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The present invention relates to a refill container for storing a toiletry product such as a liquid detergent or a fabric softener, or a food product such as a cooking oil or instant coffee.

Background Art

A toiletry product such as a liquid detergent or a fabric softener, or a food product such as a cooking oil or instant coffee is stored in a dedicated container having a user-friendly shape. Since the dedicated containers have solid structures and are hence expensive, products in refill containers for refilling with contents alone are often separately sold so that the solid container can be repeatedly used when the contents have been used up.

20 For example, in regard to a container for a liquid
detergent, since an appropriate amount must be weighted
and taken out every time the detergent is used, a rigid
plastic container, which has a nozzle at a spout to
facilitate pouring into a measuring cup, is used as a
25 repeatedly used container. In the case of this
container, as a refill container for refilling with
contents, there is generally used a soft container made

of a soft packaging film and formed with a spout or attached with a tap.

Since the rigid container that is repeatedly used is designed to facilitate pouring, the convenience of a
5 refilling operation for refilling with contents from the refill container is not necessarily taken into consideration.

Further, on the other hand, importance is exclusively and overly attached to inexpensive
10 manufacture of the refill container, and the convenience of the refilling operation is not necessarily taken into consideration.

For example, in the case of a soft container made of a soft packaging film and having a spout simply
15 formed therein, maintaining the shape of the spout and its periphery is difficult, and the spout may bend, which deteriorates pouring properties in some cases. In the case of a container having a spout reinforced by embossing, the embossing alone is not sufficient, and
20 the spout may be likewise bent in some cases. Therefore, refilling takes time, and there is always concern that contents may spill out from a main body container nozzle while refilling, which requires much care.

25 Furthermore, in the case of a refill container having a tap of a shaping tube attached to a spout, although a problem that the spout is bent does not

occur, there arises a problem that dropping of the tube or rupture of a film is apt to occur when attaching the shaping tube in a container manufacturing stage.

Moreover, since the unfilled empty containers cannot be
5 flatly stacked when supplying these containers by a filler, the empty containers are hard to align, and a problem of poor filler fitness occurs. Additionally, at a use stage, when unsealing the spout, there is an inconvenience that a knife or a pair of scissors is
10 required to cut the tube portion.

There has been suggested a refill container that can be unsealed by utilizing a nozzle provided for a repeatedly used container and that does not have to be held by hand since the refill container can stand by
15 itself during refilling. This unheld refill container is a refill container including a coupling member detachably coupled with an opening portion of a repeatedly used container to avoid falling and a container sealing member that seals a refill container
20 main body (see Patent Literature 1).

In terms of a cost, a packaging bag 60 which is a refill container having peripheries of two front and back packaging films 61 sealed as shown in FIG. 29 is advantageous. A spout 62 having an arbitrary width
25 corresponding to a diameter of the container can be provided to this packaging bag 60. However, when the spout is formed by sealing end peripheries of the two

front and back films 61, an opening portion is pulled to both the sealed ends when pouring contents, and the front and back surface films enter a pseudo-appressed state. Therefore, there occurs a problem that the spout is closed. Further, the spout is apt to bend, and there is also a problem that the spout deviates from the repeatedly used container during a refilling operation.

To solve the problem that the spout is closed or bent, there are many suggestions, e.g., inserting a part which is a different member from the film into a spout portion (see Patent Literature 2) or inflating a film near a spout portion into a three-dimensional shape to assure an opening area (see Patent Literature 3).

However, the packaging bags have a problem that a step of disposing another member or a step of deeply embossing a film is additionally required, a problem that packaging bags cannot be stacked and aligned in an orderly manner in a packaging bag supply section at the time of filling, and a basic problem that a sufficient open width is narrowed and a sufficient opening area cannot be assured for the opening portion obtained by sealing the two front and back surface films since a seal portion is present at each of both ends. When the sufficient opening area cannot be assured, a time required for pouring at the time of refill becomes

long.

To solve this problem, there is suggested a packaging bag having a configuration that a film constituting the packaging bag is bent to form a spout on one side and a seal portion for the spout is provided on one side alone (see Patent Literatures 4 and 5).

Citation List

Patent Literature

10 Patent Literature 1: Jpn. Pat. Appln. KOKAI Publication No. 2004-99082

Patent Literature 2: Jpn. Pat. Appln. KOKAI Publication No. Hei 5-132069

Patent Literature 3: Japanese Patent No. 4110940

15 Patent Literature 4: Jpn. Pat. Appln. KOKAI Publication No. Hei 11-236053

Patent Literature 5: Jpn. Pat. Appln. KOKAI Publication No. 2008-18991

Summary of Invention

20 Technical Problem

Since the refill container described in Patent Literature 1 uses two members, i.e., the coupling member and the container sealing member in order to couple the repeatedly used container with the refill container, a cost of the container is necessarily increased. Furthermore, since the refill container is configured to be screwed into the opening portion of

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the repeatedly used container and put to use in this state, both the containers can be assuredly coupled but, on the other hand, there is a drawback that not only an operation is troublesome but also a cost of a tap is disadvantageous.

In the case of such a packaging base in which one side of a spout is formed of a bent film as disclosed in Patent Literature 4 or 5, a problem that the spout is closed or a problem that an opening area of the spout portion is insufficient can be solved to some extent, it cannot be said a time required for pouring or ease of pouring is satisfactory.

Therefore, it is an object of the present invention to provide a refill container that enables an easy, rapid, and secure refilling operation.

Solution to Problem

To solve the problems and achieve the object, a refill container is configured as follows.

According to an aspect of the present invention, there is provided a refill container constituted of a laminated body having at least a base material and a sealant layer, comprising: a bent portion formed by bending the one laminated body at a top portion with the sealant layer provided on the inner side; a main body front surface laminated body formed of the bent laminated body; and a main body back surface laminated body formed of the bent laminated body, wherein the

sealant layers of the main body front surface laminated body and the main body back surface laminated body are arranged to face each other, and the peripheries of the main body front surface laminated body and the main body back surface laminated body are sealed, a spout seal portion is provided below the bent portion, and the bent portion and the spout seal portion form an outflow path for contents that reaches a spout.

According to one aspect of the present invention, there is provided a refill container constituted of a laminated body having at least a base material and a sealant layer, comprising: a bent portion formed by bending the one laminated body with the sealant layer provided on the inner side; a main body front surface laminated body formed of the bent laminated body; and a main body back surface laminated body formed of the bent laminated body, wherein the sealant layers of the main body front surface laminated body and the main body back surface laminated body are arranged to face each other, the peripheries of the main body front surface laminated body and the main body back surface laminated body are sealed, a spout seal portion is provided below the bent portion, the bent portion and the spout seal portion form a pouring nozzle for pouring contents, an end of the pouring nozzle has an expected unsealing line, a spout is formed by cutting off the end along this expected unsealing line, and the

following relationship is met: $A - 4 \text{ (mm)} \leq B \text{ (mm)} \leq A - 0.5 \text{ (mm)}$, where $A \text{ (mm)}$ is a length of the expected unsealing line and $B \text{ (mm)}$ is a width of an opening portion of the spout.

5 According to one aspect of the present invention, there is provided a refill container constituted of a laminated body having at least a base material and a sealant layer, comprising: a bent portion formed by bending the one laminated body with the sealant layer provided on the inner side; a main body front surface laminated body formed of the bent laminated body; and a main body back surface laminated body formed of the bent laminated body, wherein the sealant layers of the main body front surface laminated body and the main body back surface laminated body are arranged to face each other, and the peripheries of the main body front surface laminated body and the main body back surface laminated body are sealed, a spout seal portion is provided below the bent portion, and the bent portion and the spout seal portion form a pouring nozzle for pouring contents, an end of the pouring nozzle has an expected unsealing line, a spout is formed by cutting off the end along this expected unsealing line, and the following relationship is met: $1/10 \times (C^2/\pi) \text{ (mm}^2) \leq D \text{ (mm}^2) \leq C^2/\pi \text{ (mm}^2)$, where $C \text{ (mm)}$ is a width of the spout and $D \text{ (mm}^2)$ is a cross-sectional area of an opening portion of the spout.

As one aspect of the present invention, there is provided a refill container constituted of a laminated body having at least a base material and a sealant layer, comprising: a bent portion formed by bending the one laminated body with the sealant layer provided on the inner side; a main body front surface laminated body formed of the bent laminated body; and a main body back surface laminated body formed of the bent laminated body, wherein the sealant layers of the main body front surface laminated body and the main body back surface laminated body are arranged to face each other, the peripheries of the main body front surface laminated body and the main body back surface laminated body are sealed, a spout seal portion is provided below the bent portion, the bent portion and the spout seal portion form a pouring nozzle for pouring contents, an end of the pouring nozzle is sealed by a pouring nozzle end seal portion and forms a spout when cut off along an expected unsealing line, the laminated body forming the pouring nozzles has a protruding belt-like or streaky convex emboss pattern provided on the outer side thereof, the center of the convex emboss pattern is present in the range of $\frac{2}{3}$ of E from the pouring nozzle seal portion on the expected unsealing line, where E is a length of the expected unsealing line, and the convex emboss pattern is at least continuously present from the expected unsealing line to an extended

line of the punched portion seal portion.

Advantageous Effects of Invention

The present invention can provide the refill container that enables an easy, rapid, and secure
5 refilling operation without using another member such as a tap.

Brief Description of Drawings

FIG. 1 is a schematic view showing a configuration of a refill container according to a first embodiment
10 of the present invention;

FIG. 2A is a cross-sectional view schematically showing a configuration of a cross section II-II of the refill container;

FIG. 2B is a cross-sectional view schematically showing a layer configuration of a laminated body
15 constituting the refill container;

FIG. 3 is a schematic view showing a configuration of a refill container according to a second embodiment of the present invention;

FIG. 4A is a cross-sectional view schematically showing a configuration of a cross section IV-IV of the
20 refill container;

FIG. 4B is a cross-sectional view schematically showing a state that the refill container is opened;

FIG. 5 is a schematic view showing a configuration of a refill container according to a third embodiment
25 of the present invention;

FIG. 6 is a schematic view showing an example of a series of refilling operations using the refill container;

5 FIG. 7 is a schematic view showing the example of a series of refilling operations using the refill container;

FIG. 8 is a schematic view showing the example of a series of refilling operations using the refill container;

10 FIG. 9 is a schematic view showing a part of a spout of a refill container according to a fourth embodiment of the present invention;

FIG. 10 is a schematic view showing a configuration of a refill container according to a
15 fifth embodiment of the present invention;

FIG. 11 is a cross-sectional view schematically showing a configuration of a cross section XI-XI of the refill container;

FIG. 12A is an enlarged view showing a
20 configuration of a pouring nozzle of the refill container;

FIG. 12B is a cross-sectional view schematically showing a configuration of a spout of the pouring nozzle;

25 FIG. 13A is an enlarged view showing a configuration of a pouring nozzle of a refill container according to a conventional technology;

FIG. 13B is a cross-sectional view schematically showing a configuration of a spout of the pouring nozzle;

FIG. 14 is a schematic view showing a configuration of a refill container according to a sixth embodiment of the present invention;

FIG. 15A is a cross-sectional view schematically showing a configuration of a cross section XV-XV of the refill container;

FIG. 15B is a cross-sectional view schematically showing a state that the refill container is opened;

FIG. 16 is a schematic view showing a configuration of a refill container according to a seventh embodiment of the present invention;

FIG. 17 is a schematic view showing a configuration of a refill container according to the seventh embodiment of the present invention;

FIG. 18A is an enlarged view showing a configuration of a spout of the refill container;

FIG. 18B is a cross-sectional view schematically showing a configuration of a cross section XVII-XVII of the spout;

FIG. 18C is a cross-sectional view schematically showing a state that the spout has a maximum area in the form of the cross section XVII-XVII;

FIG. 19 is a schematic view showing a configuration of a refill container according to an

11th embodiment according to the present invention;

FIG. 20 is a cross-sectional view schematically showing a configuration of a cross section IIX-IIX of the refill container;

5 FIG. 21 is an enlarged view for explaining a configuration of a convex emboss pattern of a pouring nozzle of the refill container;

FIG. 22 is an enlarged view for explaining a configuration of a concave emboss pattern of the
10 pouring nozzle of the refill container;

FIG. 23 is an enlarged view showing a convex emboss pattern and a concave emboss pattern according to a modification of the pouring nozzle of the refill container;

15 FIG. 24A is an enlarged cross-sectional view showing a configuration of an example of the pouring nozzle of the refill container;

FIG. 24B is an enlarged cross-sectional view showing a configuration of an example of the pouring
20 nozzle of the refill container;

FIG. 24C is an enlarged cross-sectional view showing a configuration of an example of a pouring nozzle 1032A of the refill container 1000;

FIG. 24D is an enlarged cross-sectional view showing a configuration of an example of a pouring
25 nozzle 1032A of the refill container 1000A;

FIG. 25 is a schematic view showing a

configuration of a refill container according to a 12th embodiment of the present invention;

FIG. 26A is a cross-sectional view schematically showing a configuration of a cross section XXVI-XXVI of the refill container;

FIG. 26B is a cross-sectional view schematically showing the configuration of the cross section XXVI-XXVI of the refill container in a state that the refill container is opened;

FIG. 27 is a schematic view showing a configuration of a refill container according to a 13th embodiment of the present invention;

FIG. 28 is a graph showing an example of a relationship between a pouring time and a pouring amount depending on presence/absence of an emboss pattern on a pouring nozzle of the refill container; and

FIG. 29 is a schematic view showing an example of a conventional refill container.

