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(54) **BLANK FOR FORMING A WRAP-AROUND, PACK MADE OUT OF THIS BLANK, AND METHOD OF FORMING A SERIES OF SUCH BLANKS**

ZUSCHNITT ZUM AUSBILDEN EINER VERPACKUNG UND EINE SOLCHE VERPACKUNG, UND VERFAHREN ZUR BILDUNG EINER REIHE SOLCHER ZUSCHNITTE

EMBALLAGE ET FLAN POUR FORMER CETTE EMBALLAGE, ET PROCEDE DE FORMATION D'UNE SÉRIE DE TELS FLANS

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a blank for forming a wrap-around pack for foodstuffs, a wrap-around pack formed from the blank, a reel comprising a plurality of the blanks, and a method of forming a series of the blanks.

BACKGROUND OF THE INVENTION

[0002] Fresh and convenience foodstuffs such as baguettes, wraps, hard fruits (e.g. apples) are often packed in a wraparound film pack which is hermetically sealed to maintain its freshness for an extended shelf life, or utilise a modified atmosphere within the pack for the same reason. The film packs are formed from a web of film on a flow-wrapper type machine by forming a tube around the foodstuff to envelope it and heat sealing the longitudinal margins of the web to maintain the tubular shape. Further transverse heat seal seams are formed at each end of the foodstuff and the transverse seam is severed in the middle to separate an individual pack from the tube.

[0003] Whilst this process is typically automated in a large food packing plant, the foodstuff is typically loaded within a wraparound board sleeve or tray manually, before being placed in a flow-wrapper. The board sleeve or tray typically has a specific weight of around 225gsm and is used to improve the rigidity of the finished pack, and provide something relatively rigid and of a substantially fixed dimension to assist in the flow-wrapping process. Usually the sleeve or tray provide a surface which may have information printed on it to provide information regarding the foodstuff and to make it attractive to prospective purchasers at a retailer. The need to load the foodstuff into the sleeve or tray increases the amount of labour required at the plant and therefore increases the costs for the food manufacturer/packer. In addition, the packer is required to maintain an inventory of two separate packaging articles, which may add to logistics costs. Further, the board within the pack tends to absorb moisture, so is unsuitable for use with certain foodstuffs if an extended shelf life over say 24 hours is needed, particularly if they include ingredients with a high moisture content, such as lettuce, that that become limp if they lose moisture.

[0004] It is also known to adhere relatively small, relatively thin labels to film that is flow-wrapped after the flow-wrapping has taken place. However, such labels do not contribute to the structure of the pack, and cannot extend around more than one side of the pack. In addition they are susceptible to wrinkling if applied to a film surface that is not supported by the foodstuff or board inside.

[0005] EP2399835 is to a method of forming a web of laminated board or card for foodstuff packaging. US2012/0128835 discloses a reclosable flexible film package.

[0006] The present invention seeks to overcome, or at least mitigate the problems of the prior art.

SUMMARY OF THE INVENTION

[0007] A first aspect of the invention provides a blank for forming a wrap-around pack for foodstuffs, comprising a section of plastics film substrate, the film substrate section being generally rectangular with a front edge, a rear edge, and first and second outer edges, the outer edges being substantially parallel to the direction the blank is fed during assembly of the wrap-around pack; one or more sections of paperboard, adhesively attached to an outer surface of the film substrate, at least one section of the paperboard having at least one fold line, the fold line being substantially parallel to the outer edges of the film substrate; an end portion, composed of the film substrate with no paperboard attached to it, such that, when the pack is assembled, the end portion defines a free end of the wrap-around pack that can be heat sealed; and wherein the fold line defines at least two panels of the paperboard section, the panels arranged to be mutually angled when the pack is assembled. Blanks of this type may reduce materials used compared to prior art flow-wrapped packs, and may further reduce the amount of labour required during loading, and also reduce the contact between board and foodstuffs packed in the blank when erected. Additionally, the board may increase the rigidity of the pack, to improve its stacking and display characteristics on the shelf.

[0008] The fold line may be defined by at least one cut, the cut being either a continuous line through a partial depth of the paperboard, or a discontinuous line of discrete segments through at least a partial depth of the paperboard.

[0009] The fold line may be defined by at least three cuts.

[0010] The fold line may be defined by a crease

[0011] A least one section of paperboard may comprise at least two fold lines such that the section of paperboard defines at least three panels, the panels arranged to be mutually angled when the wrap-around pack is assembled. This may provide further rigidity to the pack when assembled.

[0012] At least two panels of the paperboard section may be substantially perpendicular to each other, when the wrap-around pack is assembled.

[0013] The paperboard section may have a front and a rear edge. Each longitudinal end of the fold line may terminate at a point offset from the front and rear edges. This may enable the ends of the pack to be more easily heat sealed and folded as the thickness is minimised.

[0014] The blank may comprise first and second sections of paperboard, the first section of paperboard being offset from the first outer edge of the film substrate section, and the second section of paperboard being offset from the second outer edge of the film substrate section, such that first and second side portions of the blank are

composed of a majority of film substrate only and are defined adjacent the first and second outer edges respectively, the first and second side portions being configured to be heat-sealed together when the pack is assembled. By removing the majority of the paperboard from the outer edges, heat sealing and folding may be more easily achieved.

[0015] At least one portion of paperboard may extend from at least one of the first and second sections of paperboard to at least one of the first and second outer edges.

[0016] The at least one portion may be narrower in a direction parallel to the first and second outer edges than the one of the first or second sections of paperboard from which it extends. This further enhances the heat sealing and folding characteristics.

[0017] The blank may comprise first and second sections of paperboard, the first section of paperboard being offset from the first outer edge of the film substrate section, and the second section of paperboard being offset from the second outer edge of the film substrate section, such that first and second side portions of the blank, composed of the film substrate with no paperboard attached, are defined adjacent the first and second outer edges respectively, the first and second side portions being configured to be heat-sealed together when the pack is assembled.

[0018] The first section of paperboard adjacent the first side portion of the blank may define a base panel, such that when the wrap-around pack is assembled, and the first and second portions of blank are heat-sealed together, the base panel of the first section and the second section are substantially coplanar, defining a substantially planar base of the pack.

[0019] An area of paperboard arranged to form at least part of a base of a pack, when erected, may be provided with a plurality of creases arranged to increase the rigidity of the area and/or to enhance the folding of the blank to form the pack.

[0020] The plurality of fold lines may be non-parallel to at least a side edge or an end edge of the blank. This arrangement may further improve the rigidity

[0021] The plurality of fold lines may non-parallel to both a side edge and an end edge of the blank. This arrangement may still further improve the rigidity

[0022] The first section of paperboard may have a generally rectangular footprint, with at least one cut out section defining an internal angle.

[0023] The first section of paperboard may have two rectangular cut-out sections of equal dimensions, such that the first section of paperboard is generally T-shaped with two internal angles, the internal angles being substantially right-angled.

[0024] At least one internal angle may be radiused.

[0025] The internal angles may have a radius of at least 5mm.

[0026] The internal angles may have a radius of at least 10mm.

[0027] The paperboard specific weight may be at least 100gsm.

[0028] The paperboard specific weight may be between 100gsm and 250gsm.

[0029] The film substrate material may be oriented polypropylene film.

[0030] The film substrate material may have a thickness of at least 15 microns, optionally at least 17 microns, optionally at least 20 microns.

[0031] The film substrate material may have a thickness of at least 25 microns.

[0032] The paperboard sections may cover more than 30% of the area of the film substrate.

[0033] The paperboard sections may cover more than 40% of the area of the film substrate.

[0034] The paperboard sections may cover more than 50% of the area of the film substrate.

[0035] Substantially the entirety of the area of the paperboard sections may be adhered to the film substrate. This may further enhance the rigidity of the pack.

[0036] A second aspect of the invention provides a wrap-around pack formed from the blank of the first aspect.

[0037] The wrap-around pack may comprise a longitudinal seam substantially parallel to each fold line and at least one end seam substantially transverse to the longitudinal seam, the seams formed by heat sealing of the film substrate.

[0038] A third aspect of the invention provides a reel comprising a plurality of blanks according to the first aspect of the invention.

[0039] A fourth aspect of the invention provides a method of forming a series of blanks for forming a wrap-around pack for foodstuffs, comprising feeding a web of paperboard in a first feed direction, through one or more print stations to apply one or more colours to a top surface of the web; passing the web through a first die station where an outline is cut in the web, the outline defining a waste portion, a central section of the web and one or more continuous sections, each continuous section and the or each fold line being substantially parallel to the feed direction of the web; providing a continuous substrate of plastics film and feeding it in the first feed direction, substantially parallel to the web of paperboard; applying adhesive to one or more of a first portion of the web or a first portion of the film, a second portion of the film not receiving any adhesive; attaching the first portion of the web to the first portion of the film substrate; passing the attached web and film substrate through a second die station to divide the one or more continuous sections from the central section of the web; removing the waste portion downstream of the first die station and removing the one or more continuous sections of the web once the web is attached to the film substrate to leave a series of discrete blanks. This method is an efficient way of continuously forming blanks of the first aspect using a mechanised process.

[0040] The method may further comprise making one

or more fold lines in the web. This enables a finished pack to be formed with substantially planar panels when erected.

[0041] The one or more fold lines may be made in the web at a further die station downstream of a station at which the first portion of the web of paperboard is attached to the first portion of the film substrate.

[0042] The waste portion is optionally removed upstream of a station at which the web of paperboard is attached to the first portion of the film substrate.

[0043] The first portion of the web may be defined by an area of a bottom surface of the web corresponding to the central section of the web. The first portion of the film substrate may be defined by an area of a top surface of the film substrate corresponding to the central section of the web.

[0044] The central section may comprise a first section and a second section of paperboard.

[0045] The web may comprise a bridging portion, wherein the bridging portion is located intermediate the continuous section and the central section. The bridging portion enables the amount of paperboard to be minimised where the pack is to be longitudinally heat sealed.

[0046] The web may have a first continuous section and a second continuous section, the first continuous section connecting to the first section of the paperboard and the second continuous section connecting to the second section of the paperboard.

[0047] The continuous portions may be located at a periphery of the web, the periphery being defined as the longitudinal border of the web relative to the feed direction.

[0048] The fold lines may be made in the first section of the paperboard.

