

CONTAINER-SEALING LID HAVING EXCELLENT OPEN STATE RETENTION AND RECLOSABILITY

FIELD OF THE INVENTION

5 [0001]

The present invention relates to a lid having excellent open state retention and reclosability, which is suitably used for containers for instant food, etc.

10 BACKGROUND OF THE INVENTION

[0002]

In lids for containers of instant food such as cupped noodle and instant Yakisoba noodle, it is preferable that hot water is easily poured when the lids are opened, and that they can be easily reclosed after pouring hot water to keep
15 the instant food hot for about 3 minutes to turn it eatable. In order that hot water is easily poured when the lids are opened, the opened lids should be strongly curled to keep an open state. Also, for easy reclosing, a peeled portion (flap) of the lid should be easily engageable with a remaining portion of the lid or a container body to keep the flap reclosed.

20 [0003]

With respect to the open state retention, as shown in Figs. 17 and 18, the applicant previously proposed by WO 2004/106189, a lid 2 sealed to an upper flange 1a of a container body 1, which comprises a peeling tab 21, tearing-starting notches 22a, 22b on both sides of the peeling tab 21, straight
25 lid-opening half cuts 23a, 23b extending from the tearing-starting notches 22a, 22b in a tearing direction, and substantially U-shaped or circular tearing-stopping half cuts 24a, 24b in such direction that they project toward the tearing direction.

[0004]

As shown in Fig. 19 (D-D cross section in Fig. 18), the lid 2 comprises, for instance, a PBT film layer 201, an adhesive layer 202, an extrusion-laminated polyethylene layer 203, a paper sheet layer 204, an adhesive layer 205, an extrusion-laminated polyethylene layer 206, a PET film layer 207, a light-blocking ink layer 208, an adhesive layer 209, an extrusion-laminated polyethylene layer 210, and a sealant layer 211 in this order from an upper surface. Each lid-opening half cut 23a, 23b penetrates the PBT film layer 201, the adhesive layer 202, the extrusion-laminated polyethylene layer 203, and part of the paper sheet layer 204 (at least about 30% in thickness).

[0005]

Accordingly, when the peeling tab 21 is lifted up, as shown in Fig. 20, the lid 2 is torn along a pair of half cuts 23a, 23b to form a flap 3. After hot water is poured into the container body 1 with the flap 3 uprising, the flap 3 is reclosed, resulting in the engagement of edges 2a, 2b of a hot-water-pouring opening with edges 3a, 3b of the flap 3, and thus surely keeping the flap 3 in a reclosed state.

[0006]

It has been found, however, that the flap 3 is not likely to rise sufficiently because this lid 2 comprises the paper sheet layer 204 as a layer for imparting dead-folding characteristics. To secure sufficient uprising of the flap 3, as shown in Figs. 21-23, the applicant proposed by WO 2005/009868, a lid 2 having dead-folding characteristics, which is heat-sealed to an upper flange 1a of a container body 1, the lid 2 mainly comprising a PBT film layer 201, a paper sheet layer 204 and a sealant layer 211 in this order from an outer side; a tab 21 being provided on a peripheral edge; half cuts 23a, 23b extending in a lid-opening direction from tearing-starting notches 22a, 22b on both sides of the tab 21 on a lower surface side; and partial easy-to-peel layers

25a, 25b being provided in regions outside the half cuts 23a, 23b.

[0007]

As shown in Fig. 23 (E-E cross section in Fig. 22), the lid 2 comprises, for instance, a PBT film layer 201, an adhesive layer 202, a paper sheet layer 204, an adhesive layer 205, a PET film layer 206, a light-blocking ink layer 208, an adhesive layer 209, and a sealant layer 211 in this order from an upper surface. Partial easy-to-peel layers 25a, 25b are provided on the upper surface of the adhesive layer 202. Each half cut 23a, 23b penetrates the sealant layer 211, the adhesive layer 209, the light-blocking ink layer 208, the PET film layer 206, the adhesive layer 205, and part of the paper sheet layer 204 (at least about 30% in thickness) from a lower surface.