Description of Embodiments

A refill container 1 according to a first embodiment of the present invention will now be described hereinafter in detail with reference to FIG. 1, FIG. 2A, and FIG. 2B.

FIG. 1 is a plan view schematically showing the refill container 1 according to the first embodiment of the present invention. FIG. 2A is a cross-sectional

view schematically showing a cross section II-II of the
refill container 1 in FIG. 1. FIG. 2B is a cross-
sectional view schematically showing a configuration of
a laminated body of the refill container 1 as the cross
5 section II-II of the refill container in FIG. 1.

As shown in FIG. 1 and FIG. 2A, the refill
container 1 according to this embodiment has a main
body front surface laminated body 2, a main body back
surface laminated body 3, a bent portion 6, and a seal
10 portion 20. Further, as shown in FIG. 20B, the refill
container 1 is formed of a laminated body 10 having at
least a base material 11 and a sealant layer 12.

In the refill container 1, one laminated body 10
is gently bent at a top portion in such a manner that
15 the sealant layer 12 can be provided on the inner side
and surfaces of the sealant layer 12 can face each
other. In the refill container 1, the periphery of
this bent laminated body 10 is sealed.

When the one laminated body 10 is bent in this
20 manner, the refill container 1 forms the bent portion 6
bent at the top portion, the main body front surface
laminated body 2 which is one main surface with the
bent portion 6 determined as the boundary, and the main
body back surface laminated body 3 which is the other
25 main surface with the bent portion 6 determined as the
boundary. The main body front surface laminated body 2
is a film forming a main body surface. Further, the

main body back surface laminated body 3 is a film forming the main body surface. Furthermore, in the refill container 1, the seal portion 20 is formed by sealing the periphery of the bent laminated body 10.

5 It is to be noted that an opening portion used for filling the refill container 1 shown in FIG. 1 with contents is omitted in this refill container 1. This opening portion may be provided at any position of the seal portion 20, and the corresponding position of the
10 seal portion 20 may be sealed after filling with the contents.

 The main body front surface laminated body 2 and the main body back surface laminated body 3 form a front side and a back side of the refill container 1, respectively. Moreover, the main body front surface
15 laminated body 2 and the main body back surface laminated body 3 are sealed by the seal portion 20 at their side edges and lower edges to be formed into a bag-like shape. It is to be noted that the main body
20 front surface laminated body 2 is a part of the laminated body 10, and it is also the main body front surface film. Additionally, the main body back surface laminated body 3 is a part of the laminated body 10, and it is the main body back surface film.

25 The seal portion 20 has side seal portions 22 and a bottom seal portion 23. The side seal portions 22 seal the side edges of the main body front surface

laminated body 2 and the main body back surface
laminated body 3. The bottom seal portion 23 seals the
lower edges of the main body front surface laminated
body 2 and the main body back surface laminated body 3.

5 The seal portion 20 includes a spout seal portion 24
that seals from a part of the upper side of the side
edge of one of the main body front surface laminated
body 2 and the main body back surface laminated body 3
to a part of the lower side of the bent portion 6.

10 The bent portion 6 is formed of a bent end side of
the laminated body 10 and the spout seal portion 24
provided below this end side. In the bent portion 6,
an end portion of the laminated body 10 and the spout
seal portion 24 form a spout 31 and an outflow path 33
15 for the contents.

The spout 31 is opened by cutting a part of the
side seal portion 22. The outflow path 33 is formed to
become horizontally long until it reaches the spout 31.

As the laminated body 10, for example, a laminated
20 film which is generally used for a soft packaging bag
is adopted. The base material 11 is a film layer of a
base material. As the base material 11, a paper sheet,
metal foil, or a synthetic resin film consisting of one
or more layers is used. For instance, the base
25 material 11 is exemplified by a synthetic resin film
such as a low-density polyethylene resin (LDPE), a
high-density polyethylene resin (HDPE), a linear

low-density polyethylene resin (LLDPE), a polypropylene resin (PP), a polyolefin-based resin such as polyolefin-based elastomer, a polyethylene terephthalate resin (PET), a polybutylene terephthalate resin (PBT), a polyester-based resin such as a polyethylene naphthalate resin (PEN), cellophane, a cellulosic resin such as a cellulose triacetate, a polymethyl methacrylate (PMMA) resin, an ethylene-vinyl acetate copolymer resin (EVA), an ionomer resin, a polybutene-based resin, a polyacrylonitrile-based resin, a polyamide-based resin, a polystyrene-based resin (PS), a polyvinyl chloride-based resin (PVC), a polyvinylidene chloride-based resin (PVDC), a polycarbonate resin (PC), a fluorinated resin, or a urethane-based resin, a paper sheet, or metal foil in the form of a single body or a composite body. The base material 11 includes a printed layer or an adhesive layer as required.

As the paper sheet, it is possible to use high-quality paper, single art paper, coated paper, cast-coated paper, simili paper, and others. Usually, to stably open the spout, a pouring nozzle may be embossed, but using a paper sheet for the laminated body results in an inconvenience that the paper sheet is cracked due to embossing. However, in this embodiment, the spout is stably opened by bending the one laminated body 10, and using the paper sheet is

effective in terms of environment-friendliness since the embossing is not required.

As the sealant layer 12, a polyolefin-based resin is generally used. Specifically, as the sealant layer 12, there is used an ethylene-based resin such as a low-density polyethylene resin, a medium-density polyethylene resin, a linear low-density polyethylene resin, an ethylene-vinyl acetate copolymer, or an ethylene- α olefin copolymer, or a polypropylene-based resin such as a homopolypropylene resin, a propylene-ethylene random copolymer, a propylene-ethylene block copolymer, or a propylene- α olefin copolymer. Further, as the sealant layer 12, a multilayer film obtained by compounding these resins may be used in some cases.

As specific composition examples of the laminated body 10, there are, e.g., a film having a composition of PET/printed layer/adhesive layer/drawn polyamide resin film (which will be referred to as ONY hereinafter))/adhesive layer/LLDPE, or a composition of ONY/adhesive layer/LLDPE/, a composition of ONY/adhesive layer/ONY/adhesive layer/LLDPE, a composition of paper/LDPE/aluminum foil/LDPE, a composition of paper/LDPE, and others.

In the thus configured refill container 1, since the bent portion 6 is formed by gently bending the one laminated body 10, the bent portion 6 has the elastic rebound behavior of the laminated film. That is, a

restoring force is generated in the bent portion 6. Therefore, an upper side of the cross section of the outflow path 33 is constantly expanded. Accordingly, a wide cross-sectional area of the spout 31 can be assured, and a large amount of contents can be discharged at a time. Further, since the outflow path 33 has the expanded cross section, the outflow path 33 is hard to bend at the time of the refilling operation.

A refill container 100 according to a second embodiment of the present invention will now be described hereinafter in detail with reference to FIG. 3, FIG. 4A, and FIG. 4B. It is to be noted that like reference numerals denote structures equal to those of the refill container 1, and a detailed explanation thereof will be omitted.

FIG. 3 is a schematic view showing the refill container 100 according to the second embodiment of the present invention. FIG. 4A is a cross-sectional schematic view showing a cross section IV-IV of the refill container 100. Furthermore, FIG. 4B is a cross-sectional schematic view showing the cross section IV-IV in a state that a container main body as the refill container 100 is opened.

The refill container 100 has a main body front surface laminated body 2, a main body back surface laminated body 3, and a bottom tape 104. The refill container 100 is obtained by arranging respective

sealant layers 12 to face each other and sealing the periphery of these layers. The bottom tape 104 is made of the same material as that of a laminated body 10. The bottom tape 104 is provided at a lower portion of the container and bent in such a manner that the sealant layer 12 is provided on the outer side, one end of the bottom tape 104 and the main body front surface laminated body 2 form a bottom seal portion 123, and the other end of the same and the main body back surface laminated body 3 form the bottom seal portion 123, thereby constituting a container bottom surface. A packaging bag having this shape is a so-called standing pouch. This standing pouch has characteristics that a container having a large capacity can be realized since the bottom surface can be greatly widened.

A bent portion 6 is formed by moderately bending the one laminated body 10 at a top portion with the sealant layer provided on the inner side like the bent portion 6 of the refill container 1. Moreover, the bent portion 6 and a spout seal portion 124 provided below the bent portion 6 form an outflow path 33 for contents reaching a spout 31 to become horizontally long.

Additionally, in the refill container 100, a part of the bent portion 6 is cut open to provide a filling opening portion 141 from which the container is filled

with contents. It is to be noted that the filling opening portion 141 is sealed after filling with the contents. FIG. 3 shows a state that the filling opening portion 141 is sealed to form a top seal portion 121.

In the thus configured refill container 100, when the contents are of a liquid type and the contents are to be poured, the bent portion 6 enables the contents to smoothly flow in the linear outflow path 33.

Therefore, the refill container 100 enables rapid pouring. In particular, since the refill container 100 having a shape called a standing pouch has a large capacity, using the bent portion 6 that enables the rapid pouring further enhances the effect.

Further, when the filling opening portion 141 is provided at the top portion of the container, an advantage of facilitating the filling operation for the contents can be obtained.

A refill container 200 according to a third embodiment according to the present invention will now be described in detail with reference to FIG. 5. It is to be noted that like reference numerals denote structures equal to those of the refill container 1 and the refill container 100 to omit a detailed explanation thereof.

FIG. 5 is a schematic view showing a configuration of the refill container 200 according to the third

embodiment of the present invention. FIG. 6 is a schematic view showing an example of a series of refilling operations using the refill container 300. FIG. 7 is a schematic view showing an example of the series of refilling operations using the refill container 300. FIG. 8 is a schematic view showing an example of the series of refilling operations using the refill container 300.

10 In the refill container 200, an outflow path 33 is formed as a protruding pouring nozzle 232 by forming a punched portion 225 in a spout seal portion 224.

Furthermore, in the refill container 200, a grip 226 having a shape that can be fitted in the punched portion 225 is provided on an opposite side of a side where the pouring nozzle 232 is formed. To manufacture the refill container 200 depicted in FIG. 5, a laminated body 10 slit having a width which is substantially double a width corresponding to a height of the refill container 200 is gently bent at a top portion so that surfaces of a sealant layer 12 can be provided on the inner side and face each other.

20 Then, a bent portion 6 is provided at a boundary to form a main body front surface laminated body 2 and a main body back surface laminated body 3, and this structure is continuously supplied. It is to be noted that continuously supplying means bending one laminated body 10, from which the refill containers 200 can be

formed, and supplying the main body front surface laminated body 2 and the main body back surface laminated body 3 so that the refill containers 200 can be formed.