[0049] A fifth aspect of the invention provides a method of forming a series of blanks for forming a wrap-around pack for foodstuffs, comprising feeding a label in a first feed direction, the label having a top surface and an adhesive bottom surface, the adhesive bottom surface being covered by backing material, through one or more printing stations to apply one or more colours to the top surface of the label; passing the label through a first die station at which at least one outline is die cut and one or more fold lines are made in the label, each fold line being substantially parallel to the feed direction of the label; providing a continuous feed of plastics film substrate and feeding the film substrate feed in a direction substantially parallel to the first feed direction; and using an arrangement to remove the backing material from the bottom surface of the label and then attach the one or more labels to a surface of the film substrate in a predetermined linear position, to form a series of discrete blanks.. This method is another efficient way of continuously forming blanks of the first aspect using a mechanised process.

[0050] The method may comprise winding the label up into one or more separate reels prior to removing the backing material and attaching the label to the film substrate.

[0051] Other aspects and features of the invention will be apparent from the claims and the following description.

5 BRIEF DESCRIPTION OF THE DRAWINGS

[0052] Embodiments of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a blank according to an aspect of the invention;

Figure 2 is a perspective view of a pack formed from the blank of Figure 1;

Figure 3 is a perspective view of a reel containing a repeating array of blanks of Figure 1;

Figure 4 is a schematic view of an apparatus for forming a blank according to a method of another aspect of the present invention;

Figures 5A, 5B and 5C are plan views of webs of paperboard at an intermediate stage of being formed into a three different blanks on the apparatus of Figure 4; and

Figure 6 is a schematic view of an apparatus for forming a blank according to a method of another aspect of the present invention.

DETAILED DESCRIPTION OF EMBODIMENT(S)

[0053] Referring firstly to Figure 1, a blank for forming a wrap-around pack for foodstuffs is indicated generally at 100. In this embodiment, the blank 100 includes a section of film substrate 110, a first section of paperboard 130 adhesively attached to the film substrate 110, and a second section of paperboard 150 adhesively attached to the film substrate 110.

[0054] In this embodiment, the section of film substrate (25 μ m oriented polypropylene) 110 is generally rectangular, with a front edge 112, a rear edge 114, a first outer edge 116 (to the left in Figure 1), and a second outer edge 118 (to the right in Figure 1). When the blank 100 is being formed, the film substrate 110 is fed through an apparatus 400, 500 (shown in Figures 4 and 6; the process is described in more detail below) in a feed direction represented by an arrow 111 in Figure 1. Therefore, the front edge 112 defines a leading edge as the film substrate 110 is fed through the machine, the rear edge 114 defines a trailing edge as the film substrate 110 is fed through the apparatus 400, 500, and the first and second outer edges 116, 118 are parallel to the arrow 111 representing the feed direction of the film substrate 110 during the forming of the blank 100. It will be appreciated, however, that the feed direction could be rotated by 180 degrees in some embodiments, i.e. reversed.

[0055] In practice, as described in more detail below, the film substrate 110 is often provided as a continuous reel such that the front and rear edges 112, 114 are only illustrative. The front and rear edges 112, 114 do repre-

sent the cutting lines when the continuous reel is divided into discrete blanks 100 at a defined step of the manufacturing process however. It will be appreciated that this dividing may however occur at a point where the blank 110 is actually substantially formed into a pack which contains e.g. a food item within.

[0056] In this embodiment, the film substrate 110 includes a datum (registration mark) 113. As an example, the datum 113 is located in the bottom left corner of the blank 100 as shown in Figure 1. It is typically a different colour to the surrounding film substrate 110 and rectangular in shape. It will be appreciated that the datum 113 could be of any appropriate shape however. As described in more detail below, the apparatus 400, 500 can include an arrangement configured to detect the datum 113 as the film substrate 110 is fed through the apparatus 400, 500 (however, it should be appreciated that such a datum may not be required with the apparatus 400 as will be apparent from the description below). The location of the datum 113 is such that it indicates the location of the front edge 112 of each blank 100 (i.e. the cut point when the blanks are separated), which enables the apparatus 500 to perform a number of functions that are dependent on accurately determining the exact position of the film substrate 110 (described below).

[0057] As shown in Figure 1, the first section of paperboard 130 is generally 'T-shaped', and adjacent the first outer edge of the film substrate 116, in this embodiment. The first section of paperboard 130 has a front edge 132, a rear edge 134, an outer edge 136, and an inner edge 138. In this embodiment, the front edge 132 is parallel to and adjacent the front edge of the film substrate 112. The rear edge 134 is parallel to and adjacent the rear edge of the film substrate 114. The outer edge 136 is parallel to and adjacent the first outer edge of the film substrate 116, and connects the front edge 132 to the rear edge 134. The right side (as in Figure 1) of the first section of paperboard 130 has two rectangular cut-out sections that create the general 'T-shape' of the first section of paperboard 130. Therefore, although the inner edge 138 does connect the front edge 132 to the rear edge 134, unlike the outer edge 136, the inner edge 138 is not a straight line. The inner edge 138 is made up of five parts 138a, 138b, 138c, 138d, and 138e. The inner edge part 138a extends perpendicularly from the front edge 132, in the direction of the rear edge 134. The inner edge part 138e extends perpendicularly from the rear edge 134, in the direction of the front edge 132. The inner edge parts 138b, 138c, 138d define a rectangular portion protruding from the remainder of the first section of paperboard 130. Specifically, the inner edge part 138b extends perpendicularly from the inner edge part 138a, in an inner direction (to the right in Figure 1). The inner edge part 138d extends perpendicularly from the inner edge part 138e, also in the inner direction (to the right in Figure 2). The inner edge parts 138b, 138d are substantially parallel in this embodiment. The inner edge part 138c connects the inner edge part 138b to the inner edge part 138d. The

inner edge part 138c is parallel to the outer edge 136, as well as the inner edge parts 138a, 138e. It will be appreciated that the shape of the first section of paperboard 130 is given as an example only, and can be varied to be any desired shape. The paperboard has a specific weight of 150gsm, and a 115 μ m thickness in this embodiment.

[0058] To assist with assembly of a wrap-around pack, the first section includes at least one fold line 140. The fold lines 140 extend generally from the front edge 132 to the rear edge 134, and are parallel to the feed direction 111. Advantageously, as the fold lines 140 are parallel to the feed direction 111, assembly of the wrap-around pack is simplified. The shape of the first section of paperboard 130 can be varied, but as the fold lines 140 are usually substantially parallel to the feed direction 111, it is simple to wrap the blank around a product during assembly (described in more detail below).

[0059] In this embodiment, the fold lines 140 are defined by three parallel cuts 142, spaced by approx. 1mm from each other. It will be appreciated however that the number of cuts can be varied from one upwards, as can the formation of each cut. For example, in this embodiment, each cut 142 is a continuous line through a partial depth of the first section of paperboard 130 (commonly referred to as score lines). However, in an alternative embodiment, each cut 142 may be a discontinuous line of discrete segments, each segment being through part or the entire depth of the first section of paperboard 130 or one or more creases may be introduced instead of cuts. The fold line 140 may also be defined by a combination of the alternative types of cuts 142. Advantageously, the provision of multiple spaced score lines helps folding to occur even if there is some misalignment between the blank and item to be packed during the pack forming process. This arrangement is preferred for the process described in relation to Figure 6 as the paperboard is typically less rigid. For the process described in relation to Figure 4 below the paperboard is typically thicker and more rigid, and therefore the provision of multiple parallel cuts is less desirable to account for the tendency of material to shift from out of its desired location

[0060] In this embodiment, although the fold line 140 extends generally from the rear edge 134 to the front edge 132 of the first section of paperboard 130, the fold line 140 terminates at each longitudinal end at a point offset from the front and rear edges 132, 134, by approx. 2mm in this embodiment. Advantageously, this decreases the risk of the first section of paperboard 130 being separated during forming of the blank, or assembly of the pack, into one or more detached sections of paperboard, which is undesirable.

[0061] In this embodiment, the first section of paperboard 130 includes two fold lines 140. The two fold lines 140 define three panels of the first section of paperboard, a first panel 144a, a second panel 144b, and a third panel 144c. In this embodiment, the first panel 144a is generally rectangular and adjacent the first outer edge of the film

substrate 116.

[0062] Moving inwardly (towards the right in Figure 1), the second panel 144b is adjacent the first panel 144a, and is also generally rectangular. Moving further inwardly, the third panel 144c is adjacent the second panel 144d, and is generally 'T-shaped', as its outline includes the inner edge 138.

[0063] The second section of paperboard 150 is generally rectangular and adjacent the second outer edge of the film substrate 118, in this embodiment. The second section of paperboard 150 has a front edge 152, a rear edge 154, an inner edge 156, and an outer edge 158. In this embodiment, the front edge 152 is parallel to and adjacent the front edge of the film substrate 112. The rear edge 154 is parallel to and adjacent the rear edge of the film substrate 114. The outer edge 158 is parallel to and adjacent the second outer edge of the substrate 118. The inner edge 156 connects the front edge 132 to the rear edge 134, and is parallel to the outer edge 158.

[0064] In this embodiment, the external and internal corners of the first and second sections of paperboard 130, 150, the corners defined by the junction of the edges are rounded. In this embodiment, the external rounded corners have a radius of 5mm, and the internal corners have a radius of 10mm. Advantageously, the radiused corners decrease the risk of the paperboard sections 130, 150 tearing during forming of the blank 100.

[0065] The first section of paperboard 130 is offset from the first outer edge of the film substrate 116, and the second section of paperboard 150 is offset from the second outer edge of the film substrate 118. The area between the first section of paperboard 130 and the first outer edge of the film substrate 116 defines a first side portion 146a. The area between the second section of paperboard 150 and the second outer edge of the film substrate 118 defines a second side portion 146b. The side portions 146a, 146b define an area composed of the film substrate 110 with no paperboard attached.

[0066] The first and second sections of paperboard 130, 150 are offset from the front edge of the film substrate 112. The area between the first and second sections of paperboard 130, 150 and the front edge of the film substrate 112 defines a first free end 148a. The first and second sections of paperboard 130, 150 are also offset from the rear edge of the film substrate 114. The area between the first and second sections of paperboard 130, 150 and the rear edge of the film substrate 114 defines a second free end 148b. The free ends 148a, 148b define an area composed of the film substrate 110 with no paperboard attached.

[0067] The side portions 146a, 146b extend from the rear edge of the film substrate 114 to the front edge of the film substrate 112. The free ends 148a, 148b extend from the rear edge of the first outer edge of the film substrate 116 to the second outer edge of the film substrate 118. It can therefore be seen that the side portions 146a, 146b and the free ends 148a, 148b intersect to define four corner regions 149 of the blank 100, which are also

have no paperboard attached.

