

DESCRIPTION

PLUG AND FILM CONTAINER HAVING PLUG

TECHNICAL FIELD

5 [0001]

The present invention relates to a plug and a film container having the plug.

This application claims priority from Japanese Patent Application No.

2015-216518 filed on November 4, 2015, the contents of which are incorporated herein
by reference in their entirety.

10

BACKGROUND ART

[0002]

Conventionally, as a plug provided at one end of a film container which is made
of a film, a structure or the like is known in which a cap screwed to a plug is provided
15 and an engaging ring engaged with a plug main body is connected to the cap by a
vulnerable portion. In such a cap, when the cap is rotated, a vulnerable portion between
the engaging ring engaged with the plug main body and the cap breaks, the cap becomes
rotatable, and then the cap can be opened. However, in a structure having such a cap, a
large force is necessary to open the cap as the cap needs to be broken by the vulnerable
20 portion being torn, and there is a problem in that the cap is easily lost once it has been
opened.

[0003]

Regarding the problem in that the cap is easily lost, it is convenient when a
hinged cap is employed as a cap structure so that the cap is not easily lost.

25 [0004]

Thus, for example, Patent Document 1 proposes a safety cap for a small dispenser including a tubular cap main body having a discharge opening which communicates with an interior of a container at a top thereof, a cup-shaped cap formed to fit the discharge opening to seal the cap main body, an elastic hinge web structure connecting the cap to the cap main body, a holding mechanism holding the cap in a sealed position on the cap main body, allowing the cap to perform rotational motion on the cap main body within a range determined by the web structure, and including an annular recess formed on an inner wall of the cap in a circumferential direction and an annular bead formed on an outer wall of the cap main body in a circumferential direction and capable of being fitted to the recess, an interference protruding portion and a lifting piece respectively provided on the cap main body and the cap so that they overlap each other when the cap moves to the sealed position on the cap main body around the web structure, the web structure being formed in a length capable of rotating the cap in the sealed position within a limited range so that the lifting piece moves away from a linear arrangement with the interference protruding portion on the cap main body, and a detent mechanism which elastically holds the cap on the cap main body at a position away from the linear state between the interference protruding portion and the lifting piece so that a finger can touch a lower side of the lifting piece to remove the cap and includes a protuberance portion formed in one of the cap or the cap main body and a cleaved portion formed in the other and configured to receive the protuberance portion when the cap is rotated in one direction toward a predetermined position on the cap main body, thereby allowing removal of the cap without causing the interference protruding portion and the lifting piece to overlap due to an elastic restoring force of the web structure.

[0005]

25 However, with this method, when the container is unintentionally dropped,

problems such as opening of the cap due to an impact applied to the container and consequent scattering of contents in the container may easily occur.

[0006]

Therefore, for example, Patent Document 2 proposes a hinged cap which is
5 constituted by a container lid main body in which a top plate and a skirt vertically
suspended from a peripheral edge of the top plate are formed, and an upper lid coupled to
the container lid main body by a hinge, in which an upright circumferential protrusion is
formed on a peripheral edge of an upper surface of the top plate of the container lid main
body, a protruding portion protruding outward in a horizontal direction is formed at an
10 upper end of the circumferential protrusion, and a protruding portion protruding inward
in a horizontal direction is formed on an inner side of a circumferential end edge of the
upper lid, and, in the hinged cap in which a closed state of the upper lid is maintained by
engagement between these protruding portions, the protruding portion of the upper lid is
constituted by a main protrusion formed with a constant curvature and an auxiliary
15 protrusion formed with a constant curvature at a position shifted downward with respect
to a central axis of the main protrusion when viewed in a side cross section in a state in
which the upper lid is closed, a center of curvature of the auxiliary protrusion and a
center of curvature of the main protrusion are at different positions, and a radius of
curvature of the auxiliary protrusion is set to be smaller than a radius of curvature of the
20 main protrusion, and, in a normal state in which the upper lid is closed in the container
lid main body, the auxiliary protrusion is positioned away from a lower surface of the
protruding portion of the container lid main body but, when a pressure in a space
between the upper lid and the container lid main body rises, the auxiliary protrusion
comes into contact with the lower surface of the protruding portion of the container lid
25 main body.

[0007]

However, with such an engagement of the protruding portions alone, the occurrence of problems such as deformation of the cap by an impact applied to the container due to dropping of the container, opening of the hinged cap, and consequent
5 scattering of contents in the container cannot be prevented.

[0008]

In response to these problems, Patent Document 3 proposes a pouch container including a container main body formed by joining film-like materials and a plug attached to the container main body, in which the plug includes a base joined to the
10 container main body, a spout formed in a tubular shape having a lumen and having a first end connected to the base, a lid having a shape capable of entering the lumen and connected to a second end of the spout to seal the spout, a thin portion connecting the spout and the lid while maintaining the watertightness thereof, a rib provided in the thin portion and configured to adjust an amount of a force necessary for breaking the thin
15 portion, and a connection member for connecting the spout and the lid separately from the thin portion, and the plug can be opened by breaking the thin portion.

[0009]

In this method, before opening the lid, the spout and the lid are reliably connected by the thin portion and thus unintentional opening of the lid cannot easily
20 occur. However, similarly, once the lid is open, even if the lid is closed afterward, since the lid is merely inserted into the spout, there is a problem in that the lid may open due to an impact applied to the container.

PRIOR ART DOCUMENTS

PATENT DOCUMENTS

25 [0010]

[Patent Document 1] Japanese Patent No. 1175781
[Patent Document 2] Japanese Patent No. 4125402
[Patent Document 3] Japanese Unexamined Patent Application, First Publication No.
2014-73865

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SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0011]

The present invention has been made in view of the above problems, and
10 provides a plug in which a cap does not easily open and is not easily lost even once the
cap is opened and even when an impact is applied to the plug or an internal pressure is
applied to the container due to dropping of the container with a lid of the cap closed.

MEANS FOR SOLVING THE PROBLEMS

[0012]

15 A plug according to a first aspect of the present invention includes a plug main
body having a spout, a spout hole communicating with the spout, and an inner wall
protrusion provided on an inner wall of the spout hole; a first flange provided at a
position adjacent to the spout on an outer side of the plug main body and having an
engaging protrusion protruding from the plug main body toward an outer side thereof,
20 and a hinge positioned on a side opposite to the engaging protrusion; a hinged cap having
a hinge cap body connected to the first flange via the hinge, an engaging claw engageable
with the engaging protrusion, an inner ring insertable into the spout hole via the spout, an
inner-ring engaging protrusion provided on the inner ring and engageable with the inner
wall protrusion, and a distal end which is smaller in thickness than the hinge cap body
25 and positioned on an outer side of the engaging claw, and a second flange having an

extended portion protruding from the plug main body toward an outer side thereof and provided at a position further away from the spout than the first flange, and a pressing rib protruding from a distal end of the extended portion and provided at a position at which the pressing rib faces the engaging protrusion to be able to come into contact with the engaging claw.