5 Subsequently, a bottom tape 104 folded into two so that the surfaces of the sealant layer 12 can be provided on the outer side is continuously supplied to a space between the main body front surface laminated body 2 and the main body back surface laminated body 3.
10 Then, after performing sealing required for the laminated body 10 and the bottom tape 104, an outline of the refill container 200, the punched portion 225, and the grip 226 are punched out to provide the container.

15 Additionally, in the refill container 200, a part of the bent portion 6 is cut open to provide a filling opening portion 141 from which the container is filled with the contents.

 According to this thus configured refill container
20 200, since the punched portion 225 is provided, the outflow path 33 is formed in the protruding pouring nozzle 232. This pouring nozzle 232 can be inserted into, e.g., a tap portion of a repeatedly used container.

25 Forming the protruding pouring nozzle 232 and inserting the pouring nozzle 232 into the tap portion of the container can facilitate improving workability

at the time of the refilling operation for refilling the container with the contents in the refill container 200. It is to be noted that an appropriate shape can be selected for the punched portion 225 in accordance with a configuration of the periphery of the tap portion of the repeatedly used container.

Further, although the punched portion 25 is fundamentally a portion to be discarded, when the grip 226 is formed into the shape that can be fitted in the punched portion 225 of the adjacent refill container 200 at the time of manufacture as shown in FIG. 5, the grip 226 can be added without particularly increasing the number of materials. Since the grip 226 is present, this grip 226 can be held to perform the refilling operation, and hence the refilling operation can be safely and easily carried out.

Furthermore, since the refill container 200 has the configuration that the punched portion 225 or the grip portion 226 is provided to a side seal portion 22, it is difficult to provide the filling opening portion 141 with a sufficient width besides the bent portion 6. Therefore, as a position of the filling opening portion 141, providing this opening portion to the bent portion 6 is preferable.

A series of refilling operations using the refill container 200 will now be described with reference to FIG. 6, FIG. 7, and FIG. 8.

As shown in FIG. 6, the refill container 200 according to this embodiment is held, and an end of the pouring nozzle 32 is cut to open a spout 31. A nozzle 52 of a repeatedly used empty container 51 is inserted
5 into this spout 31. In this drawing, the repeatedly used container 51 is a plastic container including a nozzle cap 53 having the nozzle 52.

Then, as shown in FIG. 7, the pouring nozzle 232 of the refill container 200 enters a state that this
10 nozzle is assuredly inserted in the nozzle cap 53 of the repeatedly used container 51. Subsequently, as shown in FIG. 8, when the whole container is raised so that the pouring nozzle 232 becomes vertical while maintaining a positional relationship between the
15 repeatedly used container 51 and the refill container 200 constant, the contents in the refill container 200 are poured into the repeatedly used container 51 in one go.

As described above, in the refill container
20 according to the present invention, when the bent portion 6 is provided, the spout having a large area can be assured without using, e.g., a special plastic tab. Further, as a size of this spout can be freely designed in accordance with a shape of the tap of the
25 repeatedly used target container, the dedicated refill container that enables the rapid refilling operation has a very high value.

A refill container 300 according to a fourth embodiment according to the present invention will now be described hereinafter in detail with reference to FIG. 9. It is to be noted that like reference numerals
5 denote parts equal to those in the respective refill containers 1, 100, and 200 to omit detailed explanation thereof.

FIG. 9 is a schematic view showing a portion of a spout 31 of the refill container 300 according to the
10 fourth embodiment of the present invention.

The refill container 300 has a configuration that a half-cut line 334 is provided to a pouring nozzle 332 on outer surfaces of a main body front surface laminated body 2 and a main body back surface laminated
15 body 3 at a portion that should serve as a spout 31. When such a configuration is adopted, the portion of the half-cut line 334 can be torn by hand to readily form the spout 31. The portion that should serve as the spout 31 is an expected unsealing portion, and it
20 is preferable to provide this portion at a position that is slightly retracted from an end of the pouring nozzle 332 when the pouring nozzle 332 is present as shown in FIG. 6. That is because the end of the pouring nozzle can be held and easily torn by hand.
25 For the half-cut line 334, a method of forming this line by a cutting tool or a method of forming this line by laser beam machining is generally used. However,

since the method using the laser beam machining enables forming a uniform and stable cut line, forming the half-cut line 334 by the laser beam machining is preferable.

5 A specific example of the refill container 300 according to this embodiment will now be described hereinafter as Example 1.

(Example 1)

10 A laminated body 10 having the following configuration was used as each of the main body front surface laminated body 2 and the main body back surface laminated body 3.

<Configuration of Laminated Body 10 used for Main Body Front Surface Laminated Body 2 and Main Body Back
15 Surface Laminated Body 3>

PET (P60 manufactured by Tray Industries, Inc., 12 μm)/printed layer/adhesive layer (TM272 manufactured by Toyo-Morton, Ltd., 3 g/m^2 (dry))/ONY (ONMB manufactured by Unitika Ltd., 15 μm)/adhesive layer
20 (same as above)/LLDPE (TUX-FCS manufactured by Mitsui Chemicals Tohcello, Inc., 150 μm)

The laminated body 10 having the following configuration was used as a bottom tape 4.

<Configuration of Laminated Body 10 used for Bottom
25 Tape 4>

ONY (ONM manufactured by Unitika Ltd., 25 μm)/LLDPE (same as above, 120 μm)

The laminated body 10 was used to fabricate a standing pouch having a shape shown in FIG. 5 as the refill container 300. Incidentally, as a filling opening portion 141, a part of a bent portion 6 was cut to provide the filling opening portion 141. Further, the half-cut line 334 obtained by the laser beam machining was provided at the portion that should serve as the spout 31 at the end portion of the pouring nozzle 332, thereby providing an expected opening portion. The thus obtained refill container 300 was filled with a domestic liquid detergent, and the filling opening portion 141 was subjected to heat sealing to provide a detergent refill.

The expected opening portion at the end of the pouring nozzle 332 of the refill container for the detergent refill was cut off by hand to open the spout 31, and then an operation of refilling a repeatedly used dedicated container 51 with the detergent as the contents was performed in accordance with such a procedure as shown in FIGS. 7 to 9. As a result, the refilling operation can be very rapidly completed without spill or overflow of the detergent.

A refill container 400 according to a fifth embodiment of the present invention will now be described in detail with reference to FIG. 10, FIG. 11, FIG. 12A, FIG. 12B, FIG. 13A, and FIG. 13B. It is to be noted that like reference numerals denote structures

equal to those in the respective refill containers 1, 10, 200, and 300 to omit detailed explanation thereof.

FIG. 10 is a schematic view showing a configuration of the refill container 400 according to the fifth embodiment of the present invention. Furthermore, FIG. 11 is a cross-sectional view schematically showing a configuration of a cross section XI-XI of the refill container 400. FIG. 12A is an enlarged view showing a configuration of a pouring nozzle 432 of the refill container 400. FIG. 12B is a cross-sectional view schematically showing a configuration of a spout 31 of the pouring nozzle 432. FIG. 13A is an enlarged view showing a configuration of a pouring nozzle 482 of a refill container according to the conventional technology. FIG. 13B is a cross-sectional view schematically showing a configuration of a spout 483 of the pouring nozzle 482.

As shown in FIGS. 10 and 11, the refill container 400 according to this embodiment is constituted of a laminated body 10 having at least a base material 11 and a sealant layer 12. Moreover, the refill container 400 has a main body front surface laminated body 2 and a main body back surface laminated body 3 as shown in FIGS. 10 and 11, respective sealant layers 12 are arranged to face each other, and the peripheries are sealed. That is, in the refill container 400, the one laminated body 10 is bent with the sealant layer 12

provided on the inner side to form a bent portion 6,
the main body front surface laminated body 2, and the
main body back surface laminated body 3. The bent
portion 6 and a spout seal portion 424 form the pouring
5 nozzle 432 from which contents are poured. When an end
of the pouring nozzle 432 is cut off along an expected
unsealing line 434, a spout 31 can be formed.

Additionally, as shown in FIG. 12A, the refill
container 400 is formed into a shape that meets a
10 relationship of $A - 4 \text{ (mm)} \leq B \text{ (mm)} \leq A - 0.5 \text{ (mm)}$, where A
(mm) is a length of the expected unsealing line of the
pouring nozzle 432 and B (mm) is an opening portion
width of the spout 31. This relational expression
represents that a width of the spout seal portion 424
15 is not smaller than 0.5 mm and not greater than 4 mm.
When such a configuration is adopted, the wide opening
portion width B of the spout can be assured with
respect to the length A of the expected unsealing line,
i.e., a width of the pouring nozzle 432. As a result,
20 insertion into a nozzle cap portion of a main body of a
repeatedly used container 51 can be facilitated, and a
large flow volume of contents at the time of a
refilling operation can be assured. Therefore, a
smooth and rapid refilling operation of the refill
25 container 400 can be realized. It is to be noted that
the dimension A and the dimension B in FIG. 12A are
numerical values measured in a state that the pouring

nozzle 432 is flatly pressed. As shown in FIG. 12B, the actual pouring nozzle has a cross section that is horizontally expanded due to the elasticity of the laminated body 10.

5 If $A-4 \text{ (mm)} > B \text{ (mm)}$ is achieved, the width of the spout seal portion 424 in the pouring nozzle 432 is too large, and insertion into the nozzle cap portion of the main body of the repeatedly used container 51 is difficult. Further, if $B \text{ (mm)} > A-0.5 \text{ (mm)}$ is achieved,
10 the width of the spout seal portion 424 is too small, and the compression strength when a pressure is applied to the refill container 400 from the outside may be insufficient.

 FIG. 13A is an enlarged view of a pouring nozzle
15 482 of a refill container according to the conventional technology. Furthermore, FIG. 13B is a cross-sectional schematic view of a spout 483 of the pouring nozzle 482. In pouring nozzle 482 according to the conventional technology, since seal portions 484 are
20 present above and below the spout 483, a length A of an expected unsealing line 485 is large with respect to an opening portion width B. Moreover, since the spout 483 cannot be opened widely, there is a problem that pouring properties are poor in addition to a problem
25 that insertion into a nozzle cap is difficult.

 On the other hand, in the refill container 400 depicted in FIG. 10, a main body front surface

laminated body 2 and a main body back surface laminated
body 3 are sealed at a side seal portion 22 and a
bottom seal portion 23 to form a bag-like shape. It is
to be noted that a filling opening portion for filling
5 with contents is required in an actual container, but
the filling opening portion is omitted in FIG. 10. In
the refill container 400 depicted in FIG. 10, the
filling opening portion can be provided to the bottom
seal portion 23 or the side seal portion 22.

10 Although the expected unsealing line 434 at the
end portion of the pouring nozzle 32 is a virtual line
indicative of an unsealing position, printed indication
and the like may be actually provided to clarify the
unsealing position. Furthermore, as the expected
15 unsealing line 434, it is possible to adopt a half-cut
line 334 provided on the outer surface of the main body
front surface laminated body 2 and/or the main body
back surface laminated body 3. When the half-cut line
334 is used for the expected unsealing line 434 in this
20 manner, the portion corresponding to the expected
unsealing line 34 may be torn by hand to easily form
the spout 31.

It is preferable to provide the portion that
should serve as the spout 31 at a position slightly
25 back from an end of the pouring nozzle 432. That is
because this configuration can facilitate holding and
tearing the end of the pouring nozzle by hand.

Moreover, a V-shaped or U-shaped notch or a cutting line may be provided in the spout seal portion 24 corresponding to the expected unsealing line 434, or the end portion of the spout seal portion may be machined to have a wide width. When such a notch or cutting line is provided or the end portion of the seal portion is machined to have a wide width in this manner, easiness of unsealing the end of the pouring nozzle 432 can be further improved.

A refill container 500 according to a sixth embodiment of the present invention will now be described hereinafter with reference to FIG. 14, FIG. 15A, and FIG. 15B. It is to be noted that like reference numerals denote structures equal to those in the respective refill containers 1, 100, 200, 300, and 400 to omit detailed explanation thereof.