[0068] Figure 2 shows an assembled wrap-around pack 200, formed from the blank 100. The assembly process is as follows: the blank 100 is wrapped around an item of foodstuff such as a filled baguette sandwich (not shown in Figure 2 for clarity) in a continuous process to form a tube such that the side portions 146a, 146b of the blank engage each other. Heat and pressure is applied to the side portions 146a, 146b using a standard heat seal process in a flow-wrapper machine or form fill and seal machine (not shown), at least partially melting the film substrate 110 to define a longitudinal seam 202 attaching the first side portion 146a to the second side portion 146b.

[0069] The heat seal process is carried out at each free end 148a, 148b to define two end seams 204a, 204b, each end seam extending in a direction transverse to the longitudinal seam 202. The end seam 204a attaches the free end 148a to itself, and the end seam 204b attaches the free end 148b to itself. The longitudinal seam 202 and the end seams 204a, 204b both also pass through the corner regions 149, defined by the intersection of the side portions 146a, 146b and the free ends 148a, 148b. Thus a substantially hermetically sealed pack is formed. The formed 200 pack is then severed from a further pack being formed upstream across the centre of the transverse seam as part of the continuous process.

[0070] It can also be seen from Figure 2 that, when the pack 200 is assembled, the first panel 144a and the second section of paperboard 150 are substantially coplanar, to define a base 206 of the pack 200. This improves the rigidity of the base 206. The longitudinal seam 202 is located intermediate the first panel 144a and the second section of paperboard 150. As noted above, the provision of three parallel score lines 142 at each fold line 140 assists with the forming of the pack 200 on a flow-wrapper or form fill and seal machine, as it enables folding of the panels 144a, 144b and 144c delimited by the fold lines to be achieved even if there is some inaccuracy in the relative positions of the blank and the foodstuff being packaged.

[0071] Further, when the pack 200 is assembled, the three panels 144a, 144b, 144c are mutually angled. In this embodiment, each panel 144a, 144b, 144c is substantially perpendicular to the adjacent panel, i.e. the first panel 144a is substantially perpendicular to the second panel 144b, and the second panel 144b is substantially perpendicular to the third panel 144c. This angled arrangement further improves the stability and rigidity of the pack, such that the packs may be better stacked and better presented on-shelf.

[0072] Figure 3 shows an example of a reel 300 comprising a plurality of blanks 100 in a regular repeating array.

[0073] Figures 4 and 6 are schematic representations of two different embodiments of the automated apparatus 400, 500 that may be employed to form the reel 300 of blanks 100.

[0074] Figure 4 shows the apparatus 400 for forming a variant of the blank 100. One example of a suitable apparatus is a UV flexographic press as manufactured by Gallus Ferd. Rüsch AG of St. Gallen, Switzerland with suitable adaptations as set out below.

[0075] A web of paperboard 601 is continuously fed from a reel 402 in a first feed direction 403. The web 601 passes through at least one print station 406 to add ink to a top surface of the web 601, the ink defining images and/or text. Typically the apparatus includes several, for example seven or eight print stations 406 so as to produce full colour images, as well as varnishes and other coatings as may be required. The inks and others coatings are typically low migration, since despite the fact they are on the exterior of a pack, on a reel they will sit in contact with an interior face of the film.

[0076] Next, the web 601 is fed through a first die station 408, which employs a rotary die to cut an outline in the web through the entire depth of the paperboard. An example of the web after the cuts have been made is shown in Figure 5A in plan view. The outline defines a waste or window portion 602 (shown cross-hatched in Figure 5A), a central section 604 of the web 601 and one or more continuous sections 606. The cross hatched waste portion 602, is then extracted from the web 601.

[0077] In this embodiment, the central section 604 of the web 601 corresponds to, and ultimately forms, the first and second sections of paperboard 130, 150 of the blank 100. It should be noted that, by comparison to the blank of Figure 1, an additional tie portion 131 of paperboard between the first and second sections 130, 150 is provided in web of Figure 5A in order to support the first and second sections of paperboard until lamination (described below).

[0078] The continuous sections 606 enable the web 601 to feed continuously through the apparatus 400 following the outline being cut out. It will be appreciated that following the die cutting step, there may otherwise be insufficient strength in the remainder of the web to withstand the tension in the web 601 as it feeds through the apparatus 400, and therefore may tear.

[0079] In this embodiment, the continuous sections 606 are made up of a strip portion 608 and at least one bridging portion 610 per blank. In this embodiment, there are two strip portions 608, each strip portion 608 being located at a periphery of the web, i.e. the longitudinal border of the web relative to the feed direction 403. The bridging portions 610 are located intermediate the strip portions 608 and the central section 604, connecting the central section 604 to the strip portions 608. In this embodiment there are two bridging portions 610 per blank connecting a first strip portion 608a to the first section of paperboard 130, and two bridging portions 610 connecting a second bridge portion 608b to the second section of paperboard 150. The line A-A, shown in Figure 5A defines a first cutting line, and the line B-B defines a second cutting line. At a later stage of the process (described below), further cuts are made along the first and second

cutting lines A-A, B-B to divide the continuous sections 606 from the central section 602.

[0080] In this embodiment, there are two continuous sections 606 running along the borders of the web 601, but it will be appreciated that an alternative embodiment could provide a different arrangement. As an example, there could be a single continuous section 606 extending longitudinally through the centre of the web 601, the bridging portions 610 and the first and second sections of paperboard 130, 150 extending outwardly from the centre.

[0081] After passing through the die station 408 and removal of the waste portion 602, an adhesive is applied to a first portion of a reverse (i.e. unprinted) surface of the web 601, at the adhesive station 410. To achieve this, the web 601 may be turned or diverted back on itself (i.e. run for a certain distance opposite the general direction of feed through the apparatus) to invert it prior to the first die station 408 or between the first die cut station and the adhesive station 410. The first portion of the reverse surface of the web is defined by the area of the reverse surface, corresponding to the central section 604 of the web, i.e. adhesive is only applied to the bottom surface of the first and second sections of paperboard 130, 150, so no adhesive is applied to the bottom surface of the continuous sections 606. In other embodiments adhesive may be applied across the whole reverse surface of the paperboard.

[0082] A reel 412 of plastics film substrate 110 is provided and fed in the first feed direction 403, substantially parallel to the web of paperboard 401. In this embodiment, the film is a 25µm oriented polypropylene (OPP), although other suitable films may be used, such as polyethylene (PE), polymerised lactic acid (PLA), ethylene vinyl alcohol (EVOH), or co-extrusions/laminates of multiple materials to provide certain desired properties such as anti-mist properties, gloss, etc. In some embodiments a barrier film may be used to substantially prevent the passage of air through the film, and in other embodiments the film may be perforated to provide for a passive modified atmosphere. Further if the pack formed from the blank is intended to be ovenable (i.e. left in place whilst a foodstuff in the pack is heated in a conventional or microwave oven), a suitable heat-sealable polyethylene terephthalate (PET) film and heat resistant paperboard such as Trayforma board produced by Stora Enso Oyj of Helsinki, Finland, or Jazz board produced by Plastiroll Oy Ltd of Ylöjärvi, Finland.

[0083] In alternative embodiments, the adhesive is applied directly to a surface of the film substrate 110 corresponding to the central section 604 of the web 601, i.e. the area of the film substrate 110 that will come into contact with the central section 604 of the web when the web 401 and film substrate 110 are brought together (described below). However this is not preferred as datum or register marks would be required on the film to enable the adhesive pattern to be accurately aligned with the correct areas of the board.

[0084] At an attachment station 414, the web 601 and

the film substrate 110 are brought together, by passing the web 601 and the film substrate 110 through nip rollers with a small clearance between them. The web 601 passes to a curing station 416, where the adhesive is cured. In this embodiment, the adhesive is cured by UV light.

[0085] A second die station 417 then produces the fold lines in the form of the three parallel score lines through part of the depth of the board. In other embodiments a multi-height die cutter may be used to cut out the waste material and form the score lines at the same station.

[0086] The web 601 and film substrate 110 are then fed to a third die station 418 where further cuts are made along the first and second cutting lines A-A, B-B through the paperboard web 601 and film substrate 110 to divide the continuous sections 606 from the central section 602. The web 401 and film substrate 110 are then fed to a final station 420, where the continuous sections 606 are removed, e.g. by a turret rewinder 424. In other embodiments the cuts along A-A and B-B may be through the paperboard web 601 only such that (if the continuous sections are not adhered to the film) the paperboard can be separated from the film.

[0087] The remaining web 401 and film substrate 110 define a variant of the completed blank 100 with the differences described above, which is wound up into the reel 300 containing a series of blanks 100 as generally illustrated in Figure 3. This reel is then supplied to a packer for feeding into a flow-wrapper or form fill and seal machine to produce the a variant of the packs 200 as illustrated in Figure 2 but with the additional tie portion 131 and bridging portions 610. It will be appreciated that this reel may omit the register marks, since the correct pitch between blanks is provided by the continuous sections 606 at the point where the board and film are brought together. However, an edge of board extending transverse to the feed direction (for example one of edges 132, 134, 152, 154 138b or 138d may be used in conjunction with an ultrasonic sensor (not shown) on the apparatus to provide a datum via detecting a difference in calliper that may be utilised for downstream processes.

[0088] In an alternative embodiment, one such downstream process is separating the series of blanks into individual blanks 100 and supplying these as "cut singles". These blanks are intended to form a pouch, for example, having a base and a tubular side wall. Such pouches may be used for tortilla wraps and the like. In this case, the blanks are pre-folded and glued on a folder-gluer machine (not shown) for supply to a packer in a part-erected flat form. The packer opens the part erected blank, loads the foodstuff into the pouch and then only heat seals the top to form a hermetically sealed pack. The blanks are loaded, stacked on top of each other, into a magazine of the folder-gluer. The folder gluer requires a leading edge at least partially of board for folding. Therefore these blanks have at least one edge that is not entirely film (unlike flow-wrapper/form fill and seal blanks) to assist with folding. In this embodiment a multi-height die cutter may be required on the third die station to both

cut through just the continuous sections 606 and not the film, as well as to cut through both the board and film to form the individual blanks.

[0089] Figure 5B shows a series of two blanks 100' having an alternative layout in which like parts are labelled by like numerals with the suffix ' by reference to Figure 5A. In this embodiment the shape has been altered, but otherwise the principle of manufacture is substantially the same. In this embodiment the bridging portions 610' are left in place after the cuts along lines A'-A' and B'-B', and these may be used as the datum, as may the central board area 131', in conjunction with a sensor.