According to the plug of the first aspect of the present invention, in a state in which the hinged cap is closed in the plug, the hinge is bent, the engaging claw is engaged with the engaging protrusion, the inner ring is inserted into the spout hole, and the inner-ring engaging protrusion is engaged with the inner wall protrusion. Also, the engaging claw is disposed between the pressing rib and the engaging protrusion. In a state in which the hinged cap is closed in this way, even when an impact is applied to the plug or an internal pressure is applied to the container due to dropping of the container, the pressing rib comes in contact with the engaging claw, the pressing rib restricts deformation of the engaging claw, and thereby movement of the engaging claw is prevented. Therefore, the hinged cap does not unintentionally open. Accordingly, the engagement state between the pressing rib and the engaging claw is not easily released, and the plug can be reliably prevented from being opened even when an unintended impact is applied to the plug or an internal pressure is applied to the container.

[0013]

In the plug according to the first aspect of the present invention, the pressing rib may include an inner surface facing the engaging protrusion and an inclined surface provided at an end of the inner surface.

According to the plug of the first aspect of the present invention, when the hinged cap is pressed from above toward the spout at the time of closing the plug, an outer end of the engaging claw comes into contact with the inclined surface of the

pressing rib, the outer end of the engaging claw slides on the inclined surface of the pressing rib, and then the hinged cap can be closed. Therefore, the engaging claw can be easily disposed between the pressing rib and the engaging protrusion so that the engaging protrusion and the engaging claw can be engaged with each other.

5 [0014]

In the plug according to the first aspect of the present invention, a thickness of the pressing rib may be larger than a thickness of the second flange, and a thickness of the pressing rib may be larger than a thickness of the hinged cap.

10 According to the plug of the first aspect of the present invention, when the thicknesses of the hinged cap is defined as described above, when the plug is opened, it is possible to easily detach the engaging claw from the pressing rib while elastically deforming the hinged cap, and thereby the hinged cap can be opened.

Also, when the thickness of the pressing rib and the thickness of the second flange are defined as described above, a sufficient strength for an inverted L-shaped structure constituted by the second flange and the pressing rib can be obtained and unintended opening of the hinged cap by a user can be reliably prevented.

[0015]

20 In the plug according to the first aspect of the present invention, the hinged cap may include a tamper-proof rib provided at the distal end, and the tamper-proof rib may be coupled to the pressing rib in a state in which the hinge is folded, the inner ring is inserted into the spout hole, and the engaging claw is engaged with the engaging protrusion.

25 According to the plug of the first aspect of the present invention, since the pressing rib and the tamper-proof rib are firmly coupled to each other, the plug can be reliably prevented from opening even when an unintended impact is applied to the plug

or an internal pressure is applied to the container.

[0016]

In the plug according to the first aspect of the present invention, the tamper-proof rib may be removable from the pressing rib by breaking.

5 In addition, the tamper-proof rib may have a vulnerable portion that can be broken.

According to the plug of the first aspect of the present invention, the plug can be opened by breaking the tamper-proof rib and removing it from the pressing rib.

Further, when the tamper-proof rib has the above-described vulnerable portion,
10 the engaging claw is easily pulled out by breaking the vulnerable portion, the engagement state due to the tamper-proof rib can be released, and thus the plug can be opened.

[0017]

A film container according to a second aspect of the present invention includes a
15 plug according to the first aspect described above.

Effects of the Invention

[0018]

According to the aspects of the present invention described above, it is possible to provide a plug in which a cap does not easily open and is not easily lost even once the
20 cap is opened and even when an impact is applied to the plug or an internal pressure is applied to the container due to dropping of the container with a lid of the cap closed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

25 FIG. 1 is a perspective view showing an external appearance of a plug according

to a first embodiment of the present invention.

FIG. 2 is a view showing a situation in which a film container to which a plug according to the first embodiment of the present invention is fused is utilized, and is a perspective view showing an external appearance of the film container.

5 FIG. 3A is a plan view showing a plug according to the first embodiment of the present invention.

FIG. 3B is a front view showing the plug according to the first embodiment of the present invention.

10 FIG. 3C is a left side view showing the plug according to the first embodiment of the present invention.

FIG. 4A is a longitudinal cross-sectional view showing a state in which a plug according to the first embodiment of the present invention is open.

FIG. 4B is a longitudinal cross-sectional view showing a state in which the plug according to the first embodiment of the present invention is closed.

15 FIG. 5A is a view showing a plug according to the first embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which an internal pressure of the plug has risen and a hinged cap is being opened.

20 FIG. 5B is a view partially showing the plug according to the first embodiment of the present invention, and is a view showing a state in which a film container in which the plug is provided has been dropped and the hinged cap is being opened.

FIG. 6A is a view showing a plug according to the first embodiment of the present invention, and is a longitudinal cross-sectional view showing a state before a user opens the hinged cap.

25 FIG. 6B is a view showing the plug according to the first embodiment of the present invention and is a longitudinal cross-sectional view showing a state in which a

user applies a force for opening the hinged cap.

FIG. 6C is a view showing the plug according to the first embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which the hinged cap is open.

5 FIG. 7A is a view showing a plug according to the first embodiment of the present invention, and is a longitudinal cross-sectional view showing a state before the hinged cap is closed.

FIG. 7B is a view showing the plug according to the first embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which the
10 hinged cap is being closed.

FIG. 8A is a view showing a plug according to a second embodiment of the present invention and is a longitudinal cross-sectional view showing a state before a hinged cap seals the plug and immediately after the plug is molded.

FIG. 8B is a view showing the plug according to the second embodiment of the
15 present invention, and is a longitudinal cross-sectional view showing a state in which the hinged cap is closed and seals the plug.

FIG. 9 is a view showing a plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which a hinged cap in which a tamper-proof rib and a pressing rib are coupled to each other is
20 closed and a state in which the hinged cap is open.

FIG. 10A is a view showing a plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view showing a state before a user opens the hinged cap.

FIG. 10B is a view showing the plug according to the second embodiment of the
25 present invention, and is a longitudinal cross-sectional view showing a state in which the

user applies a force for opening the hinged cap.

FIG. 10C is a view showing the plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which the hinged cap is open.

5 FIG. 11 is a longitudinal cross-sectional view showing a plug according to a modified example of the present invention.

