

CARRIER WITH PANEL LOCKING MECHANISM

FIELD OF THE INVENTION

The present invention relates to beverage packaging, and more specifically to a wrap-around carrier with a panel locking means that restricts lateral movement between lap panels.

BACKGROUND OF THE INVENTION

Cartons for holding, storing, and carrying multiple articles are well known in the art. For example, many cartons are useful for grouping and carrying multiple beverage containers while exposing the beverage containers for visibility and economy of material use.

Some cartons are carriers are configured to wrap around an arranged group of bottles or other beverage containers. Such wrap-around carriers are typically top gripping, that is, they can be lifted from above using a handle formed in a top wall of the carrier. Wrap around bottle carriers frequently include interlocking assemblies that mechanically lock panels together after the carrier has been applied to a pre-arranged group of containers using automatic packaging machinery. As the lower wall of the carrier typically must bear the weight of the bottles without reinforcement, the panels of the carrier must be securely and reliably locked together to prevent release or shifting of the container group as the carrier is being carried.

Interlocking arrangements commonly include a slide lock assembly that includes a locking tab and cooperating slit. An example of this type of locking arrangement can be seen in U.S. Pat. No. 3,249,284. In this example, as is typical, the locking tab includes a head that is attached along a relatively narrow neck to a panel of the carton. The tab includes at least one shoulder, i.e., that portion of the tab where the head connects with the relatively narrow neck. On an opposite panel of the carton, a slit is formed into which the tab can be inserted. Following insertion, the locking tab shoulder engages the end of the slit, preventing the tab from being withdrawn, and thereby securing the interlocking arrangement.

In interlocking arrangements of this type, the length of the slit is equal to or slightly greater than the width of the head portion of the locking tab to allow insertion of the tab. As a

result, the tab may be laterally movable when it is fully inserted up to its neck. Such lateral movement could result in disengagement of the tab shoulder from the slit. For this reason, it is advantageous to provide means to restrict lateral movement of the locking tab. One way in which the locking tab can be laterally restrained is to arrange a row of locking tabs such that each of the opposite end locking tabs is provided with only one shoulder so that the shoulderless side edge of that tab abuts the adjacent end of the associated slit and thereby restrains all the tabs in the row from lateral movement. An example of such an approach can be seen in U.S. Pat. No. 4,732,316. One disadvantage of this approach, however, is less locking strength of the interlocking arrangement due to the reduction in number of the locking points.

What is needed, therefore, is an improved interlocking arrangement which increases the security of the interlocking arrangement against inadvertent disengagement. Such an arrangement should be capable of restraining the locking tab from moving within the locking slit without reducing the number of the locking points.

SUMMARY OF THE INVENTION

The present invention provides a carton panel interlocking arrangement for interlocking a first and a second panel. The interlocking arrangement effectively restricts lateral movement of its components, thereby improving the security and reliability of the connection between the two panels. The interlocking arrangement includes a locking tab that extends from and is hingedly connected to the first panel, a locking slit for receiving the locking tab, an alignment receptacle and an alignment tab. The locking slit is defined at least in part in either or both of the second panel that is to be connected to the first panel and a lap panel that is hingedly connected to the second panel. The locking slit is preferably defined at least in part along a leading edge of the second panel, and may be further defined by portions of the lap panel and the hinged connection therebetween. The alignment receptacle is defined in either the locking tab or the lap panel. The alignment tab is formed adjacent to the other of the locking tab or the lap panel.

The locking tab has a relatively wide head that defines locking shoulders along each of its side edges. The width of the head of the locking tab is substantially greater than that of that of its neck, by which it is foldably connected to the first panel. Each shoulder of the locking tab is configured to engage the portion of the hinged connection between the second panel and the

lap panel that extends on either side of the locking slit when the locking tab is received in the locking slit.

In fact, according to one aspect of the various embodiments, the head is at least slightly wider than the length of that portion of the locking slit that is coextensive with the hinged connection between the second panel and the lap panel. Although the head of the locking tab is wider than the locking slit, the head still can pass through the locking slit to engage the fold that defines the hinged connection because of the configuration of the locking slit.

Advantageously, according to another aspect of the various embodiments of the invention, lateral movement in this shoulder-slit engagement is further restricted by means of the alignment tab also being received in the alignment receptacle when the locking tab is received in the locking slit.

