

A BEVERAGE CONTAINER AND ASSEMBLING MEMBER

The present invention relates to a combination of at least one liquid container and a container assembling member.

Liquid containers formed of flexible material in a bag shaped configuration are known, for example, for containing beverages, for example, orange juice. The beverage is filled in the container through an upper opening and the opening is then thermally sealed.

Generally, the known containers have non-uniform cross-sections and are incapable of self-standing. It is rather difficult to pack a plurality of the containers in a box or a package. In practice these containers are randomly packed in boxes, and it has been found that corner portions of the containers may be damaged during transportaion because of the irregular packing. Further, in order to inject beverage into a plurality of liquid containers, it is necessary to regularly align the containers in a row so as to perform smooth and effective filling of the beverage into the containers. However, where the containers are not self-standing it is difficult to smoothly fill successive containers at a beverage filling station.

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 combination of at least one liquid container and a container assembling member for assembling together a plurality of said containers, wherein the or each liquid container comprises:

a container body formed of a flexible material and having an opening therein, and a liquid delivery unit

secured to said opening and arranged to allow a liquid within the container body to pass therethrough, said delivery unit having a mouth portion positioned outside said container body, and a joining portion in sealing
05 contact with said opening, and wherein said container assembling member comprises an elongate, hollow channel member having a substantially C-shaped cross-section, said channel member being formed with a lip portion engageable with the delivery unit of the or each said
10 liquid container, the arrangement being such that the or each said liquid container is movable along said channel member with its delivery unit supported by said lip portion.

15 In an embodiment, the liquid delivery unit of the or each said liquid container has a flange portion external of its container body and adjacent to said opening, the lip portion of said channel member being engageable with the flange portion of the or each said
20 liquid container whereby a plurality of liquid containers may be assembled relative to said channel member.

The invention also extends to a combination of at
25 least one liquid container and a container assembling member for assembling together a plurality of said containers, wherein the or each liquid container comprises a main container body formed of a flexible material and having an opening therein, and a liquid
30 delivery unit sealingly secured to said opening, said liquid delivery unit having a flange portion external of its container body and adjacent to said opening, and wherein said container assembling member comprises an elongate, hollow channel member having a substantially
35 C-shaped cross-section, a lip portion of said channel member being engageable with the flange portion of the or each said liquid container whereby a plurality of

liquid containers may be assembled relative to said channel member.

Embodiments of the invention enable a plurality of
05 liquid containers to be engaged with the channel member so that the containers are all oriented in the same direction, that is, the containers are regularly juxtaposed with respect to one another, and this permits the containers to be effectively packed in a packing
10 box. In addition, the regularly juxtaposed containers can be subjected to smooth injection of the beverage at the beverage filling station.

Preferably the or each container body is folded in
15 gusset type manner such that the body is a flat thin shape prior to filling. The side wall portions of the container body are inwardly folded to provide a V-shape in cross-section. This internally folded portion is deformed to form a generally flat plane upon injection
20 of the beverage. The lower end portions of the side walls of the container body may be cut away, and the cut away edges then heat-sealed together.

In an embodiment, the combination further comprises
25 a packaging box for storing a plurality of said liquid containers, and a plurality of support members disposed in said packaging box for mounting thereon at least two said channel members.

30 Preferably, said flange portion of a liquid container comprises two flange members spaced relative to each other in an axial direction of said delivery unit, the lip portion of said channel member being engageable between said two flange members.

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In an embodiment where the or each said liquid delivery unit comprises a mouth portion positioned outside said container body and a joining portion in sealing contact with said opening, said flange portion
05 of the or each said liquid delivery unit comprises at least two flanges arranged on said mouth portion outwardly of said container body relative to said joining portion. Preferably, at least two ribs are positioned between said flanges and project in a
10 direction substantially perpendicular to front and rear surfaces of said container body.

In a preferred embodiment, said container body, is made of flexible material, and has said opening at an
15 upper end thereof. For example, the flexible material may comprise laminated films.

The container body of the or each said liquid container may have a folded construction defining a pair
20 of side walls which are substantially V-shaped in cross-section prior to filling the container body with liquid. Preferably, the container body has front and rear walls and said pair of side walls, each said side wall being thermally sealed to both said front and rear
25 walls at respective ones of four side seams of said container body, and said front and rear walls being thermally sealed together at their lower end portions, so as to provide a closed bottom end portion defining a substantially flat base portion when the container is
30 filled with liquid.

