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(54) **PANEL INTERLOCKING ARRANGEMENT, CARTON AND CARTON BLANK**

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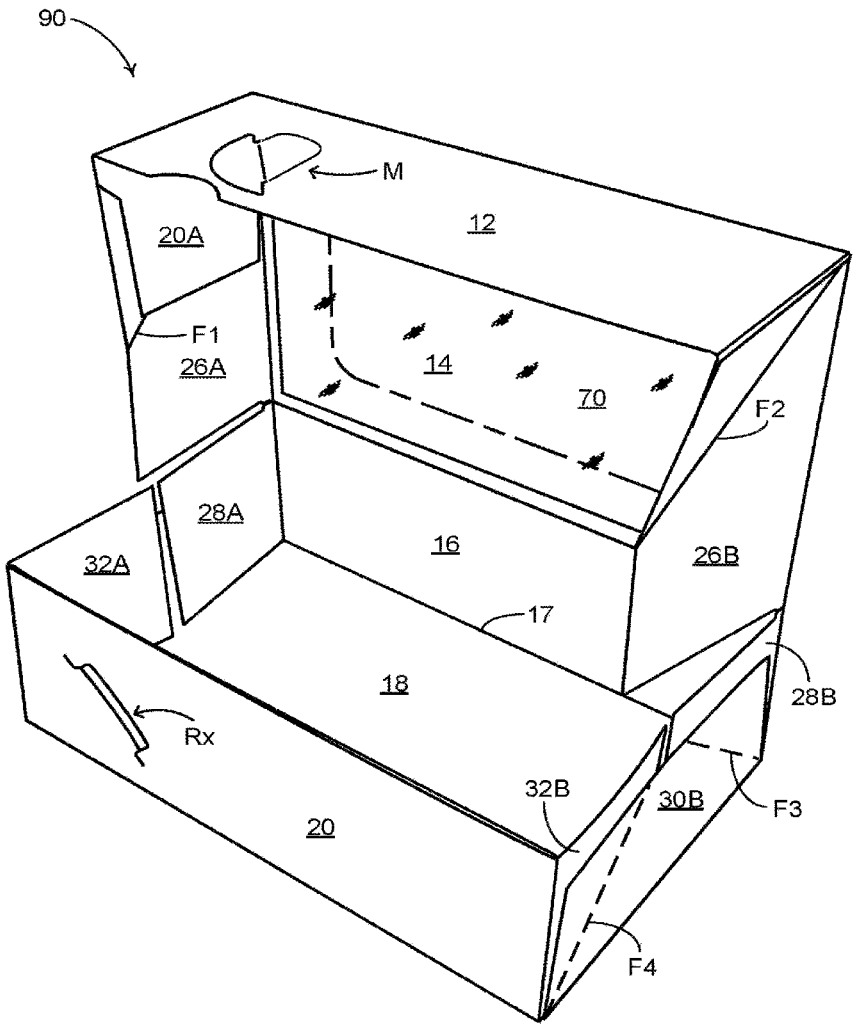
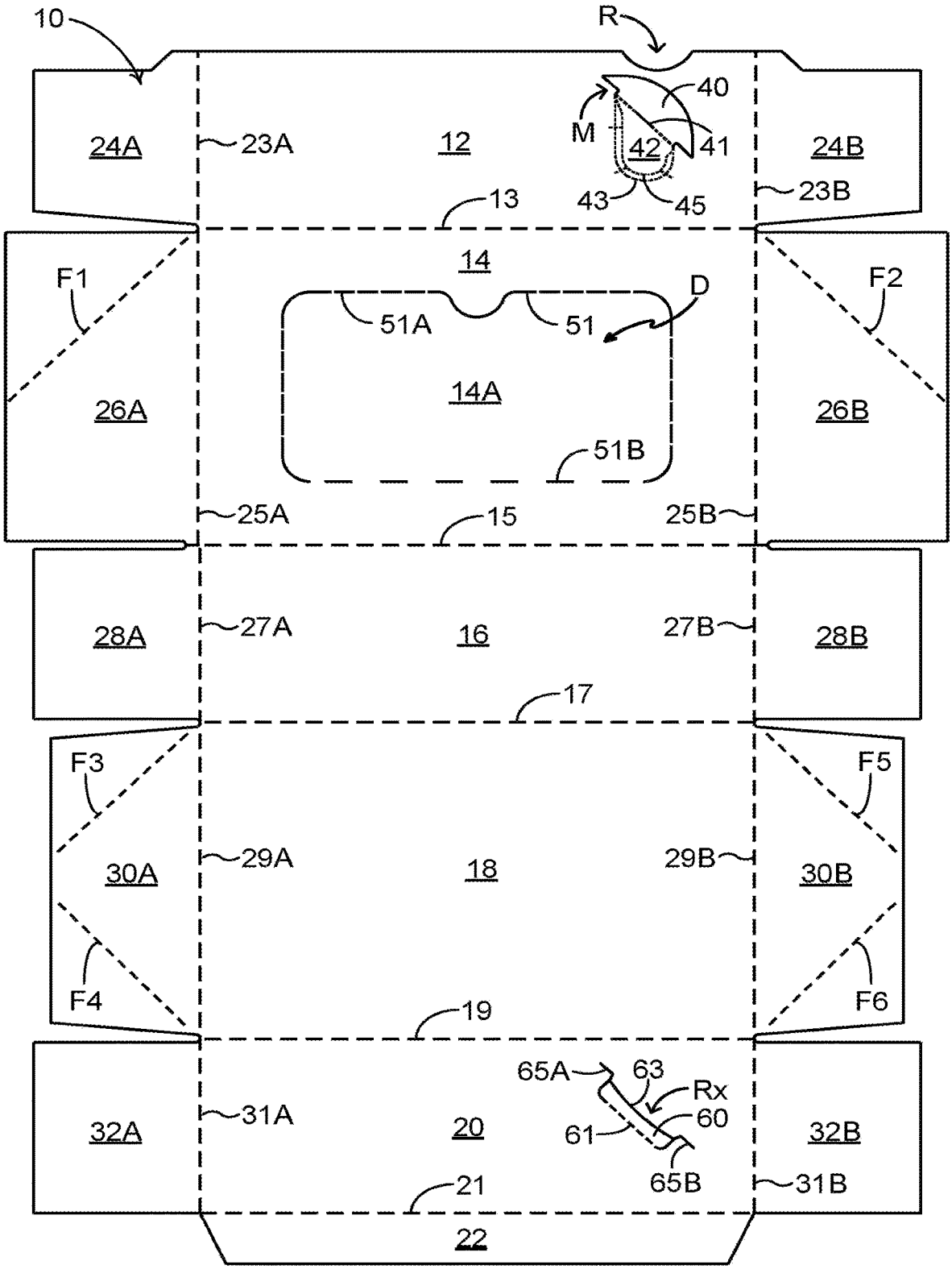
(57) **ABSTRACT**

A panel interlocking arrangement for securing a pair of panels together comprising: first and second panels for placement in an overlapping position. The first and second panels are disposed at least in part in a face-contacting arrangement. A pair of locking elements are provided for locking engagement with each other to secure the first and second panels in the overlapping position. The pair of locking elements comprises a male locking element and female locking element. The female locking element is formed in the second panel and the male locking element is connected to the first panel.

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24B
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F1
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26B
51B
25A
15
25B
28A
27A
16
27B
28B
17
F3
F5
29A
30A
18
29B
30B
F4
F6
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65A
63
Rx
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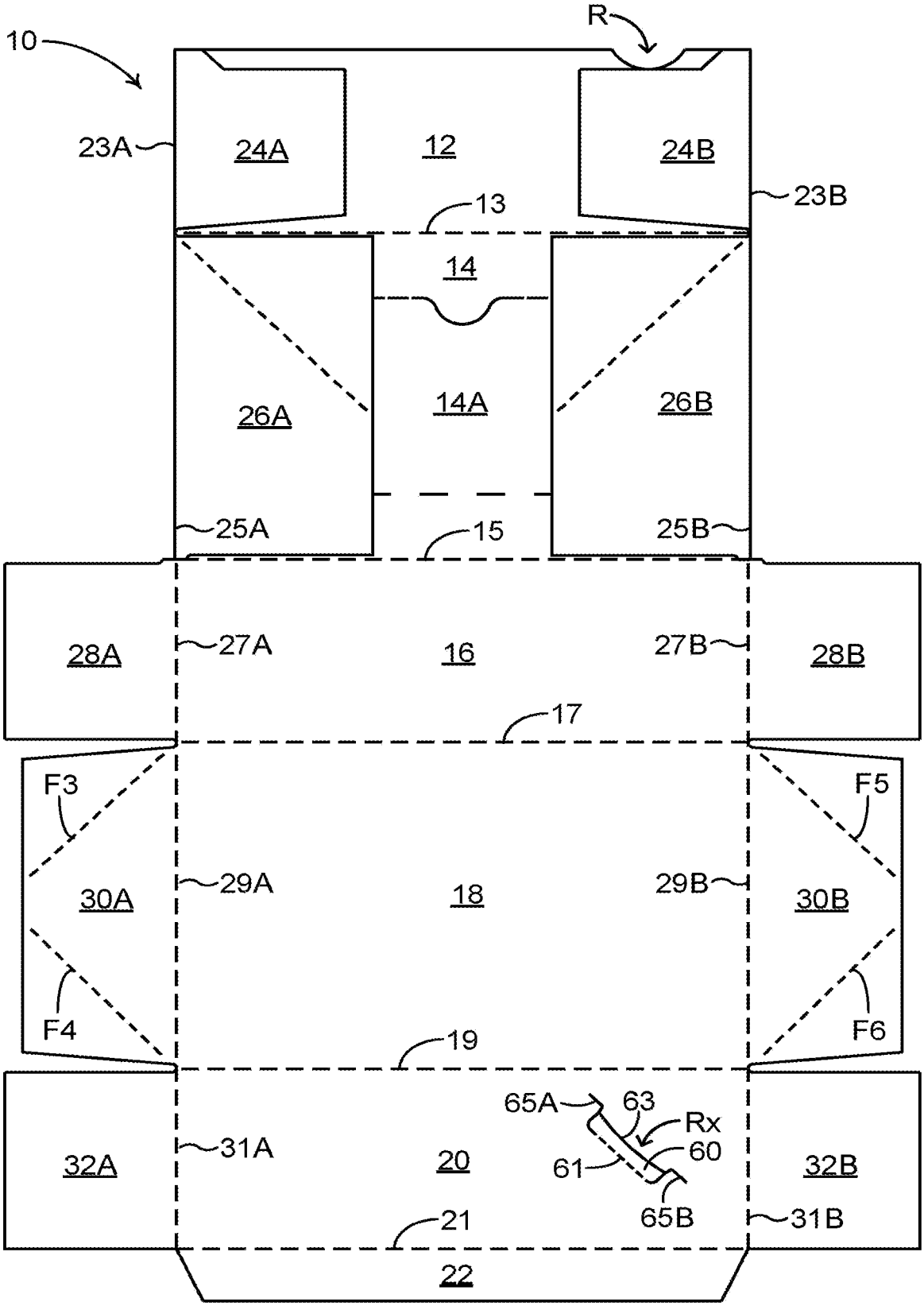
32A
31A
20
61
32B
65B
21
31B
22

FIG. 1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23B
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27B
28B
17
F3
F5
30A
29A
18
29B
30B
F4
F6
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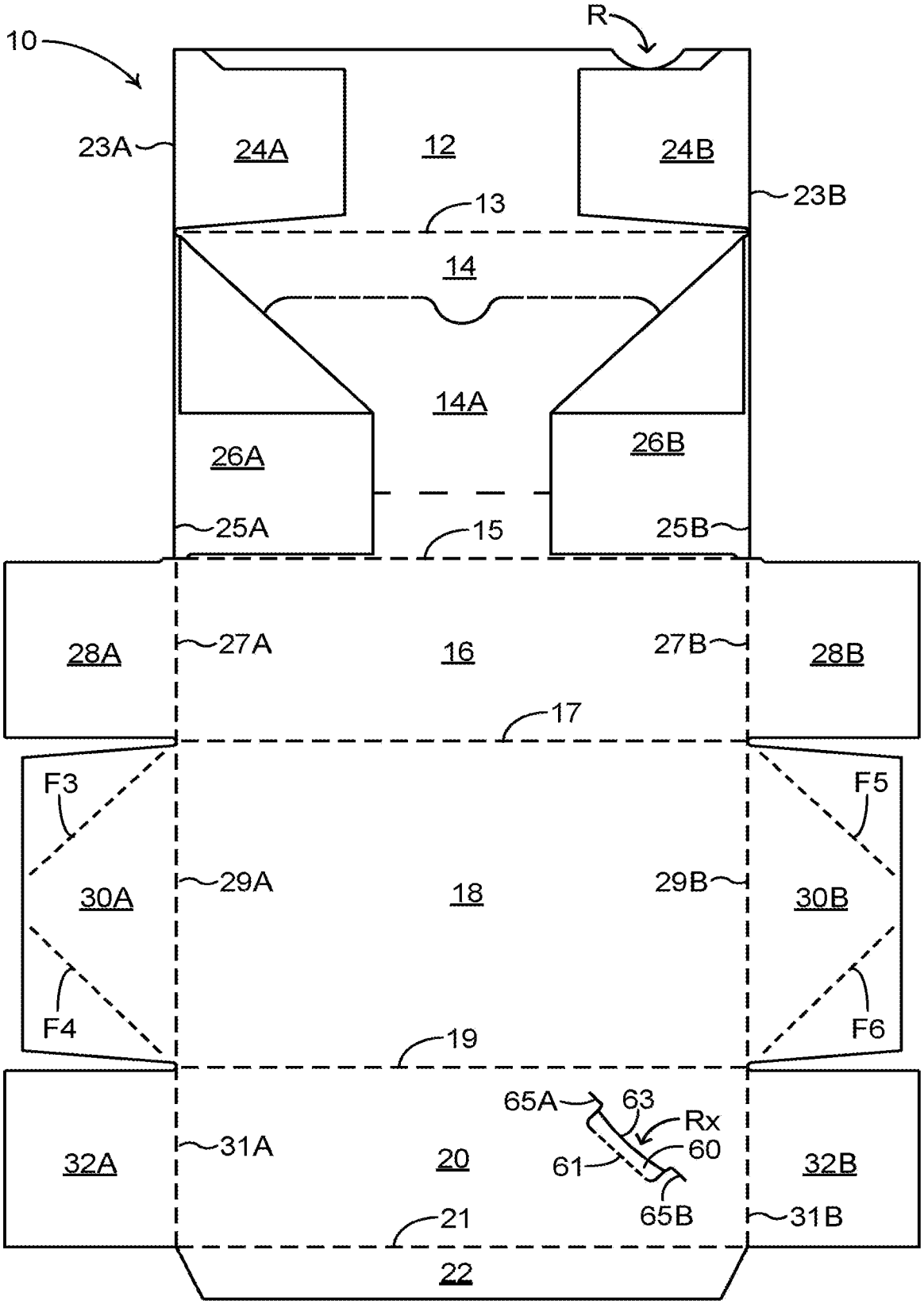
20
32B
31B
21
22