In one embodiment, the locking slit is slightly curved such its opposing ends extend onto the second panel rather than being coextensive with the hinged connection between the second panel and the lap panel. Consequently, when the second panel is folded with respect to the lap panel, the locking slit is sufficiently wide to allow entry of the locking tab, but the portion of the locking slit that is coextensive with the hinged connection between the second panel and the lap panel is substantially shorter than the head is wide. When the carrier is erected, the shoulders of the locking tab are captured by the hinged connection between the second panel and the lap panel and the locking tab is restricted from moving laterally or back out of the locking slit in part because of the configuration of the locking slit.

In this embodiment, the alignment tab is defined adjacent to the locking tab along a cut line that defines a capture slot. The alignment tab is also defined at least in part in and hingedly attached to the first panel along a fold line that is spaced apart from the hinged connection between the locking tab and the first panel. The alignment receptacle is defined in the lap panel that is connected hingedly to the second panel, and may be a recessed edge of the lap panel. The locking tab and locking slit may be matingly engaged during or prior to erection of the carrier. When the carrier panels are erected to form the carrier, the alignment tab slides into the alignment receptacle, which guides the alignment tab under the lap panel until its distal end is received in the capture slot, which fixes the relative positions of the locking tab and the slit and lap panel with respect to lateral movement.

In another embodiment, the locking slit is at most slightly wider than the neck of the locking tab. Nevertheless, the head and shoulders of the locking tab can enter the locking slit because the locking slit defines one side of an opening that is defined by displacing a hingedly attached alignment flap. At its widest point, the opening is at least as wide as the widest point of the head of the locking tab, so head and shoulders of the locking tab can enter the opening and travel under the slit until the neck of the locking tab is engaged by the end edges of the slit, thereby restricting lateral movement of the locking tab and capturing the head and shoulders of the locking tab within the hinged connection between the second panel and the lap panel.

In this embodiment, the alignment tab is defined adjacent to the locking slit, and as part of the distal end of the alignment flap. The alignment receptacle is formed at least in part in the neck of the locking tab. Again, the locking tab and locking slit may be matingly engaged during or prior to erection of the carrier. When the carrier panels are erected to form the carrier, the alignment tab that extends from the distal end of the alignment flap slides into the alignment receptacle, and the remainder of distal end of the alignment flap butts against the neck of the locking tab, which fixes the relative positions of the locking tab and the slit and lap panel with respect to lateral movement.

According to another aspect of the various embodiments, all of the elements of the interlocking arrangement are folded or otherwise displaced in the same general direction (i.e., inwardly or outwardly) with respect to the exterior of the carrier during the process of interlocking the elements. This advantageously permits assembly of the wrap-around carrier package without the need for a packaging machine that can fold elements both inwardly and outwardly to secure the carrier around the container group. On the contrary, the present invention is particularly useful with modern packaging processes, which often run multiple configurations, packaging types and containers on a single machine, with minimal retooling and reconfiguration.

The interlocking arrangement is defined in a blank for forming a carton, such as a wrap-around carrier. Such a blank may include a number of panels hingedly connected to one another along the length of the blank, including a bottom panel, which is hingedly connected along a transverse fold line to a first side panel, which is hingedly connected along a transverse fold line to a top panel, which is hingedly connected along a transverse fold line to a second side panel, which is hingedly connected along a transverse fold line to a lap panel.

In the embodiments described herein, the first panel is the bottom panel and the second panel is the second side panel, although each of the first and second panels could be any panel that is to be connected to any other panel of the blank.

5 The foregoing has broadly outlined some of the aspects and features of the present invention, which should be construed to be merely illustrative of various potential applications of the invention. Other beneficial results can be obtained by applying the disclosed information in a different manner or by modifying the disclosed embodiments. Accordingly, other aspects and a more comprehensive understanding of the invention may be obtained by referring to the detailed description of the exemplary embodiments taken in conjunction with the accompanying
10 drawings, in addition to the scope of the invention defined by the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of a carrier blank incorporating a first exemplary embodiment of an interlocking arrangement in accordance with the present invention.

15 **FIG. 2** is a partial plan view of the interlocking arrangement of **FIG. 1**.

FIGS. 3-13 illustrate an exemplary method of operating the interlocking arrangement illustrated in **FIG. 1** to connect panels of the carrier blank of **FIG. 1**.