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

Figure 1 shows a perspective view, partly broken away, of one embodiment of a liquid container,

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

Figure 3 shows a perspective view, partly broken away, of a second embodiment of a liquid container,

10 Figure 4(a) shows a side view of an alternative delivery unit,

Figure 4(b) shows a side view of the delivery unit of the container of Figure 3,
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Figure 5 shows a front view of a part of the delivery unit,

Figure 6 shows a side view of parts of two delivery
20 units each moving along a guide member,

Figure 7 shows a top view of a liquid container,

Figure 8 shows a part of a flexible material used
25 to make a liquid container as shown in Figure 1,

Figure 9 shows a perspective view of a combination of the invention of a container assembling member and a plurality of liquid containers,
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Figure 10 shows a cross-sectional view of the combination of Figure 9,

Figure 11 shows schematically assemblies of
35 containers being transferred into a beverage filling station,

Figure 12 shows a cross-sectional view of a container body,

Figure 13 shows a front view of another embodiment 05 of a container body,

Figure 14 shows a side view of a container body,

Figure 15 shows a bottom view of the container body 10 of Figure 14 after beverage injection.

In the drawings the same reference numerals have been used to refer to the same or similar features.

15 Figure 1 shows a liquid container having a container body 1 which is generally in the form of a bag, and is made of flexible material. The container body 1 is formed with an opening 1a at its top and has a flexible structure. As shown in Figure 8, the container
20 body 1 is made of laminated film 6 which includes a polyester film 2 having a thickness of 12 μ , a layer of aluminum foil 3 (9 μ), a layer of stretched nylon film 4 (15 μ), a polyethylene film 5 (60-120 μ). A delivery unit 7 is secured to the upper opening 1a of the
25 container body 1. This delivery unit 7 is integrally coupled to the container body 1 upon sealing of the upper opening.

As shown in Figure 2, the delivery unit 7 includes
30 a mouth portion 9, having a threaded portion 8, and a conduit portion 10 which is integral with the mouth portion 9. The mouth portion 9 is positioned outside the container body 1 when the delivery unit 7 is fixedly secured to the opening 1a of the container body 1. A

cap holding member 9a is formed near the mouth portion 9 so as to hold a lower end of a cap 16 threadingly engaged with the threaded portion 8. The conduit portion 10 extends from a joining portion 11 for joining
05 the conduit to the mouth portion 9. The opening 1a is in close contact with an outer peripheral surface of the joining portion 11 when the opening 1a is thermally sealed. A hole 12 is formed at an upper portion of the conduit portion 10. The hole 12 is formed by partially
10 cutting the cylindrical wall of the conduit portion 10 of the delivery unit. Upon assembly, the hole 12 is positioned within the container body 1 and immediately adjacent the joining portion 11.

15 Figure 3 shows an alternative embodiment of a liquid container having a delivery unit 7 provided with two supporting flanges 14 which extend generally transversely of the axial extent of the delivery unit 7. The flanges 14 are positioned between the threaded
20 portion 8 of the mouth portion 9 and the joining portion 11. The flanges are spaced away from each other in the axial direction of the delivery unit 7, and each has a generally octagonal shape. The container body has a three dimensional shape upon injection of the beverage,
25 and two sides of each octagonal flange 14 extend substantially parallel to the front and rear surfaces of the container, while two sides of the remaining six sides of each flange extend in a direction substantially perpendicular to the front and rear surfaces of the
30 container body 1.

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
35 container body 1 and extend in the axial direction of

the delivery unit 7. These ribs 15 are positioned between the upper and lower flanges 14. As best seen in Figures 5 and 6, the ribs 15 extend to the free ends of the flanges 14 and lower end portions of the ribs 15 are cut away. 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 6.

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The delivery unit shown in Figure 4(a) is not provided with a conduit portion, and is supported at its joining portion 11 within the opening 1a of the container body 1.

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The modified construction shown in Figure 4(b), has a conduit portion 10 which extends from the joining portion 11. At the conduit 10, adjacent the joining portion 11 and within the container body 1, a plurality of slots 12 are provided, and a pair of ribs 13 extend in the axial direction of the conduit portion 10. The slots 12 are symmetrical relative to one another. The length of the conduit portion 10 is arranged such that its lower end is positioned in the vicinity of the bottom of the container body 1 when the delivery unit 7 is fixedly secured to the opening 1a of the container body 1.

When the delivery unit 7 is used as a straw or sipper, the cap 16 is removed from the mouth portion 9 which can then be held in a human mouth. Upon sucking or sipping, the wall of the container body 1 is urged towards the hole 12 (Figure 2) or slots 12 (Figure 4(b)) formed in the conduit portion 10 because of the flexibility of the container body, so that 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.

05 When the delivery unit 7 is used as a pouring means, the user holds the container body 1 by hand and inclines the same, so that beverage can be discharged through the hole 12 or slots 12 of the conduit 10 out of an opening of the mouth portion 9. As the hole or slots
10 12 are positioned at the upper portion of the conduit 10, the beverage is completely discharged out of the container body 1 by inverting the container.