[0090] Figure 5C shows a further series of two blanks 100" having an alternative layout which like parts are labelled by like numerals with the suffix ". In this embodiment a further different shape of blank is shown with a larger tie 131" between the first and second sections 130" and 150". In Figure 5C the web is shown in the state between the second and third die stations 417 and 418. In this embodiment the second die station 417 has been configured to introduce creases rather than cuts into the web at certain desired locations. Specifically a crease 142a" is introduced to provide a distinct panels 144a" and 144b" that will ultimately form a base wall of the pack. In addition, a repeating array of creases 160", angled with respect to the sides and ends of the blank, are also introduced into panels 144a" and 144b". These creases have been found to aid the subsequent forming of the blanks into a pack on a flow wrapper or form fill and seal machine, in conjunction with the crease 142a" to generate a flat base wall and clear delineation with the side of the pack.

[0091] Figure 6 shows the alternative apparatus 500 for forming the blank 100. In practice this may comprise multiple machines arranged in-line, or with certain steps taking place at certain different locations. A web of self-adhesive labelstock 501 (150gsm specific weight, 115µm thickness in this embodiment) is fed from a reel 502 in a first feed direction 503. The labelstock 501 is printed with ink and optionally other coatings on a top surface 501a of the labelstock 501, the ink defining images and/or text at a succession of print stations 504 (two shown in Fig. 6, but typically seven or eight in practice). A bottom surface 501b is adhesive, but covered by backing material (not shown). In this embodiment, the labelstock 501 is made of paperboard. In other embodiments thicker paperboard up to 200gsm or more may be used.

[0092] The labelstock 501 is fed through a first die station 506, where the first and second sections of paperboard 130, 150 are cut out, and one or more fold lines 140 (the three score lines of partial cut in this embodiment) are made in the first section 130. The remainder of the labelstock is removed on to a rewinder 513 at a separation station 505. Advantageously, there is a low amount of waste produced using this method.

[0093] In this embodiment, the labelstock is then slit between the first and second sections and a series of the first sections 130 on the associated backing are then

wound onto a reel 508a. Simultaneously, a series of the second sections 150 on the associated backing are wound onto a reel 508b. It will be appreciated though that this step of the method is not essential to the invention, and may be omitted, the first and second sections of paperboard 130, 150 being cut out but not divided into two separate reels. As a further alternative the first section 130 may be printed and die cut in a separate print and die cut run from the second section 150, although this may require additional measures to ensure colour consistency is maintained between the first section and the second section. In this embodiment, the printing and die cutting is carried out on a UV flexographic press, such as a press manufactured Mark Andy, Inc of St Louis, Missouri, USA.

[0094] The reels 508a and 508b of first and second sections of paperboard 130, 150 are then transferred to feed through applicators 510a, 510b at an applicator station 514 (alternatively, there may be just one station for both sections). The label applicators 510a and 510b divert the labelstock sections through a tight angle (e.g. approaching 180 degrees) to start the separation of the backing material from the labelstock 501. The backing is rewound for recycling.

[0095] A reel of plastics film substrate 512, for example 25 μ m OPP, or the other materials mentioned above, is provided and fed in the first feed direction 503. The film substrate 110 is fed simultaneously to the removal of the backing material from the labelstock 501 such that the adhesive reverse surface of the label and an outer surface of the film substrate 110 are brought together by passing through the applicator station 514. Specifically, the first and second sections of paperboard 130, 150 are attached to the top surface of the film substrate 110 in a predetermined linear and transverse position in order to form the blank 100. In this embodiment, this is achieved by using the datums (register marks) 113 pre-printed on the film substrate 110 at a pitch which equates to the length of one blank, as shown in Figure 1, to determine the current position of the film substrate 110, and therefore accurately place the first and second sections 130, 150 in an predetermined location, as desired, to form the blank 100, in the configuration shown in Figure 1.

[0096] A series of discrete completed blanks 100, are wound up into the reel 300 as shown in Figure 3. In an alternative embodiment, the series of blanks 100 are separated into individual blanks 100 and supplied as singles.

[0097] In this embodiment, application of the labels to film takes place on a converting machine manufactured by A B Graphics International Limited of Bridlington, UK

[0098] It will be appreciated that packs according to the present invention may be used for packaging a wide variety of foodstuffs including baguettes, sandwiches, pizza, pork pies, garlic bread, minced beef, sausages, burgers and other protein product, fruit and vegetables, etc. In the embodiments described above it will be noted that the paperboard is located entirely within the boundaries of the film substrate.

[0099] Although the invention has been described above with reference to one or more preferred embodiments, it will be appreciated that various changes or modifications may be made without departing from the scope of the invention as defined in the appended claims.

[0100] For example, the weight of board may be varied between 100gsm and 250gsm, more usually 120gsm to 170gsm and the thickness of the film may be varied between 15 μ m and 50 μ m, more typically 20 μ m and 40 μ m. The shape and size of the board sections may be varied, and a single section or more than two may be used. The sections may have windows cut from within them. Multiple lanes of blanks may be manufactured from a single web and subsequently separated into individual reels. The crease pattern 160" may take any suitable alternative regular or irregular form of straight or curved creases.

Claims

1. A blank (100) for forming a wrap-around pack for foodstuffs, comprising:

a section of plastics film substrate (110), the film substrate section being generally rectangular with a front edge (112), a rear edge (114), and first (116) and second (118) outer edges, the outer edges (116, 118) being substantially parallel to the direction the blank (100) is fed during assembly of the wrap-around pack;

one or more sections (130) of paperboard, adhesively attached to an outer surface of the film substrate (110), at least one section (130) of the paperboard having at least one fold line (140), the fold line (140) being substantially parallel to the outer edges (116, 118) of the film substrate (110);

first and second side portions (146a, 146b) between the or each section (130) of paperboard and the respective outer edge (116, 118), configured such that, when the pack is assembled, the first and second side portions (146a, 146b) can be attached to define a longitudinal seam (202);

first and second end portions 148a, 148b, composed of the film substrate (110) with no paperboard attached to it, such that, when the pack is assembled, each end portion 148a, 148b defines a free end of the wrap-around pack that can be heat sealed to define an end seam (204a, 204b);

wherein the fold line (140) defines at least two panels (144a, 144b, 144c) of the paperboard section (130), the panels (144a, 144b, 144c) arranged to be mutually angled when the pack is assembled; and

wherein at least one panel (144a, 144b, 144c) of the paperboard section is configured to form

- at least part of a base (206) of the pack when assembled, and wherein said longitudinal seam (202) is configured to be substantially parallel to the or each fold line (140) and located at the base (206) when the pack is assembled.
2. The blank (100) of claim 1 wherein the fold line (140) is defined by at least one cut, the cut being either a continuous line through a partial depth of the paperboard, or a discontinuous line of discrete segments through at least a partial depth of the paperboard, preferably wherein the fold line (140) is defined by at least three cuts.
 3. The blank (100) of claim 1 or claim 2 wherein at least one section (130) of paperboard comprises at least two fold lines (140) such that the section (130) of paperboard defines at least three panels (144a, 144b, 144c), the panels (144a, 144b, 144c) arranged to be mutually angled when the wrap-around pack is assembled.
 4. The blank (100) of any preceding claim comprising first and second sections (130, 150) of paperboard, the first section (130) of paperboard being offset from the first outer edge (116) of the film substrate (110) section, and the second section (150) of paperboard being offset from the second outer edge (118) of the film substrate (110) section, such that first and second side portions of the blank are composed of a majority of film substrate (110) only and are defined adjacent the first and second outer edges (116, 118) respectively, the first and second side portions being configured to be heat-sealed together when the pack is assembled, preferably wherein at least one portion of paperboard extends from at least one of the first and second sections (150) of paperboard to at least one of the first (116) and second (118) outer edges, more preferably wherein the at least one portion is narrower in a direction parallel to the first (116) and second (118) outer edges than the one of the first or second sections (130) of paperboard from which it extends, or wherein the first and second side portions of the blank, are composed of the film substrate (110) with no paperboard attached, and are defined adjacent the first (116) and second (118) outer edges respectively, the first and second side portions being configured to be heat-sealed together when the pack is assembled.
 5. The blank (100) of claim 4 wherein the panel of the first section (130) of paperboard adjacent the first side portion of the blank defines a base (206) panel, such that when the wrap-around pack is assembled, and the first and second portions of blank are heat-sealed together, the base (206) panel of the first section (130) and the second section (130) are substantially coplanar, defining a substantially planar base (206) of the pack.
 6. The blank (100) of any preceding claim wherein an area of paperboard arranged to form at least part of a base (206) of a pack, when erected, is provided with a plurality of creases arranged to increase the rigidity of the area and/or to enhance the folding of the blank to form the pack, preferably wherein the plurality of fold lines (140) are non-parallel to at least a side edge or an end edge of the blank, more preferably wherein the plurality of fold lines (140) are non-parallel to both a side edge and an end edge of the blank, or wherein the first section (130) of paperboard has two rectangular cut-out sections of equal dimensions, such that the first section of paperboard is generally T-shaped with two internal angles, the internal angles being substantially right-angled.
 7. The blank (100) of any preceding claim wherein the paperboard specific weight is at least 100gsm, preferably wherein the paperboard specific weight is between 100gsm and 250gsm.
 8. The blank (100) of any preceding claim wherein the film substrate (110) material has a thickness of at least 15 microns, optionally at least 17 microns, optionally at least 20 microns, and preferably wherein the film substrate (110) material has a thickness of at least 25 microns.
 9. The blank (100) of any preceding claim wherein substantially the entirety of the paperboard is adhered to the film substrate (110).
 10. A wrap-around pack (200) formed from the blank of any of claims 1 to 9.
 11. The wrap-around pack (200) of claim 10 comprising a longitudinal seam (202) and at least one end seam 204a, 204b substantially transverse to the longitudinal seam (202), the seams formed by heat sealing of the film substrate (110).
 12. A reel (300) comprising a plurality of blanks (100) according to any of claims 1 to 9.