FIG. 1B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24B
23B
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14
14A
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26B
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27B
28B
17
F3
F5
30A
29A
18
29B
30B
F4
F6
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Rx
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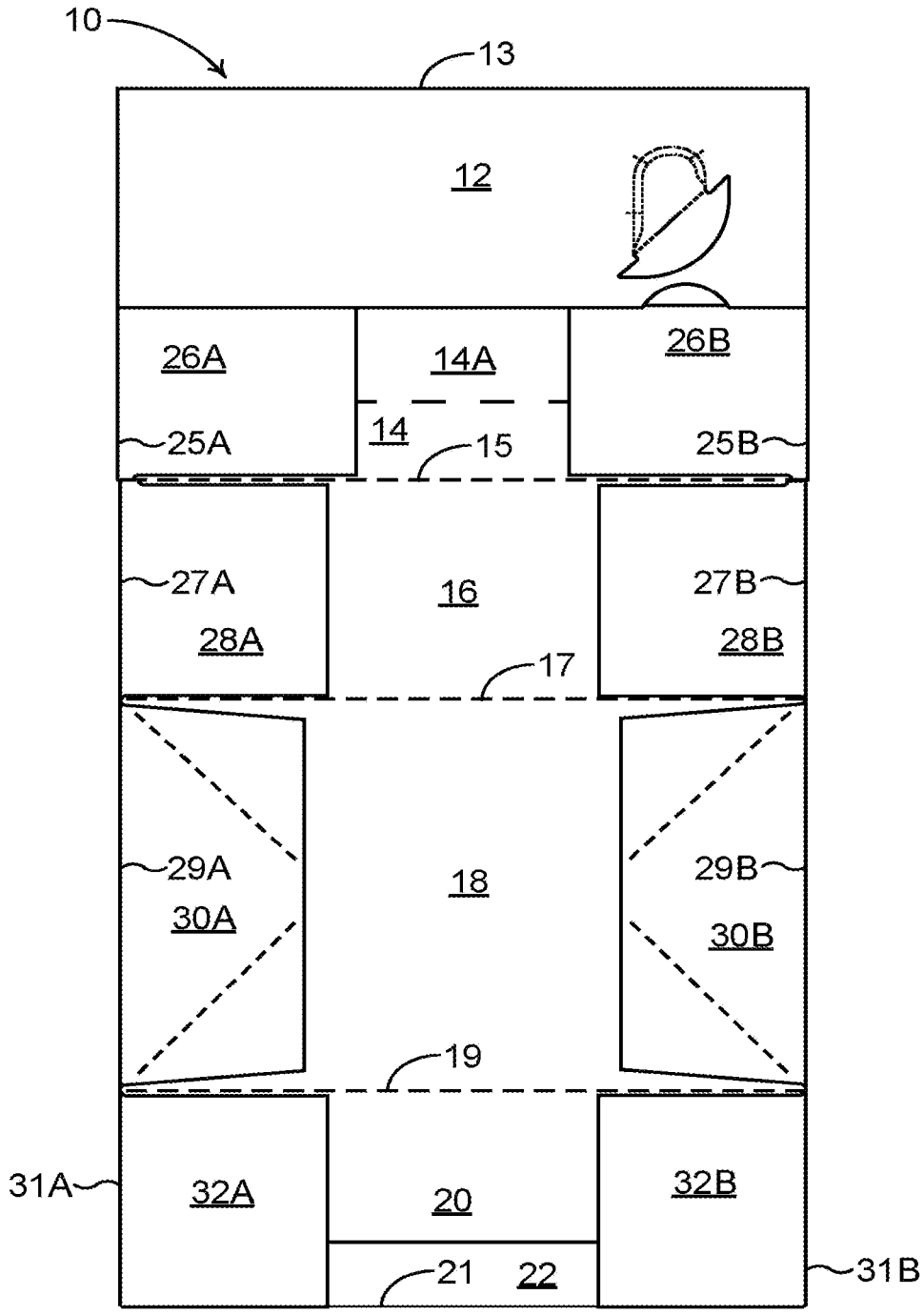
61
65B
32A
31A
20
32B
31B
21
22

FIG. 1C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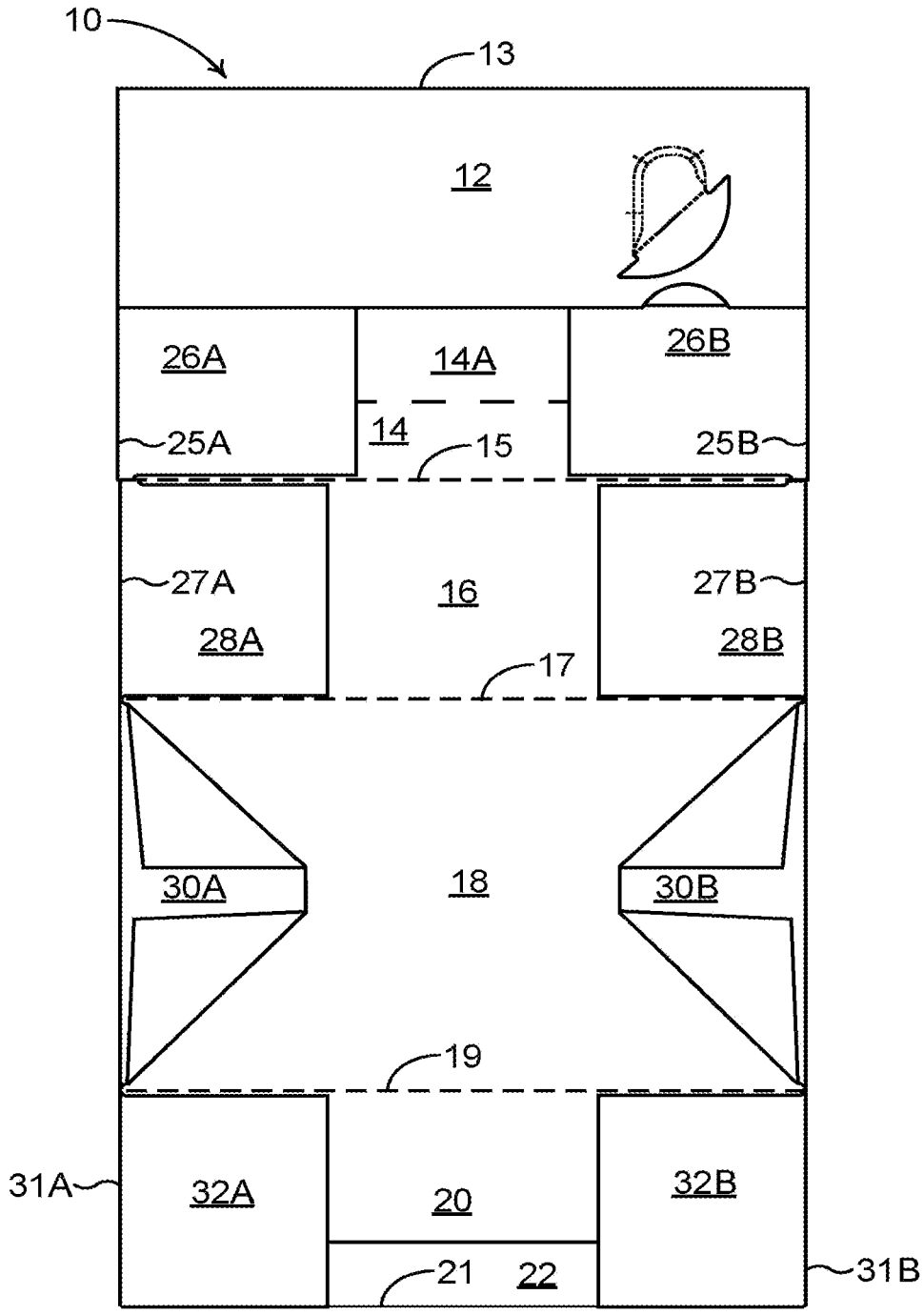
25B
27A
16
27B
28A
28B
17
29A
18
29B
30A
30B
19
31A
32A
20
32B
21
22
31B

FIG. 1D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26A
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26B
14
25A
15
25B
27A
16
27B
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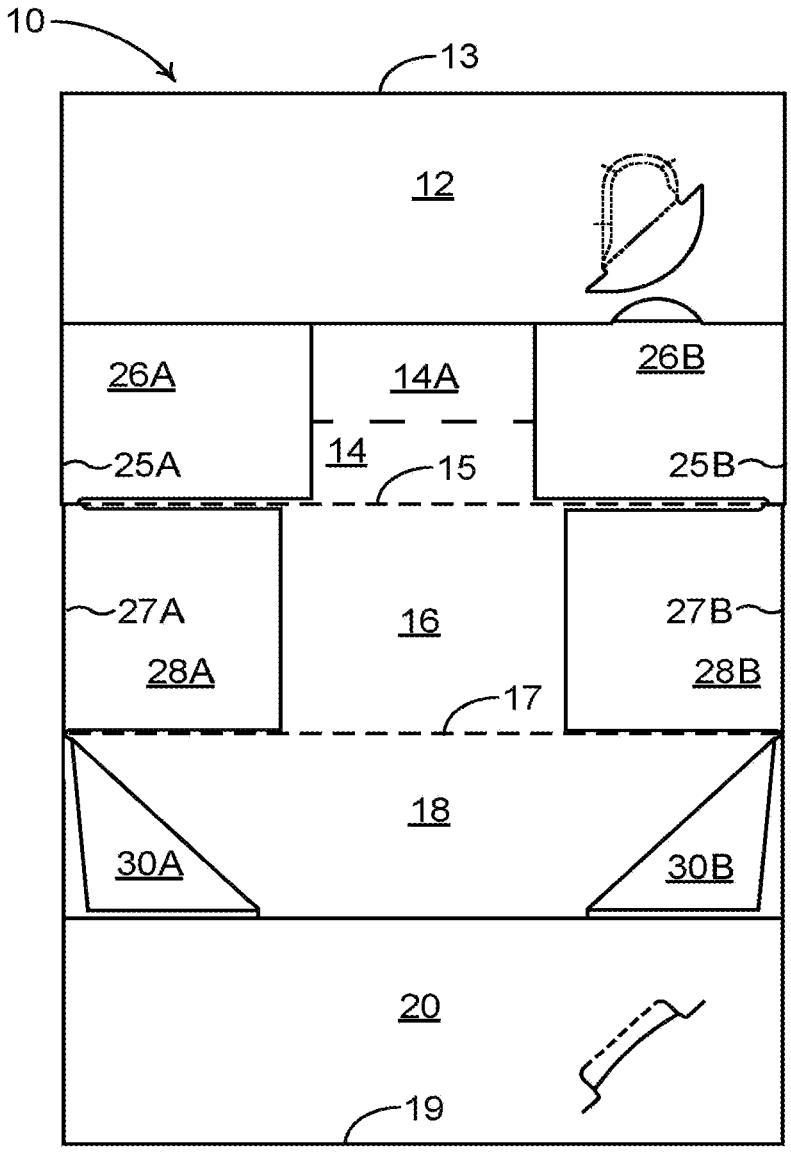
18
30B
19
31A
32A
20
32B
21
22
31B

FIG. 1E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14A
26B
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25A
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25B
27A
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27B
28A
28B
17
18
30A
30B
20
19

FIG. 1F

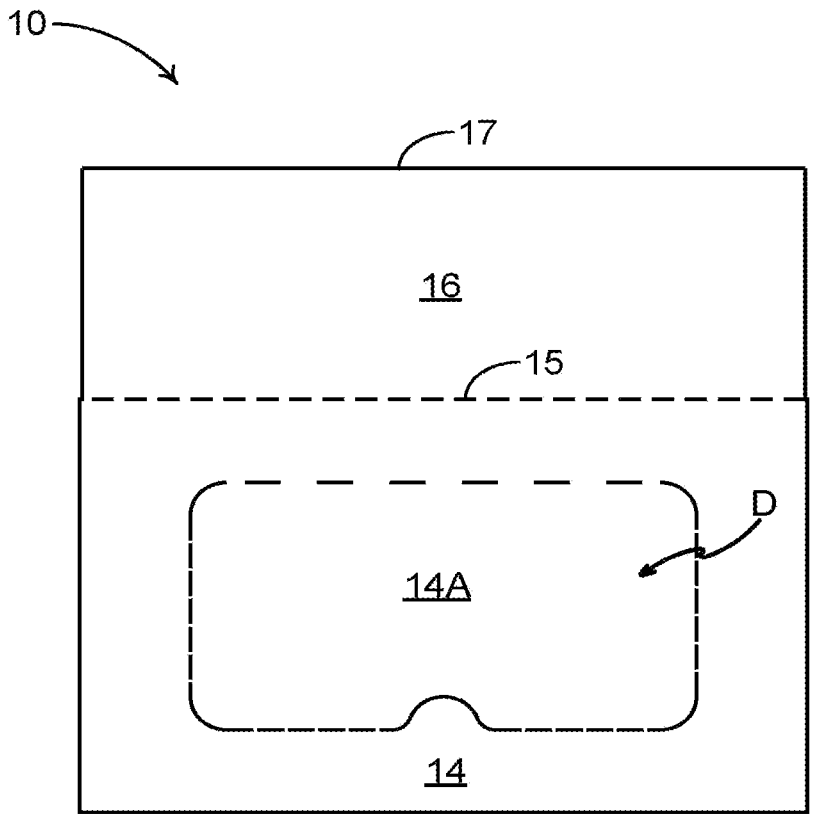
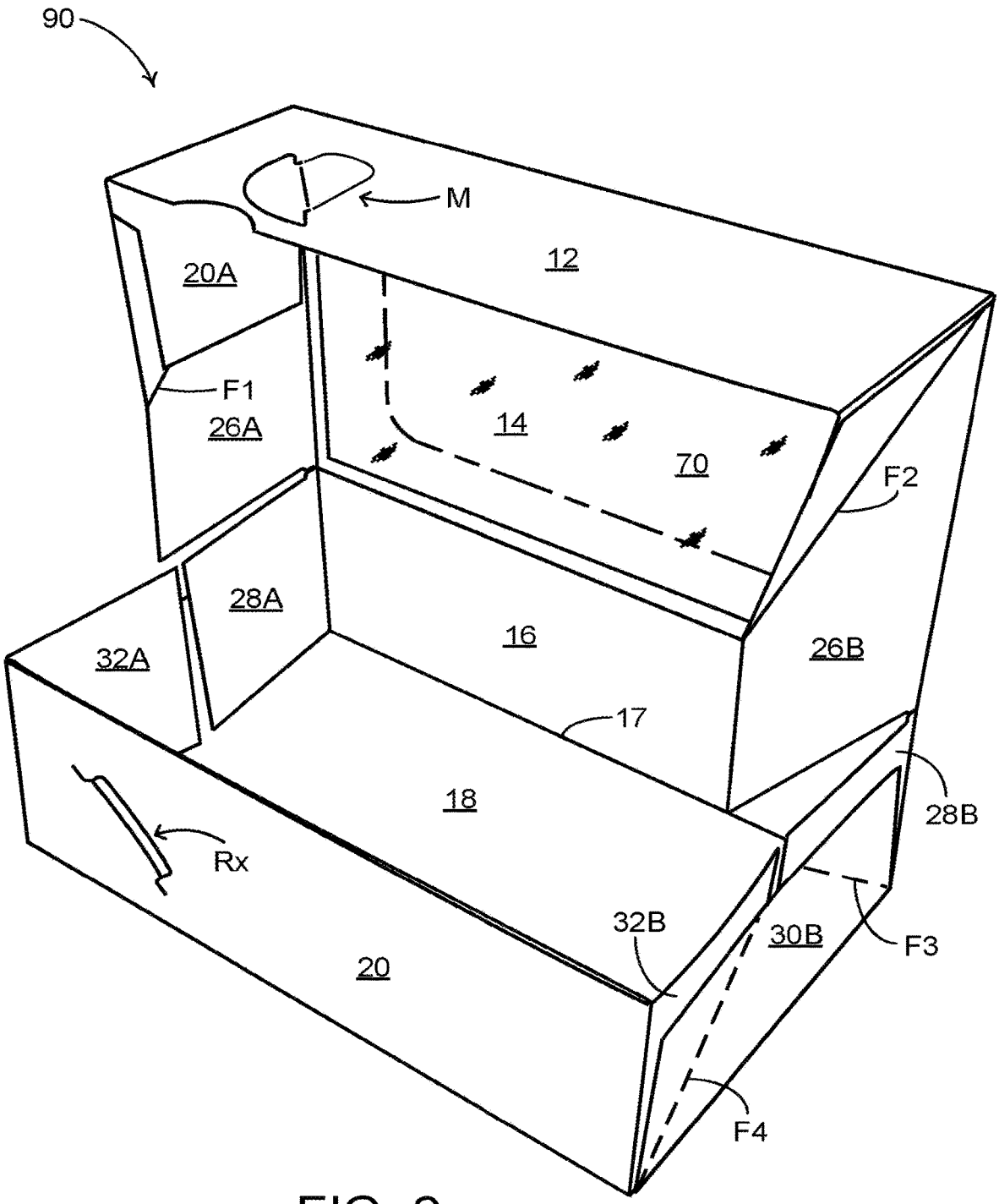