FIG. 14 is a schematic view showing a configuration of the refill container 500 according to the sixth embodiment of the present invention.

FIG. 15A is a cross-sectional view schematically showing a configuration of a cross section XV-XV of the refill container 500. FIG. 15B is a cross-sectional view schematically showing a state that the refill container 500 is opened.

In this embodiment, the refill container 500 has a main body front surface laminated body 2, a main body back surface laminated body 3, and a bottom tape 4,

respective sealant layers are arranged to face each other, and the peripheries are sealed. The bottom tape 4 is provided at a lower portion of the container and bent in such a manner that the sealant layer is
5 provided on the outer side, one end of the bottom tape 4 and the main body front surface laminated body 2 form a bottom seal portion 123, and the other end and the main body back surface laminated body 3 form the bottom seal portion 123, thereby constituting a container
10 bottom surface. A packaging bag having this form is a so-called standing pouch, and it has characteristics that can realize a large-capacity container since the bottom surface can be widely spread.

A bent portion 6 is formed by bending one
15 laminated body at a top portion with the sealant layer provided on the inner side. The bent portion 6, a spout seal portion 24, and a punched portion 525 form an outflow path 33 for contents that reaches a spout 31. That is, the refill container 500 is formed into a
20 shape having the punched portion 525 provided in the refill container 100. Further, the refill container 500 has a pouring nozzle 432.

When such a configuration is adopted, the refill container 500 enables rapid pouring since contents can
25 smoothly flow through the linear outflow path 33 when pouring the contents if the contents is a liquid in particular. Moreover, since the refill container 500

is formed into a shape called a standing pouch and has a large capacity, this container is further effective.

A refill container 600 according to a seventh embodiment of the present invention will now be described hereinafter in detail with reference to FIG. 16. It is to be noted that like reference numerals denote structures equal to those in the respective containers 1, 100, 200, 300, 400, and 500 to omit detailed explanation thereof.

FIG. 16 is a schematic view showing a configuration of the refill container 600 according to the seventh embodiment of the present invention.

As shown in FIG. 16, the refill container 600 according to this embodiment includes a grip 226 having a shape that can be fitted in a punched portion 25 on an opposite side of the punched portion 225 of a spout seal portion 224 forming a pouring nozzle 32 like the refill container 300. It is to be noted that the refill container 600 has the pouring nozzle 432 of the refill container 400 rather than the pouring nozzle 232 of the refill container 300. As described above, in the refill container 600, when the punched portion 225 is formed in the spout seal portion 224, an outflow path 33 is formed as the protruding pouring nozzle 432. It is to be noted that an appropriate shape can be selected for the punched portion 225 in accordance with a configuration around a tap portion of a repeatedly

used container.

To manufacture the refill container 600 depicted in FIG. 16, like the refill containers 200 and 300, a laminated body 10 slit with a width substantially double a width corresponding to a height of the container is bent at a top portion so that surfaces of a sealant layer 12 are provided on the inner side and face each other, thereby providing a main body front surface laminated body 2 and a main body back surface laminated body 3. This structure is continuously supplied. A bottom tape 4 that is folded into two so that the surface of the sealant layer is provided on the outer side is continuously supplied to a space between the main body front surface laminated body 2 and the main body back surface laminated body 3, necessary sealing is carried out, and then punching is carried out to obtain the container.

Additionally, in this refill container 600, a part of the bent portion 6 is cut open to provide a filling opening portion 141 for filling the container with contents. In this example, since the punched portion 25 or the grip 26 is present in a side seal portion 22, it is difficult to provide the filling opening portion with a sufficient width besides the bent portion 6. Therefore, as a position of the filling opening portion 41, providing this portion in the bent portion 6 is preferable.

A series of refilling operations for the refill container 600 will now be described with reference to FIG. 6, FIG. 7, and FIG. 8 like the refill containers 200 and 300. As shown in FIG. 6, the refill container 600 is held, and an end of the pouring nozzle 432 is cut to open the spout 31. A nozzle 52 of a repeatedly used empty container 51 is inserted into this spout 31.

Then, as shown in FIG. 7, the pouring nozzle 32 of the refill container 600 is assuredly inserted into a nozzle cap 53 of the repeatedly used container 51. Subsequently, as shown in FIG. 8, when the whole container is raised so that the pouring nozzle 32 becomes vertical while maintaining a positional relationship between the repeatedly used container 51 and the refill container 600, contents in the refill container 600 are poured into the repeatedly used container 51 in one go.

As described above, in the refill container 600 according to this embodiment, the spout having a large area can be assured without using, e.g., a special tap made of plastic, and a size of this spout can be freely designed in accordance with a shape of the tap of the repeatedly used target container, and hence the refill container 600 has a very high value as a dedicated refill container that enables a rapid refilling operation.

Example 2 to Example 7 will now be described as

specific examples of the refill container 600 according to this embodiment, and they will be also explained using Comparative Examples 1 to 6 compared with the refill container 600.

5 (Example 2)

A laminated body 10 having the following configuration was used as each of the main body front surface laminated body 2 and the main body back surface laminated body 3.

10 <Configuration of Laminated Body 10 used for Main Body Front Surface Laminated Body 2 and Main Body Back Surface laminated Body 3>

PET (P60 manufactured by Tray Industries, Inc., 12 μm)/printed layer/adhesive layer (TM272 manufactured
15 by Toyo-Morton, Ltd., 3 g/m² (dry))/ONY (ONMB manufactured by Unitika Ltd., 15 μm)/adhesive layer (same as above)/LLDPE (TUX-FCS manufactured by Mitsui Chemicals Tohcello, Inc., 150 μm)

20 The laminated body 10 having the following configuration was used as a bottom tape.

<Configuration of Laminated Body 10 used for Bottom Tape 4>

ONY (ONM manufactured by Unitika Ltd., 25 μm)/LLDPE (same as above, 120 μm)

25 The laminated body 10 was used to fabricate a standing pouch having a shape shown in FIG. 16.

Incidentally, as the filling opening portion 141, a

part of the bent portion 6 was cut to provide the filling opening portion 141. Further, an expected unsealing line 334 that should serve as the spout 31 at the end portion of the pouring nozzle 432 was provided as a half-cut line 334 obtained by the laser beam machining. The thus obtained refill container was filled with a domestic liquid detergent, and the filling opening portion was subjected to heat sealing to provide a detergent refill. At this time, a length A of the expected unsealing line shown in FIG. 12A was set to 18 mm. Furthermore, an opening portion width B was set to 14 mm.

(Example 3)

The same procedure as Example 2 was followed to fabricate a refill container except that the length A of the expected unsealing line was set to 18 mm and the opening portion width B was set to 15 mm, and the refill container was filled with the same contents.

(Example 4)

The same procedure as Example 2 was followed to fabricate a refill container except that the length A of the expected unsealing line was set to 18 mm and the opening portion width B was set to 17.5 mm, and the refill container was filled with the same contents.

(Example 5)

The same procedure as Example 2 was followed to fabricate a refill container except that the length A

of the expected unsealing line was set to 30 mm and the opening portion width B was set to 26 mm, and the refill container was filled with the same contents.

(Example 6)

5 The same procedure as Example 2 was followed to fabricate a refill container except that the length A of the expected unsealing line was set to 30 mm and the opening portion width B was set to 27 mm, and the refill container was filled with the same contents.

10 (Example 7)

 The same procedure as Example 2 was followed to fabricate a refill container except that the length A of the expected unsealing line was set to 30 mm and the opening portion width B was set to 29.5 mm, and the
15 refill container was filled with the same contents.

(Comparative Example 1)

 The same procedure as Example 2 was followed to fabricate a refill container except that the length A of the expected unsealing line was set to 18 mm and the
20 opening portion width B was set to 13 mm, and the refill container was filled with the same contents.

(Comparative Example 2)

 The same procedure as Example 2 was followed to fabricate a refill container except that the length A
25 of the expected unsealing line was set to 18 mm and the opening portion width B was set to 17.7 mm, and the refill container was filled with the same contents.

(Comparative Example 3)

The same procedure as Example 2 was followed to fabricate a refill container except that the length A of the expected unsealing line was set to 30 mm and the opening portion width B was set to 25 mm, and the refill container was filled with the same contents.

(Comparative Example 4)

The same procedure as Example 2 was followed to fabricate a refill container except that the length A of the expected unsealing line was set to 30 mm and the opening portion width B was set to 29.7 mm, and the refill container was filled with the same contents.

(Comparative Example 5)

The same procedure as Example 2 was followed to fabricate a refill container except that the pouring nozzle 482 was configured to have such a conventional shape as shown in FIG. 13A, the length A of the expected unsealing line was set to 18 mm and the opening portion width B was set to 12 mm, and the refill container was filled with the same contents. It is to be noted that an opening portion of the spout 483 was arranged at the center of the pouring nozzle 482.

(Comparative Example 6)

The same procedure as Example 2 was followed to fabricate a refill container except that the pouring nozzle 482 was configured to have such a conventional shape as shown in FIG. 13A, the length A of the

expected unsealing line was set to 30 mm and the opening portion width B was set to 24 mm, and the refill container was filled with the same contents.

5 The expected unsealing line at the end of the pouring nozzle of each detergent refill container (the refill container 600) is torn by hand to open the spout. Then, in accordance with such a procedure as shown in FIG. 6 to FIG. 8, an operation of refilling the repeatedly used dedicated container 51 (a bottle)
10 with a detergent as contents is carried out. At this time, easiness of insertion into the bottle (insertion properties) and fastness of pouring (pouring properties) were evaluated. Furthermore, pressure resistance of the unsealed refill container was
15 evaluated. These experimental results are shown in Table 1. It is to be noted each example from Example 2 to Example 7 shows the range that dimensions A and B meet a relationship $A-4 \text{ (mm)} \leq B \text{ (mm)} \leq A-0.5 \text{ (mm)}$. It is to be noted that an inside diameter of a nozzle cap of
20 the repeatedly used container 51 that was utilized at the time of the refilling operation in each of Examples 1 to 3 and Comparative Examples 1, 2, and 5 was 15 mm. Moreover, an inside diameter of the nozzle cap of the repeatedly used container 51 utilized at the time of
25 the refilling operation in each of Examples 4 to 6 and Comparative Examples 3, 4, and 6 was 27 mm.

Table 1

	Dimension A	A-4	Dimension B	A-0.5	A-B	Pouring properties	Insertion properties	Pressure resistance
Comparative Example 1	18	14	13	13.5	5	△	×	○
Example 2			14		4	○	△	○
Example 3			15		3	○	○	○
Example 4			17.5		0.5	○	○	△
Comparative Example 2			17.7		0.3	○	○	×
Comparative Example 5			12		3×2	△~×	×	○
Comparative Example 3	30	26	25	25.5	5	△	×	○
Example 5			26		4	○	△	○
Example 6			27		3	○	○	○
Example 7			29.5		0.5	◎	○	△
Comparative Example 4			29.7		0.3	◎	○	×
Comparative Example 6			24		3×2	△~×	×	○

As represented by this result, the refill container 600 according to this embodiment including the pouring nozzle meeting the relationship of $A-4 \text{ (mm)} \leq B \text{ (mm)} \leq A-0.5 \text{ (mm)}$ shows a result balanced in the insertion properties with respect to the bottle, the pouring properties, and the pressure resistance. It is to be noted that not only the refill container 600 but also the refill containers 400 and 500 meet the relationship of $A-4 \text{ (mm)} \leq B \text{ (mm)} \leq A-0.5 \text{ (mm)}$, and hence the refill containers 400 and 500 each having the spout 431 can obtain the same effect as that of the refill container 600.

A refill container 700 according to an eighth embodiment of the present invention will now be described hereinafter in detail with reference to FIG. 17, FIG. 18A, FIG. 18B, and FIG. 18C. It is to be noted that like reference numerals denote structures equal to those in each of the refill containers 1, 100, 200, 300, 400, 500, and 600 to omit detailed explanation thereof.