FIG. 14 is a plan view of a carrier blank according to a second exemplary embodiment of an interlocking arrangement in accordance with the present invention.

20 **FIG. 15** is a partial plan view of the interlocking arrangement of **FIG. 14**.

FIG. 16-22 illustrate an exemplary method of operating the interlocking arrangement illustrated in **FIG. 16** to connect panels of the carrier blank of **FIG. 15**.

DETAILED DESCRIPTION

25 As required, detailed embodiments of the present invention are disclosed herein. It will be understood that the disclosed embodiments are merely examples to illustrate aspects of the

invention that may be embodied in various and alternative forms. The figures are not necessarily to scale, and some features may be exaggerated or minimized to show details of particular components. In other instances, well-known materials or methods have not been described in detail to avoid obscuring the present invention. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but as a basis for the claims and for teaching one skilled in the art to variously employ the present invention.

The various embodiments will be described herein as a carrier for bottles, although the teachings of the invention are applicable to any number of containers, which may or may not be tapered and/or cylindrical, including but not limited to plastic, metallic, or glass bottles, cans, bowling pins, candles, or any other article for which such a carrier is suitable. As used herein, the term "neck" refers to an upper portion of a container, and the term "necked" is used to describe an article having a neck. The neck of a container may be, but is not necessarily, tapered with respect to any portion of the body of the article. As used herein, the term heel refers to the lowest portion of a beverage container (e.g., a bottle), and particularly the region at which its body (the primary content containing portion of the container) begins to curve into its base (the support surface of the container).

Referring now to the drawings in which like numerals represent like elements throughout the several views, **FIG. 1** illustrates a carton blank **10** ("blank") for forming a carrier in that incorporates one embodiment of an interlocking arrangement in accordance with the present invention. The blank **10** can be made from a substrate of paperboard, plastic, or any other desired material. One or more surfaces of the substrate can be coated, painted, printed, or treated to achieve desired package characteristics. For example, advertising can be painted on one or both sides of the substrate, and a water-resistant or waterproof sealant can be painted one or more of the substrate sides. As such, the blank **10** can be made into a wrap-around carrier as secondary packaging for carrying containers that hold liquid contents. An alternative embodiment is shown in **FIGs. 15-22**, which will be described in detail below.

The blank **10** is cut from or formed into a substantially unitary or composite foldable sheet material such as paperboard, corrugated board, clear or opaque plastic, laminates, any combination thereof, or the like. The blank **10** includes several panels that are hingedly connected to one another along transverse lines. More specifically, the blank **10** includes a top panel **102** that, in the embodiment shown, is hingedly attached along fold line **106** to a first side

panel **104**. Similarly, the blank **10** includes a second side panel **108** that is hingedly connected along fold line **110** to the top panel **102**. The first side panel **104** is hingedly connected along fold line **114** to a bottom panel **112**. The second side panel **108** is hingedly connected along fold line **118** to a lap panel **116**. In the embodiment shown, each side panel **104**, **108** includes two sections **104a/104b**, **108a/108b** that are defined by a contour fold line **105**, **109**, which is positioned horizontally proximate at the height of the shoulder (if any) of the intended container. Optionally, the top panel **102** includes a set handle apertures **H**.

The blank **10** also includes a number of optional end flaps. Specifically, bottom end flaps **132a/132b** are hingedly connected along fold lines **131a/131b** at the opposed longitudinal edges of the bottom panel **112**. Lower side end flaps **134a/134b** are hingedly connected along fold lines **133a/133b** at the opposed longitudinal edges of the lower side panel **104b**. Top end flaps **136a/136b** are hingedly connected along fold lines **135a/135b** at the opposed longitudinal edges of the top panel **102**. Top end flaps **136a/136b** may include webbed portions that are also connected to the upper side panels **104a**, **108a**. Lower side end flaps **138a/138b** are hingedly connected along fold lines **137a/137b** at the opposed longitudinal edges of the lower side panel **108b**.