[0008]

Thus, when the peeling tab 21 is lifted up, as shown in Fig. 24, the paper sheet layer 204 is torn along both half cuts 23a, 23b, with the PBT film layer 201 separating from the paper sheet layer 204 in the partial easy-to-peel layers 25a, 25b. Accordingly, the resultant flap 3 comprises a central full-layer portion 31 and curlable film portions 32a, 32b on both sides. After hot water is poured with the flap 3 uprising, the flap 3 is reclosed, resulting in the engagement of the hot-water-pouring opening edges 2a, 2b with the flap edges 3a, 3b, and thus keeping the flap 3 in a reclosed state.

[0009]

It has been found, however, that because the curlable film portions 32a, 32b on both sides consist only of a PBT film layer 201 with large curlability, the flap 3 has large curlability as a whole, so that only the engagement of the lid edges 2a, 2b with the flap edges 3a, 3b would not surely keep the flap 3 in a reclosed state.

OBJECT OF THE INVENTION

[0010]

Accordingly, an object of the present invention is to provide a lid suitable for containers for instant food, etc., which has sufficient dead-folding characteristics to keep an open state, and can be surely kept in a reclosed state.

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DISCLOSURE OF THE INVENTION

[0011]

As a result of intense research in view of the above object, it has been found that the formation of half cuts on both upper and lower surfaces of the lid, and the formation of partial peelable portions in which a curtable plastic layer is peeled, provide excellent open state retention by large curlability of the flap, and excellent reclosability by engagement of a tab edge with an edge of a hot-water-pouring opening of the lid remaining on a container body. It has also been found that even after the lid is half opened, the curling of the flap is suppressed to keep the flap in a reclosed state when a curtable plastic layer is peeled from the flap from the opposite side. The present invention has been completed based on these findings.

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[0012]

Thus, the container-sealing lid according to the first embodiment of the present invention comprises a paper sheet layer, a curtable plastic layer, and a partial easy-to-peel layer, which is sealed to a container with the paper sheet layer lower than the curtable plastic layer; the lid further comprising a tab provided on a peripheral edge, a pair of first half cuts provided on both sides of the tab on the upper surface side, and a pair of second half cuts extending from intermediate points of the first half cuts on the lower surface side; the partial easy-to-peel layer being provided in a region between the first and second half cuts.

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[0013]

It is preferable in this container-sealing lid that the first half cuts are as deep as exceeding the paper sheet layer, and that the second half cuts are as deep as reaching the partial easy-to-peel layer.

[0014]

5 In this container-sealing lid, each first half cut is bent outward at a point close to the second half cut. Therefore, the first half cut is slightly separate from the second half cut, such that the first half cut does not directly communicate with the second half cut.

[0015]

10 In this container-sealing lid, the curlable plastic layer is constituted by a polybutylene terephthalate film.

[0016]

This container-sealing lid preferably comprises a curlable plastic layer, a paper sheet layer, an adhesive layer, an easy-to-tear plastic layer, and a sealant layer in this order from an upper surface, the partial easy-to-peel layer being provided on the adhesive layer. The partial easy-to-peel layer is preferably on the same plane as the upper or lower surface of the adhesive layer or the adhesive layer. Plastic (for instance, polyethylene) film layers are preferably provided on both sides of the partial easy-to-peel layer, such that the paper sheet layer is not exposed on a peel surface.

[0017]

In the preferred container-sealing lid of the present invention, the second half cut circularly extends from points close to the first half cuts. Particularly, the second half cut circularly extends from the bending points of the first half cuts with a small gap between the second half cut and the first half cut.

[0018]

The container-sealing lid according to the second embodiment of the

present invention comprises a paper sheet layer, a curlable plastic layer, and a partial easy-to-peel layer; the lid being sealed to the container with the paper sheet layer lower than the curlable plastic layer; the lid further comprising first and second tabs provided on a peripheral edge at diagonal positions, and a half cut provided on the lower surface side of the second tab; the partial easy-to-peel layer being located inward than the half cut, whereby after the first tab is lifted up to peel the lid from the container to an intermediate point to from a flap, the flap is substantially reclosed when the second tab is lifted up to peel a laminate portion containing the curlable plastic layer from the partial easy-to-peel layer of the lid.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

Fig. 1(a) is a plan view showing a lid according to one embodiment of the present invention;

Fig. 1(b) is a plan view showing half cuts on an upper surface of the lid shown in Fig. 1(a);

Fig. 1(c) is a bottom view showing half cuts on a lower surface of the lid shown in Fig. 1(a);

