

Cigarette Packet

The present invention relates to a hinge-lid packet for smoking articles, for example cigarettes. For convenience this specification refers to cigarettes but the invention is not limited to cigarettes.

Hinge-lid packaging for cigarettes is well known. An example of a hinge-lid - packet, also known as a flip-top pack or flip-top box is disclosed in German patent application DE 19922602.

A hinge-lid packet comprises a rigid container, which is in the form of a rectangular parallelepiped when closed. The following description assumes that the hinge-lid packet is in its normal configuration arranged with the lid at the top. The base of the container comprises a rectangular bottom panel from which front, rear and side panels stand upright. The rear panel carries the hinged lid as an integral part. The top of the lid forms the top panel of the container when the lid is closed.

A fold line on the rear panel of the container provides the hinge line. It is about that hinge line that the lid pivots to effect opening and closing of the container.

The lid comprises a front panel, a rear panel, two side panels and a top panel. The front panel is longer than the rear panel. The lid side panels each have a lower edge, which slopes from the hinge-line to the lower edge of the lid front panel; the lower edge of the lid front panel provides the leading closure edge of the front panel of the lid. The angle at which the edge on the side panel of the lid inclines is termed the mitre angle. The mitre angle is the included angle between the rear upright edge of the container (the rear upright edge is the adjoining edge of the rear panel of the container and the side panel of the base portion of the container) and the inclined closure edge on the side panel of the lid.

The vertex of the mitre angle is closely adjacent to the hinge-line.

In known hinge-lid packets, the mitre angle is about 60 degrees because such an angle allows, when closing the lid, the front panel of the lid to be long enough such

that the leading (bottom) edge clears the ends of the cigarettes contained in the container when the lid is pivoted about the hinge. This is especially the case when the container is full.

In the example described above it is assumed that the term mitre angle defines the angle of both the side edge closure on the side panel of the lid and the side edge closure on the side panel of the base portion of the container. It is possible that the two edges do not abut each other when the lid is in a closed position. Therefore, it is possible that there may be two mitre angles on each side panel of the container. The first mitre angle will hereinafter be referred to as the lid-mitre angle and the second mitre angle will be hereinafter referred to as the base-mitre angle. The lid-mitre angle is the included angle taken between the rear upright edge of the container and the inclined edge on the side panel on the lid and the base-mitre angle is the included angle between the rear upright edge of the container and the inclined edge on the side panel of the base portion of the container.

The present invention provides a hinge-lid packet for smoking articles comprising a lid portion connected to a base portion at a hinge-line on a rear panel of the base portion, the lid portion being capable of pivoting about the hinge-line to open and close the packet, the lid portion comprises a lid front panel having a depth LH as measured from the top edge of the lid, the hinge-line is positioned at distance A' from the top edge of the lid, and the packet has a depth H2 taken from the top of the lid to the bottom of the base portion; A' is greater than or equal to zero and the depth LH of the lid front panel is such that a ratio of LH:H2 is less than or equal to one-fifth.

A ratio of LH:H2 of less than or equal to one-fifth provides a more compact and robust lid than known hinge-lid packets.

It is known to place indicia and/or other markings and/or features on the fronts of cigarette packets. For example, Brand owners naturally wish to place their brand and other information on the packet front. Additionally, regulations in certain jurisdictions require health warnings to be prominently displayed on packet fronts. However, in known hinge-lid packets the health warnings, indicia and/or graphics

and/or other markings and/or other features may overlap the front panels of the base portion of the container and the lid, which is aesthetically undesirable due to the health warnings, indicia and/or other markings and /or other features being broken when the lid is opened. What may also be aesthetically undesirable is misalignment of health warnings, indicia, and/or other graphics and/or other markings and/or other features that may overlap the front panels of the base portion and the lid when the lid is closed.

Advantageously, the hinge-lid packet, as provided in accordance with the present invention provides a shorter lid portion compared with known hinge-lid packets. In addition to providing a more robust and compact lid portion, the shorter lid portion increases the available area on the packet front for applying health warnings, indicia and/or other markings and/or other features and reduces the occurrence of such health warnings, indicia and/or other markings and/or other features being broken or distorted when the lid is opened.

A ratio of LH:H2 of less than or equal to one-fifth is achieved by varying the depth D of the lid front panel,. The change of depth LH may be as a consequence of adjusting the position of the hinge-line towards the top of the packet whilst maintaining or altering the lid-mitre angle. The meaning of lid-mitre angle is described above as being the angle of incline of a side closing edge provided on the lid side panel.

Examples of lid-mitre angles ϕ useful in accordance with the present invention are angles greater than 60° . More suitably the lid mitre angle may be in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α may be 61° or more and β may be 90° or less. The lid-mitre angle ϕ may be any angle between α and β taken in increments of 1° . Preferably, the lid mitre angle is 75° .