The elements of the first embodiment of the interlocking arrangement are struck from the blank **10**. Specifically, and with reference also to the detailed view of **FIG. 2**, the blank **10** includes three locking tab devices **120**, **122**, **124** that each include a locking tab **140** that is hingedly connected to the bottom panel **112** along a fold line **141**, an alignment tab **142** that is hingedly connected along a fold line **144** to the bottom panel **112**, and capture slot **146** that defines the distal end of alignment tab **142**. The alignment tab **142** is elongated and slightly trapezoidal in shape. The proximal end is spaced apart from the fold line **141**, while its distal end extends slightly beyond the fold line **141** and onto a neck portion **156** of the locking tab **140**. As the locking tab **140** extends away from the bottom panel **112**, a head portion **151** of the locking tab **140** is substantially wider than the neck portion **156** that is disposed at or near the fold line **141**, such that shoulders **150**, **152** are defined between the head and neck portions **151**, **156** of the locking tab **140**.

At the opposite end of the blank, three slit devices **126**, **128**, **130** are formed along the edge of the side panel **108** and in the lap panel **116**. Each slit device **126**, **128**, **130** includes a locking slit **160**, an expansion slit **162**, and an alignment receptacle **164**. The locking slit **160** is

formed along the leading edge of the second side panel **108** and is substantially aligned with the fold line **118** that hingedly connects the second side panel **108** to the lap panel **116**, although the locking slit **160** may be curved somewhat as shown.

Those skilled in the art will readily appreciate that the number and distribution of locking tab devices and locking slit devices is a design decision that is dictated by any number of parameters including package size, container size, package weight, strength of the substrate, and the like. All of the retaining structures are substantially identical in relevant part, so for purposes of teaching, and not of limitation, the components of one of the interlocking arrangements will be described.

The interlocking arrangement is operated as follows. After the blank **10** has been wrapped around a container group (not shown), the end edges of the side panel **108** and lap panel **116** are brought into proximity to the end edge of the bottom panel **112**. With reference particularly to **FIGs. 3-5**, the locking tab **140** is propelled toward the locking slit **160**, the alignment tab **142** is folded inwardly along fold line **141**, and the lap panel **116** is also folded inwardly along fold line **118**. The degree to which the alignment tab **142** is folded is selected to ensure that the distal end of the alignment tab **142** slides under the lap panel **116**, and more particularly, into the alignment receptacle **164** (best shown in **FIGs. 2** and **8**). A cutaway view of this arrangement is shown in **FIG. 5**, in which rotation of each element may be exaggerated to for purposes of teaching and not of limitation. As the alignment tab **142** slides under the proximal edge of the alignment receptacle **164** and the locking tab **140** enters the locking slit **160**, as shown in **FIGs. 6-8**, the lap panel **116** and the locking tab **140** are released and all of the elements are at least somewhat engaged in the arrangement shown in the cutaway view of **FIG. 5**. The panels **108**, **112** are disposed in substantially the same plane, although some distortion may raise or lower certain elements due to the interlocking arrangement.

The side panel **108** and the bottom panel **112** are then brought into an angular relationship, that is, the panel **108** is rotated around fold line **118** until the panel **108** extends vertically with respect to the bottom panel **112**. This arrangement is shown in **FIG. 10** from the perspective of the bottom panel **112**. In so doing, the alignment tab **142** is disposed between the longitudinal edges of the alignment receptacle **164** and beneath the proximal edge of the alignment receptacle **164** and the distal end of the alignment tab **142** enters the capture slot **146**. To fit in the capture slot **146**, the distal end of the alignment tab **142** may at least partially

force open the expansion slit **162**, and may also displace an expansion tab **148** that is formed along the capture slot **146**. This under-and-over arrangement of the alignment tab **142** results in the distal end of the alignment tab **142** being locked in the capture slot **146**, which is essentially a cut line that defined the distal end of the alignment tab **142** in the planar blank **10**.

5 **FIGs. 11, 12 and 13** provide particularly good views for appreciating the under-and-over arrangement of the alignment tab **142**

Lateral motion with respect to the various elements of the assembly is virtually eliminated by the engagement of the side edges of the alignment tab **142** with the side edges of the alignment receptacle **164**, combined with the engagement of the shoulders **150, 152** against
10 the fold line **118** and within the edges of the slit **160**, and further combined with the receipt of the distal end of the alignment tab **142** in the capture slot **146**.

It should be understood that the steps described with respect to the method for operating the interlocking arrangements are not necessarily presented in any particular order, and that performance of some or all the steps in an alternative order(s) is possible and is contemplated.
15 The steps have been presented in the demonstrated order for ease of description and illustration. Steps can be added, omitted and/or performed simultaneously without departing from the scope of the appended claims.

