 14 of a neighbouring liquid container (B) when these containers are moved along a guide member 17, as indicated in Figure 5.

30 In the embodiment of the delivery unit shown in Figure 3a, no conduit portion is provided. In this case, the delivery unit 7 is supported by its joining portion 11 in the upper opening 1a of the container body 1.

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In the construction illustrated in Figure 3b, a conduit portion 10, which extends from the joining portion 11, is provided. The conduit portion 10, adjacent the joining portion 11 and within the container body, is provided with a plurality of slots 12 and a pair of ribs 13 which extend in the axial direction of the delivery unit and hence of the conduit portion 10. The slots 12 are arranged to be symmetrical relative to one another. The conduit portion 10 is arranged to have a length which positions its lower end at or near to the bottom of the container body 1 when the content delivery unit 7 is fixedly secured to the opening 1a of the container body 1.

When the content delivery unit 7 is used as a straw or sipper, the cap 16 is removed from the mouth portion 9 so that the mouth portion 9 can be inserted into a human mouth. Upon sucking or sipping, the wall of the container body 1 is urged toward the hole 12 (Figure 2) or slots 12 (Figure 3b) formed in the conduit portion 10 because of the flexibility of the container body. Thus, the hole 12 or slots 12 are closed by the wall. As a result, a beverage is sucked from the lower end of the conduit portion 10.

When the content delivery unit 7 is used as a pouring device, the user holds the container body 1 by hand and inclines it so that the beverage can be discharged through the hole or slots 12 of the conduit portion 10 and out of an opening in the mouth portion 9. Since the hole or slots 12 are positioned at the upper portion of the conduit 10, the beverage is completely discharged out of the container body 1 at the inverse posture of the container.

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The hole 12 or slots 12 enable the discharge of air from the container body 1 during filling and thereby aid in the filling of the container body by injection through the delivery unit 7.

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It will be seen from Figure 1 that the flexible container body 1 has a generally rectangular shape, and has side walls which, prior to the liquid injection are folded as indicated in Figure 8. The side walls when  
10 folded have a substantially V-shaped cross-section. As is shown in Figure 9, lower substantially triangular corner regions of the container body are cut to aid the container to be upstanding after liquid injection. In this respect, as is apparent from Figure 8, the  
15 container body of Figure 1 has four corners 1b, 1c, 1d and 1e. However, and as shown in Figure 9, the four bottom corners are cut away and the cut away edge portions are thermally sealed together at 30.

20 The container body 1 has four side sealing portions 31a, 31b, 31c and 31d, and a bottom seal portion 32. When the V-shaped side walls of the container body are opened in a direction as indicated by arrows Y in Figure 8, the side walls attain the shape illustrated in Figure  
25 10. In Figure 10, the solid lines illustrate the structure with cut away corners, whilst the broken lines show the embodiment of Figure 1.

To form the cut away version, the container body 1  
30 can be constructed as indicated in Figure 1. Then, and as shown in Figure 10, a length L is defined between an inner folded bottom end 33 and an inner edgeline of the sealing portion 31. The length L is also set between the inner edgeline (upper edgeline in Figure 10) of a  
35 lower end seal 34 and an inner edgeline of the side sealing portion 31 to determine an upper point 35. The

upper point 35 so defined and the internally folded bottom end 33 are then connected by the lines 36, and thermal sealing is effected along the lines 36. After the thermal sealing, the broken line portions are removed.

With this structure, when the folded container body is inflated by the injection of liquid, the bottom portion of the body 1, i.e., the bottom portion z shown in Figure 9, is folded so as to provide the rectangular shape viewed from below as shown in Figure 11. This rectangular shaped base makes the container capable of self-standing because of the gravity or weight of the contents of the container body. In the embodiment in which the lower end corner portions are cut away, the lower end portions of the container body are easily bent, so that the container can easily maintain an upstanding posture because of the weight of the beverage. Thus embodiments of a container of the invention may be used as self-standing beverage containers capable of maintaining an upstanding position on a flat plane such as a dining table.

It is possible to arrange containers of the invention in a combination in which a plurality of containers can be regularly packed in a packing box. In addition, such a combination is capable of regularly juxtaposing the containers for a subsequent beverage filling step at a beverage filling station. In an embodiment, such combination is capable of preventing the containers from being damaged during their transportation, yet assembling large numbers of containers in a packaging box.

While the invention has been described in detail and with reference to specific embodiments thereof, it

will be apparent that various changes and modifications can be made without departing from the scope of the invention.

05        The containers described and illustrated herein are described and claimed in our copending application No. 2194507, from which the present application is divided. The combination of containers and a container assembling member described herein is also described and claimed in  
10 our copending application No. 2230510, which is also divided out of application No. 2194507.

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CLAIMS

1. A liquid container comprising:
  - a) a container body formed of a flexible material
  - 05 and having an opening therein, and
  - b) a liquid delivery unit sealingly secured to said opening and arranged to allow a liquid, when within the container body, to pass therethrough, wherein said container body has front and rear
  - 10 walls and a pair of folded side walls, each said side wall being substantially V-shaped in cross-section prior to filling the container body with liquid, and each said side wall being thermally sealed to both the front and rear walls along respective ones of four side
  - 15 seams of the container body, and wherein lower end portions of said front and rear walls are thermally sealed together to define a substantially flat base portion for said container when the container body has been filled with liquid.
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2. A liquid container as claimed in Claim 1, wherein four substantially triangular corner regions of the container body are cutaway, each said corner region being defined by adjacent lower portions of a side wall
- 25 and a front or rear wall, and a respective thermal seal is formed at each cutaway corner region to seal a cut edge of the side wall to the adjacent cut edge of the associated front or rear wall.
- 30 3. A liquid container comprising:
  - a) a container body formed of a flexible material, and
  - b) a liquid delivery unit sealingly secured to said container body,
  - 35 wherein said container body has front and rear walls and a pair of folded side walls, said side walls being substantially V-shaped in cross-section prior to



filling the container body with liquid, and each said side wall being thermally sealed to both the front and rear walls along respective ones of four side seams of the container body, and wherein said front and rear  
05 walls are thermally sealed together at their lower end portions to define a substantially flat base portion for said container when the container body has been filled with liquid, and wherein four substantially triangular corner regions of the container body are  
10 cutaway, each said corner region being defined by adjacent lower portions of a side wall and a front or rear wall, and a respective thermal seal is formed at each cutaway corner region to seal a cut edge of the side wall to the adjacent cut edge of the associated  
15 front or rear wall.

4. A liquid container as claimed in any preceding claim, wherein said delivery unit comprises a mouth portion positioned outside said container body, and at  
20 least two flanges arranged on said mouth portion outwardly of said container body, and a plurality of ribs positioned between said flanges and projecting in a direction substantially perpendicular to the front and rear walls of said container body.

25 5. A liquid container as claimed in any preceding claim, wherein said flexible material comprises laminated films.

30 6. A liquid container as claimed in any preceding claim, wherein said container body is made of ~~sheets of~~ flexible material, and has said opening at an upper end thereof.

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