FIG. 17 is a schematic view showing a configuration of the refill container according to the seventh embodiment of the present invention. FIG. 18A is an enlarged view showing a configuration of a spout portion of the refill container. FIG. 18B is a cross-sectional view schematically showing a configuration of a cross section XVII-XVII of the spout. FIG. 18C is a

cross-sectional view of the cross section XVII-XVII schematically showing a state that the spout has a maximum area.

As shown in FIG. 17, the refill container 700 according to this embodiment is constituted of a laminated body 10 and has a main body front surface laminated body 2 and a main body back surface laminated body 3, respective sealant layers are arranged to face each other, and the peripheries are sealed. Further, in the refill container 700, one laminated body 10 is bent with the sealant layer 12 provided on the inner side to form a bent portion 6, the main body front surface laminated body 2, and the main body back surface laminated body 3. The bent portion 6 and a spout seal portion 24 form an outflow path 33 through which contents are poured. In the refill container 700, a spout 731 can be formed by cutting off an end of the outflow path 33 along an expected unsealing line 734.

In the refill container 700 shown in FIG. 17, the main body front surface laminated body 2 and the main body back surface laminated body 3 are sealed at a side seal portion 22 and a bottom seal portion 23 to provide a bag-like shape. Although a filling opening portion for filling with contents is required in an actual container, this portion is omitted in FIG. 17. In the refill container 700 depicted in FIG. 17, the filling

opening portion can be provided in the bottom seal portion 23 or the side seal portion 22.

The expected unsealing line 734 at the end portion of the outflow path 33 is a virtual line indicating an unsealing position, but a printed indication and the like may be provided to clarify the unsealing position. A half-cut line provided on the outer surface of the main body front surface laminated body 2 and/or the main body back surface laminated body 3 can be also used. When such a configuration is adopted, the portion corresponding to the expected unsealing line 734 can be torn by hand to readily form the spout 31. Although a method of forming the half-cut line by a cutting tool or a method for forming the half-cut line by laser beam machining is generally used for this line, since the method using the laser beam machining enables forming a uniform and stable cut line, forming the half-cut line 334 by the laser beam machining is preferable. Moreover, when a V-shaped or U-shaped notch or a cutting line is provided in the spout seal portion corresponding to the expected unsealing line 734, or when the end portion of the spout seal portion 24 is machined to have a wide width, easiness of unsealing can be further improved.

Additionally, as shown in FIG. 18A, the spout 731 of the refill container 700 is formed to meet a relationship of $1/10 \times (C^2/\pi) \text{ (mm}^2\text{)} \leq D \text{ (mm}^2\text{)} \leq C^2/\pi \text{ (mm}^2\text{)},$

where C (mm) is a width of the spout 731 and D (mm²) is a cross-sectional area of the opening portion of the spout 731. This relational expression represents that the cross-sectional area D (mm²) of the opening portion of the spout is higher than 1/10 of C²/π (mm²) which is a theoretical maximum value of the cross-sectional area of the opening portion.

According to the thus configured refill container 700, a wide cross-sectional area B of the opening portion of the spout 731 is assured. Additionally, insertion into a nozzle cap portion of a main body of a repeatedly used container 51 can be facilitated. Therefore, a large flow volume of contents at the time of a refilling operation can be assured. Therefore, the refill container 700 enables a smooth and rapid refilling operation.

It is to be noted that the dimension C in FIG. 18A is a numerical value measured in a state that the spout 731 is flatly pressed. The actual spout 731 has a horizontally expanded cross section due to elasticity of the laminated body 10 as shown in FIG. 18B. The cross-sectional area of the opening portion of the spout 731 at this moment is D (mm²). It is to be noted that C²/π represents the cross-sectional area D of the opening portion of the spout 731 when the spout 731 is assumed to be a perfect circle, and this value is a maximum value of the cross-section area D of the

opening portion of the spout 731.

When $1/10 \times (C^2/\pi) \text{ (mm}^2) \leq D \text{ (mm}^2) \leq C^2/\pi \text{ (mm}^2)$ is attained, the cross-sectional area D of the opening portion of the spout 731 is small, and insertion into the nozzle cap portion of the main body of the repeatedly used container 51 may be difficult in some cases. Further, a flow volume at the time of pouring cannot be assured, and a rapid refilling operation may not be performed.

A refill container 800 according to a ninth embodiment of the present invention will now be described hereinafter in detail with reference to FIG. 14, FIG. 15A, FIG. 15B, FIG. 18A, FIG. 18B, and FIG. 18C. It is to be noted that like reference numerals denote structures equal to those in each of the refill containers 1, 100, 200, 300, 400, 500, 600, and 700 to omit detailed explanation thereof.

The refill container 800 according to this embodiment has a main body front surface laminated body 2, a main body back surface laminated body 3, and a bottom tape 4 like the refill container 500, respective sealant layers are arranged to face each other, and the peripheries are sealed. The bottom tape 4 is bent at a lower portion of the container and in such a manner that the sealant layer is provided on the outer side. On end of the bottom tape 4 and the main body front surface laminated body 2 form a bottom seal portion

123, and the other end and the main body back surface laminated body 3 form the bottom seal portion 123 to constitute a container bottom surface. A packaging bag of this form is a so-called standing pouch and has a characteristic that a large-capacity container can be realized since a bottom surface can spread.

A bent portion 6 is formed by bending one laminated body at a top portion with the sealant layer provided on the inner side, and the bent portion 6, a spout seal portion 24, and a punched portion 25 form an outflow path 33 for contents that reaches a spout 731 as a protruding pouring nozzle 832. That is, the refill container 800 is configured to have the pouring nozzle 832 with the spout 731 which is different from the pouring nozzle 432 formed in the refill container 500. Therefore, the pouring nozzle 832 can obtain the same effect as that of the refill container 700 by using the spout 731.

Additionally, in this refill container 800, a part of the bent portion 6 is cut open to provide a filling opening portion 41 for filling with the contents. FIG. 14 shows a state that the filling opening portion 41 is sealed to form a top seal portion 21. When the filling opening portion is present at the top of the container, there can be obtained an advantage that a filling operation for the contents can be facilitated.

A refill container 900 according to a 10th embodiment of the present invention will now be described hereinafter in detail with reference to FIG. 6, FIG. 7, FIG. 8, FIG. 16, FIG. 18A, FIG. 18B, and FIG. 18C. It is to be noted that like reference numerals denote structures equal to those in each of the refill containers 1, 100, 200, 300, 400, 500, 600, 700, and 800 to omit detailed description thereof.

The refill container 900 according to this embodiment has the same configuration as that of the refill container 600, and the pouring nozzle 832 is provided in place of the pouring nozzle 432 of the refill container 600. Specifically, a grip 26 having a shape that can be fitted in a punched portion 25 is provided on an opposite side of the punched portion 25 of a spout seal portion 24 forming the pouring nozzle 832. When the punched portion 25 is formed in the spout seal portion 24, an outflow path 33 is formed as the protruding pouring nozzle 832. An appropriate shape of the punched portion 25 can be selected in accordance with a structure around a tap portion of a repeatedly used container.

To manufacture the refill container depicted in FIG. 16, a laminated body 10 slit having a width substantially double a width corresponding to a height of the container is gently bent at a top portion so

that surfaces of a sealant layer 12 can be provided on the inner side and face each other, thereby providing a main body front surface laminated body 2 and a main body back surface laminated body 3. This laminated body 10 is continuously supplied, and a bottom tape 4 folded into two so that the surface of the sealant layer 12 can be provided on the outer side is continuously supplied during this period.

Subsequently, necessary sealing for a side seal portion 22, a bottom seal portion 123, a spout seal portion 24, and others of the main body front surface laminated body 2, the main body back surface laminated body 3, and the bottom tape 4 is carried out, and then punching is effected to provide the container.

FIGS. 6 to 8 are schematic views showing examples of a series of refilling operations using the refill container 900 according to this embodiment. As shown in FIG. 7, the refill container 900 according to this embodiment is held, and an end of the pouring nozzle 832 is cut to open a spout 731. A nozzle 52 of the repeatedly used empty container 51 is inserted into this spout 731. In this drawing, the repeatedly used container 51 is a plastic container including a nozzle cap 53 having the nozzle 52.

Then, as shown in FIG. 7, the pouring nozzle 832 of the refill container 900 is securely inserted into the nozzle cap 53 of the repeatedly used container 51.

Subsequently, as shown in FIG. 9, when the whole container is raised so that the pouring nozzle 832 becomes vertical while maintaining a positional relationship between the repeatedly used container 51 and the refill container 900 constant, contents in the refill container 900 are poured into the repeatedly used container in one go.

As described above, the refill container 900 according to this embodiment of the present invention enables assuring the spout having a large area without using, e.g., a special tap made of plastic, a size of this spout can be freely designed in accordance with a shape of the tap of the repeatedly used target container, and hence this refill container has a very high value as a dedicated refill container that enables a rapid refilling operation.

Example 8 to Example 15 will now be described as specific examples of the refill container 900 according to the present invention, and they will be also explained in conjunction with Comparative Example 7 and Comparative Example 8 compared with Example 8 to Example 15 of the refill container.

(Example 8)

A laminated body 10 having the following configuration was used as each of the main body front surface laminated body 2 and the main body back surface laminated body 3.

<Configuration of Laminated Body 10 used for Main Body
Front Surface Laminated Body 2 and Main Body Back
Surface Laminated Body 3>

PET (P60 manufactured by Tray Industries, Inc.,
5 12 μm)/printed layer/adhesive layer (TM272 manufactured
by Toyo-Morton, Ltd., 3 g/m^2 (dry))/ONY (ONMB
manufactured by Unitika Ltd., 15 μm)/adhesive layer
(same as above)/LLDPE (TUX-FCS manufactured by Mitsui
Chemicals Tohcello, Inc., 150 μm)

10 The laminated body 10 having the following
configuration was used as a bottom tape.

<Configuration of Laminated Body 10 used for Bottom
Tape 4>

ONY (ONM manufactured by Unitika Ltd., 25 μm)/LLDPE
15 (same as above, 120 μm)

The laminated body 10 was used to fabricate a
standing pouch having a shape shown in FIG. 16.
Incidentally, as a filling opening portion 141, a part
of a bent portion 6 was cut to provide the filling
20 opening portion 141. Further, an expected unsealing
line 334 that should serve as the spout 31 at the end
portion of the pouring nozzle 832 was provided as a
half-cut line formed by laser beam machining. The thus
obtained refill container was filled with a domestic
25 liquid detergent, and the filling opening portion was
subjected to heat sealing to provide a detergent
refill. At this time, a width C of the spout shown in

FIG. 18A was set to 20 mm. Furthermore, a cross-sectional area D of the opening portion was set to 127 mm².

(Example 9)

5 The same procedure as Example 8 was followed to fabricate the refill container 900 except that the cross-sectional area D of the opening portion was set to 60 mm² by adjusting bending strength when forming the bent portion, and the refill container was filled
10 with the same contents.

(Example 10)

 The same procedure as Example 8 was followed to fabricate a refill container except that the cross-sectional area D of the opening portion was set to
15 40 mm², and the refill container was filled with the same contents.

(Example 11)

 The same procedure as Example 8 was followed to fabricate the refill container 900 except that the
20 cross-sectional area D of the opening portion was set to 14 mm², and the refill container was filled with the same contents.

(Comparative Example 7)

 The same procedure as Example 8 was followed to fabricate the refill container 900 except that the
25 cross-sectional area D of the opening portion was set to 10 mm², and the refill container was filled with the

same contents.

(Example 12)

5 The same procedure as Example 8 was followed to fabricate a refill container except that the width C of the spout was set to 25 mm and the cross-sectional area D of the opening portion was set to 199 mm², and the refill container was filled with the same contents.

(Example 13)

10 The same procedure as Example 12 was followed to fabricate a refill container except that the cross-sectional area D of the opening portion was set to 120 mm² by adjusting the bending strength when forming the bent portion, and the refill container was filled with the same contents.