FIG. 1G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M
12
20A
F1
26A
14
70
F2
28A
16
26B
32A
17
18
28B
Rx
32B
30B
F3
20
F4

FIG. 2

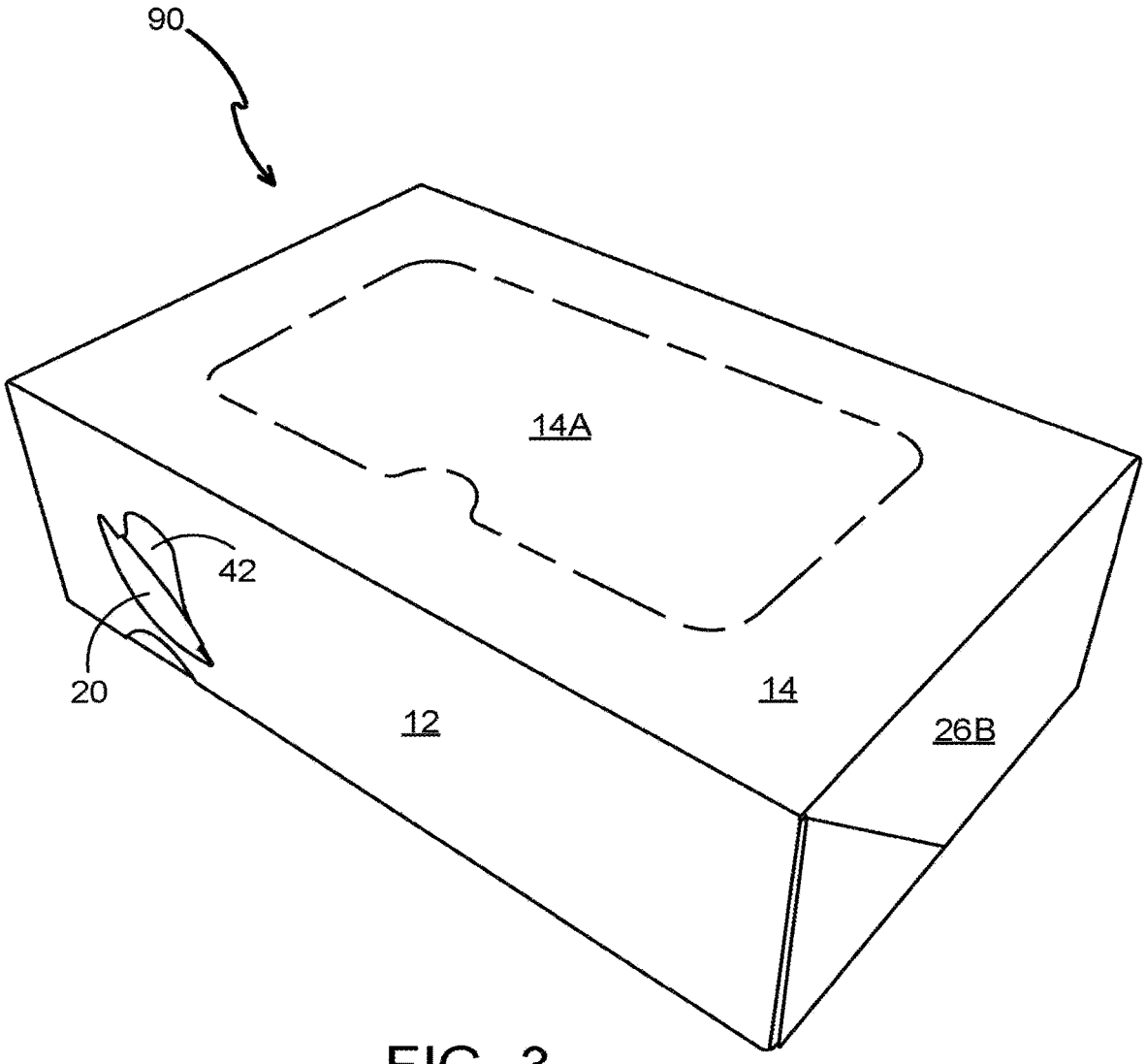


FIG. 3

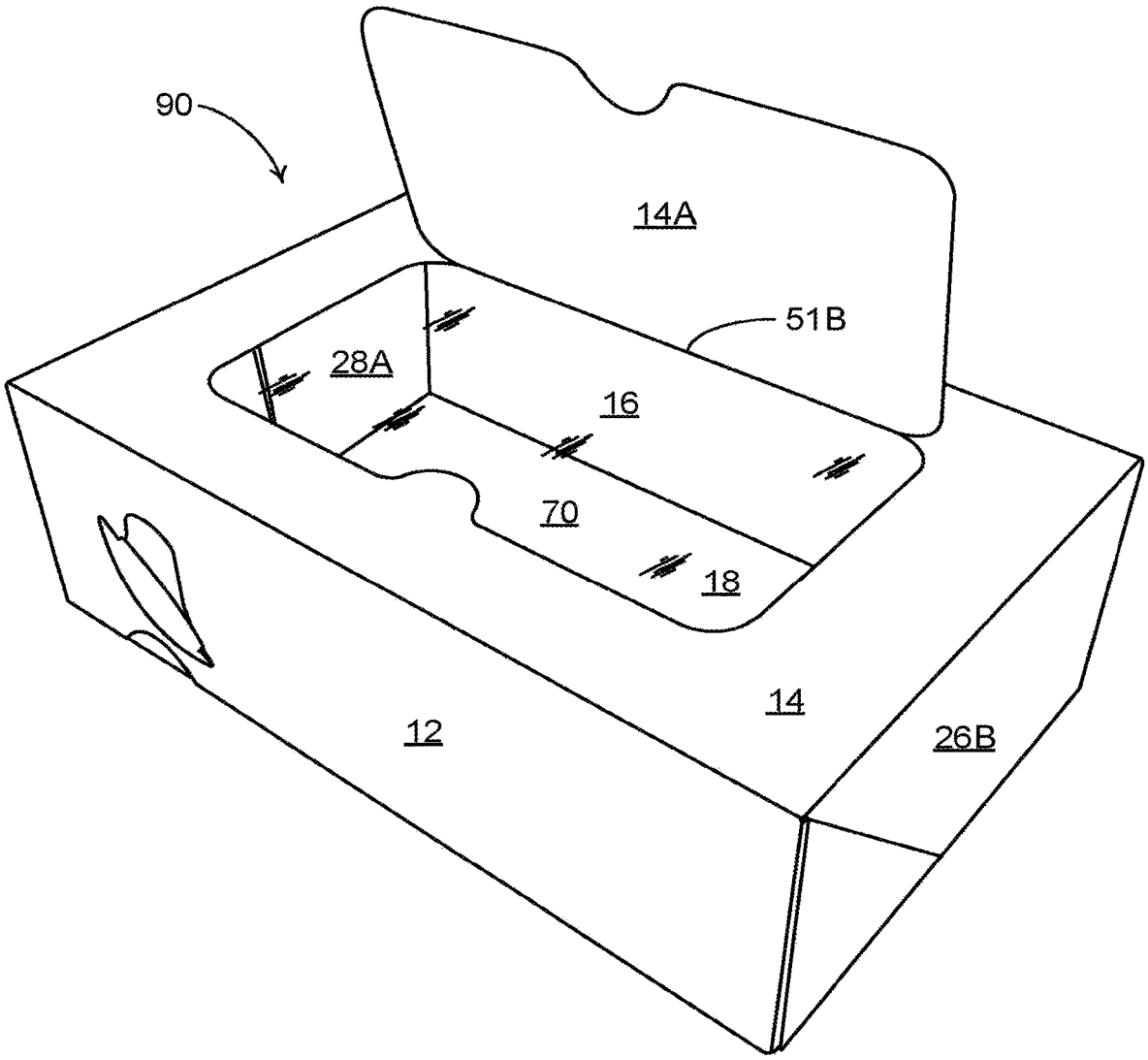


FIG. 4

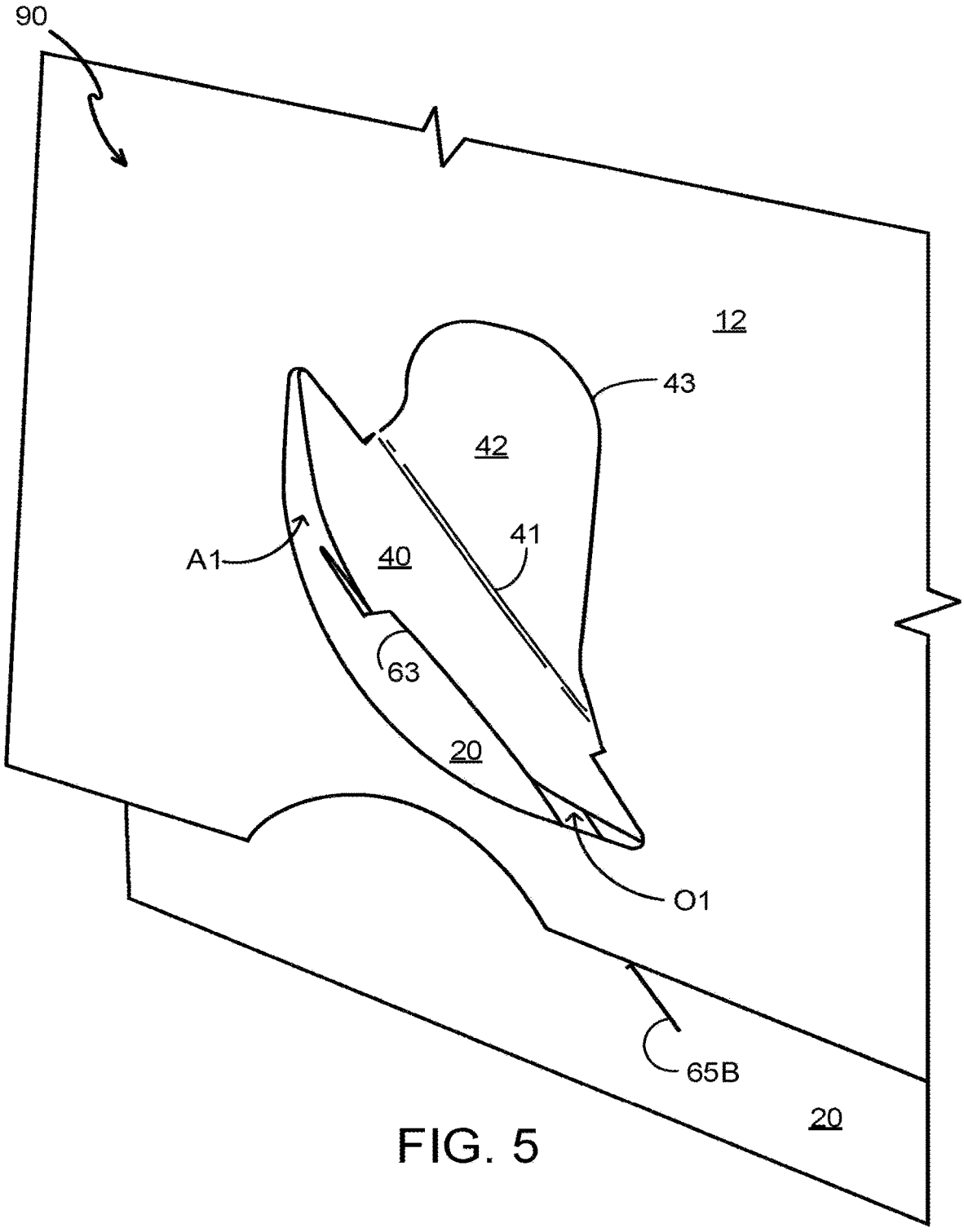


FIG. 5

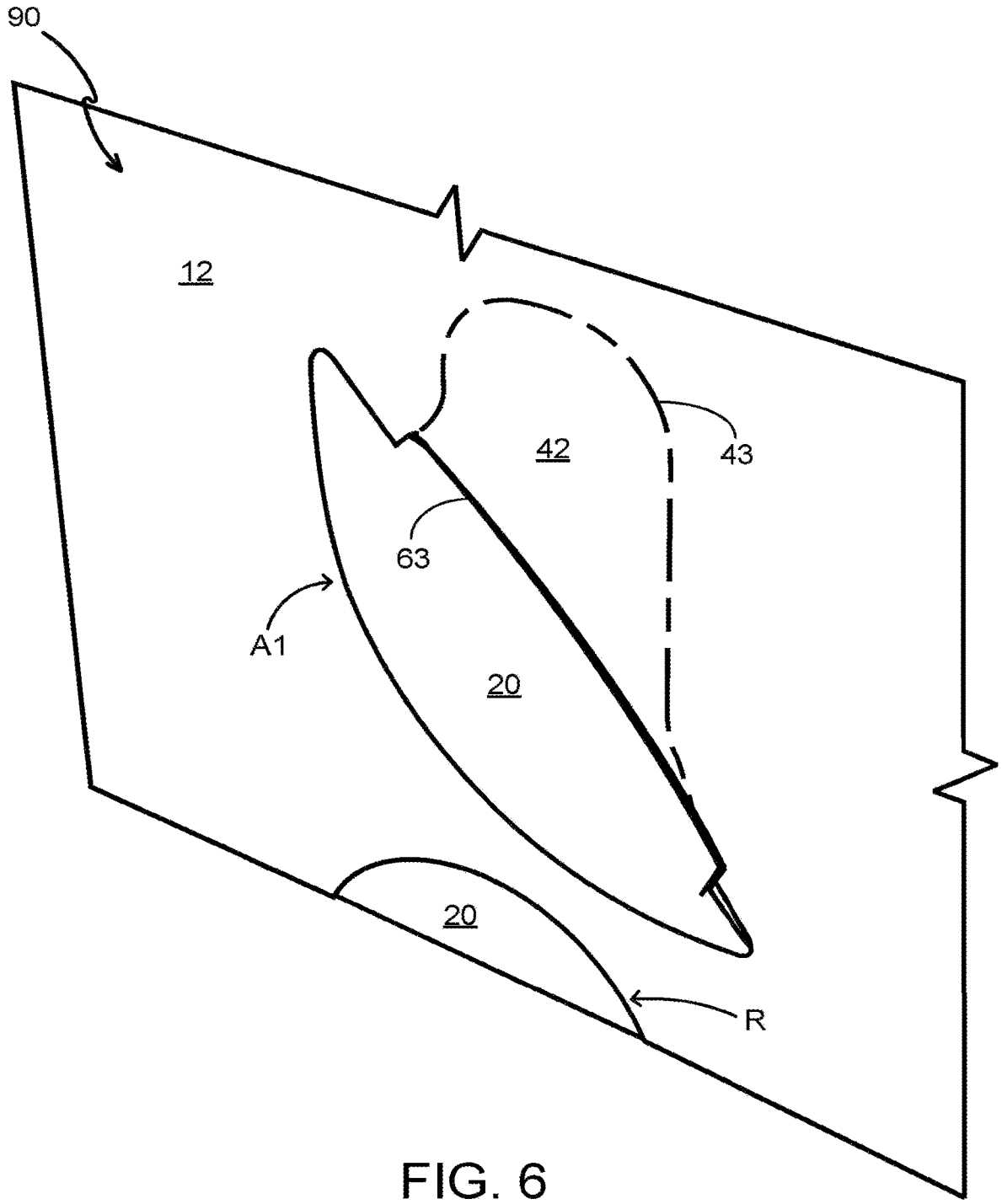


FIG. 6

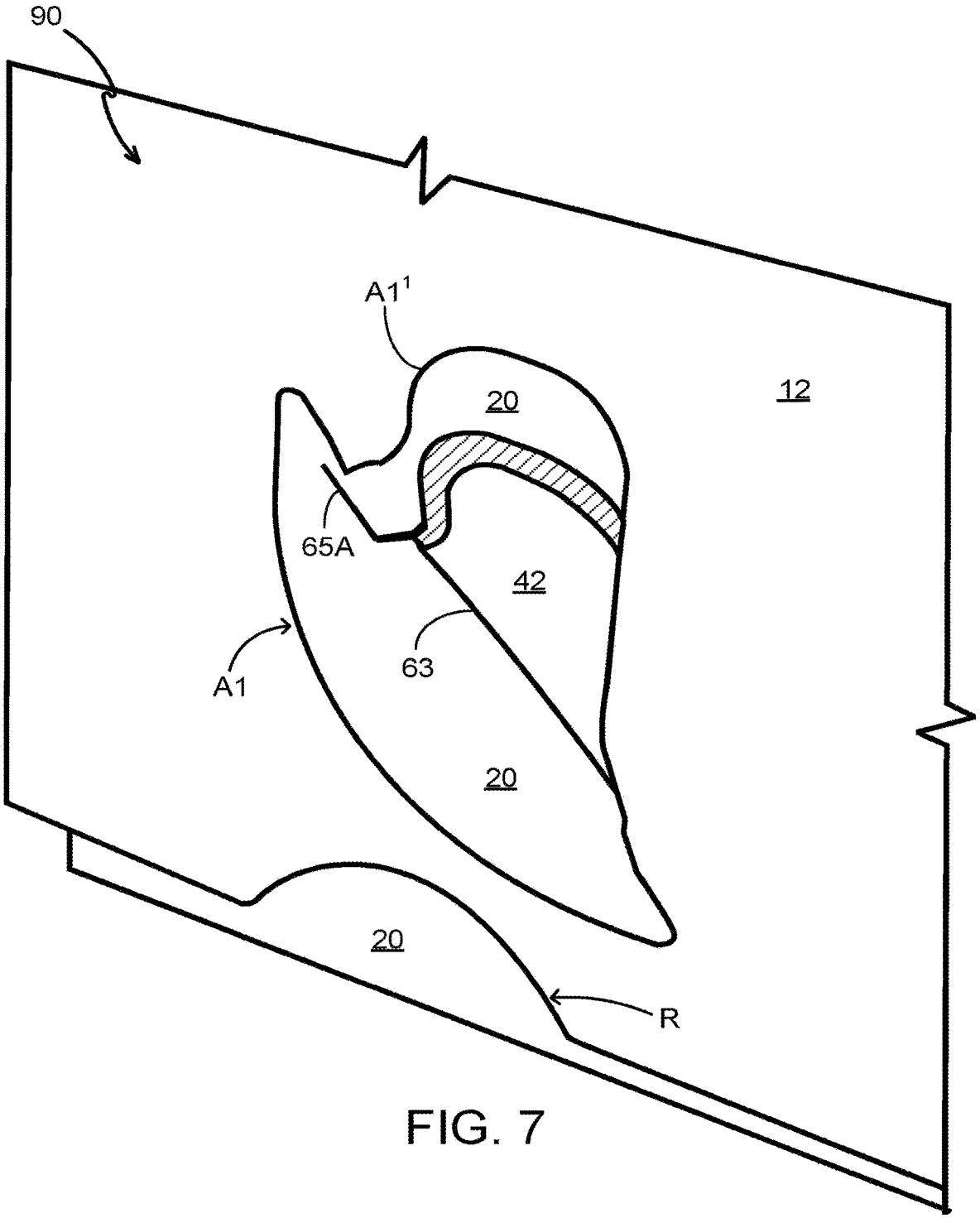


FIG. 7

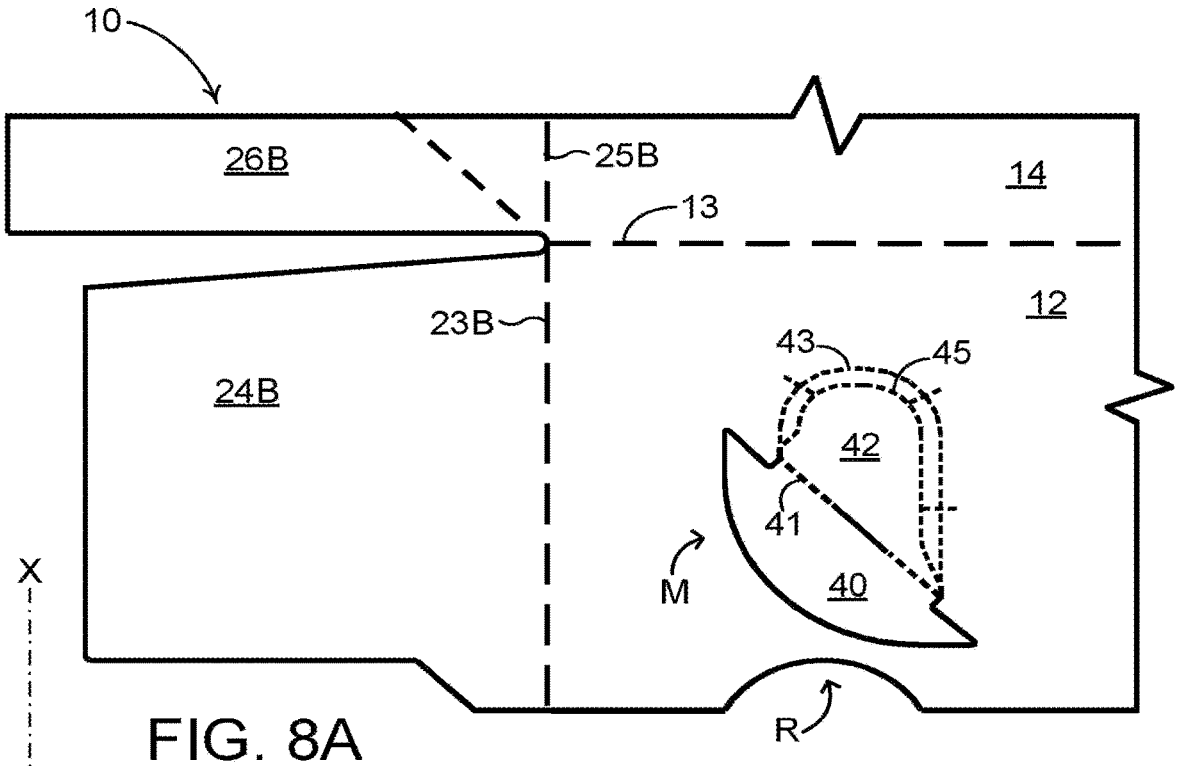
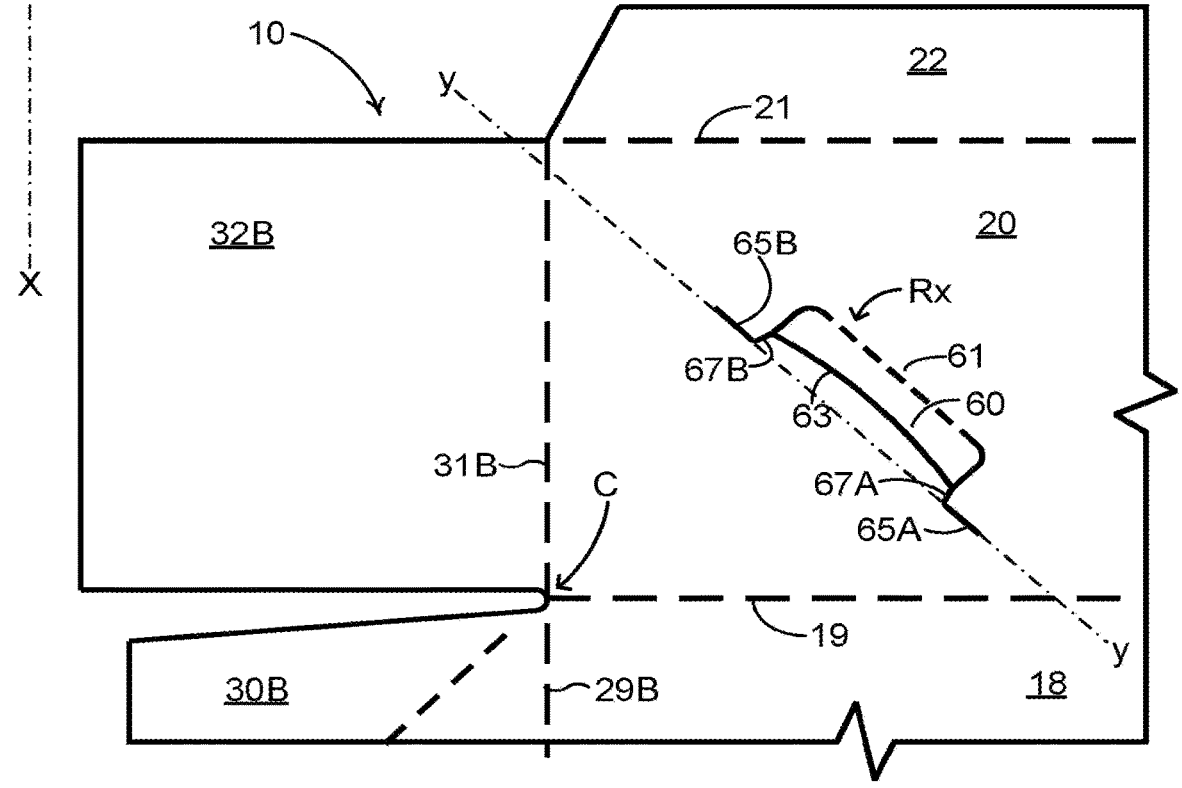

10
26B
25B
14
13
12
23B
24B
43
45
42
41
40
M
R
X

FIG. 8A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y
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32B
20
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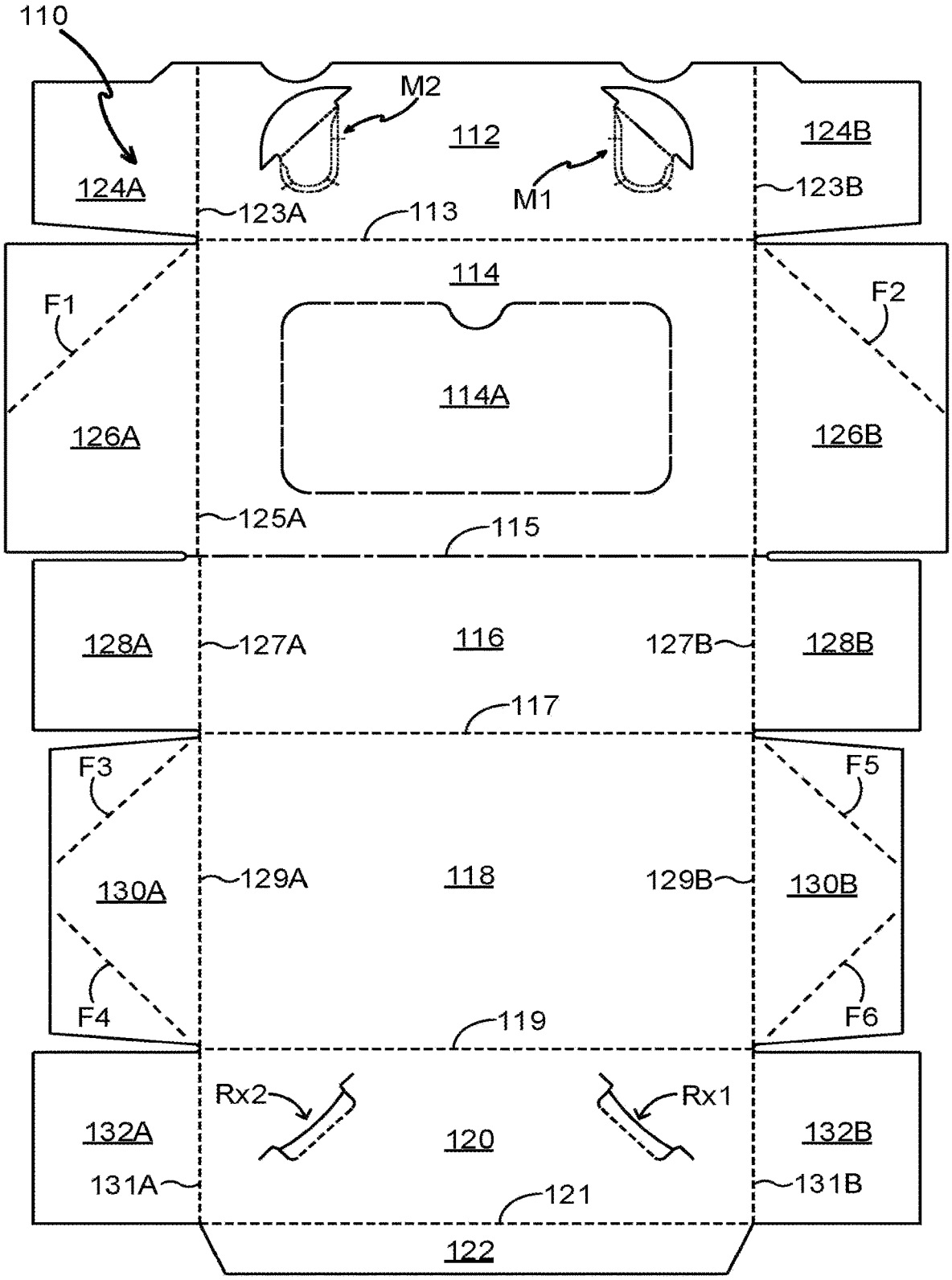
60
31B
C
67A
65A
19
y
30B
29B
18
X

FIG. 8B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M2
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124B
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123B
M1
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F1
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128A
127A
116
127B
128B
117
F3
F5
130A
129A
118
129B
130B
F4
F6
119
Rx2
Rx1
132A
120
132B
131A
131B
121
122

FIG. 9

PANEL INTERLOCKING ARRANGEMENT, CARTON AND CARTON BLANK

TECHNICAL FIELD

[0001] Aspects of the present invention relate to a panel interlocking arrangement, a carton and a blank for forming the same more specifically, but not exclusively, to a carton comprising a tamper evident lock for securing a pair of panels together.