Preferably, the lid-mitre angle ϕ is sized such that an imaginary first radius on the side panel of the lid is greater than an imaginary second radius on the side panel of the lid, wherein the first radius is defined by a planar distance between a hinge line and a leading closure edge of the lid front panel and the second radius is defined by a planar distance between the hinge line and an inner surface edge provided by an edge

that adjoins the lid front panel with the lid top panel. Such an arrangement reduces the occurrence of the leading closure edge on the front panel of the lid fouling the end of the smoking article, such as cigarettes, cigars or cigarillos that may be contained in the packet.

The hinge-line, about which the lid pivots to effect opening and closing of the hinge-lid packet, may be provided coincident with the vertex of the lid-mitre angle. The vertex of the lid mitre angle being coincident with a point at one end of the side closing edge, which point being on the edge of the packet defined by the rear panel and the side panel. Alternatively, the hinge-line may be offset from the vertex of the lid-mitre angle towards the top of the lid and a cut extends from the vertex of the lid-mitre angle to join the mitre angle to the hinge-line. The cut may extend from the vertex of the lid-mitre angle as an extension of the slope defined by the side closing edge on the lid side panel. Alternatively, the cut may extend from the vertex of the lid-mitre angle to the hinge-line along the edge defined by the rear panel and the side panel. The cut minimises the effect of tearing when opening/closing the lid having an offset hinge-line.

A lid having dimensions as described above, should allow the lid to close without the leading closure edge of the lid front panel fouling the end of smoking articles, such as cigarettes contained in the packet. If the top of the lid, in the closed position, is closely proximate the ends of the cigarettes then the likelihood of the leading closure edge of the front panel of the lid fouling the end of the cigarettes is increased. Therefore, greater clearance between the top of the pack (in the closed position) may be considered. However, this requires a larger packet. Disadvantages associated with a larger packet are that the cigarettes may not be as tightly packed and, at least may move length wise in the packet, a larger/longer packet may also weaken the packet construction and as a result of the clearance between the end of the cigarettes and the top panel the manufacturing processes may also be affected. In the manufacture of a larger packet more material is also used.

Offsetting the hinge line from the vertex of the lid-mitre angle towards the top of the lid effectively increases the size of the arc traced by the closing leading edge at

the front panel of the lid, thereby increasing the clearance between the cigarettes and the closing leading edge at the front panel of the lid, on opening and closing the packet. Therefore, an offset hinge-line may overcome the problem of the closing leading edge of the front panel of the lid fouling the ends of the cigarettes without needing to change the external dimensions of the packet.

The ratio of $LH:H2$ may approach zero by an alteration of the denominator increasing incrementally by one.

The side closing edges on the lid side panels extend from a point proximate the end of the hinge-line to one end of a leading closing edge on the lid front panel. The side closing edges may extend from a point at depth B from the top edge of the lid to a point at depth LH coincident with the ends of a leading closing edge on the lid front panel such that A' is greater than or equal to zero and A' is less than or equal to B.

The side closing edge may be straight or curved. The leading closing edge on the lid front panel may also be straight or curved. The side closing edge on the side panel of the lid and the leading closing edge on the front panel of the lid may be formed of piecewise linear sections or piecewise curved sections or a combination of piecewise linear sections and piecewise curved sections. It will be appreciated that the corresponding closing edges on the base portion of the hinge-lid packet may be similarly formed such as to provide a functional closure of the packet.

The hinge-lid packet according to the present invention may further comprise a window on any one of the panels forming the packet. The hinge-lid packet may further comprise one or more windows on one or more of the panels forming the packet. The window(s) may extend onto two or more adjoining panels. Therefore, a window may extend around the body of the packet; it may extend across the front panel, side panels and rear panel. Alternatively, or in addition it may extend along the front panels of the lid and the base portion of the container, the bottom panel, the rear panel and the top panel of the lid.

Preferably, a covering is provided over the window. The covering may be sized substantially the same as the window, whilst providing a minimal overlap such

that the window may be adhered to the panel carrying the window. Alternatively, the covering may be sized substantially the same as the panel(s) carrying the window and adheres to the panel carrying the window. It will be appreciated that the covering may extend over the whole of the packet, covering the panel(s) that carry windows and the panel(s) that do not. The covering may adhere to the interior or exterior surface(s) of the packet.

The covering may be a transparent or opaque material, for example film or plastic. The covering may be decorated and/or coloured. Alternatively, the covering may be a reflective material. Preferably, the covering is a lamination applied to the packet.

The hinge-lid packet in accordance with the present invention may further comprise an inner frame having at least a front panel and two side panels, which front and side panels are arranged to coincide with corresponding panels of the base portion, wherein a top edge of the inner frame projects from a top edge of the base portion and wherein at least the front panel of the projecting part of the inner frame has a concavely curved cut out portion.