Patentansprüche

1. Zuschnitt (100) zum Bilden einer Wrap-around-Verpackung für Lebensmittel, aufweisend:

einen Abschnitt Kunststoffoliensubstrat (110), wobei der Foliensubstratabschnitt allgemein rechteckig mit einer Vorderkante (112), einer hinteren Kante (114) und ersten (116) und zweiten (118) Außenkanten ist, wobei die Außenkanten (116, 118) im Wesentlichen parallel zu der

- Richtung sind, in welcher der Zuschnitt (100) während des Zusammenbaus der Wrap-around-Verpackung zugeführt wird; einen oder mehrere Abschnitte (130) Karton, die haftend an einer Außenfläche des Foliensubstrats (110) befestigt sind, wobei mindestens ein Abschnitt (130) des Kartons mindestens eine Falzlinie (140) hat, wobei die Falzlinie (140) im Wesentlichen parallel zu den Außenkanten (116, 118) des Foliensubstrats (110) ist; erste und zweite Seitenteile (146a, 146b) zwischen dem oder zwischen jedem Kartonabschnitt (130) und der jeweiligen Außenkante (116, 118), die so ausgebildet sind, dass bei Zusammenbau der Verpackung die ersten und zweiten Seitenteile (146a, 146b) befestigbar sind, um eine Längsnaht (202) zu bestimmen; erste und zweite Endteile 148a, 148b, die aus dem Foliensubstrat (110) ohne daran befestigten Karton gebildet sind, so dass bei Zusammenbau der Verpackung jeder Endteil 148a, 148b ein freies Ende der Wrap-around-Verpackung bestimmt, das heißsigelbar ist, um eine Endnaht (204a, 204b) zu bestimmen; wobei die Falzlinie (140) mindestens zwei Felder (144a, 144b, 144c) des Kartonabschnitts (130) bestimmt, wobei die Felder (144a, 144b, 144c) so eingerichtet sind, dass dieselben bei Zusammenbau der Verpackung zueinander winklig sind; und wobei mindestens ein Feld (144a, 144b, 144c) des Kartonabschnitts dazu ausgebildet ist, mindestens einen Teil einer Basis (206) der zusammengebauten Verpackung zu bilden, und wobei die Längsnaht (202) dazu ausgebildet ist, bei Zusammenbau der Verpackung im Wesentlichen parallel zu der oder zu jeder Falzlinie (140) und an der Basis (206) angeordnet zu sein.
2. Zuschnitt (100) nach Anspruch 1, wobei die Falzlinie (140) durch mindestens einen Schnitt bestimmt ist, wobei der Schnitt entweder eine durchgängige Linie durch eine Teiltiefe des Kartons oder eine unterbrochene Linie aus getrennten Segmenten durch mindestens eine Teiltiefe des Kartons ist, wobei die Falzlinie (140) bevorzugt durch mindestens drei Schnitte bestimmt ist.
 3. Zuschnitt (100) nach Anspruch 1 oder Anspruch 2, wobei mindestens ein Kartonabschnitt (130) mindestens zwei Falzlinien (140) aufweist, so dass der Kartonabschnitt (130) mindestens drei Felder (144a, 144b, 144c) bestimmt, wobei die Felder (144a, 144b, 144c) so eingerichtet sind, dass dieselben bei Zusammenbau der Wrap-around-Verpackung zueinander winklig sind.
 4. Zuschnitt (100) nach einem der vorangehenden An-

sprüche, der erste und zweite Kartonabschnitte (130, 150) aufweist, wobei der erste Kartonabschnitt (130) von der ersten Außenkante (116) des Foliensubstratsabschnitts (110) versetzt ist und der zweite Kartonabschnitt (150) von der zweiten Außenkante (118) des Foliensubstratsabschnitts (110) versetzt ist, so dass erste und zweite Seitenteile des Zuschnitts nur aus einem größten Teil des Foliensubstrats (110) gebildet sind und angrenzend an die erste beziehungsweise zweite Außenkante (116, 118) bestimmt sind, wobei die ersten und zweiten Seitenteile dazu ausgebildet sind, bei Zusammenbau der Verpackung aneinander heißgesiegelt zu sein, wobei bevorzugt mindestens ein Teil des Kartons sich von mindestens einem der ersten und zweiten Kartonabschnitte (150) zu mindestens einer der ersten (116) und zweiten (118) Außenkanten erstreckt, wobei weiter bevorzugt der mindestens eine Teil in einer zu den ersten (116) und zweiten (118) Außenkanten parallelen Richtung schmaler als der eine der ersten oder zweiten Kartonabschnitte (130) ist, von dem er sich erstreckt, oder wobei die ersten und zweiten Seitenteile des Zuschnitts aus dem Foliensubstrat (110) ohne daran befestigten Karton gebildet sind und angrenzend an die erste (116) beziehungsweise zweite (118) Außenkante gebildet sind, wobei die ersten und zweiten Seitenteile dazu ausgebildet sind, bei Zusammenbau der Verpackung aneinander heißgesiegelt zu sein.

5. Zuschnitt (100) nach Anspruch 4, wobei das Feld des ersten Kartonabschnitts (130) angrenzend an den ersten Seitenteil des Zuschnitts ein Basis- (206) -Feld bestimmt, so dass bei Zusammenbau der Wrap-around-Verpackung und bei aneinander heißgesiegelten ersten und zweiten Teilen des Zuschnitts das Basis- (206) -Feld des ersten Abschnitts (130) und des zweiten Abschnitts (130) im Wesentlichen komplanar sind und eine im Wesentlichen ebene Basis (206) der Verpackung bestimmen.
6. Zuschnitt (100) nach einem der vorangehenden Ansprüche, wobei eine Kartonfläche, die dazu eingerichtet ist, mindestens einen Teil einer Basis (206) einer aufgestellten Packung zu bilden, mit einer Vielzahl von Falten versehen ist, die dazu eingerichtet sind, die Steifigkeit der Fläche und/oder die Falzung des Zuschnitts zur Bildung der Verpackung zu verbessern, wobei die Vielzahl von Falzlinien (140) bevorzugt zu mindestens einer Seitenkante oder einer Endkante des Zuschnitts nichtparallel ist, wobei weiter bevorzugt die Vielzahl von Falzlinien (140) sowohl zu einer Seitenkante als auch zu einer Endkante des Zuschnitts nichtparallel ist, oder wobei der erste Kartonabschnitt (130) zwei rechteckig ausgeschnittene Abschnitte mit gleichen Maßen hat, so dass der erste Kartonabschnitt allgemein T-förmig mit zwei Innenwinkeln ist, wobei die Innenwinkel im

Wesentlichen rechtwinklig sind.

7. Zuschnitt (100) nach einem der vorangehenden Ansprüche, wobei das spezifische Gewicht des Kartons mindestens 100 g/m² beträgt, wobei das spezifische Gewicht des Kartons bevorzugt zwischen 100 g/m² und 250 g/m² beträgt. 5
8. Zuschnitt (100) nach einem der vorangehenden Ansprüche, wobei das Material des Foliensubstrats (110) eine Dicke von mindestens 15 Mikrometern, wahlweise mindestens 17 Mikrometern, wahlweise mindestens 20 Mikrometern hat und wobei das Material des Foliensubstrats (110) bevorzugt eine Dicke von mindestens 25 Mikrometern hat. 10 15
9. Zuschnitt (100) nach einem der vorangehenden Ansprüche, wobei im Wesentlichen der gesamte Karton haftend an das Foliensubstrat (110) gebunden ist. 20
10. Wrap-around-Verpackung (200), die aus dem Zuschnitt nach einem der Ansprüche 1 bis 9 gebildet ist.
11. Wrap-around-Verpackung (200) nach Anspruch 10, die eine Längsnaht (202) und mindestens eine im Wesentlichen quer zu der Längsnaht (202) verlaufende Endnaht (204a, 204b) aufweist, wobei die Nähte durch Heißsiegeln des Foliensubstrats (110) gebildet sind. 25 30
12. Rolle (300), die eine Vielzahl von Zuschnitten (100) gemäß einem der Ansprüche 1 bis 9 aufweist. 35

Revendications

1. Flan (100) pour former un emballage enveloppe de denrées alimentaires comprenant :

un segment de film plastique substrat (110), ce segment de film substrat étant de forme essentiellement rectangulaire avec un bord avant (112), un bord arrière (114), un premier bord externe (116) et un second bord externe (118), les bords externes (116, 118) étant essentiellement parallèles à la direction selon laquelle le flan (100) est fourni au cours de l'assemblage de l'emballage enveloppe,

au moins un segment de carton (130) fixé par adhésion à la surface externe du film substrat (110), au moins un segment de carton (130) ayant au moins une ligne de pliage (140), la ligne de pliage (140) étant essentiellement parallèle au bord externe (116, 118) du film substrat (110),

une première partie latérale et une seconde partie latérale (146a, 146b) situées entre le ou cha-

que segment de carton (130) et le bord externe (116, 118) respectif, et conformées de sorte que, lorsque l'emballage est assemblé, la première partie latérale et la seconde partie latérale (146a, 146b) puissent être fixées pour définir une soudure longitudinale (202), une première partie d'extrémité et une seconde partie d'extrémité (148a, 148b) constituées du film substrat (110) auxquelles n'est pas fixé de carton de sorte que lorsque l'emballage est assemblé, chaque partie d'extrémité (148a, 148b) définisse une extrémité libre de l'emballage enveloppe qui peut être soudée thermiquement pour définir une soudure d'extrémité (204a, 204b), la ligne de pliage (140) définissant au moins deux panneaux (144a, 144b, 144c) du segment en carton (130), les panneaux (144a, 144b, 144c) étant réalisés pour être disposés angulairement lorsque l'emballage est assemblé, et au moins un panneau (144a, 144b, 144c) du segment en carton étant conformé pour former au moins une partie de la base (206) de l'emballage lorsqu'il est assemblé, et la soudure longitudinale (202) étant réalisée pour être essentiellement parallèle à la ou à chacune des ligne(s) de pliage (140) et être située au niveau de la base (206) lorsque l'emballage est assemblé.

2. Flan (100) conforme à la revendication 1, dans lequel, la ligne de pliage (140) est définie par au moins une découpe, la découpe étant soit une ligne continue au travers d'une partie de l'épaisseur du carton, soit une ligne discontinue de segments discrets au travers d'au moins une partie de l'épaisseur du carton, la ligne de pliage (140) étant de préférence définie par au moins trois découpes.

3. Flan (100) conforme à la revendication 1 ou 2, dans lequel, au moins un segment de carton (130) comprend au moins deux lignes de pliage (140) de sorte que le segment de carton (130) définisse au moins trois panneaux (144a, 144b, 144c), les panneaux (144a, 144b, 144c) étant agencés pour être positionnés angulairement lorsque l'emballage enveloppe est assemblé.