 To fill the liquid containers described, each
15 container body 1 is suspended by a guide member 17 of a beverage filling apparatus (not shown) by way of its supporting flanges 14. The ribs 15 formed between the flanges 14 prevent the flanges of one container from becoming engaged with the flanges of a neighbouring
20 container. A plurality of the container bodies can therefore be aligned in a row without disturbance during beverage injection therinto. The hole at the lower end of the mouth portion (Figure 4(a)) or the plurality of slots 12 (Figure 4(b)) enable air in the container to
25 discharge to atmosphere therethrough during beverage injection, and thus a sufficient quantity of the beverage can be injected into the container.

 The ribs 15 also prevent the delivery unit 7 from
30 thermal contraction during cooling after the process of forming the delivery unit by injection molding. This improves the resultant dimensional stability of the delivery unit. Furthermore, and as shown in Figure 4(b), ribs 13 may be provided for reinforcing the part
35 of the conduit portion 10 at which the slots 12 are formed.

As described above, as beverage is filled into each container body, a smooth discharge of air through the hole or slots 12 is provided, to ensure effective filling. In addition, the hole or slots enable
05 effective discharge of the beverage out of the container body. Further engagement between neighbouring container bodies is obviated to facilitate regular alignment thereof during injection of the beverage.

10 Figures 9 to 11 illustrate a combination of the invention of liquid containers and a container assembling member. As shown, the container assembling member comprises a hollow elongate channel member 20 which has a generally C-shaped cross-section. The
15 channel member 20 is formed with a lip portion comprising two spaced and aligned linear lips 22. The channel member 20 is mounted in a recess 25 of a support member 23 so that the lips 22 are disposed at the upper portion of the channel member 20. The support member 23
20 may be located, for example, in a packing box. The channel member 20 has an internal space whose vertical length h is sufficiently long to permit the mouth portion 9 of a liquid container to be received within the channel member 20. By this means, a container is
25 held by the channel member 20 in its inverse position and can be smoothly slid therealong. A portion of the mouth portion 9 between the two flanges 14 has a generally rectangular cross-section and its width is smaller than the width w of the spacing between the two
30 lips 22 to allow smooth engagement of the flanges with the lips 22. The axial length of the spacing between the flanges 14 is greater than the thickness of each of the lips 22.

35 For the transportation of a plurality of the liquid containers, the liquid containers are inverted and are

successively inserted into the interior of the channel member 20 from one of its longitudinal open ends 21 so that flanges 14 are slidably engaged with the lips 22. In this case, the container bodies 1 are all aligned in the same direction so that the containers are regularly assembled with respect to the channel member 20.

A plurality of channel members 20 can be mounted to extend substantially parallel with respect to one another on the support member 23 of a packaging box as shown in Figure 10. In this case, one of the container bodies 1 assembled with one of the channel members 20 is interposed between adjacent container bodies assembled with the other of the channel members as is indicated. In this manner compact packaging can be provided as the container bodies in the two rows of containers are staggered with respect to one another. The support member 23 can form the bottom of a packaging box. A plurality of support members 23 may also be disposed in one box separated from one another in the vertical direction.

Where the containers are to be filled with a beverage, the channel 20 may act as a guide for introducing the containers into a beverage filling station 24 as is indicated in Figure 11. It is thus unnecessary to pre-align the containers ready for the injection of beverage thereinto.

The combination of the containers and the container assembling member described above enables a plurality of containers, which do not have a self-standing facility prior to liquid injection, to be regularly assembled on each channel member. Large numbers of the assembled containers can then be packed into a package box. This

provides very effective packaging for the containers which provides a high yield of acceptable containers. For example, the packaged containers are protected against deterioration of their corner portions because
05 frictional contact therebetween is prevented, and wrinkle of the flexible container bodies does not occur. The regularly juxtaposed containers are also available for successive injection of the beverage thereinto without any pre-alignment of the containers being
10 necessary.

In the embodiments described above, the flexible container body 1 has a rectangular shape (see Figure 3) prior to the liquid injection, and is folded as shown in
15 Figure 12. As shown in Figure 13, lower substantially triangular corners of the container body may be cut away as one means of ensuring that the container is self-standing after liquid injection. As is shown in Figures 12 and 14, the container body has four
20 corners 1b, 1c, 1d and 1e in the foregoing embodiments. The four bottom corners may be cut away as shown in Figure 13 and the cut away edge portions thermally sealed together at 30.

25 The container body 1 has front and rear walls connected by a pair of side walls which, in the unfilled condition, are folded to have a generally V-shaped cross-section. The container body 1 also has four side sealing portions 31a, 31b, 31c and 31d, and a bottom
30 seal portion 32. When the V-shaped folded side walls of the container body 1 are opened as indicated by arrows Y in Figure 12, the side walls attain the shape shown in Figure 14. In this Figure, which shows a side view, the solid lines show the structure of a cut away container
35 body, and the broken lines show the container body

without cut away corners. In Figure 14, a length L is defined between an inner folded bottom end 33 and an inner edgeline of the side sealing portion 31. The length L is also set between the inner edgeline (upper
05 edgeline in Figure 14) of a lower end seal 34 and an inner edgeline of the side sealing portion 31 to determine an upper point 35. Then the upper point 35 and the internally folded bottom end 33 are connected by lines 36, and the thermal sealing 30 is effected along
10 the lines 36. After the thermal sealing, the broken line portions can be removed.