Fig. 1(d) is a plan view showing a flap obtained by opening the lid of Fig. 1(a), which is in a 180° open state;

Fig. 2 is an enlarged cross-sectional view taken along the line A-A in Fig. 1;

Fig. 3 is an enlarged cross-sectional view taken along the line B-B in Fig. 1;

Fig. 4 is an enlarged cross-sectional view showing a portion X in Fig. 2;

Fig. 5 is a cross-sectional view taken along the line C-C in Fig. 4;

Fig. 6 is an enlarged cross-sectional view showing another layer structure of the lid;

Fig. 7 is a perspective view showing the lid of Fig. 1, which is peeled from a cupped needle container to a full open state;

5 Fig. 8 is a perspective view showing the lid of Fig. 1, which is once opened and then fully reclosed;

Fig. 9(a) is a plan view showing a lid according to another embodiment of the present invention;

10 Fig. 9(b) is a plan view showing a flap obtained by opening the lid of Fig. 9(a), which is in a 180° open state;

Fig. 10(a) is a plan view showing a lid according to a further embodiment of the present invention;

Fig. 10(b) is a plan view showing a flap obtained by opening the lid of Fig. 10(a), which is in a 180° open state;

15 Fig. 11(a) is a plan view showing a lid according to a still further embodiment of the present invention, which is attached to a round container for instant Yakisoba noodle;

Fig. 11(b) is a plan view showing the lid of Fig. 11(a);

20 Fig. 12 is a plan view showing a lid according to a still further embodiment of the present invention, which is attached to a rectangular container for instant Yakisoba noodle;

Fig. 13(a) is a plan view showing a lid according to a still further embodiment of the present invention, which is attached to a round container for instant Yakisoba noodle;

25 Fig. 13(b) is a plan view showing a flap obtained by opening the lid of Fig. 13(a), which is in a 180° open state;

Fig. 14 is a plan view showing a lid according to a still further embodiment of the present invention;

Fig. 15(a) is a side view showing the lid of Fig. 14, which is partially opened from a cupped needle container to pour hot water into the container;

Fig. 15(b) is a side view showing the opened lid of Fig. 14, which is set free to partially return to the original position;

5 Fig. 15(c) is a side view showing the lid of Fig. 14, which is closed from the partially opened state by opening a curable plastic film layer from the opposite side;

Fig. 16 is a plan view showing a lid according to a still further embodiment of the present invention;

10 Fig. 17 is a perspective view showing one example of conventional lids;

Fig. 18 is a plan view showing the lid of Fig. 17;

Fig. 19 is a cross-sectional view taken along the line D-D in Fig. 18;

15 Fig. 20 is a perspective view showing the lid of Fig. 17, which is attached to a container;

Fig. 21 is a perspective view showing another example of conventional lids;

Fig. 22 is a plan view showing the lid of Fig. 21;

Fig. 23 is a cross-sectional view taken along the line E-E in Fig. 22;

20 and

Fig. 24 is a perspective view showing the lid of Fig. 21, which is partially peeled from a container.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

25 [0020]

The structure of the lid of the present invention will be explained referring to the attached drawings. Unless otherwise mentioned, the same reference numerals are assigned to the same parts as in Figs. 17-24, thereby

omitting their explanations.

[0021]

[1] Structure of lid

(1) First lid

5 Fig. 1 shows the first lid of the present invention. The lid 2 attached to a cupped needle container 1 comprises a pair of notches 22a, 22b formed on both sides of a peeling tab 21, a pair of first half cuts extending from a pair of notches 22a, 22b in a lid-opening direction and bent at points 29a, 29b, each comprising a parallel portion 23a, 23b and a slant portion 26a, 26b, and second
10 half cuts 27a, 27b slantly extending from the bending points 29a, 29b of the first half cuts. The lid 2 has partial easy-to-peel layers 25a, 25b between the slant portions 26a, 26b of the first half cuts and the second half cuts 27a, 27b. The lid 2 has marks 28, 28 at points at which a straight line connecting the ends of the second half cuts 27a, 27b crosses the peripheral edge of the lid 2.
15 As shown in Figs. 1(b) and 1(c), the first half cuts 23a, 26a and 23b, 26b are formed on an upper surface of the lid 2, while the second half cuts 27a, 27b are formed on a lower surface of the lid 2.