EMBODIMENTS FOR CARRYING OUT THE INVENTION

[0020]

10 Hereinafter, a plug according to an embodiment of the present invention will be described in detail with reference to the drawings.

In the drawings, in order for the respective components to be of understandable size in the drawings, the dimensions and the proportions of the components are modified as needed compared with the real components.

15 [0021]

(First Embodiment)

FIG. 1 is a perspective view showing an external appearance of a plug according to a first embodiment of the present invention.

20 FIG. 2 is a view showing a situation in which a film container to which a plug according to the first embodiment of the present invention is fused is utilized, and is a perspective view showing an external appearance of the film container.

Normally, a plug according to the first embodiment of the present invention is manufactured by injection molding to have a shape as shown in the perspective view of FIG. 1. A plug 1 is fused to one end of a film container 50 and used. The plug 1
25 includes a fused portion 2 positioned under the plug 1. The fused portion 2 is formed in

a boat shape in which an external form in a longitudinal direction is pointed at the left and right and a center bulges in a round shape in plan view so that a film and the plug 1 are easily fused to each other. Also, the plug 1 includes a spout 3 positioned on an upper side of the plug 1.

5 [0022]

The plug 1 includes a spout hole 30 penetrating the fused portion 2 and the spout 3, and provided inside the plug 1. The spout hole 30 is provided to penetrate from the inside to outside of the film container 50. In addition, two flanges (a first flange 31 and a second flange 32) are provided around the spout 3.

10 [0023]

Between the two flanges, the first flange 31 is positioned around a foremost end of the spout 3, and is connected to a hinged cap 4 capable of opening and closing the spout 3 in a plugging manner via a hinge 40. In addition, in the first flange 31, an engaging protrusion 311 (engaging rib) is provided on a side opposite to a position of the

15 hinge 40.

[0024]

Further, the second flange 32 is provided below the first flange 31. A pressing rib 321 is provided on the second flange 32 at a position at which the pressing rib 321 faces the engaging protrusion 311. The pressing rib 321 prevents the hinged cap 4

20 engaged with the engaging protrusion 311 from being easily opened due to an impact or the like.

[0025]

An inner ring 41 positioned at a center of the hinged cap 4 and inserted and fitted into the spout hole 30 of the spout 3 is provided in the hinged cap 4. In the hinged

25 cap 4, an engaging claw 42 is provided on a side opposite to the hinge 40. Further, in

the hinged cap 4, a thickness of a distal end 4A positioned on the outer side of the engaging claw 42 is smaller than a thickness of a hinge cap body 4B (a thickness of an external form of the hinged cap 4 which is a portion excluding the distal end 4A).

With this structure, in a state in which the plug 1 is closed (for example, see FIG. 6A to be described below), sufficient space R is obtained between the distal end 4A of the hinged cap 4 and a corner 321C of the pressing rib 321 (refer to FIGS. 4A and 6A). Therefore, as will be described below, a user can easily ascertain a position of the distal end 4A of the hinged cap 4, and thus a structure in which the user's nail or finger is easily brought into satisfactory contact with the distal end 4A of the hinged cap 4 can be obtained.

[0026]

The fused portion 2 formed in a boat shape as described above is sandwiched between a front film 51 and a back film 52 of a film main body 5 constituting the film container 50 and then fused. Therefore, a gap is provided between the front film 51 and the back film 52 so that the spout hole 30 of the plug 1 is fused thereto. Normally, as shown in the perspective view of FIG. 2, the hinged cap 4 is closed, the inner ring 41 provided on an inner wall of the hinged cap 4 is inserted and fitted into the spout hole 30, and thus the film container 50 is sealed.

[0027]

Next, a structure of the plug 1 will be described in more detail.

FIGS. 3A to 3C are views showing the plug 1 according to the first embodiment of the present invention, showing a state immediately after injection molding of the plug. FIG. 3A is a plan view showing the plug 1, FIG. 3B is a front view showing the plug 1, and FIG. 3C is a left side view showing the plug 1.

As shown in FIGS. 3B and 3C, the plug 1 includes a plug main body 100, the

first flange 31, the hinged cap 4, and the second flange 32.

The plug main body 100 includes a spout 3, a spout hole 30 communicating with the spout 3, and a spout hole protrusion 301 (inner wall protrusion) provided on an inner wall W of the spout hole 30.

5 The first flange 31 includes an engaging protrusion 311 protruding toward the outer side from the plug main body 100, and a hinge 40 positioned on a side opposite to the engaging protrusion 311. The first flange 31 is provided at a position adjacent to the spout 3 on the outer side of the plug main body 100.

10 The hinged cap 4 includes a hinge cap body 4B connected to the first flange 31 via the hinge 40, an engaging claw 42 engageable with the engaging protrusion 311, an inner ring 41 insertable into the spout hole 30 via the spout 3, an inner-ring engaging protrusion 411 provided on the inner ring 41 and engageable with the spout hole protrusion 301, and the distal end 4A which is smaller in thickness than the hinge cap body 4B and positioned on an outer side of the engaging claw 42.

15 The second flange 32 includes an extended portion 322 protruding toward the outer side from the plug main body 100 and provided at a position further away from the spout 3 than the first flange 31, and the pressing rib 321 protruding from a distal end of the extended portion 322 and provided at a position at which the pressing rib 321 faces the engaging protrusion 311 so that the pressing rib 321 can come into contact with the
20 engaging claw 42.

[0028]

At a lowermost position of the plug 1, the boat-shaped fused portion 2 having a boat shape in which left and right portions gradually narrow in plan view (FIG. 3A) is provided.

25 On an outer surface of the boat-shaped fused portion 2, a sink marks-preventing

recess 21 extending in a lateral direction is formed so that a fused strength of a surface of the boat-shaped fused portion 2 does not deteriorate due to sink marks (shrinkage) during molding. In addition, thin and pointed ribs 22 are provided at left and right ends of the boat-shaped fused portion 2 and are designed such that gaps are not generated at

5 boundaries at which the front film 51 and the back film 52 start to be superimposed on each other.

The second flange 32 is positioned above the boat-shaped fused portion 2, and the pressing rib 321 is provided on a left end of the second flange 32. Further, the first flange 31 is positioned above the second flange 32. The spout hole 30 provided at a

10 center of the first flange 31 is provided to penetrate the first flange 31, the second flange 32, and the fused portion 2 so that it reaches a lower end of the fused portion 2.

The pressing rib 321 is provided to protrude upward in a vertical direction from an upper surface of the second flange 32 on the left end of the second flange 32 (extended portion 322). In this configuration, a space S surrounded by the second

15 flange 32, the pressing rib 321, and the engaging protrusion 311 is formed.