When closing a hinge-lid packet, users may grasp the sides of the packet causing the front panel to bow outwards. On closing the hinge-lid packet, the closing leading edge on the lid front panel may collide with the edge of the cut-out portion on the inner frame; usually, the top edge of the inner frame projects from the top edge of the front panel of the outer container. Shaping the top edge of the cut-out portion on the inner frame's front panel as a concaved curve may reduce the effects of collision between the closing leading edge on the front panel of the lid and the top edge of inner frame by providing a substantially point-to-point contact rather than the conventional edge-to-edge contact. If the front panel of the packet is bowed by an amount typical of use of a hinge-lid packet and the edge of the cut-out portion of the inner frame is concavely curved the leading edge of the lid front panel is more likely to clear the edge of the inner frame and thereby close the packet.

The edge of the cut out portion may be an arc, which extends across the front panel from edge-to-edge. Typically, the side panels of the inner frame also project from the top edge of the container to the top of the cigarettes. Portions of the front panel of the inner frame proximate the side panels may also project to the top of the cigarettes. To reduce the effects of the closing leading edge on the front panel of the lid colliding with the inner frame the side panels of the inner frame may be shaped to merge into the concavely curved edge of the cut-out portion. Preferably, the nadir of the concavely curved edge of the cut-out portion is offset from the top edge of the front panel of the base portion. The nadir of the concavely curved cut-out portion may be formed by a radius in the range of 30mm to 250mm. Preferably, the radius is 200mm.

In the embodiments of the present invention providing a hinge lid packet, comprising at least one window on at least one panel forming the base portion, one or more windows may also be provided on corresponding panel(s) of the inner frame. The one or more windows may extend onto two or more adjoining panels.

Where a window is provided only on the base portion the corresponding panel of the inner frame may be decorated or marked such that the decoration and/or markings are viewed through the window. Alternatively if corresponding windows are provided on the base portion and the inner frame the contents of the packet may be viewed.

Preferably, a covering covers the window(s). The covering may be sized such as to cover the window(s) with an overlap, which overlap adheres to the panel(s) carrying the window. Alternatively, the covering may be sized substantially the same as the panel(s) carrying the window, such that the whole of the panel(s) is covered. Preferably, the covering covers the whole of the packet, which includes panel(s) that may be carrying window(s) and panel(s) that may not. The covering may be applied to the interior or exterior surfaces of the container and/or the inner frame.

The covering may be a transparent or opaque material and may be decorated and/or coloured. Alternatively, the covering may be reflective material. Preferably, the covering is lamination applied to the packet.

The hinge-lid packet may be made from laminated cardboard.

These and further aspects of the present invention are defined in claims to which attention is invited.

A further aspect of the present invention provides a hinge-lid packet containing smoking articles, for example cigarettes, cigars or cigarillos.

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

Figure 1 illustrates front and side views of a hinge-lid packet according to one embodiment of the present invention;

Figure 2 illustrates a perspective view of the hinge-lid pack of figure 1;

Figure 3 illustrates front and side views of a hinge-lid packet comprising a modified hinge-line;

Figure 4 illustrates in greater detail than Figure 3, the modified hinge-line of figure 3;

Figure 5 illustrates two examples of the modified hinge-line of figures 3 and 4;

Figure 6 illustrates a perspective view of a hinge-lid packet containing the inner frame of figure 8 and a window in the front panel;

Figure 7 illustrates a perspective view of a hinge-lid packet being hinged at the top edge of the hinge-lid packet;

Figure 8 illustrates the web for an inner frame for use with the hinge-lid packet of figures 1 to 7;

Figures 9a and 9b illustrate an alternative hinge-lid packet to that illustrated in figures 1 to 7;

Figure 10 illustrates part of a blank for forming a hinge-lid packet; and

Figure 11 illustrates in more detail than Figure 10 the form of the hinge-line according to an embodiment of the present invention.

Referring to Figure 1, a hinge-lid packet, flip-top pack or flip-top box 1 comprises a rigid container, which is in the form of a rectangular parallelepiped when closed (figure 2). When the hinge-lid packet 1 is arranged in its normal configuration, as illustrated in figures 1, 2, 3, 6 and 7, the hinged lid 3 is at the top. The base or container section of the hinge-lid packet 1 comprises a rectangular bottom panel 5 from which a front panel 7, a rear panel 9 and two side panels 11 stand upright. The rear panel 9 carries the hinged lid 3 as an integral part. The top of the lid 3 forms the top panel of the hinge-lid packet 1 when the lid 3 is closed.

A fold line on the rear panel 9 of the hinge-lid packet 1 provides a hinge-line 15. It is about that hinge line 15 that the lid 3 pivots to effect opening and closing of the hinge-lid packet 1.

The hinged lid 3 comprises a front panel 17, a rear panel 19, two side panels 21 and a top panel 23. In the embodiments illustrated in figures 1, 2, 3, 4, and 6 the front panel 17 is longer than the rear panel 19. The side panels 21 of the lid each provide an inclined closing edge 25 at their lower edge. The inclined closing edge 25 on each of the side panels 21 of the lid slopes from the hinge-line 15 to the end of the lower edge 27 of the front panel 17; the lower edge of the front panel 27 is the leading closing edge 27 on the front panel of the hinged lid 3. The angle at which the inclined closure edge 25 on the side panel of the lid slopes is termed the lid-mitre angle ϕ . The lid-mitre angle ϕ is the included angle between the rear upright edge of the container section of the packet (the rear upright edge is the adjoining edge 9a of the rear panel 9 and the side panel 11 of the container section of the packet) and the inclined closure edge 25 on the side panel 21 of the hinged lid 3.