[0022]

20 In the example shown in Figs. 2 and 3, the lid 2 comprises a curlable plastic (PBT) film layer 201, an adhesive layer 202, an extrusion-laminated polyethylene layer 203, a paper sheet layer 204, an extrusion-laminated polyethylene layer 206a, an adhesive layer 205, an extrusion-laminated polyethylene layer 206b, a rigid plastic (PET) film layer 207, a light-blocking ink layer 208, an adhesive layer 209, an extrusion-laminated polyethylene
25 layer 210, and a sealant layer 211. The first half cuts 23a, 26a and 23b, 26b penetrate the curlable plastic (PBT) film layer 201, the adhesive layer 202, the polyethylene layer 203, the paper sheet layer 204 and the polyethylene layer 206a from an upper surface, and reach the adhesive layer 205. When jaggy

torn portions are desired, the first half cuts 23a, 26a and 23b, 26b may be terminated partially in the paper sheet layer 204, for instance, at a depth corresponding to about 30% of the thickness of the paper sheet layer 204. The second half cuts 27a, 27b penetrate the sealant layer 211, the
5 extrusion-laminated polyethylene layer 210, the adhesive layer 209, the light-blocking ink layer 208, the rigid plastic (PET) film layer 207 and the polyethylene layer 206b from a lower surface, and reach the adhesive layer 205.

[0023]

10 In the example shown in Fig. 4, an adhesive layer 205 is formed between a pair of polyethylene layers 206a, 206b between the paper sheet layer 204 and the rigid plastic film layer 207, part of the adhesive layer 205 being a partial easy-to-peel layer 25a, 25b (only 25b is shown in Fig. 4). As shown in Fig. 5, the partial easy-to-peel layer 25a, 25b (only 25b is shown in Fig. 5) has
15 a structure in which peelable resin spots 125 are uniformly distributed in the adhesive layer 205. However, the partial easy-to-peel layer is not restrictive thereto, but may be a thin, peelable resin layer applied to an upper or lower surface of the adhesive layer 205.

[0024]

20 Fig. 6 shows another structure of the lid of the present invention 2. In this example, partial easy-to-peel layers 25a, 25b are formed as part of an adhesive layer 202 between a pair of polyethylene layers 203a, 203b between a curlable plastic film layer 201 and a paper sheet layer 204. Accordingly, the first half cuts comprise parallel portions (not shown), which penetrate a
25 curlable plastic film layer 201, a polyethylene layer 203a, an adhesive layer 202, a polyethylene layer 203b and a paper sheet layer 204 from an upper surface, and reach an adhesive layer 205, and slant portions 26a, 26b, which penetrate the curlable plastic film layer 201 and the polyethylene layer 203a

from an upper surface, and reach the adhesive layer 202. The second half cuts 27a, 27b penetrate a sealant layer 211, a polyethylene layer 210, an adhesive layer 209, a light-blocking ink layer 208, a rigid plastic film layer 207, a polyethylene layer 206, an adhesive layer 205, a paper sheet layer 204 and a polyethylene layer 203b from a lower surface, and reach the adhesive layer 202.

[0025]

Thus, when the peeling tab 21 shown in Figs. 1-5 is lifted as shown in Fig. 7, the lid 2 is peeled from an upper flange 1a of a container 1, and torn along the parallel portions 23a, 23b of the first half cuts. When the peeling of the lid 2 reaches intersections 29a, 29b, an upper laminate portion comprising the paper sheet layer 204 and above layers is peeled from a lower laminate portion comprising the rigid plastic (PET) film layer 207 and lower layers in regions of the partial easy-to-peel layers 25a, 25b along the second half cuts 27a, 27b. Because the parallel portions 23a, 23b of the first half cuts penetrate from the curlable plastic film layer 201 to the polyethylene layer 206a, an underlying rigid plastic film layer 207, etc. are easily cut.

Accordingly, a hot-water-pouring opening in the remaining lid 2 has non-jaggy edges 2a, 2b, and the resultant flap 3 also has non-jaggy edges 3a, 3b. As shown in Fig. 8, because the edges 2a, 2b of the lid 2 and the edges 3a, 3b of the flap 3 firmly engage each other simply by pressing the flap 3 to the remaining lid 2, the flap 3 is surely reclosed.