[0029]

An engaging protrusion 311 is provided at a left end of the first flange 31. The hinge 40 connected to the hinged cap 4 is provided at a right end of the first flange 31. In addition, in the first flange 31, an upper surface of a portion (a stepped portion 312)

20 positioned around an opening of the spout hole 30 is slightly higher than an upper surface of the first flange 31 (an upper surface of the engaging protrusion 311). The stepped portion 312 is spaced apart from an outer periphery of the first flange 31 by a constant width and is positioned inside the outer periphery of the first flange 31. As shown in FIG. 3B, when the stepped portion 312 is formed to be higher by one level than the upper

25 surface of the first flange 31, it is possible to ascertain a closed state of the hinged cap 4

such that a folding position of the hinge does not change markedly. In the present embodiment, as shown in FIGS. 3A and 3B, the structure in which the stepped portion 312 is formed in the first flange 31 is employed, but in the present invention, the stepped portion 312 need not be provided.

5 [0030]

Further, the inner ring 41 positioned at the center of the hinged cap 4 is provided in the hinged cap 4 connected to the first flange 31 by the hinge 40. Further, on a side opposite to the hinge 40 with respect to the inner ring 41, the engaging claw 42 which engages with the engaging protrusion 311 is provided. A protrusion 421 is formed on a
10 surface (protrusion surface) of the engaging claw 42 that faces the inner ring 41.

[0031]

The inner-ring engaging protrusion 411 is provided in a band shape on an outer periphery of the inner ring 41. Also, the distal end 4A (step) having an upper surface lower than an upper surface of the hinge cap body 4B is provided on a side opposite to
15 the hinge 40 (a right side in FIG. 3B) with respect to the engaging claw 42. As will be described below, when the distal end 4A is provided, the user's nail or the like is easily inserted between the hinged cap 4 and the first flange 31 and thus opening of the cap is facilitated.

[0032]

20 FIGS. 4A and 4B are views showing a distal end of the spout 3 of the plug 1 according to the first embodiment of the present invention. FIG. 4A is an enlarged longitudinal cross-sectional view showing a state in which the hinged cap 4 is open. The inner-ring engaging protrusion 411 is provided on the outer periphery of the inner ring 41 positioned at the center of the hinged cap 4. In addition, the spout hole
25 protrusion 301 is also provided on an inner wall of the spout hole 30. Further, an

inclined surface 321A (chamfer) is provided on an inner surface 321D (a surface facing the engaging protrusion 311) of the pressing rib 321 provided on the second flange 32. The inner surface 321D faces the engaging protrusion 311. The inclined surface 321A is provided at an end of the inner surface 321D.

5 [0033]

In the present embodiment, a thickness of the second flange 32 is defined as T1 (a thickness in a direction perpendicular to a direction in which the second flange 32 extends). A thickness of the pressing rib 321 is defined as T2 (a thickness in a direction parallel to the direction in which the second flange 32 extends). A thickness of the hinged cap 4 is defined as T3. In the present embodiment, the thickness T2 is larger than the thickness T1 ($T2 > T1$). Also, the thickness T2 is larger than the thickness T3 ($T2 > T3$). More specifically, when linear low-density polyethylene is selected as a material of the plug 1, for example, the thickness T1 is 1.25 mm, the thickness T2 is 1.40 mm, and the thickness T3 is 1.00 mm. The thicknesses T1, T2, and T3 exemplified in this embodiment are merely examples of the present invention, and the above-described thickness values can be appropriately changed as long as thickness conditions “ $T2 > T1$ ” and “ $T2 > T3$ ” are satisfied.

When the thickness T1 of the second flange 32, the thickness T2 of the pressing rib 321, and the thickness T3 of the hinged cap 4 are defined as described above, a function of the pressing rib 321 to be described below can be sufficiently obtained, and, when the user opens the plug 1, the hinged cap 4 can be opened while elastically deforming the hinged cap 4.

[0034]

FIG. 4B is an enlarged longitudinal cross-sectional view showing a state in which the hinged cap 4 is closed. When the hinge 40 is bent by 180 degrees from the

open state of the hinged cap 4 shown in FIG. 4A to bring the hinged cap 4 into the closed state, the inner ring 41 is inserted into the spout hole 30. At this time, since the hinged cap 4 rotates about a center of the hinge 40, a curved surface is provided at a distal end of the inner ring 41 so that the inner ring 41 can be easily inserted into the spout hole 30.

5 When the inner ring 41 is inserted into the spout hole 30, the inner-ring engaging protrusion 411 engages with the spout hole protrusion 301 and a click feeling can be obtained. Further, the engaging claw 42 provided on the hinged cap 4 engages with the engaging protrusion 311 provided on a side opposite to the hinge 40 on the first flange 31. At this time, a lower end of the engaging protrusion 311 comes into contact with the
10 protrusion 421. Also when the engaging claw 42 and the engaging protrusion 311 are engaged with each other as described above, since a distal end (the protrusion 421) of the engaging claw 42 rides over the engaging protrusion 311 to engage therewith, simultaneously with engagement of the inner-ring engaging protrusion 411 and the spout hole protrusion 301, a better click feeling can be obtained. At this time, the pressing rib
15 321 is adjacent to a surface (back surface of the engaging claw 42) opposite to an engaging surface (protrusion surface) of the engaging claw 42 which is engaged with the engaging protrusion 311. In other words, the distal end of the engaging claw 42 is disposed in the space S.

[0035]

20 Next, a state in which the plug 1 is closed by the hinged cap 4 will be described in detail with reference to FIGS. 5A and 5B.

FIG. 5A is a longitudinal cross-sectional view showing a state in which an internal pressure of the plug 1 has risen and the hinged cap 4 is being opened in a state in which the plug 1 is closed by the hinged cap 4.

25 FIG. 5B is a partial cross-sectional view showing a state in which a film

container having the plug 1 is dropped and the hinged cap 4 is being opened in a state in which the plug 1 is closed by the hinged cap 4. Particularly, FIGS. 5A and 5B are enlarged views showing members near the spout 3.

[0036]

5 As shown in FIG. 5A, in the film container 50 having the plug 1 according to the first embodiment of the present invention, the user may unintentionally grip a bag of the film container 50 strongly. In this case, an internal pressure of the film container 50 into which contents are filled rises and a force acting to open the hinged cap 4 is generated as indicated by reference letter P. Alternatively, in accordance with a change
10 in temperature of usage environment of the film container 50, contents in the film container 50 may expand, an internal pressure of the film container 50 rises, and then a force acting to open the hinged cap 4 is generated as indicated by reference letter P.