In the embodiments illustrated in figures 1 to 6 the lid closing edges on the front and side panels abut with corresponding edges on the side and front panels of the container section. In these examples the lid-mitre angle ϕ , which is the angle of inclination of the side edge closure on the side panel of the lid is the same as the base-mitre angle ϕ_2 , which is the angle of inclination of side edge closure on the side panel of the base portion of the container. The lid-mitre angle ϕ is the included angle taken between the rear upright edge of the container and the inclined edge on the side panel on the lid and the base-mitre angle ϕ_2 is the included angle between the rear upright edge of the container and the inclined edge on the side of the base portion of the container.

Referring to figure 9a, the lid section and the container section may not abut each other when the lid is in a closed position. Therefore, the lid-mitre angle ϕ on the side panel of the lid may vary from the base-mitre angle ϕ_2 on the side panel of the container section. Referring to figure 9b, the lid-mitre angle ϕ and the base-mitre

angle ϕ_2 may be same but the closing edges on the side panel of the lid and container may not abut or the angles ϕ , ϕ_2 may vary with the vertices of the mitre angles being displaced from each other.

In the embodiment shown in figures 1 and 2, the vertex of the lid-mitre angle ϕ is closely adjacent to the hinge-line.

As described above, in known hinge-lid packets, the lid-mitre angle ϕ is about 60 degrees. When opening and closing the lid, such an angle provides a front panel 17 of the lid, which is long enough to ensure that the closing leading edge 27 on the front panel of the lid 3 clears the ends of the cigarettes contained in the packet. The outline of the hinged-lid on a known hinge-lid packet and the lid-mitre angle ϕ_1 of the known hinge-lid packet is shown as a dashed line in figures 1 and 2.

Referring to figures 1 and 2, a first embodiment of the present invention utilises a lid-mitre angle ϕ of greater than 60 degrees, whilst substantially maintaining the position of the hinge-line of the conventional pack, i.e. it is closely adjacent the vertex of the mitre angle. In the example illustrated in Figures 1 and 2, the lid-mitre angle is about 75 degrees. Compared with a known hinge-lid packet, a lid-mitre angle ϕ of greater than 60 degrees provides a shortened front panel 17 on the lid 3, whilst increasing the size of the front panel 7 of the container section of the hinge-lid packet 1. When the hinge-line 15 is coincident with the vertex of the lid-mitre angle ϕ , too much of an increase in the size of the lid-mitre angle ϕ can result in the leading closing edge 27 on the front panel of the lid 3 fouling with the cigarettes contained in the packet when opening and closing the packet 1. On opening and closing the packet, fouling of the cigarettes by the leading closing edge 27 of the front panel of the lid 3 is more likely, as the dimension of the radius R1 of the arc, which is defined by the leading closing edge 27 of the front panel of the lid 3, tends towards the dimension of the radius R2 of the arc, which is defined by the front-top edge of the lid.

Referring to figures 3, 4 and 5, with the exception of the hinge-lid 12, the container section of the hinge-lid packet 10 is similar in construction to that illustrated

in figures 1 and 2. Therefore, like reference numerals will be used to refer to those features of the hinge-lid packet 10 that correspond with the hinge-lid packet 1.

The hinged lid 12 comprises a lid-mitre angle ϕ , which is the included angle between the rear upright edge 9a (provided by the adjoining edge of the rear panel 9 and the side panel 11) and the inclined closure edge 25 on the side panel of the hinged lid 12. A fold line on the rear panel 9 of the hinge-lid packet 10 provides the hinge line 15'. In this embodiment, the fold line 15' is offset by a distance A' from the top edge of the hinge-lid packet 10 and is offset by a distance B from the vertex of the lid-mitre angle ϕ . It is about the offset hinge line 15' that the lid 12 pivots to effect opening and closing of the hinge-lid packet 10. The hinge-line 15' may be coincident with the top-rear-most edge of the packet. Therefore the dimension A' is zero as illustrated in figure 3b.

The hinge-line 15' provides the end of the radius R1 of the arc defined by rotation of the leading closing edge on the front panel of the lid 12 and the end of the radius R2 of the arc defined by rotation of the front-top edge of the lid 12 when opening and closing the hinge-lid packet 10.