BACKGROUND

[0002] In the field of packaging it is often required to provide consumers with a package comprising multiple primary product containers. Such multi-packs are desirable for shipping and distribution purposes and for the display of promotional information. For cost and environmental considerations, such cartons or carriers need to be formed from as little material as possible and cause as little wastage as possible in the materials from which they are formed. Another consideration is the strength of the packaging and its suitability for holding and transporting large weights of articles.

[0003] It is desirable to provide a carton comprising a lock to secure at least two panels together, it is beneficial if the lock indicates that the package has been accessed since being locked.

[0004] The present invention seeks to overcome or at least mitigate the problems of the prior art.

SUMMARY

[0005] According to a first aspect of the present disclosure there is provided a panel interlocking arrangement comprising first and second panels for placement in an overlapping position. The first and second panels are disposed, at least in part, in a face-contacting arrangement. The panel interlocking arrangement comprises a pair of locking elements for locking engagement with each other to secure the first and second panels in the overlapping position. The pair of locking elements comprises a male locking element and female locking element. The female locking element is formed in the second panel. The male locking element is connected to the first panel. The female locking element includes a cut formed in the second panel. The second panel comprises a corner defined by first and second peripheral edges of the second panel. The first peripheral edge is hingedly connected, at least in part, to a third panel. The second peripheral edge is hingedly connected, at least in part, to a fourth panel. The second panel further comprises first and second portions on the opposite sides of the cut. The first portion extends between the cut and the corner such that the first portion is brought into contact at an inside surface thereof with at least part of the male locking element when the male and female locking elements are in the locking engagement. The cut comprises first and second angled segments. The first segment is disposed obliquely with respect to each of the first and second peripheral edges. The second segment extends from the first segment away from the corner.

[0006] Optionally, the female locking element further includes an opening formed in the second portion of the second panel, the opening being defined in part by part of the cut.

[0007] Optionally, the opening is defined in part by the second segment of the cut.

[0008] Optionally, the female locking element further includes a retaining tab hingedly connected to the second portion of the second panel along a fold line. The opening is defined in the second portion when the retaining tab is folded about the fold line out of a plane of the second panel.

[0009] According to a second aspect of the present disclosure there is provided a blank for forming a carton. The blank comprises a plurality of primary panels connected together to define an interior of the carton for receiving at least one article. The plurality of primary panels includes an inner front panel, a bottom panel hingedly connected to the inner front panel along a first fold line, a rear panel hingedly connected to the bottom panel along a second fold line, a top panel hingedly connected to the rear panel along a third fold line, and an outer front panel hingedly connected to the top panel along a fourth fold line. The inner and outer front panels are arranged for placement in an overlapping position when the blank is erected into a carton. The inner and outer front panels are disposed, at least in part, in a face-contacting arrangement. The blank further comprises a male locking element and a female locking element for locking engagement with each other to secure the inner and outer front panels in the overlapping position. The female locking element is formed in the inner front panel. The male locking element is connected to the outer front panel. The female locking element includes a cut formed in the inner front panel. The inner front panel comprises a corner defined by first and second peripheral edges of the inner front panel. The first peripheral edge is hingedly connected, at least in part, to the bottom panel by the first fold line. The second peripheral edge is hingedly connected, at least in part, to an end flap. The inner front panel further comprises first and second portions on the opposite sides of the cut. The first portion extends between the cut and the corner such that the first portion is brought into contact at an inside surface thereof with at least part of the male locking element when the male and female locking elements are in the locking engagement. The cut comprises first and second angled segments. The first segment is disposed obliquely with respect to each of the first and second peripheral edges. The second segment extends from the first segment away from the corner.

[0010] According to a third aspect of the present disclosure there is provided a panel interlocking arrangement comprising first and second panels for placement in an overlapping position. The first and second panels are disposed, at least in part, in a face-contacting arrangement. Male and female locking elements are provided for locking engagement with each other to secure the first and second panels in the overlapping position. The female locking element is formed in the second panel. The male locking element is connected to the first panel. The first panel is hingedly connected to a third panel along a first fold line. The first and second panels are hingedly connected together indirectly through at least the third panel for generally linear movement toward and relative to each other along a notional line into the overlapping position. The notional line is parallel to at least one of the first and second panels and is generally perpendicular to the first fold line. The male locking element comprises a locking tab hingedly connected to the first panel along a second fold line such that the male and female locking elements are engageable into the locking

engagement through the generally linear movement of at least one of the first and second panels. The second fold line is disposed obliquely with respect to the notional line.

[0011] Optionally, the at least the third panel comprises two or more panels hingedly connected together in series.

[0012] According to a fourth aspect of the present disclosure there is provided a blank for forming a carton. The blank comprises a plurality of primary panels connected together to define an interior of the carton for receiving at least one article. The plurality of primary panels includes an inner front panel, a bottom panel hingedly connected to the inner front panel along a first fold line, a rear panel hingedly connected to the bottom panel along a second fold line, a top panel hingedly connected to the rear panel along a third fold line, and an outer front panel hingedly connected to the top panel along a fourth fold line. The inner and outer front panels are arranged for placement into an overlapping position when the blank is erected into a carton wherein the inner and outer front panels are disposed, at least in part, in a face-contacting arrangement to form a single front wall in the carton. The blank further comprises male and female locking elements for locking engagement with each other so as to secure the inner and outer front panels in the overlapping position. The female locking element is formed in the inner front panel. The male locking element comprises a locking tab hingedly connected to the outer front panel along a fifth fold line. The first, second, third, and fourth fold lines are parallel to one another such that the inner and outer front panels are movable relative to each other along a notional line into the overlapping position. The notional line is parallel to at least one of the inner and outer front panels and is generally perpendicular to the fourth fold line. The fifth fold line is disposed obliquely with respect to the fourth fold line such that the male and female locking elements are engageable into the locking engagement through linear sliding movement of at least one of the inner and outer front panels along the notional line toward and relative to the other.

[0013] According to a fifth aspect of the present disclosure there is provided a panel interlocking device for securing a pair of panels together. The panel interlocking device comprises a first part provided by one of the pair of panels and a second part provided by the other one of the pair of panels. The first part comprises a male tab struck from within the one of the pair of panels. The male tab comprises a head section hingedly connected to a body section by a hinged connection. The body section is detachably connected to the one of the pair of panels and struck therefrom or defined therein. The body section is defined by at least one severance line. The severance line extends between a first end of the hinged connection and a second end of the hinged connection. The head section defines a first aperture in the one of the pair of panels. The second part comprises a cutaway struck from the other one of the pair of panels to form a receiver. The cutaway defines a second aperture which receives the head section. The second aperture provides a pair of opposing edges of the other one of the pair of panels. In a locked condition one of the pair of opposing edges is disposed on a first side of the one of the pair of panels and a portion of the other one of the pair of opposing edges is disposed on a second side of the one of the pair of panels. A portion of the other one of the pair of panels at least partially occludes the first aperture in the one of the pair of panels. The cutaway may be shaped such that the other one of the pair of opposing edges overlaps with the hinged connection between the head section and body section.

[0014] Optionally, the cutaway is shaped such that the one of the pair of opposing edges is spaced apart from the hinged connection between the head section and body section.

[0015] Optionally, the severance line comprises a pair of severance lines.

[0016] Optionally, the pair of severance lines comprises a first partial depth severance line provided in a first face of the one of the pair of panels and a second partial depth severance line provided in a second, reverse, face of the one of the pair of panels.

[0017] Optionally, the second partial depth severance line is generally similar in shape to the first partial depth severance line and spaced part therefrom.

[0018] Optionally, the second partial depth severance line is generally parallel to the first partial depth severance line.

[0019] Optionally, the second partial depth severance line and the first partial depth severance line converge with each other at each end thereof.

[0020] Optionally, the cutaway comprises one of the features selected from the following group: a cut line, severance line, and opening.

[0021] Optionally, the cutaway comprises an opening defined at least in part by a tab foldably connected to the other one of the pair of panels.

[0022] Optionally, the cutaway comprises a cutline and an opening adjacent to the cutline, the opening being provided on a leading edge or side of the receiver.

[0023] Optionally, a cut line defines the receiver and comprises an intermediate portion and end portions, the end portions being offset with respect to the intermediate portion.

[0024] Optionally, terminal ends of the end portions define a notional line obliquely oriented with respect to a pair of adjacently disposed brace panels hingedly connected to the other one of the pair of panels.

[0025] According to a sixth aspect of the present disclosure there is provided a carton of a clam shell arrangement comprising, a tray and a lid hingedly connected to the tray. The carton comprises the panel interlocking arrangement as described in the foregoing aspects, in which the first part is provided by a panel forming one of the tray and lid and the second part is provided by a panel forming the other one of the tray and lid. The first and second parts are brought into engagement when the lid or cover is closed.

[0026] Optionally, the lid is closed by pivoting the lid about a hinged connection between the tray and the lid.

[0027] Optionally, the fold line between the head section and the body section is obliquely oriented with respect to the hinged connection between the tray and the lid.

[0028] According to a seventh aspect of the present disclosure there is provided a carton comprising a plurality of panels hinged one to the next in a linear series by a respective fold line. The carton comprises the panel interlocking arrangement as described in the foregoing aspects, the first part being provided by a first one of the pair of panels, and the second part being provided by a second one of the pair of panels. The first one of the pair of panels is disposed in overlapping relationship second one of the pair of panels to form a composite panel.

[0029] Within the scope of this application it is envisaged or intended that the various aspects, embodiments, examples, features and alternatives set out in the preceding

paragraphs, in the claims and/or in the following description and drawings may be considered or taken independently or in any combination thereof.

[0030] Features or elements described in connection with, or relation to, one embodiment are applicable to all embodiments unless there is an incompatibility of features. One or more features or elements from one embodiment may be incorporated into, or combined with, any of the other embodiments disclosed herein, said features or elements extracted from said one embodiment may be included in addition to, or in replacement of one or more features or elements of said other embodiment.

[0031] A feature, or combination of features, of an embodiment disclosed herein may be extracted in isolation from other features of that embodiment. Alternatively, a feature, or combination of features, of an embodiment may be omitted from that embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] Exemplary embodiments of the invention will now be described with reference to the accompanying drawings, in which:

[0033] FIG. **1** is a plan view from above of a blank for forming a carton according to an embodiment of the invention;

[0034] FIGS. **1**B to **1**G illustrate stages of construction of a carton from the blank of FIG. **1**;

[0035] FIG. **2** is a perspective view from above of a carton formed from the blank of FIG. **1** showing the carton in an open condition;

[0036] FIG. **3** is a perspective view from above of a carton formed from the blank of FIG. **1** showing the carton in a closed condition;

[0037] FIG. **4** is a perspective view from above of a carton formed from the blank of FIG. **1** showing an access feature an open condition;

[0038] FIG. **5** is a perspective view of a portion of the carton of FIG. **2** showing a locking feature being brought into engagement;

[0039] FIG. **6** is a perspective view of a portion of the carton of FIG. **2** showing a locking feature in a locked condition;

[0040] FIG. **7** is a perspective view of a portion of the carton of FIG. **2** showing a locking feature in a locked condition in a disengaged or severed condition;

[0041] FIGS. **8**A to **8**B illustrate enlarged views of portions of the blank of FIG. **1**; and

[0042] FIG. **9** is a plan view from above of a blank for forming a carton according to a further embodiment of the invention.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0043] Detailed descriptions of specific embodiments of the panel interlocking arrangements, packages, blanks and cartons are disclosed herein. It will be understood that the disclosed embodiments are merely examples of the way in which certain aspects of the invention can be implemented and do not represent an exhaustive list of all of the ways the invention may be embodied. Indeed, it will be understood that the panel interlocking arrangements, packages, blanks and cartons described herein may be embodied in various and alternative forms. The Figures are not necessarily to scale and some features may be exaggerated or minimised to show details of particular components. Well-known components, materials or methods are not necessarily described in great detail in order to avoid obscuring the present disclosure. Any specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the invention.

[0044] Referring to FIGS. **1** and **2** there is shown a blank **10** for forming a carton **90** capable of accepting an input of primary products such as, but not limited to a food or beverage product.

[0045] The blank **10** comprises a plurality of main panels **12**, **14**, **16**, **18**, **20** hinged one to the next in a linear series. The blank **10** forms a carton of a clamshell configuration, that is to say it comprises a base or tray having a lid or cover hingedly connected thereto. The base and cover each having upstanding walls. The base comprises upstanding walls surrounding a base panel **18**. The cover may comprise upstanding walls at least partially surrounding a top panel **14**.

[0046] The plurality of main panels **12**, **14**, **16**, **18**, **20** comprises a cover or outer side wall panel **12** hinged to the top panel **14** by a hinged connection in the form of a fold line **13**. A first base side wall panel **16** is hinged to the top panel **14** by a hinged connection such as a fold line **15**. The base panel **18** is hinged to the first base side wall panel **16** by a hinged connection in the form of a fold line **17**. A second base or inner side wall panel **20** is hinged to the base panel **18** by a hinged connection such as a fold line **19**.

[0047] A flap **22** may be hinged connected to second base or inner side wall panel **20** by a hinged connection in the form of a fold line **21**.

[0048] The plurality of main panels **12**, **14**, **16**, **18**, **20** of the blank **10** form walls of a tubular structure in a set-up condition. The tubular structure is at least partially closed by end closure structures. The tubular structure has a tubular axis defining a longitudinal direction.

[0049] The tray comprises end closure panels **28**A, **30**A, **32**A, **28**B, **30**B, **32**B forming end walls of the tray.

[0050] End closure panels **28**A, **30**A, **32**A are configured to close a first end of the cover and end closure panels **28**B, **30**B, **32**B are configured to close a second end of the cover.

[0051] The cover comprises end closure panels **24**A, **26**A, **24**B, **26**B forming end walls of the cover.

[0052] End closure panels **24**A, **26**A are configured to close a first end of the cover and end closure panels **24**B, **26**B are configured to close a second end of the cover.

[0053] A first cover end closure panel **24**A is hinged to a first end of the cover side wall panel **12** by a hinged connection such as a fold line **23**A. A second cover end closure panel **24**A is hinged to a first end of the top panel **14** by a hinged connection such as a fold line **25**A.

[0054] A third cover end closure panel **24**B is hinged to a second end of the cover side wall panel **12** by a hinged connection such as a fold line **23**B. A fourth cover end closure panel **24**B is hinged to a second end of the top panel **14** by a hinged connection such as a fold line **25**B.