[0026]

Because the flap 3 has curlable portions 32a, 32b consisting substantially of the curlable plastic film layer 201 and the paper sheet layer 204 on both sides of a full-layer portion 31 in regions of the partial easy-to-peel layers 25a, 25b, the flap 3 has extremely large curlability, resulting in a sufficient opening for pouring hot water into the cupped needle

container 1 while keeping the lid 2 open. Thus, the lid 2 of the present invention is excellent in both open state retention and reclosability.

[0027]

(2) Second lid

5 The second lid 2 shown in Figs. 9(a) and 9(b) is substantially the same as the first lid, except that parallel portions 23a, 23b of first half cuts and second half cuts 27a, 27b are substantially on the same straight line. In the lid 2 of this example, a flap 3 can be easily formed by lifting a peeling tab 21.

[0028]

10 (3) Third lid

The third lid 2 shown in Figs. 10(a) and 10(b) is substantially the same as the first lid, except that the slant portions 26a, 26b of the first half cuts are connected to parallel portions 26a', 26b', whose ends do not reach a peripheral edge of the lid 2, and that substantially U-shaped or circular half cuts 24a, 24b
15 for stopping the tearing of the lid 2 are formed very close to the ends of the parallel portions 26a', 26b'. Because the third lid 2 having this structure has long first half cuts as a whole, it has excellent reclosability.

[0029]

(4) Fourth lid

20 The fourth lid 2 shown in Figs. 11(a) and 11(b) is attached to a container 1 for instant Yakisoba noodle. This lid 2 is substantially the same as the first lid, except that it has a tab 121 on a peripheral edge at a position diagonally opposite to a peeling tab 21, and that the tab 121 has pluralities of C-shaped notches 122 for forming hot-water-discharging openings, and linear
25 notches 123 on both sides of the C-shaped notches 122. Marks 28', 28' show the limit of opening the tab 121 for forming a hot-water-discharging opening.

[0030]

The C-shaped notches 122 per se are known as described in JP

2003-285881A. Each C-shaped notch 122 comprises a pair of straight lines and a circular line connecting them, with its opening directed inside the lid 2. The ends of each C-shaped notch 122 are positioned in a sealed portion of the lid 2. When the tab 121 is lifted up, a portion encircled by each C-shaped notch 122 remains sealed to the upper flange 1a of the container 1. Accordingly, the lid 2 is cut straight from the straight lines of the C-shaped notches 122, forming a hot-water-discharging opening.

[0031]

(5) Fifth lid

The fifth lid 2 shown in Fig. 12 is attached to a rectangular container 1 for instant Yakisoba noodle. The lid 2 has the same structure as that of the fourth lid.

[0032]

(6) Sixth lid

The sixth lid 2 shown in Figs. 13(a) and 13(b) has a second half cut 27 between intersections 29a, 29b of parallel portions 23a, 23b and slant portions 26a, 26b of first half cuts. The second half cut 27 is substantially perpendicular to the parallel portions 23a, 23b of the first half cuts. With respect to other structural features, the sixth lid 2 is the same as the fourth lid.

[0033]

Because the rupture strength of the rigid plastic film layer 207, the light-blocking ink layer 208 and the sealant layer 211 is extremely larger than a force necessary for peeling the partial easy-to-peel layer 25, peeling occurs in the partial easy-to-peel layer 25 in a region encircled by both slant portions 26a, 26b and the second half cut 27. There is a portion 32 mainly constituted by the curlable plastic layer 201 at the root of the flap 3, the flap 3 has large curlability. Accordingly, this lid 2 has excellent open state retention and reclosability.

[0034]

In this example, the slant portions 26a, 26b of the first half cuts, which determine the width of the partial easy-to-peel layer 25, are extremely short, though their length and inclination angle can be properly determined depending on the necessary curlability of the flap 3.

[0035]

(7) Seventh lid

The seventh lid 2 shown in Fig. 14 comprises peeling tabs 21 and 221 on a peripheral edge at diagonally opposing positions, the peeling tab 221 being provided with a half cut 222 for securing the peeling of a partial easy-to-peel layer 25 on a lower surface of the lid 2. In this example, the boundary of the partial easy-to-peel layer 25 extends to center marks 28, though it is not restrictive. The partial easy-to-peel layer 25 may extend to a position shown in Fig. 2 or 3 in the lid 2.