4. Flan (100) conforme à l'une quelconque des revendications précédentes, comprenant un premier segment de carton et un second segment de carton (130, 150), le premier segment de carton (130) étant décalé par rapport au premier bord externe (116) du segment de film substrat (110) et le second segment de carton (150) étant décalé par rapport au second bord externe (118) du segment de film substrat (110) de sorte que la pre-

- mière partie latérale et la seconde partie latérale du flan soient constituées en majorité uniquement du film substrat (110) et soient définies de façon à être respectivement adjacentes au premier bord externe et au second bord externe (116, 118), la première partie latérale et la seconde partie latérale étant conformées pour être soudées thermiquement l'une avec l'autre lorsque l'emballage est assemblé, et de préférence au moins une partie de carton s'étend du premier et/ou du second segment(s) de carton (150) au premier bord externe (116) et/ou au second bord externe (118), et de façon plus préférentielle, cette partie étant plus étroite dans la direction parallèle au premier bord externe (116) et au second bord externe (118) que le premier ou le second segment(s) de carton (130) à partir duquel elle s'étend, ou la première partie latérale et la seconde partie latérale du flan étant constituées par le film substrat (110) sans carton fixé, et agencées de façon à être respectivement adjacentes au premier bord externe (116) et au second bord externe (118), la première partie latérale et la seconde partie latérale étant conformées pour pouvoir être soudées thermiquement l'une à l'autre lorsque l'emballage est assemblé.
5. Flan (100) conforme à la revendication 4, dans lequel, le panneau du premier segment de carton (130) adjacent à la première partie latérale du flan définit un panneau de base (206), de sorte que, lorsque l'emballage enveloppe est assemblé, et que la première partie et la seconde partie du flan sont soudées thermiquement l'une à l'autre, le panneau de base (206) du premier segment (130) et du second segment (130) soient essentiellement coplanaires, en définissant une base (206) essentiellement plane de l'emballage.
6. Flan (100) conforme à l'une quelconque des revendications précédentes, dans lequel, une surface de carton agencée pour former au moins une partie de la base (206) de l'emballage, lorsqu'il est dressé est équipée d'un ensemble de rides réalisées pour augmenter la rigidité de la surface et/ou faciliter le pliage du flan pour former l'emballage et de préférence les lignes de pliage de l'ensemble de lignes de pliage (140) ne sont pas parallèles à au moins un bord latéral ou un bord d'extrémité du flan, et de façon plus préférentielle, les lignes de pliage (140) de l'ensemble de lignes de pliage (140) ne sont pas parallèles à un bord latéral et à un bord d'extrémité du flan, ou le premier segment de carton (130) a deux segments de découpe rectangulaires de mêmes dimensions de sorte que le premier segment de carton ait essentiellement la forme d'un T avec deux angles internes, les angles internes étant essentiellement des angles droits.
7. Flan (100) conforme à l'une quelconque des revendications précédentes, dans lequel, le poids spécifique du carton est au moins de 100g/m², et de préférence le poids spécifique du carton est compris entre 100g/m² et 250 g/m².
8. Flan (100) conforme à l'une quelconque des revendications précédentes, dans lequel, le matériau constitutif du film substrat (110) a une épaisseur d'au moins 15 microns, le cas échéant, d'au moins 17 microns, le cas échéant d'au moins 20 microns et de préférence le matériau constitutif du film substrat (110) a une épaisseur d'au moins 25 microns.
9. Flan (100) conforme à l'une quelconque des revendications précédentes, dans lequel, essentiellement la totalité du carton adhère au film substrat (110).
10. Emballage enveloppe (200) conforme à l'une quelconque des revendications précédentes, réalisé à partir d'un flan conforme à l'une quelconque des revendications 1 à 9.
11. Emballage enveloppe (200) conforme à la revendication 10, comportant une soudure longitudinale (202) et au moins une soudure d'extrémité (204a, 204b) essentiellement transversale à la soudure longitudinale (202), les soudures étant formées par soudage thermique du film substrat (110).
12. Bobine (300) comprenant un ensemble de flans (100) conforme à l'une quelconque des revendications 1 à 9.