[0037]

 In this case, the hinged cap 4 is pushed upward from the spout 3 in accordance
15 with the generation of the force P directed toward the outer side of the hinged cap 4 from the spout hole 30. Then, the hinged cap 4 tries to rotate about the hinge 40. Therefore, a member on the side opposite to the hinge 40 (the engaging claw 42) that is not connected to the hinge 40 tries to move upward from the spout 3 first. In addition, a portion 411A on a side opposite to the hinge 40 in the inner-ring engaging protrusion 411
20 of the inner ring 41 tries to ride over the spout hole protrusion 301. When such a force acting to open the hinged cap 4 works as described above, the spout hole 30 is widened such that a wall W1 (inner wall) on the side opposite to the hinge 40 in the spout hole 30 is pushed outward. Therefore, the engaging protrusion 311 provided on the side opposite to the hinge 40 of the first flange 31 is also deformed to be pushed outward. In
25 accordance with the deformation of the engaging protrusion 311, the engaging claw 42 is

deformed to be pushed outward (left side in FIG. 5A). When the engaging claw 42 is pushed outward, an outer surface 42A of the engaging claw 42 is brought into contact with the inner surface 321D of the pressing rib 321 provided on the second flange 32. The pressing rib 321 restricts deformation of the engaging claw 42 toward the outer side and prevents the engaging claw 42 from moving toward the outer side of a surface in which the pressing rib 321 and the engaging claw 42 are in contact. Therefore, even when an internal pressure of the film container 50 rises at once due to a pressure applied from the outside or the internal pressure of the film container 50 rises as the contents of the film container 50 expand in accordance with a change in temperature of usage environment of the film container 50, the hinged cap 4 does not unintentionally open.

[0038]

Also, as shown in FIG. 5B, in the film container 50 having the plug 1 according to the first embodiment of the present invention, the user may unintentionally drop the film container 50 and the plug 1 may collide with the ground in some cases.

As described above, when an impact due to dropping of the film container 50 is applied to the plug 1, there is a possibility of the hinged cap 4 trying to rotate about the hinge 40 due to a vibration or the like. In this case, the member on the side opposite to the hinge 40 (the engaging claw 42) that is not connected to the hinge 40 tries to move downward (toward a dropping surface FL) from the spout 3 first. Also, the portion 411A on the side opposite to the hinge 40 in the inner-ring engaging protrusion 411 of the inner ring 41 tries to ride over the spout hole protrusion 301. When such a force acting to open the hinged cap 4 works as described above, the spout hole 30 is widened such that the wall W1 on the side opposite to the hinge 40 in the spout hole 30 is pushed outward. Therefore, the engaging protrusion 311 provided on the side opposite to the hinge 40 of the first flange 31 is also deformed to be pushed outward. In accordance

with the deformation of the engaging protrusion 311, the engaging claw 42 is deformed to be pushed outward (right side in FIG. 5B). When the engaging claw 42 is pushed outward, the outer surface 42A of the engaging claw 42 is brought into contact with the inner surface 321D of the pressing rib 321 provided on the second flange 32. The pressing rib 321 restricts deformation of the engaging claw 42 toward the outer side and prevents the engaging claw 42 from moving toward the outer side of a surface in which the pressing rib 321 and the engaging claw 42 are in contact. Therefore, even when a dropping impact caused by dropping of the film container 50 is applied to the plug 1, the hinged cap 4 does not unintentionally open.

[0039]

Particularly, in FIGS. 4A, 5A, and 5B, since the thickness T1 of the second flange 32 and the thickness T2 of the pressing rib 321 satisfy the condition " $T2 > T1$," a sufficient strength for an inverted L-shaped structure constituted by the second flange 32 and the pressing rib 321 can be obtained and unintended opening of the hinged cap 4 by the user can be reliably prevented.

[0040]

Next, a movement of the plug 1 when the user opens the hinged cap 4 that has been closed with respect to the plug 1 will be described in detail with reference to FIGS. 6A to 6C.

FIG. 6A is a longitudinal cross-sectional view showing a state before the user opens the hinged cap. FIG. 6B is a longitudinal cross-sectional view showing a state in which the user applies a force for opening the hinged cap. FIG. 6C is a longitudinal cross-sectional view showing a state in which the hinged cap is open.

In the following description, a case in which the user opens the hinged cap 4 with a ball of a finger F will be described, but the same applies to a case in which the

user opens the hinged cap 4 with a nail.

[0041]

First, as shown in FIG. 6A, since the thickness of the distal end 4A is smaller than the thickness of the hinge cap body 4B, the sufficient space R formed between the distal end 4A of the hinged cap 4 and the corner 321C of the pressing rib 321 is obtained.

When the hinged cap 4 is opened, the user brings the ball of the finger F into contact with the distal end 4A of the hinged cap 4. At this time, the user's finger F not only comes into contact with the distal end 4A but also may come into contact with an outer surface 321B of the pressing rib 321. That is, in this case, the user's finger F covers the space R positioned between the corner 321C of the outer surface 321B and the distal end 4A. When the finger F touches the distal end 4A and the corner 321C, the user can ascertain the position of the distal end 4A. Also, since the outer surface 321B is a flat surface, the user can ascertain the position of the distal end 4A while sliding the finger F on the outer surface 321B.

[0042]

Next, as shown in FIG. 6B, after the position of the distal end 4A is ascertained, the user applies a force lifting the distal end 4A upward to the hinged cap 4. Here, since the sufficient space R is formed between the distal end 4A of the hinged cap 4 and the corner 321C of the pressing rib 321, the ball of a user's finger F is easily caught by the distal end 4A in the space R between the distal end 4A of the hinged cap 4 and the corner 321C of the pressing rib 321. Therefore, while pressing the distal end 4A of the hinged cap 4, the user can pull up the distal end 4A upward and easily open the hinged cap 4. At this time, when the finger F is in contact with the outer surface 321B, the user can pull up the distal end 4A upward while sliding the finger F on the outer surface 321B.

When the distal end 4A is opened with the user's nail, since the user's nail easily

enters the space R and the distal end 4A is pulled upward by the nail, it is possible to easily open the hinged cap 4.

[0043]

An operation of opening the hinged cap 4 will be described in detail.

5 When the user applies a force pulling up the distal end 4A upward to the hinged cap 4, the hinged cap 4 begins to undergo elastic deformation. When the user gradually lifts the distal end 4A upward, an elastic deformation region X gradually enlarges from the distal end 4A toward the hinge 40. As the elastic deformation region X enlarges, the inner ring 41 positioned under the elastic deformation region X deforms, and the portion
10 411A on the side opposite to the hinge 40 in the inner-ring engaging protrusion 411 of the inner ring 41 tries to ride over the spout hole protrusion 301. When such a force acting to open the hinged cap 4 works as described above, the spout hole 30 is widened such that the wall W1 on the side opposite to the hinge 40 in the spout hole 30 is pushed outward. Therefore, the engaging protrusion 311 provided on the side opposite to the
15 hinge 40 of the first flange 31 is also deformed to be pushed outward. In accordance with the deformation of the engaging protrusion 311, the engaging claw 42 is deformed to be pushed outward (left side in FIG. 6B). When the engaging claw 42 is pushed outward, the outer surface 42A of the engaging claw 42 is brought into contact with the pressing rib 321 provided on the second flange 32.