[0036]

As shown in Fig. 15(a), the peeling tab 21 is lifted to peel the lid 2 from the container 1 to the marks 28. When a hand is set free after hot water is poured into the container 1 with the flap 3 lifted, the flap 3 remains slightly opened by dead-folding characteristics as shown in Fig. 15(b). When the peeling tab 221 is lifted to peel the curtable portion 35 mainly comprising the curtable plastic layer 201 and the paper sheet layer 204 from the lid 2, the curtable portion 35 is extremely curled, and its reaction makes the flap 3 extremely close to the upper flange 1a of the container 1 as shown in Fig. 15(c). The lid 2 is thus easily reclosed after pouring hot water, presumably because of the intrinsic nature of the curtable plastic layer 201.

[0037]

(8) Eighth lid

Like the fourth lid 2 shown in Fig. 11, the eighth lid 2 shown in Fig. 16

is attached to a container 1 for instant Yakisoba noodle. This lid 2 has substantially the same structure as that of the fourth lid 2, except that first half cuts have first parallel portions 23a, 23b extending from notches 22a, 22b, slant portions 26a, 26b extending from the ends of the first parallel portions 23a, 23b, and second parallel portion 26a', 26b' extending from the ends of the slant portions 26a, 26b, that a second half cut 27 circularly extends from intersections of the first parallel portions 23a, 23b and the slant portions 26a, 26b of the first half cuts, that U-shaped or circular half cuts 24a, 24b for stopping the tearing of the lid 2 are formed on extensions of the second parallel portions 26a', 26b' with slight gaps, and that third half cuts 127 extend from C-shaped notches 122 and linear notches 123.

[0038]

There is a small gap d between the first parallel portions 23a, 23b on an upper surface and the second half cut 27 on a lower surface, so that the first half cuts are not connected to the second half cut 27. A flap is peeled from the lid 2 along the circular second half cut 27, resulting in a semi-circular hot-water-pouring opening defined by the first parallel portions 23a, 23b of the first half cuts and the second half cut 27. Disruption of half cuts between the first parallel portions 23a, 23b and the second half cut 27 does not hinder the smooth tearing of the lid 2, because the gap d is sufficiently small.

Accordingly, a non-jaggy hot-water-pouring opening is obtained. Also, the lid 2 is torn along the straight third half cuts 127 extending from the C-shaped notches 122 and the linear notches 123 to provide a non-jaggy hot-water-discharging opening.

[0039]

[2] Layer structure of lid

The layer structure of the lid 2 of the present invention will be explained referring to the example shown in Fig. 2, though not restricted

thereto.

[0040]

(a) Curlable plastic film layer

The curlable plastic film layer 201 formed outside the paper sheet layer 204 for imparting dead-folding characteristics is preferably constituted by a polyester film, particularly a polybutylene terephthalate (PBT) film. The PBT film is excellent not only in dead-folding characteristics but also in gas barrier and heat resistance. Also, it does not generate toxic gases by incineration, resulting in easy treatment.

[0041]

The PBT film is preferably as thick as about 5-50 μm . It is technically difficult to make the PBT film thinner than about 5 μm , and the PBT film thicker than about 50 μm makes the lid expensive without any advantages. The preferred thickness of the PBT film is 10-30 μm .

[0042]

The curlable plastic film layer 204 is preferably adhered to the paper sheet 204 in a stretched state for keeping a resiliently recovering force, so that the flap 3 is provided with curlability.

[0043]

(b) Transparent resin coating layer

The transparent resin coating layer formed on an upper surface of the PBT film 201 absorbs fine surface roughness of the PBT film 201, thereby providing it with high transparency and clarity, and thus making the printed layer clearly visible through the PBT film layer 201. Though the transparent resin may be soluble or insoluble in water, it is preferably a water-soluble resin because no organic solvent is needed. Examples of the water-soluble transparent resins may be polyvinyl alcohol, cellulose polymers, polyvinyl pyrrolidone, polyethylene glycol, polyacrylamide, etc. The polyvinyl alcohol

may be modified with anions, cations, acetals, etc. The polyvinyl alcohol may also be ethylene-vinyl alcohol copolymers; partially saponified polyvinyl acetate, etc. The polyvinyl alcohol preferably has a degree of polymerization of 1000 or less.