A second embodiment of the locking arrangement of present invention is shown in **FIGs. 14-22**. The exemplary blank **20** that is shown in **FIG. 14** is substantially identical to the blank **10**
20 of **FIG. 1**, with the following distinctions. The blank **20** includes three locking tab devices **220, 222, 224** that each includes a locking tab **240** that is hingedly connected to the bottom panel **112** along a fold line **141**, and an alignment receptacle **264**. As the locking tab **240** extends away from the bottom panel **112**, a head portion **251** of the locking tab **240** is substantially wider than the neck portion **256** that is disposed at or near the fold line **141**, such that shoulders **250, 252**
25 are defined between the head and neck portions **251, 256** of the locking tab **240**. In fact, the locking tab **240** is substantially trapezoidal in shape, although other shapes with shoulders are contemplated. The alignment receptacle **264** extends slightly beyond the fold line **141** and onto a neck portion **156** of the locking tab **240**.

At the opposite end of the blank, three slit devices **226, 228, 230** are formed along the
30 edge of the side panel **108** and in a lap panel **216** that is hingedly connected along fold line **118** to the side panel **108**. Each slit device **226, 228, 230** includes a locking slit **260**, an alignment

flap **262**, and an alignment tab **242**. The locking slit **260** is formed along the leading edge of the second side panel **108** and is substantially aligned with the fold line **118** that hingedly connects the second side panel **108** to the lap panel **116**. The alignment flap **262** is trapezoidal in shape, with its widest side disposed along a fold line **263** that hingedly connects the alignment flap **262** to the lap panel **216**, and its narrowest side being a distal edge **268** defined along the locking slit **260**, with the alignment tab **242** extending from the distal edge **268** of the alignment flap **262**. The proximal end of the alignment flap **262**, defined by the fold line **263**, is spaced apart from free edge of the lap panel **116**.

In this embodiment, the size and shape of the locking tab **240** and the alignment flap **262** are selected to be complementary, as will be described with respect to the operation of the assembly. In particular, the width of the neck **256** of the locking tab **240** is substantially equal or slightly less than the length of the distal edge of the alignment flap **262**, and the length of the distal edge of the alignment flap **262** is substantially the same as the coextensive locking slit **260**.

The second exemplary interlocking arrangement is operated as follows. After the blank **20** has been wrapped around a container group (not shown), the end edges of the side panel **108** and lap panel **116** are brought into proximity to the end edge of the bottom panel **112**. With reference particularly to **FIGs. 16-19**, the lap panel **216** is folded inwardly along the fold line **118**, which frees the distal edge of the alignment flap **262**, and opens the locking slit **260**. The alignment flap **262** may also fold inwardly along fold line **263**. The locking tab **240** is propelled toward the locking slit **260**, as shown in **FIG. 17**, and thereby comes to overlies the alignment flap **262**, perhaps but not necessarily, in a face contacting sliding arrangement.

As mentioned above, the locking tab **240** and the alignment flap **262** are similar in size and shape, such that the alignment flap **262** functions as a conforming although narrowing ramp that is sufficiently wide at the point of entry (near fold line **141**) of the locking tab **240** to allow the shoulders **250**, **252** to clear the side edges **246** of the opening formed by displacement of the alignment flap **262** so that the shoulders **250**, **252** can then be captured by the end edges of the locking slit **260** (as shown in **FIG. 18**). As such, the locking tab **240** may be folded inwardly along with or independently of the alignment flap **262** as the locking tab **240** is drawn toward the locking slit **260**. The degrees to which the alignment flap **262** and the locking tab **240** are folded

are selected to ensure safe entry of the locking tab **240** into the locking slit **260** and retention of the shoulders **250**, **252** in the locking slit **260**.

Once the locking tab **240** is securely received and locked into the locking slit **260**, the alignment tab **242** comes into registry with the alignment receptacle **264** (best shown in **FIGs. 15** and **17**). As the locking tab **240** slides over the alignment flap **262** and enters the locking slit **260**, the lap panel **116** and the locking tab **140** are no longer actively folded inward by machine elements and all of the elements are at least somewhat engaged in the arrangement shown in **FIGs. 19** and **20**. The panels **108**, **112** are disposed in substantially the same plane, although some distortion may raise or lower certain elements due to the interlocking arrangement.