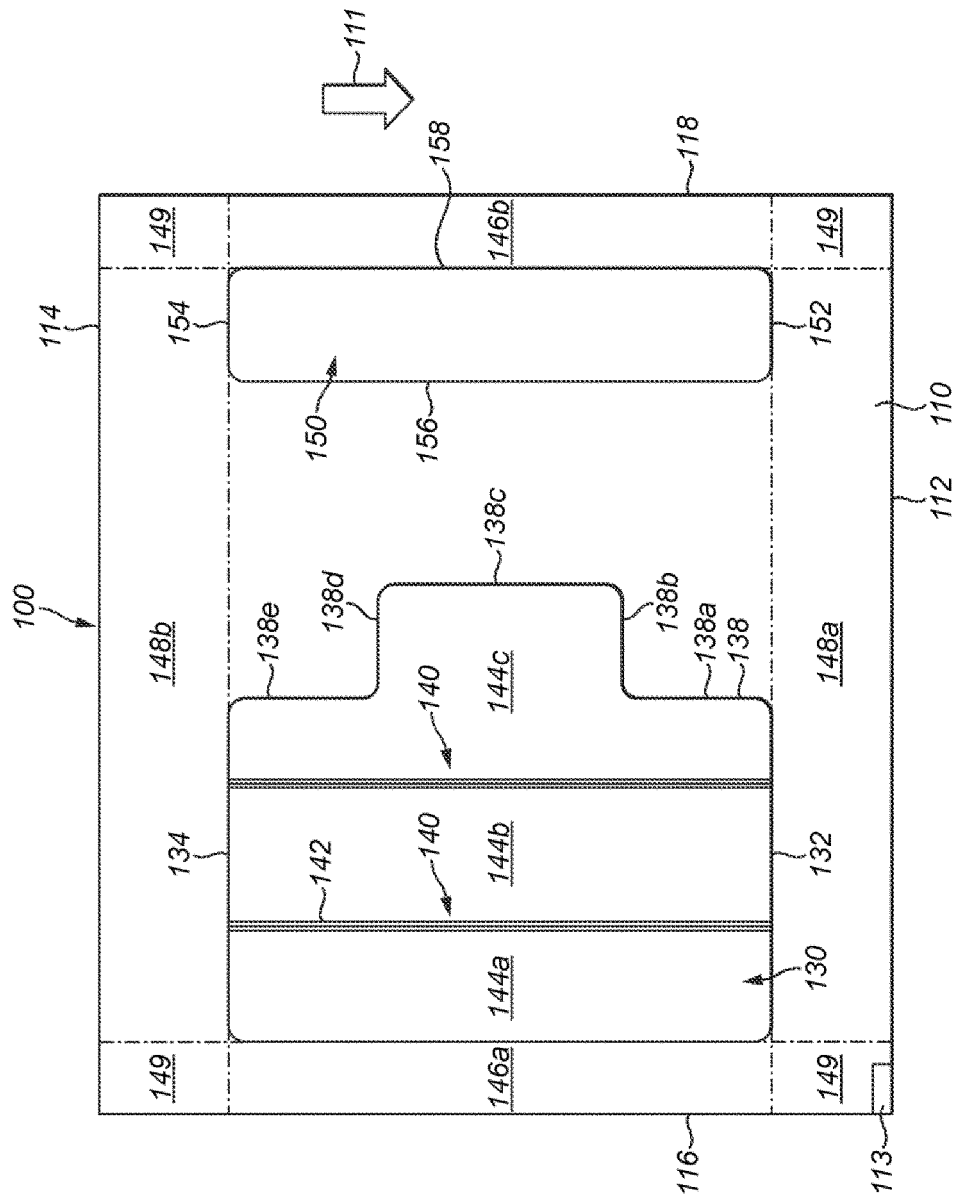


FIG. 1

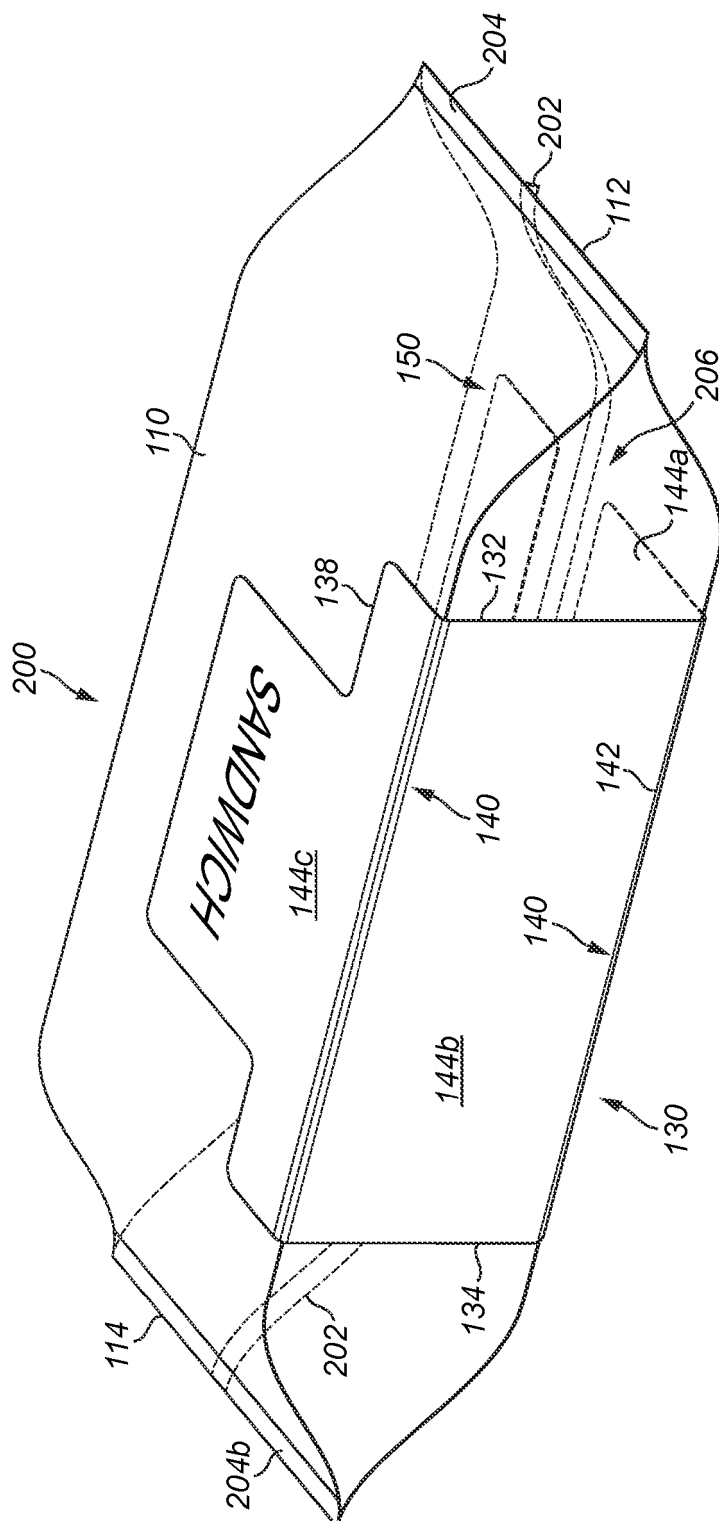


FIG. 2

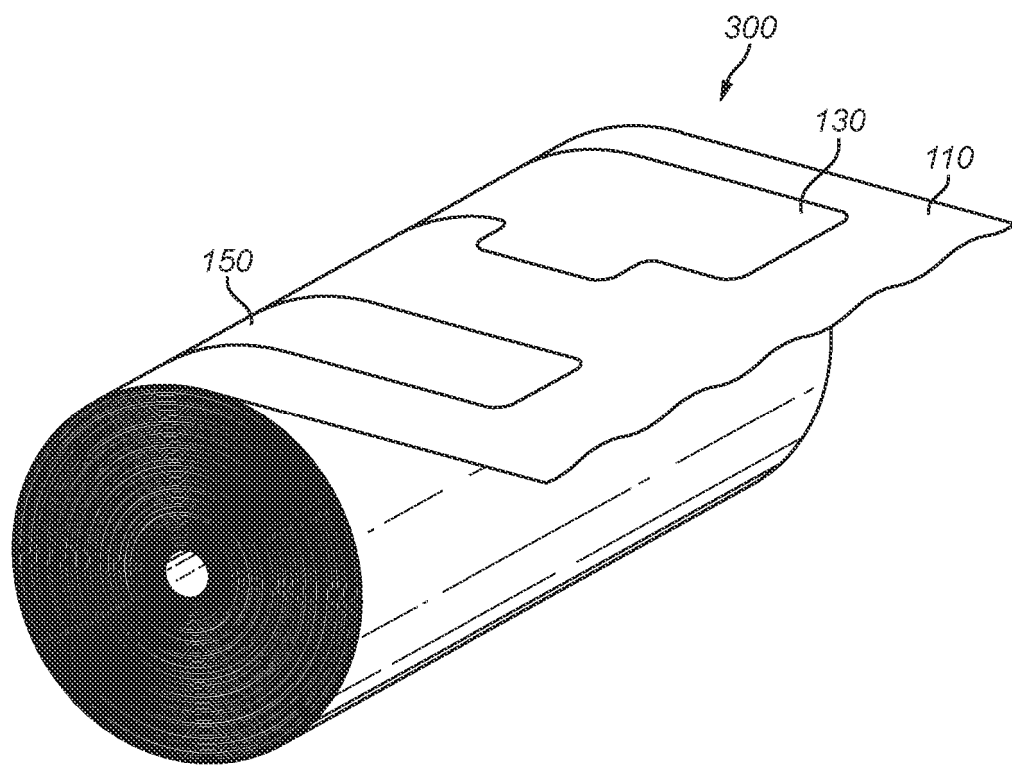
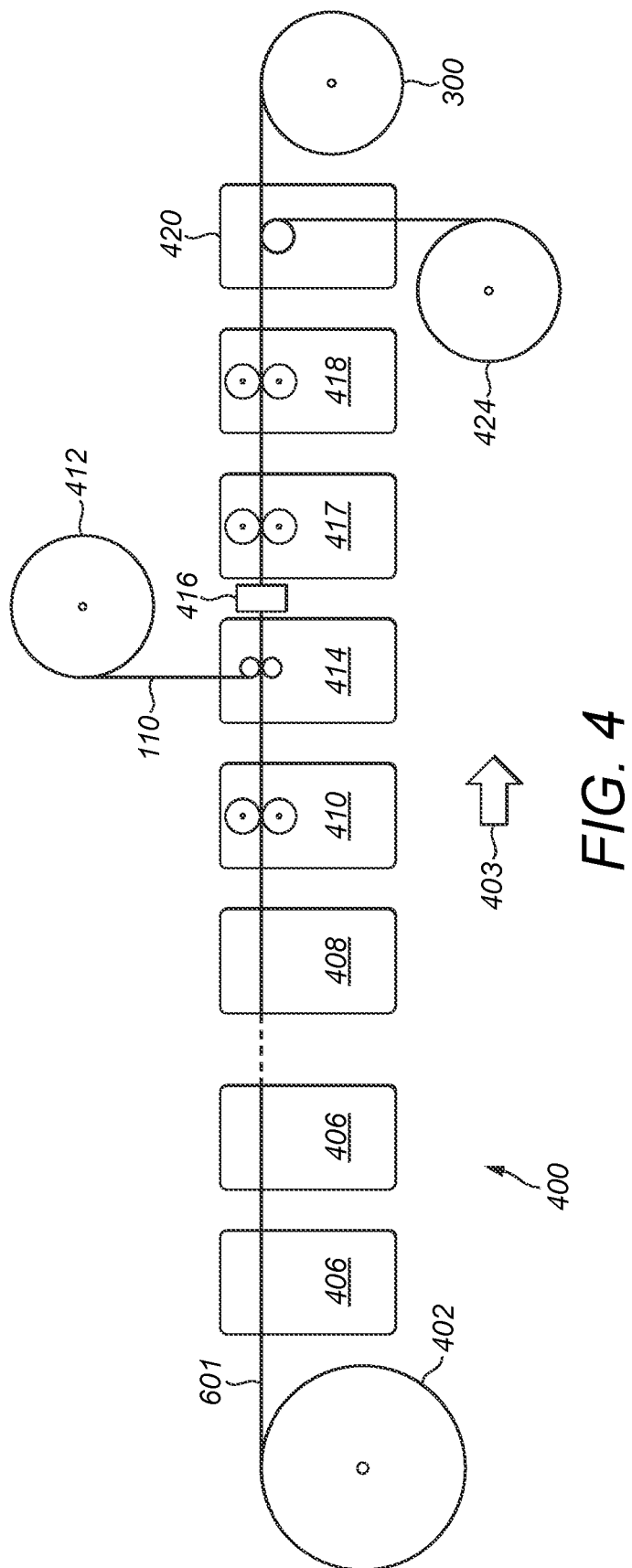
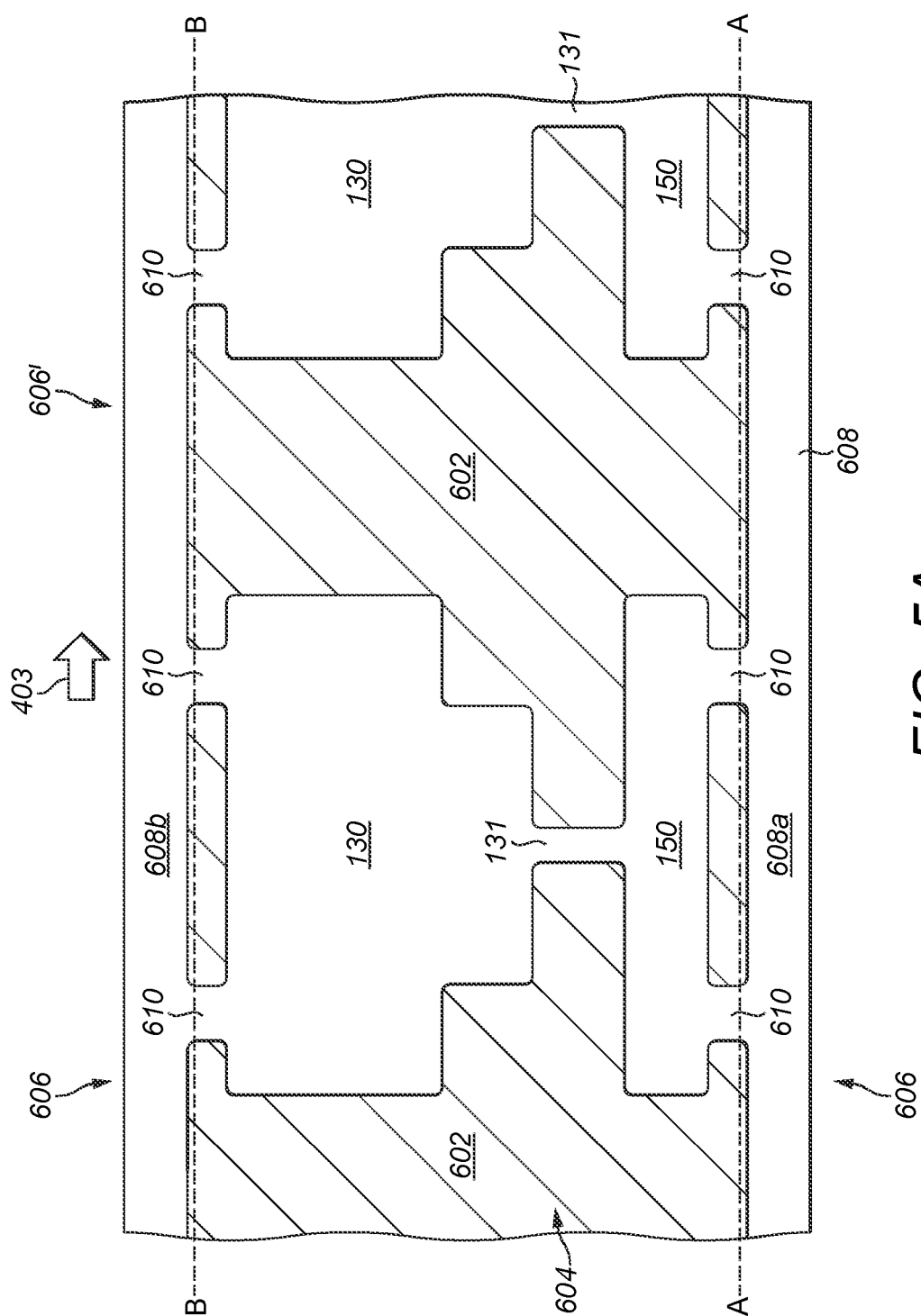
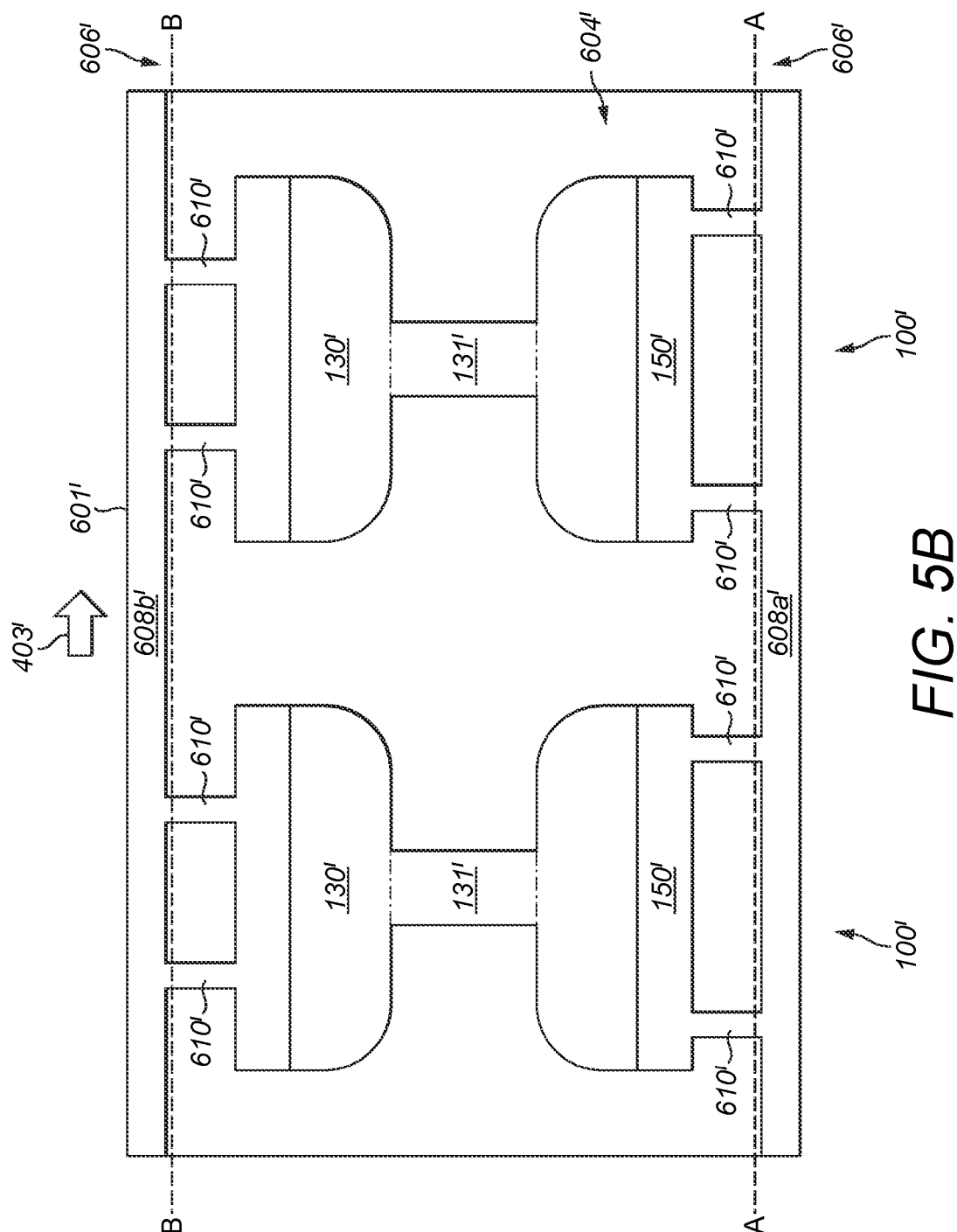