15 (Example 14)

The same procedure as Example 12 was followed to fabricate a refill container except that the cross-sectional area D of the opening portion was set to 80 mm², and the refill container was filled with the same contents.

20

(Example 15)

The same procedure as Example 12 was followed to fabricate a refill container except that the cross-sectional area D of the opening portion was set to 22 mm², and the refill container was filled with the same contents.

25

<Comparative Example 8>

The same procedure as Example 12 was followed to fabricate a refill container except that the cross-sectional area D of the opening portion was set to 18 mm², and the refill container was filled with the same contents.

The expected unsealing line at the end of the pouring nozzle of each detergent refill container (the refill container 900) was cut off by hand to open the spout, and then speed of pouring (pouring properties) was evaluated. Table 2 shows these experimental results. As shown in Table 2, each of Examples 8 to 15 represents the range meeting a relationship of $1/10 \times (C^2/\pi) \text{ (mm}^2) \leq D \text{ (mm}^2) \leq C^2/\pi \text{ (mm}^2)$. It is to be noted that, when evaluating the speed of pouring (the pouring properties), the speed of pouring (the pouring properties) when the refill container 900 was inclined with the spout 731 opened was evaluated without using a repeatedly used dedicated container for evaluation.

Table 2

	Dimension C (mm)	Cross-sectional area D (mm ²)	Ratio with respect to C^2/π	Pouring properties
Example 8	20	127	1	◎Flowing swiftly
Example 9		60	1/2.1	○Flowing smoothly
Example 10		40	1/3.2	○Flowing smoothly
Example 11		14	1/9.1	△Flowing slowly
Comparative Example 7		10	1/12.7	×Slightly flowing from gap
Example 12	25	199	1	◎Flowing swiftly
Example 13		120	1/1.7	◎Flowing swiftly
Example 14		80	1/2.5	○Flowing smoothly
Example 15		22	1/9.0	△Flowing slowly
Comparative Example 8		18	1/11.1	×Slightly flowing from gap

Pouring properties: (good) ◎>○>△>× (bad)

As represented by this result, the refill container 900 according to this embodiment including the pouring nozzle 832 that meets the relationship of $1/10 \times (C^2/\pi) \text{ (mm}^2\text{)} \leq D \text{ (mm}^2\text{)} \leq C^2/\pi \text{ (mm}^2\text{)}$ has good insertion properties with respect to a bottle and shows a preferred result in regard to the pouring properties. It is to be noted that not only the refill container 900 but also the refill containers 700 and 800 meet the relationship of $1/10 \times (C^2/\pi) \text{ (mm}^2\text{)} \leq D \text{ (mm}^2\text{)} \leq C^2/\pi \text{ (mm}^2\text{)}$, and hence the refill containers 700 and 800 each having the spout 731 can obtain the same effect as that of the refill container 900.

A refill container 1000 according to an 11th embodiment of the present invention will now be described in detail with reference to FIG. 19, FIG. 20, FIG. 21, and FIG. 22. It is to be noted that like reference numerals denote structures equal to those in each of the refill containers 1, 100, 200, 300, 400, 500, 600, 700, 800, and 900 to omit detailed explanation thereof.

FIG. 19 is a schematic view showing a configuration of the refill container 1000 according to the 11th embodiment of the present invention. FIG. 20 is a cross-sectional view schematically showing a configuration of a cross section XX-XX of the refill container 1000. FIG. 21 is an enlarged view for explaining a configuration of a convex emboss pattern

1035 of a pouring nozzle 1032 in the refill container 1000. FIG. 22 is an enlarged view for explaining a configuration of a concave emboss pattern 1036 of the pouring nozzle 1032 in the refill container 1000.

5 The refill container 1000 according to this embodiment is constituted of a laminated body 10 having at least a base material 11 and a sealant layer 12. As shown in FIG. 19 and FIG. 20, the refill container 1000 is obtained by bending one laminated body 10 with the
10 sealant layer 12 provided on the inner side to form a bent portion 6, a main body front surface laminated body 2, a main body back surface laminated body 3 and sealing the peripheries.

 The bent portion 6, a pouring nozzle seal portion
15 1024a, and a punched portion seal portion 1025a form the pouring nozzle 1032 from which contents are poured. An end of the pouring nozzle 1032 is sealed by a pouring nozzle end seal portion 1024b. When the pouring nozzle 1032 is cut off along an expected
20 unsealing line 1034, a spout 1031 is formed. A protruding belt-like or streaky convex emboss pattern 1035 is provided on the outer side of the laminated body 10 forming the pouring nozzle 1032.

 Assuming that a length of the expected unsealing
25 line 1034 is E, in the convex emboss pattern 1035, an emboss center line 1035c is present in the range of $2/3E$ from the pouring nozzle seal portion 1024a on the

expected unsealing line 1034. Furthermore, the convex emboss pattern 1035 is at least continuously present from the expected unsealing line 1034 to an extended line 1025 of the punched portion seal portion 1025a.

5 The bent portion 6 is formed by bending the one laminated body 10 at a top portion with the sealant layer 12 provided on the inner side. The bent portion 6 and both the pouring nozzle seal portion 1024a and the punched portion seal portion 1025, which are
10 provided below the bent portion 6, form an outflow path 1033 for contents reaching the spout 1031. A cross section of the outflow path 1033 enters a state that its upper portion is constantly expanded due to a function of elastic rebound of the laminated body 10 in
15 the bent portion 6. Therefore, a wide cross-sectional area of the spout 1031 can be assured. As a result, the refill container 1000 enables discharging a large amount of contents at one time.

 In the enlarged view of the pouring nozzle 1032
20 shown in FIG. 21, the convex emboss pattern 1035 is an emboss pattern convexly provided on the outer side of the laminated body 10, and its shape is a belt-like shape or a streaky shape. The belt-like shape means a shape having, e.g., a rectangular, trapezoidal,
25 semicircular, or vault-like cross section, and the streaky shape means a linear emboss pattern having, e.g., a triangular cross-sectional shape. The

continuously provided convex emboss pattern 1035 can suffice even though this convex emboss pattern is not linear.

Assuming that the length of the expected unsealing line 1034 is E, it has been experimentally revealed that a preferred position of the convex emboss pattern 1035 is a position at which the emboss center line 1035c is present in the range of $2/3E$ from the pouring nozzle seal portion 1024a on the unsealed expected line. It has been found out that an opening of the spout 1031 can be stably widened when the convex emboss pattern 1035 is provided in this range.

Moreover, in regard to a length of the convex emboss pattern 1035, it is desirable to at least continuously provide this pattern from the expected unsealing line 1034 to the extended line 1025b of the punched portion seal portion 1025a. As shown in FIG. 3, the convex emboss pattern 1035 may be provided to greatly extend beyond the extended line 1025b of the punched portion seal portion 1025a.

In regard to an angle of the convex emboss pattern 1035, it is preferable for an angle θ formed between the center line 1035c of the convex emboss pattern 1035 and a ridge line 7 of the bent portion 6 to be not smaller than 0° and not greater than 60° . When the angle θ falls within this range, an effect of smoothing the opening of the spout 1031 can be enhanced.

In the embodiment depicted in FIG. 19, the main body front surface laminated body 2 and the main body back surface laminated body 3 are sealed at the side seal portion 22 and the bottom seal portion 23 to provide a bag-like shape. In an actual container, a filling opening portion for filling the container with contents is required, but this portion is omitted in FIG. 19. In the embodiment depicted in FIG. 19, the filling opening portion may be provided in the bottom seal portion 23 or the side seal portion 22. Additionally, a part of the bent portion 6 may be cut open to provide the filling opening portion.

In the embodiment shown in FIG. 19, the bent portion 6 is horizontally arranged in an upper portion of the refill container 1000, though it may be vertically arranged on a side surface of the refill container 1000.

Further, in the refill container 1000, easiness of unsealing can be improved by providing a V-shaped or U-shaped notch or a cutting line in the pouring nozzle seal portion 1024a and the pouring nozzle end seal portion 1024b corresponding to the expected unsealing line 1034, or by machining end portions of the pouring nozzle seal portion 1024a and the pouring nozzle end seal portion 1024b with large widths to provide an unsealing tab 8.

It is to be noted that the expected unsealing line

1034 is a virtual line indicative of an unsealing position, but a printed indication and the like may be actually provided to clarify the unsealing position. Furthermore, as the expected unsealing line 1034, it is
5 preferable to adopt a half-cut line continuously provided on outer surfaces of the main body front surface laminated body 2 and the main body back surface laminated body 3. When such a configuration is adopted, the portion corresponding to the expected
10 unsealing line 1034 may be torn by hand to easily form the spout 1031. For the half-cut line, although a method of forming this line by a cutting tool or a method of forming this line by laser beam machining is generally used, since the method using the laser beam
15 machining enables forming a uniform and stable cut line, the method using the laser beam machining is preferable. As a type of laser, a carbon dioxide gas laser is preferable. The expected unsealing line 1034 does not have to be vertical to the ridge line 7 of the
20 bent portion, and it may be oblique.

As the laminated body 10 used in the refill container 1000 according to this embodiment, it is possible to adopt a laminated body 10 used for the same regular soft packaging bag as each of the refill
25 containers 1, 100, 200, 300, 400, 500, 600, 700, 800, and 900.

Moreover, the convex emboss pattern 1036 is

provided to the pouring nozzle 1032 of the refill container 900.

FIG. 22 is an enlarged view of the pouring nozzle of the refill container 1000 according to this embodiment, and it is also an explanatory view for the concave emboss pattern 1036. When the recessed belt-like or streaky concave emboss pattern 1036 is on the outer side between the convex emboss pattern 1035 and the pouring nozzle seal portion 1024a at a specific position with a specific angle, larger cross-sectional areas of the spout 1031 and the outflow path 1033 can be assured. Additionally, the pouring nozzle 32 can be prevented from bending or coming off the repeatedly used container, and the effect of easily, rapidly, and assuredly performing the refilling operation can be stabilized. A main function of the concave emboss pattern 1036 is to improve a difficulty in expanding the vicinity of the pouring nozzle seal portion 1024a of the spout 1031, but this pattern also has a function of enhancing an effect of avoiding bending the spout 1031.

In the concave emboss pattern 1036, a concave emboss center line 1036c is present in the range of 3 mm from the pouring nozzle seal portion 1024a on the expected unsealing line 1034. Further, the concave emboss pattern 1036 is at least continuously present from the expected unsealing line 1034 to the extended

line 1025b of the punched portion seal portion 1025a.

Furthermore, in the concave emboss pattern 1036, it is preferable for an angle of the concave emboss center line 1036c to fall within the range of an angle

5 parallel to the pouring nozzle seal portion to an angle vertical to the ridge line 7 of the bent portion 6. In FIG. 22, the range of this angle is represented as δ .

The shape of the concave emboss pattern 1036 is the same as that of the convex emboss pattern 1035, and
10 it is a belt-like or streaky shape. The belt-like shape means a shape having a rectangular, trapezoidal, half-circular, or vault-like cross-sectional shape, and the streaky shape means a linear emboss pattern having a triangular cross-sectional shape. The concave emboss
15 pattern 1036 may be a curved shape instead of a linear shape as long as it is continuous, like the convex emboss pattern 1035, and it may be a curved line parallel to the pouring nozzle seal portion 1024a.

It is to be noted that each of the convex emboss
20 pattern 1035 and the concave emboss pattern 1036 may not have the belt-like or streaky shape. A convex emboss pattern 1035A and a concave emboss pattern 1036A as modifications of the convex emboss pattern 1035 and the concave emboss pattern 1036 for use in the refill
25 container 1000 according to this embodiment will now be described.

FIG. 23 is an enlarged view showing a

configuration of a pouring nozzle 1032A as a
modification of the pouring nozzle 1032 of the refill
container 1000 according to this embodiment, and it
also shows configurations of the convex emboss pattern
5 1035A and the concave emboss pattern 1036A. In the
pouring nozzle 1032A, each of the convex emboss pattern
1035A and the concave emboss pattern 1036A is formed of
one streaky emboss pattern. In the refill container
1000 according to this embodiment, even such a simple
10 emboss shape can sufficiently exercise the above
effect. In particular, when a paper sheet is used as
the laminated body 10 constituting the refill container
1000, such a streaky emboss pattern is preferable in
light of preventing rupture of the paper sheet.