The side panel **108** and the bottom panel **112** are then brought into an angular relationship, that is, the panel **108** is rotated around fold line **118** until the panel **108** extends vertically with respect to the bottom panel **112**. The alignment tab **142** is forced into the alignment receptacle **264**, with the distal edge **268** butting up against the fold line **141** at the neck **256** of the locking tab **240**.

Lateral motion with respect to the various elements of the second embodiment of the locking assembly is virtually eliminated by the engagement of the side edges of the alignment tab **242** with the edges of the alignment receptacle **264**, combined with the engagement of the shoulders **250**, **252** against the fold line **118** and within the edges of the slit **260**, and further combined with the engagement of the neck **256** with the narrowest extent of the side edges **246**.

Those skilled in the art will readily appreciate that each blank **10** and **20** can be erected using automatic or manual means.

The present invention has been illustrated in relation to a particular embodiment which is intended in all respects to be illustrative rather than restrictive. Those skilled in the art will recognize that the present invention is capable of many modifications and variations without departing from the scope of the invention. For example, as used herein, directional references such as "top", "base", "bottom", "end", "side", "inner", "outer", "upper", "middle", "lower", "front" and "rear" do not limit the respective to such orientation, but merely serve to distinguish these panels from one another. Any reference to hinged connection should not be construed as necessarily referring to a single fold line only; indeed, it is envisaged that hinged connection can be formed from one or more of one of the following, a score line, a frangible line or a fold line,

without departing from the scope of invention. Those skilled in the art will also appreciate that the shapes and sizes of cap, heel and handle apertures and of the handle are only examples of the various configurations that will be suitable for implementation of the various embodiments of the invention.

5 It should be understood that various changes may be made within the scope of the present invention, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing size or shape, and alternative shapes, sizes, and configurations for interlocking arrangement elements may be used. The carrier may
10 accommodate one or more articles in different arrangements, including in multiple rows or levels.

CLAIMS

1. A blank for forming a wrap-around carrier, comprising:
 - a first panel;
 - a second panel;
 - a lap panel hingedly connected along a fold line to the second panel;
 - an interlocking arrangement for interconnecting the first panel and the second panel, the interlocking arrangement comprising:
 - a locking tab extending from and joined to the first panel;
 - a locking slit for receiving the locking tab, the locking slit being defined at least in part in at least one of the second panel and the lap panel;
 - an alignment receptacle defined at least in part by at least one of the locking tab and the lap panel; and
 - an alignment tab that is defined at least in part by the other of the locking tab and the lap panel.
2. The blank of claim 1, wherein the locking slit is defined at least in part along the fold line that hingedly connects the lap panel to the second panel.
3. The blank of claim 1, wherein the opposed ends of the locking slit are formed in the second panel and are spaced apart from the fold line that hingedly connects the lap panel to the second panel.
4. The blank of claim 1, wherein the locking tab is hingedly connected to the first panel along a fold line.
5. The blank of claim 2, wherein:
 - the opposed ends of the locking slit are formed in the second panel and are spaced apart from the fold line that hingedly connects the lap panel to the second panel; and
 - the portion of the locking slit that is defined along the fold line is shorter than the width of the locking tab.

6. The blank of claim 1, wherein the locking slit defines a proximal edge of an opening in the lap panel, wherein a distal edge of the opening is wider than the locking tab, and the locking slit is shorter than the width of the locking tab.
7. The blank of claim 6, further comprising an alignment flap that is hingedly connected to the lap panel along the distal edge of the opening and that extends toward the locking slit.
8. The blank of claim 4, wherein the alignment tab is hingedly connected to the first panel along a fold line that is spaced apart from the hinged connection between the locking tab and the first panel, the alignment tab having a distal end that is defined by a capture slot that separates the distal end of the alignment tab from the locking tab.
9. The blank of claim 8, wherein the alignment receptacle comprises a recessed edge of the lap panel, the alignment receptacle being aligned with and spaced apart from the locking slit.
10. The blank of claim 7, wherein the alignment tab extends from the distal edge of the alignment flap.
11. The blank of claim 10, wherein the alignment receptacle comprises an opening formed in part in the first panel and in part in the locking tab.