By offsetting the hinge-line 15' the radius R1 of the arc, which is traced by rotation of the front-top edge of the lid when opening and closing the hinge-lid packet 10, is reduced relative to the known hinge-lid packet arrangement. The dimension of the radius R2 of the arc that is traced by rotation of the leading closing edge 27 of the front panel of the lid 12 increases at the lower range of mitre angles described above. The dimension of the radius R1 of the arc, which is traced by rotation of the leading closing edge of the front panel of the lid 12, reduces as the lid-mitre angle ϕ increases. In this embodiment having an offset hinge-line 15', the upper limit of the range of lid-mitre angles ϕ increases relative to the first embodiment whilst still ensuring that the leading closing edge 27 of the front panel of the lid 12 does not foul the contents of the hinge-lid packet 10. In addition, an offset hinge-line 15' maximises the surface area available for gluing the panels during construction of the hinge-lid packet 10.

So that the whole of the lid 12 moves freely, a cut extends from the end of the hinge-line 15' to the vertex of the lid-mitre angle ϕ . Referring to figure 5, two variations of connecting the vertex of the lid-mitre angle ϕ to the hinge-line 15' are illustrated. In one example a cut across the rear panel of the packet has a curved profile 16 that smoothly joins the vertex of the lid-mitre angle to a point on the hinge-line 15'. An alternative example is illustrated, wherein the cut 16' is a continuation of the sloping line that defines the side closing edge of the side panel of the lid which line intersects with the hinge-line 15'. A further alternative (not illustrated) is where the cut extends along the rear upright edge from the vertex of the lid-mitre angle to the end of the hinge-line.

Figure 5, shows only part of the hinge-lid packet, it will be appreciated that the hinge-lid packet is substantially symmetric about a longitudinal axis.

Referring to figure 7, the hinge-line 15'' may be coincident with the adjoining edge of the rear panel 9 of the container section and the top panel 23 of the lid 30. In this case, the hinge-line 15'' is coincident with the top-rear edge of the hinge-lid packet 10' and with the vertex of the mitre angle ϕ . The hinge-lid packet as illustrated in figure 7, having a lid-mitre angle ϕ , which is less than or equal to 90 degrees provides a shorter front panel on the lid 30 than on the known hinge-lid packets 10. As a result of shortening the front panel of the lid a larger front panel on the container section of the packet 10' is also provided. An alternative arrangement, having larger side panels, wherein the hinge-line 15' is not coincident with the vertex of the lid-mitre angle ϕ is illustrated in figure 3b.

Referring to figure 6, a further embodiment of the invention is illustrated, wherein the front panel 56 of the hinge-lid packet 100 carries a window 58. In the example illustrated, the window 58 is round and located on the front panel 56. It will be appreciated that the window 58 may be placed on any panel and may even extend from one panel to another such as from the front panel 56 to the side panel 60. The window 58 may be any shape. One or more windows may be placed on one or more panels (not illustrated).

A covering covers the window. That covering may be a transparent or opaque material, which may be patterned or coloured. Alternatively, the covering may be a reflective material. Preferably, the hinge-lid packet is produced from a laminated cardboard blank. Therefore, the lamination applied to the blank covers the window(s).

Referring to figure 8, a blank of an inner frame 50 is illustrated. The blank is folded and inserted into the hinge-lid packet 1, 10, 10', 100 to provide reinforcement in the upper section of the hinge-lid packet 1, 10, 10', 100, which upper section is in contact with the hinge-lid 3, 12, 30. The inner frame also facilitates keeping the lid 3, 12, 30 closed, by providing an interference fit with the inside of the lid 3, 12, 30. The inner frame 50 comprises two side panels 52 and a front panel 54. The front panel comprises a cut-out 62 at its upper edge. At the bottom edge there is a correspondingly shaped projection, which is formed as a result of a plurality of inner frames 50 being cut from the same sheet.

The cut-out 62 has a concavely curved edge. The curved edge smoothly blends from the side panels 52 to the front panel 54, thereby removing a flat edge (known in the prior art) against which the leading closing edge 27 of the front panel of the hinge-lid packet 1, 10, 10', 100 may collide during closure. The concavely curved edge 62' facilitates guiding the leading closing edge of the front panel of the lid towards a closed position. The edge 62' is for example an arc of radius R about a centre in the plane of the front panel 54, although it may have another shape. The radius R may be in the range of 30mm to 250mm. Preferably, the radius R is 200mm.

The inner frame is folded about fold lines F1 and F2 and inserted in the hinge-lid packet 1, 10, 10', 100. The front panel 54 and side panels 52, of the inner frame 50 coincide with the corresponding panels of the hinge-lid packet (see figure 6 and figure 7).