15 It is to be noted that examples of these pouring
nozzles 1032 and 1032A will now be described with
reference to FIG. 24A, FIG. 24B, FIG. 24C, and
FIG. 24D.

FIG. 24A is an enlarged cross-sectional view
20 showing a configuration of an example of the pouring
nozzle 1032 in the refill container 1000. FIG. 24B is
an enlarged cross-sectional view showing the
configuration of the example of the pouring nozzle 1032
in the refill container 1000. FIG. 24C is an enlarged
25 cross-sectional view showing a configuration of an
example of the pouring nozzle 1032A in the refill
container 1000. FIG. 24D is an enlarged

cross-sectional view showing a configuration of an example of a pouring nozzle 1032A in the refill container 1000A.

5 In the example of the pouring nozzle 1032 depicted in FIG. 24A, in the pouring nozzle 1032a are provided a belt-like convex emboss pattern 1035 having a trapezoidal cross-sectional shape and a belt-like concave emboss pattern 1036 likewise having a trapezoidal cross-sectional shape.

10 In the example of the pouring nozzle 1032 depicted in FIG. 24B, a belt-like convex emboss pattern 1035 having a trapezoidal cross-sectional shape alone is provided. In this manner, the pouring nozzle 1032 may not have the convex emboss pattern 1036 if a wide
15 cross-sectional area of the spout 1031 can be assured.

In the example of the pouring nozzle 1032A shown in FIG. 24C, a streaky convex emboss pattern 1035A having a triangular cross-sectional shape and a streaky concave emboss pattern 1036A likewise having a
20 triangular cross-sectional shape are provided.

Moreover, in the example of the pouring nozzle 1032A shown in FIG. 24D, a belt-like convex emboss pattern 1035A having a trapezoidal cross-sectional shape alone is provided. In this manner, the pouring
25 nozzle 1032A may not have the concave emboss pattern 1036A when a wide cross-sectional area of the spout 1031 can be assured.

A refill container 1100 according to a 12th embodiment of the present invention will now be described in detail with reference to FIG. 25, FIG. 26A, and FIG. 26B. It is to be noted that like
5 reference numerals denote structures equal to those in each of the refill containers 1, 100, 200, 300, 400, 500, 600, 700, 800, 900, and 1000 to omit detailed explanation thereof.

FIG. 25 is a schematic view showing a
10 configuration of the refill container 1100 according to the 12 embodiment of the present invention. FIG. 26A is a cross-sectional view schematically showing a configuration of a cross section XXVI-XXVI of the refill container 1100. FIG. 26B is a cross-sectional
15 view schematically showing the configuration of the cross section XXVI-XXVI of the refill container in a state that the refill container 1100 is opened.

As shown in FIG. 25, FIG. 26A, and FIG. 26B, the refill container 1100 according to this embodiment is
20 obtained by bending one laminated body 10 having at least a base material 11 and a sealant layer 12 with the sealant layer 12 provided on the outer side to form a bottom tape 4, inserting the bottom tape 4 into a space between a main body front surface laminated body
25 2 and a main body back surface laminated body 3, and sealing the peripheries. In this manner, the refill container 1100 has a standing pouch shape.

Additionally, like the refill container 1000, the
refill container 1100 has a bent portion 6. It is to
be noted that the bent portion 6, a pouring nozzle seal
portion 1024a, and a pouched portion seal portion 1025a
5 form a pouring nozzle 1032 from which contents are
poured.

When the refill container 1100 has such a shape,
since a filling opening portion for filling the
container with the contents cannot be provided in a
10 side seal portion, a part of the bent portion 6 is cut
open to provide the filling opening portion 1141. In
the embodiment shown in FIG. 25, the filling opening
portion 1141 is sealed to form a top seal portion 1121.
When the filling opening portion 1141 is present at a
15 top portion of the refill container 1100, there can be
obtained an advantage that a filling operation for the
contents can be facilitated.

As shown in FIG. 26B, since the bottom tape 4 can
spread, the refill container 1100 having the standing
20 pouch shape can be easily formed as a container having
a large capacity. Therefore, it is possible to
sufficiently exploit characteristics that a pouring
time in the refill container 1100 according to this
embodiment can be reduced.

25 The bent portion 6 is formed by bending the one
laminated body 10 at a top portion with the sealant
layer 12 provided on the inner side. The bent portion

6, the pouring nozzle seal portion 1024a, and the punched portion seal portion 1025a form an outflow path 1033 for contents reaching the spout 1031. In particular, when the contents is a liquid, adopting such a configuration enables rapid pouring since the contents can smoothly flow through the linear outflow path 1033 at the time of pouring the contents. As a result, the refill container 1100 is further effective since it has a large capacity.

A refill container 1200 according to a 13th embodiment of the present invention will now be described in detail with reference to FIG. 27. It is to be noted that like reference numerals denote structures equal to those in each of the refill containers 1, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, and 1100 to omit detailed explanation thereof.

FIG. 27 is a schematic view showing a configuration of the refill container 1200 according to the 13th embodiment of the present invention.

This refill container 1200 has a configuration that a grip 1226 having a shape that can be fitted in a pouched portion 1225 is provided on an opposite side of the pouched portion 1225 of a pouring nozzle seal portion 1024a forming a pouring nozzle 1032. When the pouched portion 1225 is formed in the pouring nozzle seal portion 1024a, an outflow path 1033 is formed as

the protruding pouring nozzle 1032. An appropriate shape of the pouched portion 1225 can be selected in accordance with a configuration around a tap portion of a repeatedly used container 51.

5 To manufacture the refill container 1200 depicted in FIG. 27, a laminated body 10 slit having a width substantially double a width corresponding to a height of the refill container 1200 is bent at a top portion so that surfaces of a sealant layer 12 are provided on
10 the inner side and face each other, thereby providing a main body front surface laminated body 2 and a main body back surface laminated body 3. Then, this structure is continuously supplied, and a bottom tape 4 folded into two so that the surface of the sealant
15 layer 12 can be arranged on the outer side is continuously supplied during this period. After this supply, necessary sealing is effected, and then punching is carried out to provide the refill container 1200.

20 The punched portion 1225 is basically a portion that is discarded. However, as shown in FIG. 27, when the grip 1226 is formed into the shape that can be fitted in the punched portion 1225 of an adjacent refill container 1200, the grip 1226 can be added
25 without increasing the number of materials in particular. Presence of the grip 1226 enables performing a refilling operation while holding this

grip 1226. Therefore, the refilling operation can be further safely and easily carried out using the refill container 1200.

Furthermore, in the refill container 1200, a part of the bent portion 6 is cut open to form a filling opening portion 1241 for filling the container with the contents. In this example, since the punched portion 1225 or the grip 1226 is present in the side seal portion 22, it is difficult to provide the filling opening portion 1241 having a sufficient width besides the bent portion 6. Therefore, as a position of the filling opening portion 1241, it is preferable to provide the filling opening portion 1241 in the bent portion 6.

FIGS. 6 to 8 are schematic views showing an example of a series of refilling operations using the refill container 1200 according to this embodiment of the present invention. As shown in FIG. 6, the refill container 1200 according to this embodiment is held, and an end of the pouring nozzle 1032 is cut to open the spout 1031. A nozzle 52 of a repeatedly used empty container 51 is inserted into this spout 1031. In this drawing, the repeatedly used container 51 is a plastic container including a nozzle cap 53 having the nozzle 52.

Then, as shown in FIG. 7, the pouring nozzle 1032 of the refill container 1200 is assuredly inserted into

the nozzle cap 53 of the repeatedly used container 51.

Subsequently, as shown in FIG. 8, when the whole container is raised so that the pouring nozzle 1032 becomes vertical while maintaining a positional

5 relationship between the repeatedly used container 51 and the refill container 1200 constant, the contents in the refill container 1200 are poured into the repeatedly used container 51 in one go.

As described above, in the refill container 1200
10 according to the embodiment of the present invention, the spout 1031 having a large area can be assured without using, e.g., a special tap made of plastic. Moreover, since a size of this spout 1031 can be freely
15 designed in accordance with a shape of the tap of the repeatedly used target container 51, this container has a very high value as a dedicated refill container that enables the rapid refilling operation.

Example 16 and Example 17 will now be described as specific examples of the refill container 1200
20 according to this embodiment, and they will be also explained using Comparative Example 9 compared with Example 16 and Example 17 of the refill container 1200. (Example 16)

A laminated body 10 having the following
25 configuration was used as each of the main body front surface laminated body 2 and the main body back surface laminated body 3.

<Configuration of Laminated Body 10 used for Main Body
Front Surface Laminated Body 2 and Main Body Back
Surface Laminated Body 3>

PET (P60 manufactured by Tray Industries, Inc.,
5 12 μm)/printed layer/adhesive layer (TM272 manufactured
by Toyo-Morton, Ltd., 3 g/m^2 (dry))/ONY (ONMB
manufactured by Unitika Ltd., 15 μm)/adhesive layer
(same as above)/LLDPE (TUX-FCS manufactured by Mitsui
Chemicals Tohcello, Inc., 150 μm)

10 The laminated body 10 having the following
configuration was used as a bottom tape 4.

<Configuration of Laminated Body 10 used for Bottom
Tape 4>

ONY (ONM manufactured by Unitika Ltd., 25 μm)/LLDPE
15 (same as above, 120 μm)

The laminated body 10 was used to fabricate a
standing pouch having a shape shown in FIG. 27. As a
pouch size, a width was set to 150 mm, and a height was
set to 272 mm. In regard to embossing of the pouring
20 nozzle 1032, a convex emboss pattern 1035 alone was
formed, and a concave emboss pattern 1036 was not
formed. The convex emboss pattern 1035 has a
trapezoidal cross-sectional shape, a height of 1 mm, a
length of 40 mm, and an angle θ of 50° .

25 As the filling opening portion 1141, a part of the
bent portion 6 was cut to form the filling opening
portion 1141. Additionally, as an expected unsealing

line 1034 that should function as the spout 1031 at the end portion of the pouring nozzle 1032, a half-cut line formed by laser beam machining was provided. The thus obtained refill container 1200 was filled with 900 g of a liquid detergent, and the filling opening portion 1141 was subjected heat sealing to provide an evaluation sample.

(Example 17)

The same procedure as Example 16 was followed to create an evaluation container except that the concave emboss pattern 1036 was formed on the pouring nozzle 1032 in addition to the convex emboss pattern 1035, and the container was filled with the same contents. The concave emboss pattern 1036 was configured to have a trapezoidal cross-sectional shape, a height of 1 mm, a length of 30 mm, and an angle δ of 35°.

<Comparative Example 9>

The same procedure as Example 1 was followed to create an evaluation container except that the pouring nozzle was not embossed, and the container was filled with the same contents.

The end of the pouring nozzle 1032 of the refill container 1200 as each evaluation sample was cut off along the expected unsealing line 1034 by hand, and a time required for pouring the contents was evaluated. These experimental results are shown in Table 3 and FIG. 28. It is to be noted that a pouring time in

Table 3 is a time required for pouring 95% of the inner capacity.

Table 3

	Pouring time (second)
Example 16	20
Example 17	14
Comparative Example 9	27

5

As can be understood from Table 3 and FIG. 28, the pouring time can be reduced by providing the convex emboss pattern 1035 on the pouring nozzle 1032.

Further, it can be also understood that the pouring time can be further reduced when the concave emboss pattern 1036 is provided on the pouring nozzle 1032.

It is to be noted that not only the refill container 1200 but also the refill containers 1000 and 1100 have the pouring nozzle 1032, thus the refill containers 1000 and 1100 can obtain the same effect as that of the refill container 1200.