20 [0044]

Further, when the user continuously applies the force pulling up the distal end 4A upward to the hinged cap 4, the elastic deformation region X further enlarges in accordance with the elastic deformation of the hinged cap 4, and the outer surface 42A of the engaging claw 42 slides while coming in contact with the inner surface 321D of the
25 pressing rib 321. Thereafter, when the elastic deformation of the hinged cap 4 further

progresses, an outer end 42B of the engaging claw 42 reaches the inclined surface 321A, the engaging claw 42 is separated from the pressing rib 321, and the hinged cap 4 in the plug 1 is detached as shown in FIG. 6C.

[0045]

5 Particularly, in FIGS. 4A, 6A, and 6B, the thickness T1 of the second flange 32, the thickness T2 of the pressing rib 321, and the thickness T3 of the hinged cap 4 satisfy the conditions “ $T2 > T1$ ” and “ $T2 > T3$.” Therefore, when the user continuously applies a force to the hinged cap 4, it is possible to easily detach the engaging claw 42 from the pressing rib 321 while elastically deforming the hinged cap 4.

10 [0046]

FIG. 7A is a longitudinal cross-sectional view showing a state of the plug 1 before the hinged cap 4 is closed, and is an enlarged view showing members positioned near the spout 3.

FIG. 7B is a longitudinal cross-sectional view showing a state of the plug 1 in
15 which the hinged cap 4 is being closed, and is an enlarged view showing members positioned near the spout 3.

When the hinged cap 4 is closed with respect to the spout 3, the hinged cap 4 is rotated about the hinge 40, the inner ring 41 is inserted into the spout hole 30, and the hinged cap 4 is pushed down from above. At this time, since the inner-ring engaging
20 protrusion 411 provided on the inner ring 41 is pushed into the spout hole protrusion 301 provided on the inner wall of the spout hole 30 and aligned at a precise position, an upper portion of the spout hole 30 is barely widened and the engaging protrusion 311 is pushed outward. When the engaging protrusion 311 is pushed outward, the engaging claw 42 is pushed further outward. However, since the inclined surface 321A is formed on the
25 inner surface 321D of the pressing rib 321, when a force pushing down the hinged cap 4

acts from above, the outer end 42B of the engaging claw 42 is gradually pushed toward the inside of the space S while sliding on the inclined surface 321A. Further, the engaging claw 42 slides into the lower side of the engaging protrusion 311, and thereby the engaging protrusion 311 and the engaging claw 42 can be engaged with each other.

5 Accordingly, as shown in FIG. 7B, when an inclined surface (chamfer) is formed also at the lower end of the engaging protrusion 311, the engaging claw 42 can be smoothly engaged with the engaging protrusion 311.

[0047]

(Second Embodiment)

10 In a second embodiment, identical reference numerals are used for the elements which are identical to those of the first embodiment, and the explanations thereof are omitted or simplified here.

FIG. 8A is a view showing a plug according to the second embodiment of the present invention and is a longitudinal cross-sectional view showing a state before a
15 hinged cap 4 seals the plug and immediately after the plug is molded.

FIG. 8B is a view showing the plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which the hinged cap 4 is closed and seals the plug.

[0048]

20 In the plug according to the second embodiment, the hinged cap 4 includes a tamper-proof rib 43 at a distal end 4A. In other words, the plug includes the tamper-proof rib 43 provided at a position at which the tamper-proof rib 43 faces an outer surface 42A of an engaging claw 42 provided on the hinged cap 4. The tamper-proof rib 43 includes a vulnerable portion that can be broken at an installation portion in which
25 the tamper-proof rib 43 and the hinged cap 4 are fixed, or at portions positioned above

and below the installation portion. As shown in FIGS. 8A and 8B, a notch may be provided or a hole may be provided in the vulnerable portion. Further, a vulnerable portion treated by laser processing or the like may also be employed. The tamper-proof rib 43 can be removed from a pressing rib 321 by breaking.

5 [0049]

As shown in FIG. 8B, when the hinged cap 4 is in a state of being closed in the plug, it is preferable that the tamper-proof rib 43 and the pressing rib 321 be coupled to each other. For example, when the hinged cap 4 is closed with a lower end of a second flange 32 and the tamper-proof rib 43 being in contact with a receiving jig 62 while an
10 ultrasonic horn 61 is brought into contact with an upper surface of the hinged cap 4, the tamper-proof rib 43 and the pressing rib 321 can be fused together. Further, male and female fitting shapes with which the tamper-proof rib 43 and the pressing rib 321 can be fitted to each other may be formed on the tamper-proof rib 43 and the pressing rib 321. In this case, the tamper-proof rib 43 and the pressing rib 321 may be swaged or adhered
15 to each other. Generally speaking, by coupling the tamper-proof rib 43 and the pressing rib 321, it is necessary to have a structure that cannot be opened unless the vulnerable portion is broken. Therefore, when the vulnerable portion is broken, a user can immediately ascertain that the plug has been opened.

[0050]

20 FIG. 9 is a view showing a plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view partially showing a state (left) in which the hinged cap 4 in which the tamper-proof rib 43 and the pressing rib 321 are coupled to each other is closed and a state (right) in which the hinged cap 4 is open.

When the vulnerable portion is broken, the hinged cap 4 can be opened. At this
25 time, as shown in the left portion of FIG. 9, when the tamper-proof rib 43 is broken, the

tamper-proof rib 43 is removed from the pressing rib 321, or the user can clearly confirm that there is a broken portion. Therefore, once the plug is open, it is possible to determine whether or not the plug has been opened by checking for the presence or absence of the tamper-proof rib 43 or by checking for breakage of the tamper-proof rib 43 from the hinged cap 4.

[0051]

Next, a movement of the plug when the user opens the hinged cap 4 that has been closed in the plug will be described in detail with reference to FIGS. 10A to 10 C.

FIG. 10A is a view showing a plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view showing a state before a user opens the hinged cap. In FIG. 10A, the tamper-proof rib 43 (double-dotted-dashed line) before removal is shown. FIG. 10B is a view showing the plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which the user applies a force for opening the hinged cap. FIG. 10C is a view showing the plug according to the second embodiment of the present invention, and is a longitudinal cross-sectional view showing a state in which the hinged cap is open.