5 [0044]

The water-insoluble transparent resins may be acrylic resins, polyurethanes, epoxy resins, polystyrenes, ultraviolet-curable unsaturated acrylic resins, ultraviolet-curable unsaturated ester resins, polycarbonates, etc.
[0045]

10 Though not particularly restricted, the thickness of the transparent resin coating layer is preferably 1-5 μm , more preferably 2-4 μm . When the transparent resin coating layer is as thin as less than 1 μm , sufficient improvement in the clarity of printing cannot be obtained. When the transparent resin coating layer is thicker than 5 μm , it is too costly.

15 [0046]

(c) Paper sheet layer

The paper sheet layer 204 functions as a layer for imparting dead-folding characteristics.

[0047]

20 (d) Rigid plastic film layer

The rigid plastic film layer 207 is preferably constituted by a PET film. For the easy-to-straight-tear characteristics of the lid 2, it is preferable to use a PET film monoaxially or biaxially orientated to different degrees. A lot of substantially parallel linear scratches and/or a lot of fine pores may be formed
25 on the rigid plastic film layer 207 to improve the easy-to-straight-tear characteristics of the lid 2. The easy-to-straight-tear direction of the lid 2 is preferably in parallel with the first half cuts 23a, 23b. The thickness of the rigid plastic film layer 207 should have an appropriate thickness to have half

cuts.

[0048]

(e) Light-blocking ink layer

To prevent sunlight and ultraviolet rays from causing the deterioration
5 of instant food, the lid 2 comprises a light-blocking ink layer 208. The
light-blocking ink is not particularly restrictive, as long as it is ink containing a
black or dark-color pigment or dye such as carbon black. The use of the
light-blocking ink layer 208 makes it possible to avoid adverse effect on
environment in incineration. It also makes it possible to detect foreign
10 metallic materials by a metal detector after sealing. This further improves the
safety of instant food, and extremely decreases an examination cost because
the metal detector can be utilized after sealing. However, an aluminum foil
can be used in place of the light-blocking ink layer 208 if necessary.

[0049]

15 (f) Sealant layer

A layer 211 heat-sealed to an upper flange 1a of a container body 1 is a
sealant film or a hot-melt layer. The sealant film may be formed by a
polyethylene film, an unstretched polypropylene film, an ionomer film, a
polystyrene film or the like. In order that the lid 2 is easily peeled from the
20 container body, the sealant layer 211 is preferably easy to peel.

[0050]

Usable as the sealant film is, for instance, a laminate film comprising a
polyethylene base film and a low-molecular-weight polyethylene film. The
thickness of the polyethylene base film is preferably about 10 to 40 μm , more
25 preferably about 20 to 30 μm . The thickness of the low-molecular-weight
polyethylene film is preferably about 5 to 20 μm , more preferably about 7 to
15 μm . Such laminated polyethylene film is, for instance, 760FD
commercially available from Toray Plastic Films Co., Ltd. Also usable as the

sealant film is a film made of a mixture comprising an ethylene-vinyl acetate copolymer (EVA) and polyethylene. In the film made of this mixture, the polyethylene is preferably linear low-density polyethylene (LLDPE). The thickness of the film made of this mixture is also preferably about 10 to 40 μm ,
5 more preferably about 20 to 30 μm . The thickness of the hot-melt layer is preferably 10 to 50 μm , more preferably 20 to 40 μm .

Also usable as the sealant film is a film made of a resin composition comprising a linear copolymer of ethylene and an α -olefin having 3 to 18 carbon atoms, which has a density of 0.870 to 0.910 g/cm^3 (JIS K6922), and
10 MFR of 1 to 100 g/10 minutes (JIS K6921, at 190°C under 2.16kg), and polystyrene (see JP 2004-26190 A).

[0051]

(g) Adhesive layer

Though not particularly restricted, the adhesive layer may be a urethane
15 adhesive layer ("ROCKBOND RU-40" available from Rock Paint Co., Ltd.).