[0055] A first base end closure panel **28**A is hinged to a first end of the first base side wall panel **16** by a hinged connection such as a fold line **27**A. A second base end closure panel **30**A is hinged to a first end of the base panel **18** by a hinged connection such as a fold line **29**A. A third

base end closure panel **32**A is hinged to a first end of the second base side wall panel **20** by a hinged connection such as a fold line **31**A.

[0056] A fourth base end closure panel **28**B is hinged to a second end of the first base side wall panel **16** by a hinged connection such as a fold line **27**B. A fifth base end closure panel **30**B is hinged to a second end of the base panel **18** by a hinged connection such as a fold line **29**B. A sixth base end closure panel **32**B is hinged to a second end of the second base side wall panel **20** by a hinged connection such as a fold line **31**B.

[0057] The second cover end closure panel **26**A and fourth cover end closure panel **26**B each comprise a fold line F**1**, F**2** respectively, the fold lines F**1**, F**2** are configured to allow the cover to fold into a flat collapsed form. The fold lines F**1**, F**2** extend from a corner of the respective one of the second and fourth cover end closure panels **26**A, **26**B adjacent to the fold line **25**A, **25**B hinging said one of the second and fourth cover end closure panels **26**A, **26**B to the top panel **14**. The fold lines F**1**, F**2** extend obliquely with respect to the fold line **25**A, **25**B hinging said one of the second and fourth cover end closure panels **26**A, **26**B to the top panel **14**.

[0058] The second base end closure panel **30**A and fifth base end closure panel **30**B each comprise a pair of fold lines F**3**, F**4**, F**5**, F**6** configured to allow the base to fold into a flat collapsed form.

[0059] Each of the fold lines F**3**, F**4** extends from a respective corner of the second base end closure panel **30**A adjacent to the fold line **25**A hinging the second base end closure panel **30**A to the base panel **18**. The fold lines F**3**, F**4** extend obliquely with respect to the fold line **25**A hinging the second base end closure panel **30**A to the base panel **18**.

[0060] Each of the fold lines F**5**, F**6** extends from a respective corner of the fifth base end closure panel **30**B adjacent to the fold line **25**B hinging the fifth base end closure panel **308** to the base panel **18**. The fold lines F**5**, F**6** extend obliquely with respect to the fold line **25**B hinging the fifth base end closure panel **30**B to the base panel **18**.

[0061] Optionally, the blank **10** comprises an access feature D for facilitating inspection or access to the contents of the carton **90**. The access feature D comprises an access flap **14**A struck from at least the top panel **14**. In the illustrated embodiment the access flap **14**A is defined within the top panel **14**. The access flap **14**A is defined by a severance line **51**. Optionally, a portion **51**B of the severance line **51** may serve as a hinged connection between the access flap **14**A and the top panel **14**.

[0062] When severed along at least a first portion **51**A of the severance line **51** the access flap **14**A may be displaced out of the plane of the top panel **14** to form an opening in the top panel **14**.

[0063] In some embodiments a film or sheet **70** may be applied to an inner surface of the top panel **14**, as shown in FIG. **2**. The film or sheet **70** may be transparent so as to form a window to allow inspection of the contents of the carton **90** and simultaneously retain the contents within the carton **90**. The film or sheet **70** may prevent or at least inhibit access to the contents by a user. The film or sheet **70** may be secured for example with glue or other adhesive treatment to a portion of the top panel **14** surrounding the access flap **14**A. The access flap **14**A may unsecured to the sheet **70** or may be secured with a fugitive glue.

[0064] The blank **10** comprises a locking mechanism, the locking mechanism comprises first part M provided by the cover and a second part Rx provided by the base.

[0065] The first part M forms a male locking element generally of the form of an arrow head. The first part M is struck from, or defined within, the cover side wall panel **12**. The second part Rx forms a female locking element or receiver for receiving the first part M.

[0066] The first part M comprises a head section **40** defined by a severance line or cut line. The head section **40** comprises a waist defining, at least in part, a pair of catches or barbs on opposing side thereof.

[0067] The head section **40** is coupled to a main body **42** by a hinged connection in the form of a fold line **41**. The main body **42** is elongate in shape and comprises a longitudinal axis. The fold line **41** is obliquely oriented with respect to the longitudinal axis of the main body **42**. The main body **42** is defined in part by a first partial depth cut **45** on a first side of the sheet material forming the blank **10**. The main body **42** is defined in part by a second partial depth cut **43** on a second opposing or reverse side of the sheet material forming the blank **10**. The second partial depth cut **43** is shaped similarly to the first partial depth cut **45** albeit defining a larger area than the first partial depth cut **45**. The second partial depth cut **43** substantially surrounds the first partial depth cut **45**. The second partial depth cut **43** follows the contour of the first partial depth cut **45** in a spaced apart relationship thereto. Ends of the first partial depth cut **45** converge with ends of the second partial depth cut **43**.

[0068] A first pair of converging ends of the first and second partial depth cuts **45**, **43** converge at a first end of the fold line **41** at the point it meets the cut line defining the head section **40**.

[0069] A second pair of converging ends of the first and second partial depth cuts **45**, **43** converge at a second end of the fold line **41** at the point it meets the cut line defining the head section.

[0070] The main body **42** provides a tear strip or detachable section. The detachable section can be punched or pressed out of the cover side wall panel **12** by a user and is dimensioned so as to be readily engaged by a user's finger or thumb pad. The second partial depth cut **43** being larger than the first partial depth cut **45** and provided upon the reverse surface, which is innermost, an internal face, in normal use of the carton **90** ensures the main body **42** is readily pressed out of the cover side wall panel **12** from the first side or surface of the cover side wall panel **12** which is a external face of the cover side wall panel **12**.

[0071] The first and second partial depth cuts **45**, **43** are substantially "U" shaped, in the illustrated embodiment one leg of the "U" shape cuts is longer than the other.

[0072] The first part M is located in the cover side wall panel **12** proximate to a side edge thereof. In the illustrated embodiment the first part M is located proximate to the fold line **23**B hinging the third cover end closure panel **24**B to the cover side wall panel **12**. The third and fourth cover end closure panels **24**B, **26**B secure the cover side wall panel **12** in a substantially perpendicular relationship to the top panel **14**. The third and fourth cover end closure panels **24**B, **26**B form an end wall which act as a brace between cover side wall panel **12** in and the top panel **14**. In this way the end wall provides rigidity to the cover such that when a user presses upon the main body **42** the cover side wall panel **12**

resists deformation such that the first part M is readily separated from the carton **90**.

[0073] A first catch or barb of the head section **40** is located in closer proximity to a free end edge of the cover side wall panel **12** than a first catch or barb of the head section **40**.

[0074] The second part Rx comprises a outline **63**. The outline **63** extends generally obliquely with respect to the fold line **19** hinging the second base side wall panel **20** to the base panel **18**.

[0075] The cutline **63** extends generally obliquely with respect to the fold line **31**B hinging the sixth base end closure panel **32**B to the second base side wall panel **20**.

[0076] The cutline **63** comprises a central or intermediate element and a pair of end cut elements **65**A, **65**B. The pair of end cut elements **65**A, **65**B are collinear with each other and may be offset with respect to the intermediate element. The pair of end cut elements **65**A, **65**B are each linear in shape however in alternative embodiments they may be non-linear or curved. The intermediate element is curved in shape however in alternative embodiments it may be another non-linear shape or may be linear. In some embodiments the cutline **63** may be a continuous curvilinear shape in which the end cut elements **65**A, **65**B are offset with respect to the central element.

[0077] A first end cut element **65**A is located in closer proximity to the base panel **18** than the second end cut element **65**B.

[0078] Optionally, an opening is provided in the second base side wall panel **20** adjacent to the cutline **63**. The opening may be elongate and extends along at least a portion of the centre element. The opening may extend along the entire centre element. In the illustrated embodiment the opening is defined, at least in part, by a tab **60** hingedly connected to the second base side wall panel **20** by a hinged connection in the form of a fold line **61**.

[0079] The opening or tab **60** is arranged to located above the cutline **63** when in normal use. The opening or tab **60** is located prior to the cut line **63** when the first part M is brought into registry with the second part Rx. That is to say during engagement of the first part M with the second part Rx the head section **40** first encounters or meets the opening or tab **60**—before it meets the cut line **63**.

[0080] The opening or tab **60**, when pressed inwardly or out of the plane of the second base side wall panel **20**, exposes an edge of the second base side wall panel **20** defined by the cutline **63**. The opening or tab **60** facilitates insertion of the head section **40** through the aperture created by the cutline **63** when opened up.

[0081] The second part Rx is located in the second base side wall panel **20** proximate to a pair of hinged edges, a first hinged edge is provided by the hinged connection to sixth base end closure panel **32**B, and a second hinged edge is provided by the hinged connection to the base panel **18**.

[0082] In a set up condition the base panel **18** and an end wall provided by the fifth and sixth base end closure panels **30**B, **32**B each serve to provide supports or braces to the second base side wall panel **20** when pressure is applied thereto. In this way the second base side wall panel **20** resists deformation when the first part M is pressed out of the cover side wall panel **12**.

[0083] Optionally, a recess or cutaway R is struck from the free end edge of the cover side wall panel **12**. The recess R may facilitate grasping an edge of the cover side wall panel **12** when disposed in face to face relationship with the second base side wall panel **20** in a setup carton **90**.

[0084] The carton **90** can be formed by a series of sequential folding operations in a straight line machine so that the carton **90** may not be required to be rotated or inverted to complete its construction. The folding process is not limited to that described below and may be altered according to particular manufacturing requirements.

[0085] Turning to the construction of the carton **90** as illustrated in FIG. **2**, the second cover end closure panel **26**A and fourth cover end closure panel **26**B are folded about fold lines **25**A, **25**B respectively such that the second cover end closure panel **26**A and fourth cover end closure panel **26**B are disposed in overlying relationship with the top panel **14**, as shown in FIG. **1**B.

[0086] The first cover end closure panel **24**A and third cover end closure panel **24**B are folded about fold lines **23**A, **23**B respectively such that the first cover end closure panel **24**A and third cover end closure panel **24**B are disposed in overlying relationship with the cover side wall panel **12**, as shown in FIG. **1**B.

[0087] The second cover end closure panel **26**A is folded about fold line F**1** such that a corner portion overlies an adjacent portion of second cover end closure panel **26**A, as shown in FIG. **1**C. The fourth cover end closure panel **26**B is folded about fold line F**2** such that a corner portion overlies an adjacent portion of the fourth cover end closure panel **26**B.

[0088] Glue G or other adhesive treatment is applied to an outer surface of the first cover end closure panel **24**A and third cover end closure panel **24**B. Alternatively, glue G or other adhesive treatment may be applied to an inner surface of the corner portions of the second cover end closure panel **26**A and fourth cover end closure panel **26**B.

[0089] The blank **10** is folded about the fold line **13** such that the cover side wall panel **12** is disposed in overlying relationship with the top panel **14**, as shown in FIG. **1**D. The first cover end closure panel **24**A is secured to the second cover end closure panel **26**A. The second cover end closure panel **24**B is secured to the fourth cover end closure panel **26**B.

[0090] The second base end closure panel **30**A and fifth base end closure panel **30**B are folded about fold lines **29**A, **29**B respectively such that the second base end closure panel **30**A and fifth base end closure panel **30**B are disposed in overlying relationship with the base panel **18**, as shown in FIG. **10**.

[0091] The flap **22** is folded about fold line **21** to be disposed in overlying relationship with the second base side wall panel **20**.

[0092] The third base end closure panel **32**A and sixth base end closure panel **32**B are folded about fold lines **31**A, **31**B respectively such that the third base end closure panel **32**A and sixth base end closure panel **32**B are disposed in overlying relationship with the second base side wall panel **20**, as shown in FIG. **1**D.

[0093] The first base end closure panel **28**A and fourth base end closure panel **28**B are folded about fold lines **27**A, **27**B respectively such that the first base end closure panel **28**A and fourth base end closure panel **28**B are disposed in overlying relationship with the first base side wall panel **16**.

[0094] The second base end closure panel **30**A is folded about fold line F**4** such that a corner portion overlies an adjacent portion of second base end closure panel **30**A, as shown in FIG. **1**E.

[0095] The fifth base end closure panel **30**B is folded about fold line F**6** such that a corner portion overlies an adjacent portion of the fifth base end closure panel **30**B, as shown in FIG. **1**E.

[0096] The second base end closure panel **30**A is folded about fold line F**3** such that a second corner portion overlies an adjacent portion of second base end closure panel **30**A, as shown in FIG. **1**E. The fifth base end closure panel **30**B is folded about fold line F**5** such that a second corner portion overlies an adjacent portion of the fifth base end closure panel **30**B, as shown in FIG. **1**E.

[0097] Glue G or other adhesive treatment is applied to an outer surface of the second base end closure panel **30**A and fifth base end closure panel **30**B. Alternatively, glue G or other adhesive treatment may be applied to an inner surface of the corner portions of the third base end closure panel **32**A and sixth base end closure panel **32**B.

[0098] The blank **10** is folded about the fold line **19** such that the second base side wall panel **20** is disposed in overlying relationship with the base panel **18**, as shown in FIG. **1**F. The third base end closure panel **32**A is secured to the second base end closure panel **30**A. The sixth base end closure panel **32**B is secured to the fifth base end closure panel **30**B.

[0099] Glue G or other adhesive treatment is applied to an outer surface of the first base end closure panel **28**A and fourth base end closure panel **28**B. Alternatively, glue G or other adhesive treatment may be applied to an inner surface of the second corner portions of the second base end closure panel **30**A and fifth base end closure panel **30**B.

[0100] The blank **10** is folded about the fold line **17** such that the first base side wall panel **16** is disposed in overlying relationship with the base panel **18**, as shown in FIG. **1**G. The first base end closure panel **28**A is secured to the second base end closure panel **30**A. The fourth base end closure panel **28**B is secured to the fifth base end closure panel **30**B.

[0101] The blank **10** is thus formed into a flat collapsed tubular structure which can be readily shipped or distributed.

[0102] The flat collapsed tubular structure may be erected to form a tray and cover. The cover is formed by unfolding the cover side panel **12** with respect to the top panel **14** such that the cover side panel **12** is disposed substantially perpendicularly with respect to the top panel **14**. Cover end walls are automatically erected as a consequence.

[0103] The base is formed by unfolding the first base side panel **16** and the second base side panel **20** with respect to the base panel **18** such that the first base side panel **16** and the second base side panel **20** are disposed substantially perpendicularly with respect to the base panel **18**. Base end walls are automatically erected as a consequence.

[0104] The carton **90**, in its erected form, may be loaded with one or more products through an open, upper, end of the tray.

[0105] Once the carton **90** has been loaded with product the carton **90** is closed by folding the cover about the base. The side and end walls of the cover are brought into face to face relationship with the second base end wall **20** and end walls of the base, as shown in FIG. **3**.

[0106] FIG. **5** illustrates the first part M of the locking mechanism being brought into engagement with the second part Rx as the cover is closed about the base of the carton **90**.

[0107] The head section **40** is displaced out of the plane of the cover side wall panel **12** inwardly of the cover. The head section **40** folds with respect to the main body **42** about fold line **41**.

[0108] The head section **40** is inserted into an aperture created in the second base side wall panel **20** by opening the cutline **63**. This may be achieved by displacing a region of the second base side wall panel **20** inwardly of the base. The tab **60** may be folded internally of the carton **90** to facilitate creation of the aperture, or to enlarge the aperture.