In the following description, a case in which a user opens the hinged cap 4 with a ball of a finger F will be described, but the same applies to a case in which the user opens the hinged cap 4 with a nail.

[0052]

First, as shown in FIG. 10A, in a state in which a hinge 40 is folded, an inner ring 41 is inserted into a spout hole 30, the engaging claw 42 is engaged with an engaging protrusion 311, and the tamper-proof rib 43 is coupled to the pressing rib 321 (refer to FIGS. 8B and 9).

The user opening the hinged cap 4 in which the tamper-proof rib 43 is provided

breaks the tamper-proof rib 43. The user may remove the tamper-proof rib 43 from the hinged cap 4 or maintain a state in which the tamper-proof rib 43 is partially connected to the hinged cap 4. In the following description, as shown in FIG. 10B, a case in which the tamper-proof rib 43 is removed from the hinged cap 4 will be described.

5 [0053]

As shown in FIG. 10A, when the tamper-proof rib 43 is removed from the hinged cap 4, a distal end 4C on which the tamper-proof rib 43 has been disposed in the hinged cap 4 is exposed. The distal end 4C of the hinged cap 4 is in a state of protruding further than an outer surface 321B of the pressing rib 321. Therefore, the
10 ball of the user's finger F is easily caught by the distal end 4C. Since a thickness of the distal end 4C is smaller than a thickness of a hinge cap body 4B, the sufficient space R is obtained between the distal end 4C of the hinged cap 4 and the corner 321C of the pressing rib 321.

When the hinged cap 4 is opened, the user brings the ball of the finger F into
15 contact with the distal end 4C of the hinged cap 4. At this time, the user's finger F may come into contact with the outer surface 321B of the pressing rib 321 in some cases. That is, in this case, the user's finger F covers the space R positioned between the corner 321C of the outer surface 321B and the distal end 4C. When the finger F touches the distal end 4C and the outer surface 321B, the user can ascertain a position of the distal
20 end 4C. Also, since the outer surface 321B is a flat surface, the user can ascertain the position of the distal end 4C while sliding the finger F on the outer surface 321B.

[0054]

Next, as shown in FIG. 10B, after ascertaining the position of the distal end 4C, the user applies a force lifting the distal end 4C upward to the hinged cap 4. Here, since
25 the distal end 4C of the hinged cap 4 protrudes further than the outer surface 321B, the

ball of the user's finger F is easily caught by the distal end 4C. Therefore, while pressing the distal end 4C of the hinged cap 4, the user can pull up the distal end 4C upward and easily open the hinged cap 4. At this time, when the finger F is in contact with the outer surface 321B, the user can pull up the distal end 4C upward while sliding
5 the finger F on the outer surface 321B.

When opening the distal end 4C with the user's nail, since the user's nail is easily caught by the distal end 4C and the distal end 4C is pulled upward by the nail, it is possible to easily open the hinged cap 4.

[0055]

10 When the user applies a force pulling up the distal end 4C upward to the hinged cap 4, the hinged cap 4 begins to undergo elastic deformation. When the user gradually lifts the distal end 4C upward, an elastic deformation region X gradually enlarges from the distal end 4C toward the hinge 40. As the elastic deformation region X enlarges, the inner ring 41 positioned under the elastic deformation region X deforms, and a portion
15 411A on a side opposite to the hinge 40 in an inner-ring engaging protrusion 411 of the inner ring 41 tries to ride over a spout hole protrusion 301. When such a force acting to open the hinged cap 4 works as described above, the spout hole 30 is widened such that a wall W1 of the spout hole 30 on a side opposite to the hinge 40 is pushed outward.

Therefore, the engaging protrusion 311 provided on the side opposite to the hinge 40 of a
20 first flange 31 is also deformed to be pushed outward. In accordance with the deformation of the engaging protrusion 311, the engaging claw 42 is deformed to be pushed outward (left side in FIG. 10B). When the engaging claw 42 is pushed outward, the outer surface 42A of the engaging claw 42 is brought into contact with the pressing rib 321 provided on the second flange 32.

25 [0056]

Further, when the user continuously applies a force pulling up the distal end 4C upward to the hinged cap 4, the elastic deformation region X further enlarges in accordance with the elastic deformation of the hinged cap 4, and the outer surface 42A of the engaging claw 42 slides while coming in contact with an inner surface 321D of the pressing rib 321. Thereafter, when the elastic deformation of the hinged cap 4 further progresses, an outer end 42B of the engaging claw 42 reaches an inclined surface 321A, the engaging claw 42 is separated from the pressing rib 321, and the hinged cap 4 in the plug is detached as shown in FIG. 10C.

When the hinged cap 4 is closed, as in FIGS. 7A and 7B described in the first embodiment, the hinged cap 4 is rotated about the hinge 40, the inner ring 41 is inserted into the spout hole 30, and the hinged cap 4 is pushed down from above.

[0057]

In the second embodiment described above, as in the first embodiment, the thickness T1 of the second flange 32, the thickness T2 of the pressing rib 321, and the thickness T3 of the hinged cap 4 satisfy the conditions “ $T2 > T1$ ” and “ $T2 > T3$.”

Therefore, when the user continuously applies a force to the hinged cap 4, it is possible to easily detach the engaging claw 42 from the pressing rib 321 while elastically deforming the hinged cap 4.

Also, in the second embodiment, the same effect as in the first embodiment can be obtained. Further, when the tamper-proof rib 43 is removed, the distal end 4C of the hinged cap 4 is exposed, and the distal end 4C is in a state of protruding further than the outer surface 321B of the pressing rib 321. Therefore, the ball of the user's finger F is easily caught by the distal end 4C, and the hinged cap 4 in the plug can be easily opened.

[0058]

(Modified example)

FIG. 11 is a longitudinal cross-sectional view showing a plug according to a modified example of the present invention.

In the first embodiment described above, a case in which the thickness of the hinged cap 4 is defined as T3 and the thickness T3 is constant over the entire surface of the hinged cap 4 has been described.

In the present modified example, as shown in FIG. 11, an upper surface of a hinged cap 4 may be a curved surface. In this case, for example, a thickness at an end of the hinged cap 4 is defined as T3 and a thickness at a center of the hinged cap 4 is defined as T4. Specifically, when linear low-density polyethylene is selected as a material of the plug, for example, the thickness T3 is 1.00 mm and the thickness T4 is 1.30 mm. Also in this case, the conditions for the thicknesses of “ $T_2 > T_3$ ” and “ $T_2 > T_4$ ” in which T2 is a thickness of the pressing rib 321 (1.40 mm) and T3 and T4 are thicknesses of the hinged cap 4 are satisfied. When such a thickness condition is satisfied, as described in the first embodiment, the hinged cap 4 can be elastically deformed and the hinged cap 4 in the plug can be easily opened.