With this structure, when the folded container body is inflated by the liquid injection, the bottom portion
15 Z shown in Figure 13 of the body is folded so as to provide a rectangular shape when viewed from underneath as shown in Figure 15. This container is capable of self-standing because of the gravity or weight of its contents. Since the lower end corner portions are cut
20 away, the lower end portions of the container body are easily bent, so that the container can maintain upstanding posture because of the weight of the beverage.

25 It will be appreciated that it is possible to arrange containers in a combination of the invention to facilitate the arrangement of a plurality of containers within a packing box. In addition, the combination is capable of regularly juxtaposing the containers for a
30 subsequent beverage filling step at a beverage filling station. In an embodiment, the combination is capable of preventing the containers from being damaged during their transportation, yet assembling large numbers of the 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 modification can be made without departing from the scope of the
05 invention.

The containers described and illustrated herein are described and claimed in our copending application No. 2194507, from which the present application is
10 divided. Containers illustrated herein are also described and claimed in our copending application No 2229992, which is also divided out of application No. 2194507.

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CLAIMS

1. A combination of at least one liquid container and
a container assembling member for assembling together a
05 plurality of said containers, wherein the or each liquid
container comprises

a container body formed of a flexible material and
having an opening therein, and a liquid delivery unit
secured to said opening and arranged to allow a liquid
10 within the container body to pass therethrough, said
delivery unit having a mouth portion positioned outside
said container body, and a joining portion in sealing
contact with said opening, and wherein said container
assembling member comprises an elongate, hollow channel
15 member having a substantially C-shaped cross-section,
said channel member being formed with a lip portion
engageable with the delivery unit of the or each said
liquid container, the arrangement being such that the or
each said liquid container is movable along said channel
20 member with its delivery unit supported by said lip
portion.

2. A combination as claimed in Claim 1, wherein the
liquid delivery unit of the or each said liquid
25 container has a flange portion external of its container
body and adjacent to said opening, the lip portion of
said channel member being engageable with the flange
portion of the or each said liquid container whereby a
plurality of liquid containers may be assembled relative
30 to said channel member.

3. A combination of at least one liquid container and
a container assembling member for assembling together a
plurality of said containers, wherein the or each liquid
35 container comprises a main container body formed of a
flexible material and having an opening therein, and a
liquid delivery unit sealingly secured to said opening,



said liquid delivery unit having a flange portion external of its container body and adjacent to said opening, and wherein said container assembling member comprises an elongate, hollow channel member having a
05 substantially C-shaped cross-section, a lip portion of said channel member being engageable with the flange portion of the or each said liquid container whereby a plurality of liquid containers may be assembled relative to said channel member.

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4. A combination as claimed in any preceding claim, further comprising a packaging box for storing a plurality of said liquid containers, and a plurality of support members disposed in said packaging box for
15 mounting thereon at least two said channel members.

5. A combination as claimed in any of claims 2 to 4, wherein said flange portion of a liquid container comprises two flange members spaced relative to each
20 other in an axial direction of said delivery unit, the lip portion of said channel member being engageable between said two flange members.

6. A combination as claimed in any of claims 2 to 5,
25 wherein the or each said liquid delivery unit comprises a mouth portion positioned outside said container body and a joining portion in sealing contact with said opening, wherein said flange portion of the or each said liquid delivery unit comprises at least two flanges
30 arranged on said mouth portion outwardly of said container body relative to said joining portion, and wherein at least two ribs are positioned between said flanges and project in a direction substantially perpendicular to front and rear surfaces of said
35 container body.



- 17 -

7. A combination as claimed in any preceding claim, wherein said flexible material comprises laminated films.

05 8. A combination as claimed in any preceding claim, wherein said container body of the or each said liquid container is made of flexible material, and has said opening at an upper end thereof.

10 9. A combination as claimed in any preceding claim, wherein said container body of the or each said liquid container has a folded construction defining a pair of side walls which are substantially V-shaped in cross-section prior to filling the container body with
15 liquid.

10. A combination as claimed in Claim 9, wherein said container body has front and rear walls and said pair of side walls, each said side wall being thermally sealed
20 to both said front and rear walls at respective ones of four side seams of said container body, and said front and rear walls being thermally sealed together at their lower end portions so as to provide a closed bottom end portion defining a substantially flat base portion when
25 the container is filled with liquid.

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