The inner frame of Figure 8 has at each side of the cut out projections P1 and P2 of the front panel, the edges of which are curved and merge smoothly with the edge 62'. When closing a hinge-lid packet, users may grasp the sides of the container causing the front panel to bow outwards. The hinge-lid packet 1, 10, 10', 100 has a

shorter lid front panel than conventional hinge-lid packets. Accordingly, the arcuate path followed by the leading edge of the lid having the shorter lid front panel is greatly reduced compared with the leading edge of a lid in a conventional packet. On closing the hinge-lid packet, the closing leading edge of a lid having a short front panel is more likely to collide with the edge of the cut-out portion on the inner frame; usually, the top edge of the inner frame projects from the top edge of the front panel of the outer container. Shaping the top edge of the cut-out on the inner frame's front panel as a concaved curve may reduce the effects of collision between the closing leading edge on the front panel of the lid and the top edge of inner frame by providing substantially point-to-point contact rather than edge-to-edge contact as provided on the inner frame of a conventional packet. If the front panel of the packet is bowed by an amount typical of use of a hinge-lid packet and the edge of the cut-out portion of the inner frame is concavely curved the leading edge of the front panel of the lid is more likely to clear the edge of the inner frame. Indeed the form of the concavely curved inner frame may act as a guide to bring the lid into the closed position. The concavely curved cut out portion may be provided by an arc, which extends across the front panel from edge-to-edge. Typically, the side panels of the inner frame also project from the top edge of the container to the top of the cigarettes. Portions of the front panel of the inner frame proximate the side panels may also project (P1, P2) to the top of the cigarettes. To reduce the effects of the closing leading edge colliding with the inner frame the side panels of the inner frame may be shaped to merge into the concavely curved cut-out portion. Preferably, the nadir of the concavely curved cut-out portion is offset from the top edge of the front panel of the outer container.

The lid section B1 of a blank from which the hinge-lid packet is made is illustrated in figure 10. The remainder of the blank is not illustrated because it is substantially the same as the blank for a known hinge-lid packet.

Referring to figure 10, the lid section B1 comprises a top panel B2, a front panel B3 and an extension panel B4, which extends from the front panel B3. On each side of the front panel B3 extension panels B8 and B8' extend outwards from fold lines F10 and F10' respectively. The extension panels B8 and B8' are shaped to form the side closure of the hinge-lid packet. The side closure comprises a sloped edge,

which is provided by external edges E1 and E1'. The sloped edge is at an angle termed the mitre angle ϕ , as described above.

The lid section B1 also comprises a rear panel B5 that is bound by the hinge-line HL and the top rear edge of the lid, that is provided by fold line F3. Reinforcement panels are provided on each side of the rear panel B5 in the form of extension panels B6 and B6', which extend outwards from fold lines F8 and F8' respectively. The extension panels B6 and B6' are shaped to correspond with the form of the side closure B8 and B8' of the hinge-lid packet. The extension panels B6 and B6' each comprise a sloped edge, which is provided by cut line C1 and C1'. The sloped edges are at the mitre angle ϕ to the fold lines F11 and F11' provided between the rear panel 9 and the side panels 11 and 11' of the container portion of the blank. Further reinforcing panels B7, B7' adjoin the side of extension panels B6 and B6' about fold lines F9 and F9' respectively. A through-cut C4 joins the end of the sloped edge of B6 and B6' to the hinge-line HL (see figure 11).

For ease of understanding the form of the blank B1, the fold lines, F1 etc. are illustrated by broken lines and cut edges are defined by solid lines as are the external edges; the cut edges facilitate detaching parts of the blank from other parts.

An example of a folded hinge-lid is illustrated in figure 1. The reference numerals applied in referring to parts of the formed hinge-lid hereafter will relate to figure 1.

To form the hinge-lid 3, the blank is folded about the fold lines F1 etc. as follows. Referring to figure 10 and figure 1, folding the top panel B2 through 90 degrees about fold line F3 forms the top panel 23. The front panel 17 is formed by folding the panel B3 about fold line F5 through 90 degrees relative to panel B2. Reinforcement panels B7, B7' are folded through 90 degrees about fold lines F9 and F9' respectively and by folding, through 90 degrees, the sloped reinforcement panel B6 and B6' about lines F8 and F8', panels B7 and B7' are rotated to come into contact with and adhere to the inner surface of the top panel 23. To complete the form of the lid, the sloping closure edge on the side panel of the lid is formed by folding panels B8

and B8' through 90 degrees about fold lines F10 and F10' such that they come into contact and are glued to panels B6 and B6' respectively. To reinforce the lid further, panel B4 is folded through 180 degrees about fold line F7 to bring it into contact with and is glued to the inner surface of front panel 17.

Example

Referring to Figures 3, 6 and 8, illustrative dimensions of a packet according to the invention are about:

ϕ 75°

Width W 56mm

Height H2 86mm

Depth D 24mm

Window Diameter WD 28mm

Offset Y of window from top edge of front panel 6mm

Height of front panel lid LH 14mm

Offset B of hinge from vertex of ϕ 2mm

Height A' 6mm

Radius R 200mm

Offset X 4mm

The ratio of lid front panel L to packet height H2 is 14:86 which means the lid front panel is approximately one-sixth of the height of the packet.