[0109] The cover is pivoted about the hinged connection (provided by the fold line **15**) between the cover and the base. In doing so the first part M is moved downwardly into face to face relationship with the second base side wall panel **20**. The head section **40** passes through the aperture in the second base side wall panel **20** to be internal of the carton **90**.

[0110] A portion of the second base side wall panel **20** defined by the cutline **63**, or at least the intermediate element thereof, passes through an aperture A**1** created in the cover side wall panel **12** created when the head section **40** is folded internally. The portion of the of the second base side wall panel **20** which passes through the aperture A**1** in the cover side wall panel **12** may cover or conceal, that is to say overlap or overlie, the hinged connection, fold line **41**, between the head section **40** and the main body **42**.

[0111] The tab **60** is disposed in overlapping relationship with the main body **42** of the first part M.

[0112] The tab **60** is hinged to the second base side wall panel **20** in sympathy with the head section **40**.

[0113] The tab **60** is arranged such that a free edge opposing its hinged connection, fold line **61**, to the second base side wall panel **20** does not overlap with the head section **40**, the free edge is spaced apart from the fold line **41** when the first part M is fully inserted into the second part Rx.

[0114] The second part Rx comprises a hinged female tab **60** on a leading edge of the receiver or cutline **63**.

[0115] FIG. **4** shows the carton **90** in a locked condition, the cover is engaged with the base. The access feature D has been deployed severing the severance line **51** along a section **51**A thereof. The access flap **14**A is folded about a second section **51**B of the severance line **51**. The contents of the carton **90** can be viewed or inspected through the opening in the top panel **14**.

[0116] The film **70** retains the contents of the carton **90** and prevents ingress of dirt, moisture or other matter. The film **70** inhibits removal of the contents of the carton **90** through the opening in the top panel **14** created by partially or fully separating access flap **14**A from the carton **90**.

[0117] FIG. **7** illustrates disengaging the lock mechanism. The main body **42** is pressed inwardly tearing a region of the cover side wall panel **12** between the first and second partial depth cuts **45**, **43**. The main body **42** and head section **40** are separated from the cover. The head section **40** remains engaged with the second part Rx; the carton **90** can be opened by pivoting the cover with respect to the base by unfolding about fold line **15**.

[0118] The head section **40** remains attached to the main body **42**.

[0119] The tab **60** (or opening) may facilitate unlocking by providing a yieldable region (or void) in registry, behind, the main body **42** which is readily displaced inwardly, thus enabling tearing to initiate or propagate between the first and second partial depth cuts **45**, **43**.

[0120] Referring now to FIG. **9**, there is shown an additional embodiment of the present disclosure. In the second illustrated embodiment like numerals have, where possible, been used to denote like parts, albeit with the addition of the prefix "100" to indicate that these features belong to the second embodiment. The additional embodiment shares many common features with the first embodiment and therefore only the differences from the embodiment illustrated in FIGS. **1** to **8**B will be described in detail.

[0121] FIG. **9** shows a blank **110** for forming a carton, the blank **110** comprises a plurality of main panels **112**, **114**, **116**, **118**, **120**, hinged one to the next in a linear series. The blank **110** forms a carton of a clamshell configuration, that is to say it comprises a base or tray having a lid or cover hingedly connected thereto. The base and cover each having upstanding walls. The base comprises upstanding walls surrounding a base panel **118**. The cover may comprise upstanding walls at least partially surrounding a top panel **114**.

[0122] The plurality of main panels **112**, **114**, **116**, **118**, **120** comprises a cover or outer side wall panel **112** hinged to the top panel **114** by a hinged connection in the form of a fold line **113**. A first base side wall panel **116** is hinged to the top panel **114** by a hinged connection such as a fold line **115**. The base panel **118** is hinged to the first base side wall panel **116** by a hinged connection in the form of a fold line **117**. A second base or inner side wall panel **120** is hinged to the base panel **118** by a hinged connection such as a fold line **119**.

[0123] The blank **110** comprises a pair of locking mechanisms, each locking mechanism comprises first part M**1**, M**2** provided by the cover and a second part Rx**1**, Rx**2** provided by the base. Each of the locking mechanisms is substantially the same in construction as that of the embodiment of FIG. **1** and described above.

[0124] The blank **10** comprises a first locking mechanism and a second locking mechanism. The first locking mechanism comprises a first part M**1** disposed proximate the hinged connection, fold line **123**B, between the cover side wall panel **112** and a third cover end closure panel **124**B. The second locking mechanism comprises a first part M**2** disposed proximate the hinged connection, fold line **123**A, between the cover side wall panel **112** and a first cover end closure panel **124**A.

[0125] The first part M**1** of the first locking mechanism is a mirror image of the first part M**2** of the second locking mechanism.

[0126] The first locking mechanism comprises a second part Rx**1**, forming a receiver, disposed proximate the hinged connection, fold line **131**B, between the second base side wall panel **120** and a sixth base end closure panel **132**B and disposed proximate the hinged connection, fold line **119**, between the second base side wall panel **120** and the base panel **118**.

[0127] The second locking mechanism comprises a second part Rx**2**, forming a receiver, disposed proximate the hinged connection, fold line **131**A, between the second base side wall panel **120** and a third base end closure panel **132**A and disposed proximate the hinged connection, fold line **119**, between the second base side wall panel **120** and the base panel **118**.

[0128] The second part Rx**1** of the first locking mechanism is a mirror image of the second part Rx**2** of the second locking mechanism.

[0129] The free edge of the cover side wall panel **112** comprises a pair of recesses or cutaways. Each recess is disposed adjacent to one of the first parts M**1**, M**2** of the first and second locking mechanisms respectively.

[0130] The embodiments of the present disclosure provide a carton **90** for packaging one or more articles. The carton **90** comprises a pair of panels **12**, **20**; **112**, **120** locked or secured together by a panel interlocking device M/Rx; M**1**/Rx**1**, M**2**/Rx**2**. The panel interlocking device M/Rx; M**1**/Rx**1**, M**2**/Rx**2** comprises a first part M; M**1**, M**2** provided by one of the pair of panels **12**, **20**; **112**, **120** and a second part Rx; Rx**1**, Rx**2** provided by the other one of the pair of panels **12**, **20**; **112**, **120**. The first part M; M**1**, M**2** comprises a male tab **40**/**42** struck from within the one of the pair of panels **12**, **20**; **112**, **120**. The male tab **40**/**42** comprises a head section **40** hingedly connected to a body section **42** by a hinged connection. The body section **42** is detachably connected to the one of the pair of panels **12**, **20**; **112**, **120** and struck therefrom or defined therein. The body section **42** is defined by at least one severance line **45**, **43**. The severance line **45**, **43** extends between a first end of the hinged connection and a second end of the hinged connection. The severance line **45**, **43** may comprise a pair of severance lines **45**, **43**. The pair of severance lines **45**, **43** may comprise a first partial depth severance line **45** defined, or provided in, a first side or surface of the one of the pair of panels **12**, **20**; **112**, **120**. The pair of severance lines **45**, **43** may comprise a second partial depth severance line **43** defined, or provided in, a second, reverse, side or surface of the one of the pair of panels **12**, **20**; **112**, **120**. The second partial depth severance line **43** is generally similar in shape to the first partial depth severance line **45** and spaced part therefrom. The second partial depth severance line **43** may be generally parallel to the first partial depth severance line **45**. The second partial depth severance line **43** and the first partial depth severance line **45** may converge with each other at each end thereof. The head section **40** defines a first aperture A**1** in the one of the pair of panels **12**, **20**; **112**, **120**. The second part Rx; Rx**1** Rx**2** comprises a cutaway struck from the other one of the pair of panels **12**, **20**; **112**, **120** to form a receiver. The cutaway may take the form of a cut or severance line **63** or opening. The opening may be defined at least in part by a tab foldably connected to the other one of the pair of panels **12**, **20**; **112**, **120**. The cutaway defines a second aperture which receives the head section **40**, the second aperture provides a pair of opposing edges of the other one of the pair of panels **12**, **20**; **112**, **120**. In an engaged or locked condition one of the pair of opposing edges is disposed on a first, internal, side of the one of the pair of panels **12**, **20**; **112**, **120**, and a portion of the other one of the pair of opposing edges is disposed on a second, external, side of the one of the pair of panels **12**, **20**; **112**, **120**. A portion of the other one of the pair of panels **12**, **20**; **112**, **120** at least partially closes, obscures or occludes the first aperture A**1** in the one of the pair of panels **12**, **20**; **112**, **120**. The cutaway may be shaped such that the other one of the pair of opposing edges overlaps with the hinged connection, fold line **41**, between the head section **40** and body

section **42**. The cutaway may be shaped such that the one of the pair of opposing edges is spaced apart from the hinged connection, fold line **41**, between the head section **40** and body section **42**.

[0131] The cutaway may comprise a cutline **63** and an opening adjacent to the cutline **63**, the opening being provided on a leading edge or side of the receiver. The leading edge or side of the receiver being that which the male tab **40**/**42** meets first when the first and second parts M, Rx; M**1**, M**2**, Rx**1**, Rx**2** are brought into engagement.

[0132] The carton **90** may be of a clam shell type, a tray or base having a lid or cover hingedly connected to the tray or base. The first and second parts M, Rx; M**1**, M**2**, Rx**1**, Rx**2** are brought into engagement when the lid or cover is closed. The lid or cover is closed by pivoting or rotating the lid or cover about a hinged connection, fold line **15**; **115**, between the tray or base and the lid or cover. The fold line **41** between the head section **40** and the body section **42** may be obliquely oriented with respect to the hinged connection, fold line **15**; **115**, between the tray or base and the lid or cover.

[0133] The carton **90** may comprise a plurality of panels **12**, **14**, **16**, **18**, **20**; **112**, **114**, **116**, **118**, **120** hinged one to the next in a linear series by a respective fold line **13**, **15**, **17**, **19**; **113**, **115**, **117**, **119**. The first part M; M**1**, M**2** may be provided by a first one of the pair of panels **12**, **112**, and the second part Rx; Rx**1**, Rx**2** may be provided by a second one of the pair of panels **20**; **120**. The first one of the pair of panels **12**, **112**, is disposed in overlapping relationship with the second one of the pair of panels **20**; **120**.

[0134] The cut line **63** defining the receiver may comprise an intermediate or central portion and end portions **65**A, **65**B; the end portions **65**A, **65**B may be offset with respect to the intermediate or central portion. Terminal ends of the end portions **65**A, **65**B define a notional line y-y obliquely oriented with respect to fold lines **19**, **31**B; **119**, **131**A, **131**B hingedly connecting a pair of adjacently disposed brace panels **18**, **32**B; **118**, **132**A, **132**B to the other one of the pair of panels **12**, **20**; **112**, **120**.

[0135] The present disclosure also provides a panel interlocking arrangement M/Rx; M**1**/Rx**1**, M**2**/Rx**2** comprising: first **12**; **112** and second **20**; **120** panels for placement in an overlapping position. The first and second panels **12**, **20**; **112**, **120** are disposed, at least in part, in a face-contacting arrangement. A pair of locking elements is provided for locking engagement with each other to secure the first and second panels in the overlapping position. The pair of locking elements comprises a male M; M**1**, M**2** locking element and a female Rx; Rx**1**, Rx**2** locking element. The female locking element Rx; Rx**1**, Rx**2** is formed in the second panel **20**; **120**. The male locking element M; M**1**, M**2** is connected to the first panel **12**; **112**. The female locking element Rx; Rx**1**, Rx**2** includes a cut **63** formed in the second panel **20**; **120**. The second panel **20**; **120** comprises a corner C defined by first and second peripheral edges **19**, **31**B; **119**, **132**A, **131**B of the second panel **20**; **120**. The first peripheral edge **19**; **119**, at least in part, is hingedly connected to a third panel **18**; **118**. The second peripheral edge **31**B; **131**A, **131**B, at least in part, is hingedly connected to a fourth panel **32**B; **132**A, **132**B. The second panel **20**; **120** further comprises first and second portions on the opposite sides of the cut **63**. The first portion extends between the cut **63** and the corner C such that the first portion is brought into contact at an inside surface thereof with at least part of the male locking element M; M**1**, M**2** when the male and female locking elements M, Rx; M**1**, M**2**, Rx**1**, Rx**2** are in the locking engagement. The cut **63** comprises first **65**A, **65**B and second **67**A, **67**B angled segments, best shown in FIG. **8**B. The first segment **65**A, **65**B is disposed obliquely with respect to each of the first and second peripheral edges **19**, **31**B; **119**, **132**A, **131**B. The second segment **67**A, **67**B extends from the first segment **65**A, **65**B away from the corner C.

[0136] The female locking element Rx; Rx**1**, Rx**2** further includes an opening formed in the second portion of the second panel **20**; **120**, the opening is defined in part by part of the cut **63**.

[0137] The opening is defined in part by the second segments **67**A, **67**B of the cut **63**.

[0138] The female locking element Rx; Rx**1**, Rx**2** further includes a retaining tab **60** hingedly connected to the second portion of the second panel **20**; **120** along a fold line **61**. The opening is defined in the second portion when the retaining tab **60** is folded about the fold line **61** out of a plane of the second panel **20**; **120**.

[0139] The present disclosure provides a blank **10**; **110** for forming a carton **90**. The blank **10**; **110** comprises a plurality of primary panels **12**, **14**, **16**, **18**, **20**; **112**, **114**, **116**, **118**, **120** connected together to define an interior of the carton **90** for receiving at least one article. The plurality of primary panels **12**, **14**, **16**, **18**, **20**; **112**, **114**, **116**, **118**, **120** includes an inner front panel **20**; **120**, a bottom panel **18**, **118** hingedly connected to the inner front panel **20**; **120** along a first fold line **19**; **119**, a rear panel **16**; **116** hingedly connected to the bottom panel **18**; **118** along a second fold line **17**; **117**, a top panel **14**, **114** hingedly connected to the rear panel **16**; **116** along a third fold line **15**; **115**, and an outer front panel **12**; **112** hingedly connected to the top panel **14**; **114** along a fourth fold line **13**; **113**. The inner and outer front panels **20**, **12**; **120**, **112** are arranged for placement in an overlapping position when the blank **10**; **110** is erected into a carton **90**. The inner and outer front panels **20**, **12**; **120**, **112** are disposed at least in part in a face-contacting arrangement. The blank **10**; **110** further comprises a pair of locking elements for locking engagement with each other to secure the inner and outer front panels **20**, **12**; **120**, **112** in the overlapping position. The pair of locking elements comprises a male M; M**1**, M**2** locking element and female Rx; Rx**1**, Rx**2** locking element. The female locking element Rx; Rx**1**, Rx**2** is formed in the inner front panel **20**; **120**. The male locking element M; M**1**, M**2** is connected to the outer front panel **12**; **112**. The female locking element Rx; Rx**1**, Rx**2** includes a cut **63** formed in the inner front panel **20**; **120**. The inner front panel **20**; **120** comprises a corner C defined by first and second peripheral edges **19**, **31**B; **119**, **132**A, **131**B of the inner front panel **20**; **120**. The first peripheral edge **19**; **119**, at least in part, is hingedly connected to a bottom panel **18**; **118** by the first fold line **19**; **119**. The second peripheral edge **31**B; **131**A, **131**B, at least in part, is hingedly connected to an end flap **32**B; **132**A, **132**B. The inner front panel **20**; **120** further comprises first and second portions on the opposite sides of the cut **63**. The first portion extends between the cut **63** and the corner C such that the first portion is brought into contact at an inside surface thereof with at least part of the male locking element M; M**1**, M**2** when the male and female locking elements M, Rx; M**1**, M**2**, Rx**1**, Rx**2** are in the locking engagement. The cut **63** comprises first **65**A, **65**B and second **67**A, **67**B angled

segments, best shown in FIG. **8**B. The first segment **65**A, **65**B is disposed obliquely with respect to each of the first and second peripheral edges **19**, **31**B; **119**, **132**A, **131**B. The second segment **67**A, **67**B extends from the first segment **65**A, **65**B away from the corner C.