[0059]

It is preferable that the plug used in the first embodiment and the second embodiment described above be made of a material that can be fused to the main body of the film container 50, have good compatibility with the contents stored in the film container 50, and be suitable for long-term storage. In the embodiment described above, a case of using linear low-density polyethylene as the material of the plug has been described, but the present invention is not limited to this material. For example, a high-pressure method low-density polyethylene, medium-density polyethylene, high-density polyethylene, polypropylene, ethylene vinyl acetate copolymer, or the like may be used as the material of the plug. Also, it is possible to manufacture the plug

with high productivity using an injection molding machine, a compression molding machine, or the like.

[0060]

As a material of the front film 51 and the back film 52 used for the film container 50 according to the embodiment of the present invention, a thermoplastic resin fusible to an inner surface side of a film may be used, and any configurations may be used provided that a sufficient storage stability for the contents contained in the film container 50 and strength thereof can be secured. For example, it is conceivable to have a general structure in which, from an outer side to an inner side of a film, polyethylene terephthalate/polyethylene are laminated, a structure in which polyamide/polyethylene/inorganic oxide deposited polyethylene terephthalate/polyethylene are laminated, a structure in which polyethylene terephthalate/polyethylene/a saponified ethylene vinyl acetate copolymer/polyethylene are laminated, a structure in which saponified ethylene vinyl acetate copolymer/polyamide/adhesive resin/polyethylene are laminated, a structure in which polyethylene terephthalate/polyethylene/adhesive resin/polyamide/adhesive resin/polyethylene are laminated, a structure in which polyethylene terephthalate/polyamide/adhesive resin/polyethylene/aluminum foil/polyethylene are laminated, or the like. The films described above can be laminated using a normal dry lamination machine, an extruder laminator machine, or the like, or can be manufactured using a multilayer inflation machine, or the like.

[0061]

Since the plug according to the embodiment of the present invention and the film container onto which the plug is fused have the above-described configuration, a click feeling when the hinged cap is closed in the plug can be satisfactorily obtained and

the user can clearly recognize opening and closing of the hinged cap. Also, even when a pressure or impact is applied to the plug due to an increase in an internal pressure of the film container 50, dropping of the film container 50, or the like which is not intended by the user, an effect of the hinged cap not easily opening can be obtained. Further, when
5 the user opens the hinged cap 4, it is possible to easily open the hinged cap 4 while applying a force to elastically deform the hinged cap 4 with a finger or a nail. Also, since the hinged cap is connected by the hinge, there is no possibility of it being lost, and it can be used also for a film container of a small capacity. Particularly, a size of the plug according to the embodiment of the present invention can be made small.

10 [0062]

For example, when a rotary cap that is opened and closed by screwing is applied to a small-diameter plug, there is a problem in that the cap may be stiff and difficult to open. When the plug according to the embodiment of the present invention is applied to such a small-diameter plug, the cap is very easy to open and the cap does not
15 unintentionally open. Therefore, it is possible to realize a very easy-to-use plug, and the plug according to the embodiment of the present invention and the film container onto which the plug is fused are greatly advantageous.

[0063]

While preferred embodiments of the invention have been described and
20 illustrated above, it should be understood that these are exemplary of the invention and are not to be considered as limiting. Additions, omissions, substitutions, and other modifications can be made without departing from the scope of the present invention. Accordingly, the invention is not to be considered as being limited by the foregoing description, and is only limited by the scope of the appended claims.

DESCRIPTION OF REFERENCE NUMERALS

[0064]

	1	plug
	2	fused portion
5	3	spout
	4	hinged cap
	4A, 4C	distal end
	4B	hinged cap main body
	5	film main body
10	21	sink marks-preventing recess
	22	rib
	30	spout hole
	31	first flange
	32	second flange
15	40	hinge
	41	inner ring
	42	engaging claw
	42A	outer surface
	42B	outer end
20	43	tamper-proof rib
	50	film container
	51	front film
	52	back film
	61	ultrasonic horn
25	62	receiving jig

	100	plug main body
	301	spout hole protrusion (inner wall protrusion)
	311	engaging protrusion
	312	stepped portion
5	321	pressing rib
	321A	inclined surface
	321B	outer surface
	321C	corner
	321D	inner surface
10	322	extended portion
	411	inner-ring engaging protrusion
	411A	portion
	421	protrusion
	F	finger
15	FL	dropping surface
	P	force
	S, R	space
	T1, T2, T3	thickness
	W	inner wall
20	W1	wall (inner wall)
	X	elastic deformation region

CLAIMS

1. A plug comprising:

a plug main body including a spout, a spout hole communicating with the spout,
5 and an inner wall protrusion provided on an inner wall of the spout hole;

a first flange provided at a position adjacent to the spout on an outer side of the
plug main body and including an engaging protrusion protruding from the plug main
body toward an outer side thereof, and a hinge positioned on a side opposite to the
engaging protrusion;

10 a hinged cap including a hinge cap body connected to the first flange via the
hinge, an engaging claw engageable with the engaging protrusion, an inner ring
insertable into the spout hole via the spout, an inner-ring engaging protrusion provided
on the inner ring and engageable with the inner wall protrusion, and a distal end which is
smaller in thickness than the hinge cap body and positioned on an outer side of the
15 engaging claw; and

a second flange including an extended portion protruding from the plug main
body toward an outer side thereof and provided at a position further away from the spout
than the first flange, and a pressing rib protruding from a distal end of the extended
portion and provided at a position at which the pressing rib faces the engaging protrusion
20 to be able to come into contact with the engaging claw.

2. The plug according to claim 1, wherein

the pressing rib includes:

an inner surface facing the engaging protrusion; and

25 an inclined surface provided at an end of the inner surface.

3. The plug according to claim 1 or claim 2, wherein
a thickness of the pressing rib is larger than a thickness of the second flange, and
a thickness of the pressing rib is larger than a thickness of the hinged cap.

5

4. The plug according to any one of claims 1 to 3, wherein
the hinged cap includes a tamper-proof rib provided at the distal end, and
the tamper-proof rib is coupled to the pressing rib in a state in which the hinge is
folded, the inner ring is inserted into the spout hole, and the engaging claw is engaged
10 with an engaging protrusion.

5. The plug according to claim 4, wherein
the tamper-proof rib is removable from the pressing rib by breaking.

- 15 6. A film container comprising a plug according to any one of claims 1 to 5.