CLAIMS

1. A hinge-lid packet for smoking articles comprising a lid portion connected to a base portion at a hinge-line on a rear panel of the base portion, the lid portion being capable of pivoting about the hinge-line to open and close the packet, wherein the lid portion comprises a lid front panel having a depth LH as measured from the top edge of the lid, the hinge-line is positioned at distance A' from the top edge of the lid, and the packet has a depth H2 taken from the top of the lid to the bottom of the base portion; and wherein A' is greater than or equal to zero and the depth LH of the lid front panel is such that a ratio of LH:H2 is less than or equal to one-fifth.
2. A hinge-lid packet according to claim 1, wherein A' is less than or equal to LH.
3. A hinge-lid packet according to claim 1 or 2, wherein side panels of the lid portion provide side closing edges, each side closing edge extending from a first point at a depth B taken from the top edge of the lid; the first point being on the edge defined by the rear panel and the side panel and a second point at depth LH; the second point being on the edge defined by the lid front panel and the lid side panel; wherein A' is greater than or equal to zero and A' is less than or equal to B.
4. A hinge-lid packet according to claim 3, wherein B is less than or equal to LH.
5. A hinge-lid packet according to claim 3 or 4, wherein the side closing edges on the lid side panels are inclined thereby providing a lid mitre angle ϕ which is greater than 60° .
6. A hinge-lid packet according to claim 5, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 61° or more and β is 90° or less.

7. A hinge-lid packet according to claim 6, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 61° or more and β is 90° or less.
8. A hinge-lid packet according to claim 6 or 7, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 65° or more and β is 90° or less.
9. A hinge-lid packet according to any one of claims 6, 7 or 8, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 70° or more and β is 90° or less.
10. A hinge-lid packet according to any one of claims 6 to 9, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 75° or more and β is 90° or less.
11. A hinge-lid packet according to any one of claims 6 to 10, wherein the lid-mitre angle ϕ is any angle between α and β taken in increments of 1° .
12. A hinge-lid packet according to any one of claims 5 to 11, wherein a first radius on a side face is defined by a planar distance between the hinge line and a closure edge of the lid front panel and a second radius on a side face is defined by a planar distance between the hinge line and an inner surface edge provided by an edge defined by the lid front panel and the lid top panel, the lid-mitre angle ϕ being sized such that the first radius is greater than the second radius.
13. A hinge-lid packet according to any one of claims 3 to 12, wherein the hinge-line is coincident with the first point on the side closure edge.
14. A hinge-lid packet according to claim 13, wherein the hinge-line is offset from the first point on the side closure edge; the offset being towards the top of the lid and a cut extends from the point on the side closure edge defined by the rear panel and the side panel to an end of the hinge-line.

15. A hinge-lid packet as claimed in claim 14, wherein the cut extends from the first point on the side closure edge as an extension of the incline defined by the side closing edge.
16. A hinge-lid packet as claimed in claim 15, wherein the cut extends from the first point on the side closure edge defined by the rear panel and the side panel to the hinge-line along the edge of the rear panel.
17. A hinge-lid packet according to any one of the preceding claims, wherein a closing edge provided on the front panel of the lid is straight or curved.
18. A hinge-lid packet according to claim 17, wherein the closing edge is formed of piecewise linear sections or piecewise curved sections or a combination of piecewise linear sections and piecewise curved sections.
19. A hinge-lid packet according to any one of the preceding claims, further comprising an inner frame having at least a front panel and two side panels, which front and side panels of the inner frame being arranged to coincide with corresponding front and side panels of the base portion, wherein a top edge of the inner frame protrudes from a top edge of the front panel of the base portion and wherein the protruding part of the inner frame has a cut out portion having an edge that is concavely curved.
20. A hinge-lid packet as claimed in claim 19, wherein said edge of the cut-out portion is an arc, which extends across the front panel of the inner frame from edge-to-edge.
21. A hinge-lid packet as claimed in claim 19, wherein the protruding part of the inner frame comprises side panel which are shaped to merge into the concavely curved cut-out portion.
22. A hinge-lid packet as claimed in claims 19, 20 or 21, wherein the nadir of the concavely curved cut-out portion has a radius in the range of 30mm to 250mm.

23. A hinge-lid packet according to any one of the preceding claims, further comprising at least one window on at least one of the panels forming the packet.
24. A hinge-lid packet according to claim 23, wherein the at least one window extends on to two or more adjoining panels.
25. A hinge-lid packet according to claim 23 or 24, when dependent on claims 20 to 23, wherein the at least one window is provided on corresponding panel(s) of the inner frame and the base portion.
26. A hinge-lid packet according to claims 23, 24 or 25, further comprising a covering over the at least one window.
27. A hinge-lid packet according to claim 26, wherein the covering is sized such as to cover the at least one window with an overlap, which overlap adheres to the at least one panel carrying the at least one window.
28. A hinge-lid packet according to claim 26 or 27, wherein the covering is sized substantially the same as the at least one panel carrying the at least one window and adheres to the at least one panel carrying the at least one window.
29. A hinge-lid packet according to claim 26 or 27, wherein the covering is sized substantially to cover the whole of the packet.
30. A hinge-lid packet according to any one of claims 26 to 29, wherein the covering adheres to the interior or exterior surface of the packet.
31. A hinge-lid packet according to any one of claims 26 to 30, wherein the covering is a transparent or an opaque material.
32. A hinge-lid packet according to any one of claims 26 to 31, wherein the covering is a reflective material.