[0140] The present disclosure provides a panel interlocking arrangement comprising: first **12**; **112** and second **20**; **120** panels for placement in an overlapping position where the first and second panels **12**, **20**; **112**, **120** are disposed, at least in part, in a face-contacting arrangement. A pair of locking elements is provided for locking engagement with each other to secure the first and second panels in the overlapping position. The pair of locking elements comprises a male M; M**1**, M**2** locking element and a female Rx; Rx**1**, Rx**2** locking element. The female locking element Rx; Rx**1**, Rx**2** is formed in the second panel **20**; **120**. The male locking element M; M**1**, M**2** is connected to the first panel **12**; **112**. The first panel **12**; **112** is hingedly connected to a third panel **14**; **114** along a first fold line **13**; **113**. The first and second panels **12**, **20**; **112**, **120** are hingedly connected together indirectly through at least the third panel **14**; **114** for generally linear movement toward and relative to each other along a notional line X-X into the overlapping position. The notional line X-X is parallel to at least one of the first and second panels **12**, **20**; **112**, **120** and is generally perpendicular to the first fold line **13**; **113**. The male locking element M; M**1**, M**2** comprises a locking tab **40** hingedly connected to the first panel **12**; **112** along a second fold line **41** such that the male and female locking elements M, Rx; M**1**, M**2**, Rx**1**, Rx**2** are engageable into the locking engagement through the generally linear movement of at least one of the first and second panels **12**, **20**; **112**, **120**. The second fold line **41** is disposed obliquely with respect to the notional line X-X.

[0141] The at least the third panel **14**; **114** comprises two or more panels **14**, **16**, **118**; **114**, **116**, **118** hingedly connected together in series.

[0142] The present disclosure provides a blank **10**; **110** for forming a carton **90**. The blank **10**; **110** comprises a plurality of primary panels **12**, **14**, **16**, **18**, **20**; **112**, **114**, **116**, **118**, **120** connected together to define an interior of the carton **90** for receiving at least one article. The plurality of primary panels **12**, **14**, **16**, **18**, **20**; **112**, **114**, **116**, **118**, **120** includes an inner front panel **20**; **120**, a bottom panel **18**, **118** hingedly connected to the inner front panel **20**; **120** along a first fold line **19**; **119**, a rear panel **16**; **116** hingedly connected to the bottom panel **18**; **118** along a second fold line **17**; **117**, a top panel **14**, **114** hingedly connected to the rear panel **16**; **116** along a third fold line **15**; **115**, and an outer front panel **12**; **112** hingedly connected to the top panel **14**; **114** along a fourth fold line **13**; **113**. The inner and outer front panels **20**, **12**; **120**, **112** are arranged for placement in an overlapping position when the blank **10**; **110** is erected into a carton **90**. The inner and outer front panels **20**, **12**; **120**, **112** are disposed, at least in part, in a face-contacting arrangement to form a single front wall in the carton **90**. The blank **10**; **110** further comprises a pair of locking elements for locking engagement with each other to secure the inner and outer front panels **20**, **12**; **120**, **112** in the overlapping position. The pair of locking elements comprises a male M; M**1**, M**2** locking element and female Rx; Rx**1**, Rx**2** locking element. The female locking element Rx; Rx**1**, Rx**2** is formed in the inner front panel **20**; **120**. The male locking element M; M**1**, M**2** comprises a locking tab **40** hingedly connected to the outer front panel **12**; **112** along a fifth fold line **41**. The female locking element Rx; Rx**1**, Rx**2** includes a cut **63** formed in the inner front panel **20**; **120**. The inner front panel **20**; **120** comprises a corner C defined by first and second peripheral edges **19**, **31**B; **119**, **132**A, **131**B of the outer front panel **20**; **120**.

[0143] The first, second, third and fourth fold lines **17**, **15**, **13**; **117**, **115**, **113** are parallel to one another such that the inner and outer front panels **20**, **12**; **120**, **112** are movable relative to each other along a notional line X-X into the overlapping position. The notional line X-X is parallel to at least one of the inner and outer front panels **20**, **12**; **120**, **112** and is generally perpendicular to the fourth fold line **13**; **113**. The fifth fold line **41** is disposed obliquely with respect to the fourth fold line **13**; **113** such that the male and female locking elements M, Rx; M**1**, M**2**, Rx**1**, Rx**2** are engageable into the locking engagement through linear sliding movement of at least one of the inner and outer front panels **20**, **12**; **120**, **112** along the notional line X-X toward and relative to the other.

[0144] It can be appreciated 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.

[0145] Whilst the foregoing embodiments have been described with reference to a fully enclosed carton it is envisaged that the dispenser may be employed in cartons of alternative design such as, but not limited to, wraparound style cartons, basket carries and top gripping clips.

[0146] It will be recognised that as used herein, directional references such as "top", "base", "front", "back", "end", "side", "inner", "outer", "upper" and "lower" do not limit the respective panels 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 a hinged connection can be formed from one or more of the following: a short slit, a frangible line or a fold line, without departing from the scope of the invention. It can be appreciated 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.

[0147] As used herein, the term "cutaway" may refer to one of the following: a recess, a notch, a slot, an opening, a outline, a line of perforations, a line of short slits, a line of half-cuts, a single half-cut, an interrupted cut line, aligned slits, a line of short scores and any combination of the aforesaid options, without departing from the scope of the invention.

[0148] As used herein, the terms "hinged connection" and "fold line" each refers to all manner of lines that define hinge features of the blank or substrate of sheet material, facilitate folding portions of the blank or substrate of sheet material with respect to one another, or otherwise indicate optimal panel folding locations for the blank or substrate of sheet material. Any reference to "hinged connection" should not be construed as necessarily referring to a single fold line only; indeed a hinged connection can be formed from one or more fold lines.

[0149] As used herein, the term "fold line" may refer to one of the following: a scored line, an embossed line, a debossed line, a line of perforations, a line of short slits, a line of half-cuts, a single half-cut, an interrupted cut line,

aligned slits, a line of short scores and any combination of the aforesaid options, without departing from the scope of the invention.

[0150] As used herein, the term "severance line" may refer to all manner of lines formed in the blank or substrate of sheet material that facilitate separating portions of the blank or substrate of sheet material from one another, or otherwise that indicate optimal separation locations on the blank or substrate. As used herein, the term "severance line" may refer to one of the following: a single cut line, a single partial-depth cut line (e.g., a single half-cut line), an interrupted cut line, a score line, an interrupted score line, a line of perforations, a line of short cuts, a line of short slits, a line of short partial-depth cuts (e.g., a line of short half cuts), and any combination of the aforementioned options.

[0151] It should be understood that hinged connections, fold lines and severance lines can each include elements that are formed in the blank or substrate of sheet material, including perforations, a line of perforations, a line of short slits, a line of half-cuts, a single half-cut, a cut line, an interrupted cut line, slits, scores, any combination thereof, and the like. The elements can be dimensioned and arranged to provide the desired functionality. For example, a line of perforations can be dimensioned or designed with degrees of weakness to define a fold line and/or a severance line. The line of perforations can be designed to facilitate folding and resist breaking to provide a fold line, to facilitate folding and facilitate breaking with more effort to provide a frangible fold line, or to facilitate breaking with little effort to provide a severance line.

1. A panel interlocking arrangement comprising:

first and second panels for placement in an overlapping position wherein the first and second panels are disposed, at least in part, in a face-contacting arrangement; and

a pair of locking elements for locking engagement with each other to secure the first and second panels in the overlapping position, the pair of locking elements comprises a male locking element and female locking element, the female locking element being formed in the second panel, the male locking element being connected to the first panel,

wherein the female locking element includes a cut formed in the second panel, the second panel comprising a corner defined by first and second peripheral edges of the second panel, the first peripheral edge being hingedly connected, at least in part, to a third panel, the second peripheral edge being hingedly connected, at least in part, to a fourth panel, the second panel further comprising first and second portions on the opposite sides of the cut, the first portion extending between the cut and the corner such that the first portion is brought into contact at an inside surface thereof with at least part of the male locking element when the male and female locking elements are in the locking engagement, and

wherein the cut comprises first and second angled segments, the first segment being disposed obliquely with respect to each of the first and second peripheral edges, the second segment extending from the first segment away from the corner.

2. A panel interlocking arrangement according to claim **1**, wherein the female locking element further includes an opening formed in the second portion of the second panel, the opening being defined in part by part of the cut.

3. A panel interlocking arrangement according to claim **2**, wherein the opening is defined in part by the second segment of the cut.

4. A panel interlocking arrangement according to claim **2**, wherein the female locking element further includes a retaining tab hingedly connected to the second portion of the second panel along a fold line, wherein the opening is defined in the second portion when the retaining tab is folded about the fold line out of a plane of the second panel.

5. A blank for forming a carton, the blank comprising:

a plurality of primary panels connected together to define an interior of the carton for receiving at least one article, the plurality of primary panels including an inner front panel, a bottom panel hingedly connected to the inner front panel along a first fold line, a rear panel hingedly connected to the bottom panel along a second fold line, a top panel hingedly connected to the rear panel along a third fold line, and an outer front panel hingedly connected to the top panel along a fourth fold line, the inner and outer front panels being arranged for placement in an overlapping position when the blank is erected into a carton wherein the inner and outer front panels are disposed, at least in part, in a face-contacting arrangement;

a male locking element and a female locking element for locking engagement with each other to secure the inner and outer front panels in the overlapping position, the female locking element being formed in the inner front panel, the male locking element being connected to the outer front panel,

wherein the female locking element includes a cut formed in the inner front panel, the inner front panel comprising a corner defined by first and second peripheral edges of the inner front panel, the first peripheral edge being hingedly connected, at least in part, to the bottom panel by the first fold line, the second peripheral edge being hingedly connected, at least in part, to an end flap, the inner front panel further comprising first and second portions on opposite sides of the cut, the first portion extending between the cut and the corner such that the first portion is brought into contact at an inside surface thereof with at least part of the male locking element when the male and female locking elements are in the locking engagement, and

wherein the cut comprises first and second angled segments, the first segment being disposed obliquely with respect to each of the first and second peripheral edges, the second segment extending from the first segment away from the corner.

6. The panel interlocking arrangement according to claim **1** wherein the first panel is hingedly connected to a third panel along a first fold line, wherein the first and second panels are hingedly connected together indirectly through at least the third panel for generally linear movement toward and relative to each other along a notional line into the overlapping position, the notional line being parallel to at least one of the first and second panels and being generally perpendicular to the first fold line, wherein the male locking element comprises a locking tab hingedly connected to the first panel along a second fold line such that the male and female locking elements are engageable into the locking engagement through the generally linear movement of at

least one of the first and second panels, and wherein the second fold line is disposed obliquely with respect to the notional line.

7. A panel interlocking arrangement according to claim **6**, wherein the at least the third panel comprises two or more panels hingedly connected together in series.

8. The blank according to claim **5** wherein the male locking element comprises a locking tab hingedly connected to the outer front panel along a fifth fold line, wherein the first, second, third and fourth fold lines are parallel to one another such that the inner and outer front panels are movable relative to each other along a notional line into the overlapping position, the notional line being parallel to at least one of the inner and outer front panels and being generally perpendicular to the fourth fold line, and wherein the fifth fold line is disposed obliquely with respect to the fourth fold line such that the male and female locking elements are engageable into the locking engagement through linear sliding movement of at least one of the inner and outer front panels along the notional line toward and relative to the other.

9. A panel interlocking device for securing a pair of panels together, the panel interlocking device comprising:

a first part provided by one of the pair of panels and a second part provided by the other one of the pair of panels,

wherein the first part comprises a male tab struck from within the one of the pair of panels, the male tab comprises a head section hingedly connected to a body section by a hinged connection, the body section is detachably connected to the one of the pair of panels and struck therefrom, the body section is defined by at least one severance line, the severance line extends between a first end of the hinged connection and a second end of the hinged connection, the head section defines a first aperture in the one of the pair of panels,

wherein the second part comprises a cutaway struck from the other one of the pair of panels to form a receiver, the cutaway defines a second aperture which receives the head section, the second aperture provides a pair of opposing edges of the other one of the pair of panels,

wherein in a locked condition, one of the pair of opposing edges is disposed on a first side of the one of the pair of panels and a portion of the other one of the pair of opposing edges is disposed on a second side of the one of the pair of panels, a portion of the other one of the pair of panels at least partially occludes the first aperture in the one of the pair of panels, the cutaway may be shaped such that the other one of the pair of opposing edges overlaps with the hinged connection between the head section and body section.

10. A panel interlocking arrangement according to claim **9**, wherein the cutaway is shaped such that the one of the pair of opposing edges is spaced apart from the hinged connection between the head section and body section.

11. (canceled)

12. A panel interlocking arrangement according to claim **9**, wherein the severance line comprises a pair of severance lines, wherein the pair of severance lines comprises a first partial depth severance line provided in a first face of the one of the pair of panels and a second partial depth severance line provided in a second, reverse, face of the one of the pair of panels.

13. (canceled)

14. (canceled)

15. (canceled)

16. A panel interlocking arrangement according to claim **9**, wherein the cutaway comprises one of the features selected from the following group: a cut line, severance line, and opening.

17. A panel interlocking arrangement according to claim **9**, wherein the cutaway comprises an opening defined at least in part by a tab foldably connected to the other one of the pair of panels.

18. A panel interlocking arrangement according to claim **9**, wherein the cutaway comprises a cutline and an opening adjacent to the cutline, the opening being provided on a leading edge or side of the receiver.

19. A panel interlocking arrangement according to claim **9**, wherein a cut line defines the receiver and comprises an intermediate portion and end portions, the end portions being offset with respect to the intermediate portion.

20. A panel interlocking arrangement according to claim **19**, wherein terminal ends of the end portions define a notional line obliquely oriented with respect to a pair of adjacently disposed brace panels hingedly connected to the other one of the pair of panels.

21. A carton of a clam shell arrangement comprising the panel interlocking arrangement according to claim **9**, wherein the carton comprises, a tray and a lid hingedly connected to the tray, and wherein the first part is provided by a panel forming one of the tray and lid and the second part is provided by a panel forming the other one of the tray and lid, the first and second parts being brought into engagement when the lid or cover is closed.

22. A carton according to claim **21**, wherein the lid is closed by pivoting the lid about a hinged connection between the tray and the lid.

23. A carton according to claim **22**, wherein the fold line between the head section and the body section is obliquely oriented with respect to the hinged connection between the tray and the lid.

24. A carton comprising the panel interlocking arrangement according to claim **9**, the first part being provided by a first one of the pair of panels, and the second part being provided by a second one of the pair of panels, the first one of the pair of panels being disposed in overlapping relationship with the second one of the pair of panels to form a composite wall, the pair of panels being two of a plurality of panels hinged together in a linear series by respective fold lines.

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