FIG. 3







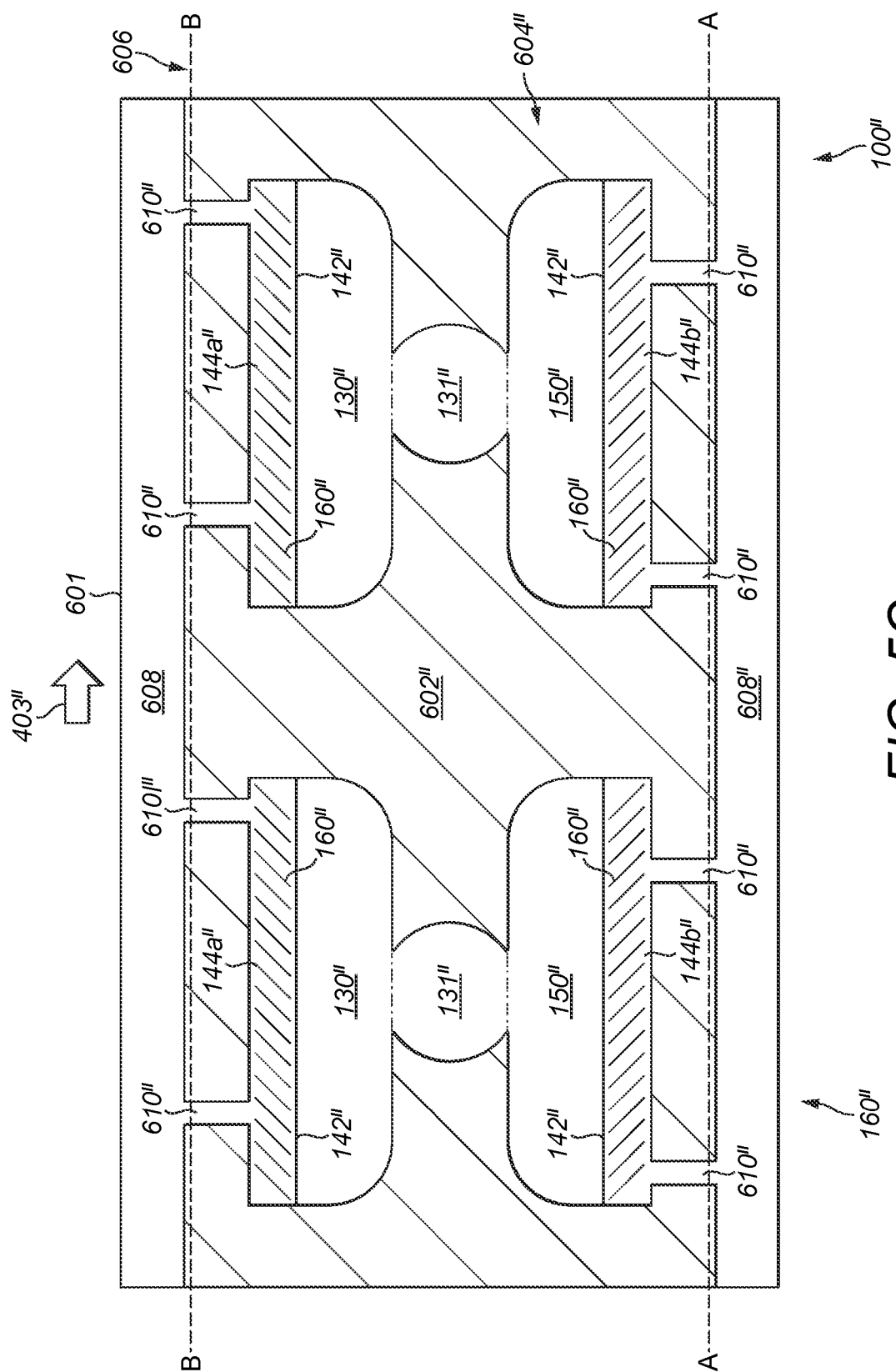


FIG. 5C

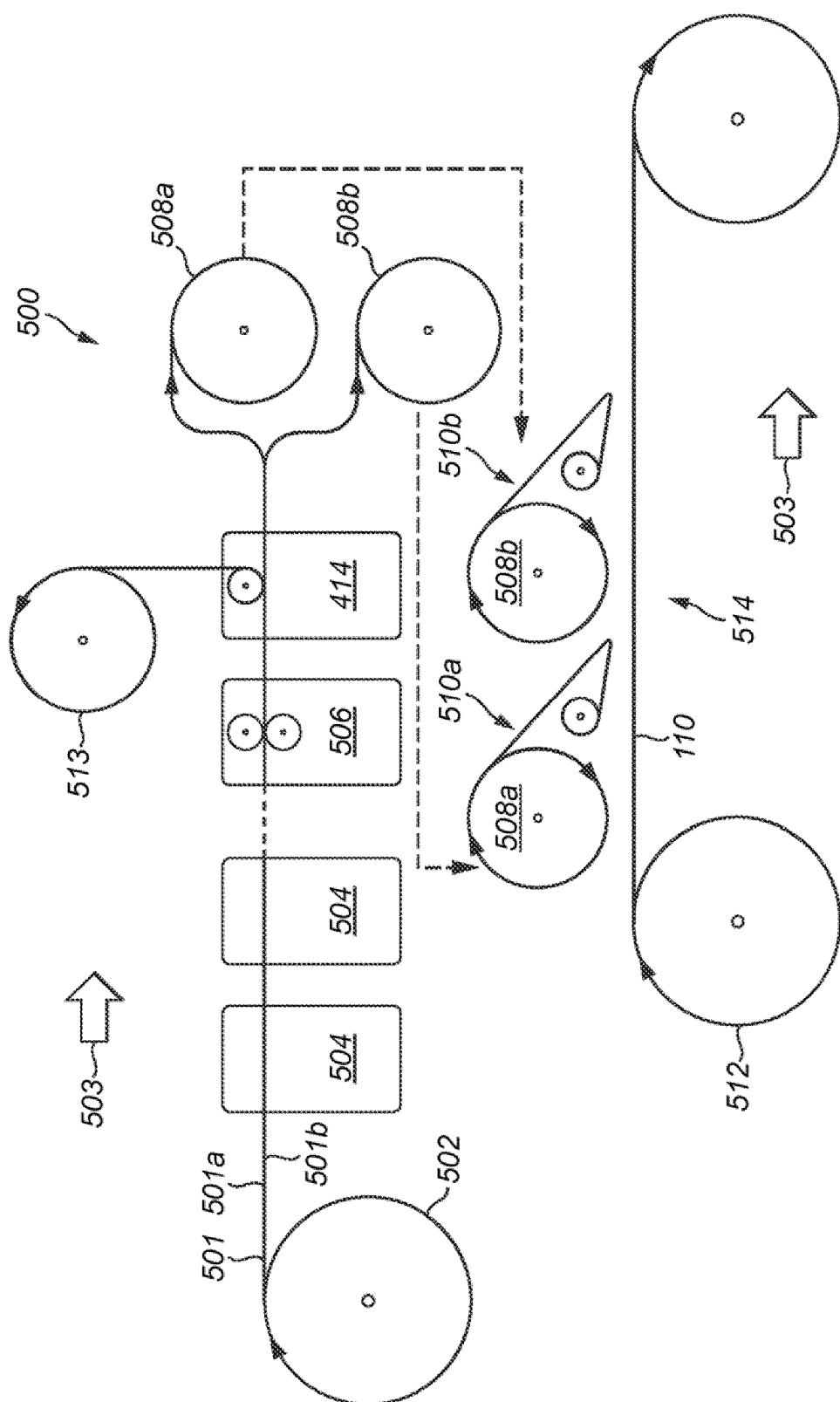


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

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