33. A hinge-lid packet according to any one of claims 26 to 32, wherein the covering is a lamination applied to the packet.
34. A hinge-lid packet according to any one of claims 26 to 33, when dependent on claims 19 to 22, wherein the covering adheres to the interior or exterior surfaces the inner frame.
35. A hinge-lid packet according to any one of the preceding claims, wherein the packet is made of laminated cardboard.
36. A blank which is foldable to form the hinge-lid packet as claimed in any one of the preceding claims.
37. A blank which is foldable to form a hinge-lid packet, wherein on the blank there is defined a lid portion defined by a lid front panel, a lid top panel, a lid rear panel and two lid side panels, the lid rear panel being connected to a base portion, the connection of the lid rear panel to the base portion provides a hinge-line about which the lid portion is capable of pivoting in the erected packet, the lid front panel has a depth LH, the connection of the lid rear panel and the base portion being positioned at distance A' from the line defining the lid top panel, the base portion comprising a front panel, a bottom panel, a rear panel and two side panels, a depth H2 is defined by a dimension taken from the junction of the lid top panel with the lid rear panel to the extremity of the rear panel of the base portion; the arrangement of the panels being such that A' is greater than or equal to zero and the depth LH of the lid front panel is such that a ratio of LH:H2 is less than or equal to one-fifth.
38. A blank according to claim 37, wherein A' is less than or equal to LH.
39. A blank according to claim 37 or 38, wherein the lid side panels comprise side closing edges being inclined to provide a lid mitre angle ϕ which is greater than 60° .

40. A blank according to claim 39, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 61° or more and β is 90° or less.
41. A blank according to claim 40, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 61° or more and β is 90° or less.
42. A blank according to claim 40 or 41, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 65° or more and β is 90° or less.
43. A blank according to any one of claims 40, 41 or 42, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 70° or more and β is 90° or less.
44. A blank according to any one of claims 40 to 43, wherein the lid-mitre angle ϕ is in the range of α is less than or equal to ϕ , and ϕ is less than or equal to β , wherein α is 75° or more and β is 90° or less.
45. A blank according to any one of claims 40 to 44, wherein the lid-mitre angle ϕ is any angle between α and β taken in increments of 1° .
46. A blank according to any one of claims 39 to 45, wherein the hinge-line is a fold line coincident with one end of the side closure edge, which is coincident with a line defining an edge of the rear panel on the erected packet.
47. A blank according to claim 46, wherein the fold line is offset from the one end of the side closure edge; the offset being towards the lid top panel and having a cut portion joining the one end of each of the side closure edges to the fold line.

48. A blank according to claim 47, wherein the cut portion is an extension of the incline defined by the side closing edge.
49. A blank according to claim 47, wherein the cut extends along the line defined by the rear panel and the side panel and extends from the one end of the side closure edge to the hinge-line.
50. A blank according to any one of claims 37 to 49, wherein a closing edge provided on the lid front panel is straight or curved.
51. A blank according to claim 50, wherein the closing edge is formed of piecewise linear sections or piecewise curved sections or a combination of piecewise linear sections and piecewise curved sections.
52. A blank according to any one of claims 37 to 51, further comprising at least one window on at least one of the panels defined in the blank.
53. A blank according to claim 52, wherein the at least one window extends on to two or more adjoining panels.
54. A blank according to claims 52 or 53, further comprising a covering over the at least one window.
55. A blank according to claim 54, wherein the covering is sized such as to cover the at least one window with an overlap, which overlap adheres to the at least one panel carrying the at least one window.
56. A blank according to claim 54 or 55, wherein the covering is sized substantially the same as the at least one panel carrying the at least one window and adheres to the at least one panel carrying the at least one window.
57. A blank according to claim 54 or 55, wherein the covering is sized substantially to cover the whole of the blank.

58. A blank according to any one of claims 54 to 57, wherein the covering adheres to one surface of the blank.
59. A blank according to any one of claims 54 to 58, wherein the covering is a transparent or an opaque material.
60. A blank according to any one of claims 54 to 59, wherein the covering is a reflective material.
61. A blank according to any one of claims 54 to 60, wherein the covering is a lamination applied to the blank.
62. A blank according to any one of claims 37 to 61, wherein the blank is made of laminated cardboard.
63. A hinge-lid packet as claimed in any one of claims 1 to 36, wherein the packet contains smoking articles.
64. A hinge-lid packet as claimed in claim 63, wherein the smoking articles are cigarettes, cigars or cigarillos.
65. A hinge-lid packet as substantially described herein and with reference to the accompanying figures 1 to 9.
66. A blank as substantially described herein and with reference to the accompanying figures 10 and 11.