[0052]

(h) Partial easy-to-peel layer

Materials for the partial easy-to-peel layers 25(25a, 25b) may be acrylic resins, polyamides, polyesters, butyral resins, vinyl chloride-vinyl acetate
20 copolymers, ethylene-vinyl acetate copolymers, nitrocellulose, etc. They may contain small amounts of silicones, waxes, etc., if necessary. The easy-to-peel layer can be formed by printing ink containing the above materials on the paper sheet or the PBT film. The partial easy-to-peel layer
25 may be formed by applying the ink to an upper or lower surface of the adhesive layer, or by uniformly distributing resins dots having easy-to-peel characteristics in the adhesive layer as shown in Fig. 5. Because the partial easy-to-peel layer 25 should be precisely aligned with the first and second half cuts, it is preferable to provide a laminate for the lid with the first and second

half cuts aligned with the printed layer on the paper sheet or the plastic film.

[0053]

Though the present invention has been explained above referring to the drawings, the present invention is not restricted thereto, but can be variously
5 modified unless deviating from the scope of the present invention. For instance, the partial easy-to-peel layer may be located in any portion as long as a peeled layer has large curlability. The size of the partial easy-to-peel layer may be determined depending on the required curlability. The inclination angles of the first and second half cuts may be determined, considering the
10 relations between the curlability of the flap and the easy-to-peel characteristics. Though explanations have been made on each embodiment, the lid of each embodiment may have any features of other embodiments in combination, as long as they do not contradict each other.

15 EFFECT OF THE INVENTION

[0054]

The first lid of the present invention for sealing a container has excellent open state retention by large curlability of the curlable plastic layer, and excellent reclosability by the engagement of the edge of the
20 hot-water-pouring opening of the lid with a flap edge, because the flap obtained by opening the lid has a torn portion engaging the hot-water-pouring opening of the lid, and partially peeled curlable plastic layer portions. Accordingly, the flap can be kept wide open to make it easy to pour hot water when the lid is peeled, while the flap can surely engage the lid when returned
25 to the closed position.

[0055]

The second lid of the present invention for sealing a container can be easily and surely reclosed after pouring hot water, simply by entirely opening

the lid from one tab, and by peeling the curlable plastic layer from the opposite side.

WHAT IS CLAIMED IS:

1. A container-sealing lid comprising a paper sheet layer, a curtable plastic layer, and a partial easy-to-peel layer, which is sealed to a container with said paper sheet layer lower than said curtable plastic layer; said lid
5 further comprising a tab provided on a peripheral edge, a pair of first half cuts provided on both sides of said tab on the upper surface side, and a pair of second half cuts extending from intermediate points of said first half cuts on the lower surface side; said partial easy-to-peel layer being provided in a region between said first and second half cuts.
- 10 2. The container-sealing lid according to claim 1, wherein said first half cuts are as deep as exceeding said paper sheet layer, and said second half cuts are as deep as reaching said partial easy-to-peel layer.
3. The container-sealing lid according to claim 1 or 2, wherein each first half cut is bent outward at a point close to said second half cut.
- 15 4. The container-sealing lid according to any one of claims 1-3, wherein said curtable plastic layer is constituted by a polybutylene terephthalate film.
5. The container-sealing lid according to any one of claims 1-4, comprising a curtable plastic layer, a paper sheet layer, an adhesive layer, an easy-to-tear plastic layer, and a sealant layer in this order from an upper
20 surface, said partial easy-to-peel layer being provided on said adhesive layer.
6. The container-sealing lid according to claim 5, wherein said partial easy-to-peel layer is on the same plane as the upper or lower surface of said adhesive layer or said adhesive layer.
7. The container-sealing lid according to claim 6, comprising plastic film
25 layers on both sides of said partial easy-to-peel layer.
8. The container-sealing lid according to any one of claims 1-7, wherein said second half cut circularly extends from points close to the first half cuts.
9. The container-sealing lid according to claim 8, wherein said second

half cut circularly extends from the bending points of the first half cuts with a small gap between said second half cut and said first half cut.

10. A container-sealing lid comprising a paper sheet layer, a curtable plastic layer, and a partial easy-to-peel layer, which is sealed to said container
- 5 with said paper sheet layer lower than said curtable plastic layer; said lid further comprising first and second tabs provided on a peripheral edge at diagonal positions, and half cuts provided on the lower surface side of said second tab; said partial easy-to-peel layer being located inward than said half cuts, whereby after said first tab is lifted up to peel said lid from said container
- 10 to an intermediate point to from a flap, said flap is substantially reclosed when said second tab is lifted up to peel a laminate portion containing said curtable plastic layer from said partial easy-to-peel layer of said lid.