Industrial Applicability

Since the refill container according to the present invention, which is a refill container constituted of the laminated body having at least the base material and the sealant layer, has the main body front surface laminated body and the main body back surface laminated body and is formed by arranging the respective sealant layers to face each other and sealing the peripheries, the refill container can be

25

manufactured from a soft packaging laminated body alone, which differs from, e.g., a plastic bottle or a container using a tap made of plastic, thereby inexpensively manufacturing the refill container.

5 Further, in the refill container, the one laminated body is gently bent at the top portion with the sealant layer arranged on the inner side to form the bent portion, the main body front surface laminated body, and the main body back surface laminated layer.

10 The bent portion and the spout seal portion provided below the bent portion form the horizontal long outflow path for the contents reaching the spout, thereby forming the pouring nozzle (the outflow path) for pouring the contents. Therefore, the linear outflow

15 path having a large area can be stably assured, whereby the smooth and rapid refilling operation can be effected. Furthermore, the spout can be easily and assuredly formed.

 Moreover, the spout is formed by cutting off the

20 end of the pouring nozzle along the expected unsealing line so that the relationship of $A-4 \text{ (mm)} \leq B \text{ (mm)} \leq A-0.5 \text{ (mm)}$ can be met, where $A \text{ (mm)}$ is a length of the expected unsealing line and $B \text{ (mm)}$ is a width of the opening portion of the spout. As a result, the wide

25 width of the opening portion is assured with respect to the length of the expected unsealing line, thereby facilitating insertion into the nozzle cap of the

repeatedly used container main body. Additionally, since a flow volume at the time of pouring can be also assured, the rapid refilling operation can be stably carried out.

5 Further, the spout is formed by cutting off the end of the outflow path along the expected unsealing line so that the relationship of $1/10 \times (A^2/\pi) \text{ (mm}^2) \leq B \text{ (mm}^2) \leq A^2/\pi \text{ (mm}^2)$ is met, where A (mm) is a width of the spout and B (mm²) is a cross-sectional area of the
 10 opening portion of the spout. As a result, the wide cross-sectional area of the opening portion can be assured, thus facilitating insertion into the nozzle cap of the repeatedly used container main body. Furthermore, a flow volume at the time of pouring can
 15 be also assured, the rapid refilling operation can be stably carried out.

Moreover, in the refill container, since the protruding belt-like or streaky convex emboss pattern is provided at a specific position of the laminated
 20 body forming the pouring nozzle, large cross-sectional areas of the spout and the outflow path can be assured. Additionally, the pouring nozzle can be prevented from bending or coming off the repeatedly used container.

As a result, the refilling operation can be
 25 easily, rapidly, and assuredly carried out. At this time, when an angle formed between the ridge line of the bent portion and the center line of the convex

emboss pattern is not smaller than 0° and not greater than 60° , the characteristics can be further sufficiently exerted.

5 Additionally, when the recessed belt-like or streaky concave emboss pattern is provided at a specific position on the outer side between the convex emboss pattern and the pouring nozzle seal portion at a specific angle, larger cross-sectional areas of the spout and the outflow path can be assured. At the same
10 time, the pouring nozzle can be prevented from bending or coming off the repeatedly used container. Therefore, the effect of the refill container, i.e., assuring the easy and rapid refilling operation can be further stabilized.

15 Further, the refill container has the main body front surface laminated body, the main body back surface laminated body, and the bottom tape, and it is formed by arranging the respective sealant layers to face each other and sealing the peripheries.
20 Furthermore, in the bottom tape, the one laminated body having at least the base material and the sealant layer is bent on the lower side of the container with the sealant layer provided on the outer side. The bottom tape is inserted into a space between the main body
25 front surface laminated body and the main body back surface laminated body, and the peripheries are sealed, thereby resulting in a so-called standing pouch having

a configuration that one end of the bottom tape and the main body front surface laminated body form a bottom seal portion and the other end of the same and the main body back surface laminated body form the bottom seal portion to form a container bottom surface. When the refill container has the standing pouch shape in this manner, it can be formed as a large-capacity refill container having self-standing properties, thus sufficiently exercising the effect of the refill container.

When the punched portion is formed in the spout seal portion to form the outflow path as the protruding pouring nozzle, the pouring nozzle can be inserted into the tap of the repeatedly used container, and hence the effect can be exerted with respect to the container that can perform such an operation.

Moreover, when the punched portion is formed in the spout seal portion to form the outflow path as the protruding pouring nozzle, since the pouring nozzle shape conforming to the nozzle cap of the main body of the repeatedly used container can be realized, the refilling operation can be further smoothly carried out.

When the grip having the shape that can be fitted in the punched portion is provided on the opposite side of the punched portion of the spout seal portion forming the pouring nozzle, this grip can be held to

effect the refilling operation. Therefore, the refilling operation can be further safely and easily performed. Additionally, since the grip has the shape that can be fitted in the punched portion, the
5 laminated body is not wasted when manufacturing the grip from the continuously laminated body based on punching.

Further, when the half-cut line is provided on the outer surfaces of the main body front surface laminated
10 body and the main body back surface laminated body at the portion that should function as the spout, this portion can be torn off by hand to easily open the spout. Likewise, when the expected unsealing line is the half-cut line provided on the outer surface of the
15 main body front surface laminated body and/or the main body back surface laminated body, tearing can be performed by hand to readily open the spout.

When the half-cut processing is performed with respect to the expected unsealing line using, e.g., a
20 laser, accurate unsealing can be easily performed along the expected unsealing line.

Furthermore, when a part of the bent portion is cut open to provide the filling opening portion for contents, even a container having a shape that any
25 other seal portion cannot be formed as the filling opening portion enables the stable filling operation.

In the refill container according to the present

invention, when the nozzle of the repeatedly used container having the nozzle cap can be inserted into the pouring nozzle, the nozzle of the repeatedly used container is inserted into the horizontally held
5 pouring nozzle, and then the container is inclined so that the pouring nozzle becomes vertical. As a result, the refill container that enables the rapid refilling can be provided, and the effect of the present invention can be exerted at a maximum.

10 That is, in the refill container according to the present invention, since the spout can be naturally opened due to presence of the bent portion obtained by gently bending the one laminated body, the nozzle of the target container can be easily inserted. Moreover,
15 when the dimensions of the spout are designed in accordance with the nozzle, the spout that can be precisely fitted to the nozzle can be obtained. Therefore, when the nozzle of the repeatedly used container is inserted into the horizontally held
20 pouring nozzle and then the container is inclined so that the pouring nozzle becomes vertical, the rapid refilling operation can be performed.

Reference Signs List

1, 100, 200, 300, 400, 500, 600, 700, 800, 900,
25 1000, 1100, and 1200 ... refill container, 2 ... main body front surface laminated body, 3 ... main body back surface laminated body, 4 and 104 ... bottom tape,

10 ... laminated body, 11 ... base material, 12 ...
sealant layer, 21, 121 and 1121 ... top seal portion,
22 and 832 ... side seal portion, 23 and 123 ... bottom
seal portion, 24, 124, 224, and 424 ... spout seal
5 portion, 25, 225, 525, and 1225 ... punched portion,
26, 226, 1226 ... grip, 31, 431, 731, 1031 ... spout,
32, 232, 332, 432, 1032, and 1032A ... pouring nozzle,
33 and 1033 ... outflow path, 34, 334, 434, 734, and
1034 ... expected unsealing line, 41, 141, 1141, and
10 1241 ... filling opening portion, 51 ... repeatedly
used container, 52 ... nozzle, 53 ... nozzle cap,
104 ... bottom tape, 1024a ... pouring nozzle seal
portion, 1024b ... pouring nozzle end seal portion,
1025a ... punched portion seal portion, 1025b ...
15 extended line, 1035 and 1035A ... convex emboss
pattern, and 1036 and 1036A ... concave emboss pattern.

C L A I M S

1. A refill container constituted of a laminated body having at least a base material and a sealant layer, characterized by comprising:

5 a bent portion formed by bending the one laminated body with the sealant layer provided on the inner side;

a main body front surface laminated body formed of the bent laminated body; and

10 a main body back surface laminated body formed of the bent laminated body,

wherein the sealant layers of the main body front surface laminated body and the main body back surface laminated body are arranged to face each other, and the peripheries of the main body front surface laminated body and the main body back surface laminated body are sealed,

15 a spout seal portion is provided below the bent portion, and the bent portion and the spout seal portion form a pouring nozzle for pouring contents, and

an end of the pouring nozzle has an expected unsealing line, a spout is formed by cutting off the end along this expected unsealing line, and the following relationship is met:

$$A-4 \text{ (mm)} \leq B \text{ (mm)} \leq A-0.5 \text{ (mm)}$$

25 where A (mm) is a length of the expected unsealing line and B (mm) is a width of an opening portion of the spout.

2. The fill container according to claim 1, characterized by further comprising a bottom tape that is

formed of the laminated body, bent with the sealant layer provided on the outer side, and inserted into a space between the main body front surface laminated body and the main body back surface laminated body,

5 wherein one end of the bottom tape and the main body front surface film form a bottom seal portion and the other end of the bottom tape and the main body back surface film likewise form the bottom seal portion when the peripheries of the main body front surface laminated body, the main
10 body back surface laminated body, and the bottom tape are sealed, thereby constituting a bottom surface.

3. The refill container according to claim 1 or 2, characterized by further comprising:

15 a punched portion provided in the spout seal portion;
and

 a grip that is provided on an opposite side of the punched portion of the spout seal portion where the pouring nozzle is formed and has a shape that is fitted in the punched portion.

20 4. The refill container according to one of claims 1 to 3,

 characterized in that the expected unsealing line is a half-cut line provided on an outer surface of the main body front surface laminated body and/or the main body back
25 surface laminated body.

5. The refill container according to one of claims 1

to 4,

characterized in that the bent portion comprises a filling opening portion for contents which is formed by cutting open a part of the bent portion.

5 6. A refill container constituted of a laminated body having at least a base material and a sealant layer, characterized by comprising:

a bent portion formed by bending the one laminated body with the sealant layer provided on the inner side;

10 a main body front surface laminated body formed of the bent laminated body; and

a main body back surface laminated body formed of the bent laminated body,

15 wherein the sealant layers of the main body front surface laminated body and the main body back surface laminated body are arranged to face each other, and the peripheries of the main body front surface laminated body and the main body back surface laminated body are sealed,

20 a spout seal portion is provided below the bent portion, and the bent portion and the spout seal portion form a pouring nozzle for pouring contents, and

an end of the pouring nozzle has an expected unsealing line, a spout is formed by cutting off the end along this expected unsealing line, and the following relationship is

25 met:

$$1/10 \times (C^2/\pi) \text{ (mm}^2\text{)} \leq D \text{ (mm}^2\text{)} \leq C^2/\pi \text{ (mm}^2\text{)}$$

where C (mm) is a width of the spout and D (mm²) is a cross-sectional area of an opening portion of the spout.

7. The refill container according to claim 6, characterized by further comprising a bottom tape that is
5 formed of the laminated body, bent with the sealant layer provided on the outer side, and inserted into a space between the main body front surface laminated body and the main body back surface laminated body, and

wherein one end of the bottom tape and the main body
10 front surface film form a bottom seal portion and the other end of the bottom tape and the main body back surface film likewise form the bottom seal portion when the peripheries of the main body front surface laminated body, the main body back surface laminated body, and the bottom tape are
15 sealed, thereby constituting a bottom surface.

8. The refill container according to claim 6 or 7, characterized by further comprising a punched portion provided in the spout seal portion,

wherein the punched portion forms the outflow path as
20 a protruding pouring nozzle.

9. The refill container according to one of claims 6 to 8, characterized by further comprising a grip that is provided on an opposite side of the punched portion of the spout seal portion where the pouring nozzle is formed and
25 has a shape that is fitted in the punched portion.

10. The refill container according to one of claims 6

to 9,

characterized in that the expected unsealing line is a half-cut line provided on an outer surface of the main body front surface laminated body and/or the main body back
5 surface laminated body.

11. The refill container according to one of claims 6 to 10,

characterized in that the bent portion comprises a filling opening portion for contents which is formed by
10 cutting open a part of the bent portion.