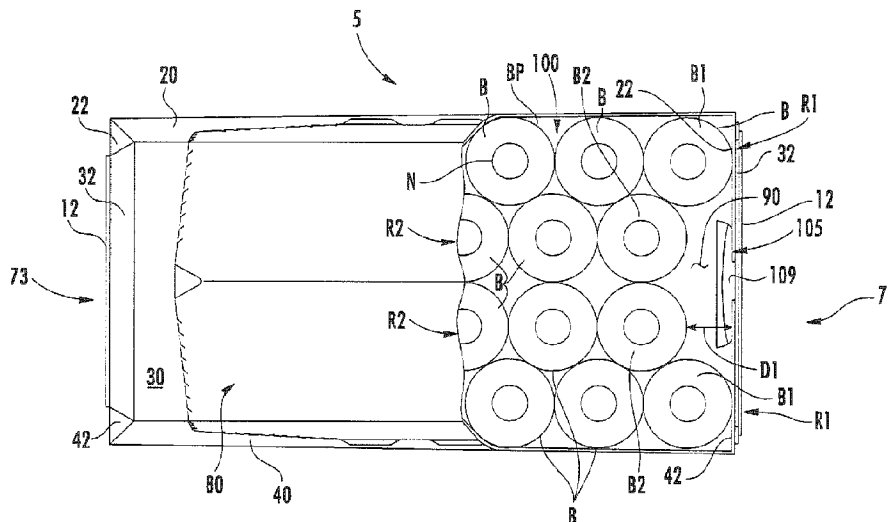




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(54) Titre : CARTON COMPORTANT UNE FONCTION DE POIGNEE
(54) Title: CARTON WITH HANDLE FEATURE



(57) **Abrégé/Abstract:**

A package comprising a carton and a plurality of articles disposed in the carton so that an interior space is formed between at least one article and at least a portion of the closed end of the carton. The carton includes a plurality panels comprising bottom, top, and a side panels and at least two end flaps foldably attached to respective panels of the plurality of panels so as to partially overlap with one another to at least partially form a closed end of the carton. The end flaps include at least a bottom end flap foldably connected to the bottom panel. A handle extends in at least one bottom end flap and is aligned with the interior space, which space allows a user to better grasp the carton at the handle. A method for forming the package and a blank for forming a carton are also provided.

ABSTRACT

A package comprising a carton and a plurality of articles disposed in the carton so that an interior space is formed between at least one article and at least a portion of the closed end of the carton. The carton includes a plurality panels comprising bottom, top, and a side panels and at least two end flaps foldably attached to respective panels of the plurality of panels so as to partially overlap with one another to at least partially form a closed end of the carton. The end flaps include at least a bottom end flap foldably connected to the bottom panel. A handle extends in at least one bottom end flap and is aligned with the interior space, which space allows a user to better grasp the carton at the handle. A method for forming the package and a blank for forming a carton are also provided.

CARTON WITH HANDLE FEATURE

[0001]

FIELD OF THE INVENTION

[0002]

The present disclosure generally relates to cartons for holding beverage containers or other types of articles. More specifically, the present disclosure relates to cartons configured to receive articles in a nested arrangement.

BACKGROUND OF THE DISCLOSURE

[0003]

The present disclosure relates to cartons that contain a plurality of articles and which are provided with one or more handle features.

SUMMARY OF THE DISCLOSURE

[0004]

In general, one aspect of the disclosure is directed to a package comprising a carton and a plurality of articles. The carton can comprise a plurality of panels that extends at least partially around an interior of the carton. The articles of the plurality of articles can be arranged in a plurality of rows of articles in the interior of the carton. The plurality of rows of articles can comprise at least a first row and a second row, the second row can be spaced apart from a panel of the plurality of panels by at least the first row, and the first row can comprise at least one more article than the second row.

[0005]

In another aspect, the disclosure is generally directed to a method of forming a package. The method can comprise obtaining a blank comprising a plurality of panels, obtaining a plurality of articles, forming an interior of the carton at least partially defined by the plurality of panels, and arranging the plurality of articles in a plurality of rows of articles in the interior of the carton. The plurality of rows of articles can comprise at least a first row and a second row. The arranging the plurality of articles can comprise disposing at least one more article in the first row than in the second row and disposing the second row to be spaced apart from a panel of the plurality of panels by at least the first row.

[0006]

In another aspect, the disclosure is generally directed to a carton for containing a plurality of articles. The carton can comprise a plurality of panels that extends at least partially around an interior of the carton. The plurality of panels can comprise at least a bottom panel, a top panel, and a side panel. At least two end flaps can be respectively foldably attached to respective panels of the plurality of panels. The at least two end flaps can be at least partially overlapped with respect to one another and thereby at least partially form a closed end of the carton, and the at least two end flaps can comprise at least a bottom end flap foldably connected to the bottom panel. A handle can extend

in at least the bottom end flap. The plurality of articles is for being disposed in the interior of the carton so that an interior space is formed between at least one article of the plurality of articles and at least a portion of the closed end of the carton, and the handle is for being at least partially aligned with the interior space.

[0007] In another aspect, the disclosure is generally directed to a blank for forming a carton for containing a plurality of articles. The blank can comprise a plurality of panels comprising at least a bottom panel, a top panel, and a side panel. At least two end flaps can be respectively foldably attached to respective panels of the plurality of panels. The at least two end flaps are for being at least partially overlapped with respect to one another and thereby at least partially form a closed end of the carton formed from the blank, and the at least two end flaps can comprise at least a bottom end flap foldably connected to the bottom panel. Handle features for forming a handle can extend in at least the bottom end flap when the carton is formed from the blank. The plurality of articles is for being disposed in an interior of the carton formed from the blank so that an interior space is formed between at least one article of the plurality of articles and at least a portion of the closed end of the carton formed from the blank. The handle is for being at least partially aligned with the interior space when the carton is formed from the blank.

[0008] In another aspect, the disclosure is generally directed to a method of forming a package. The method can comprise obtaining a blank comprising a plurality of panels comprising at least a bottom panel, a top panel, and a side panel. At least two end flaps can be respectively foldably attached to respective panels of the plurality of panels. The at least two end flaps can comprise at least a bottom end flap foldably connected to the bottom panel. Handle features can extend in at least the bottom end flap. The method also can comprise forming an interior of the carton at least partially defined by the plurality of panels, inserting a plurality of articles into the interior of the carton, and at least partially overlapping the at least two end flaps with respect to one another to at least partially form a closed end of the carton. The inserting the plurality of articles can comprise arranging the plurality of articles to form an interior space between at least one article of the plurality of articles and the closed end. The method further can comprise forming a handle in the closed end from the handle features, the handle being at least partially aligned with the interior space.

[0008a] By placing the handle in the bottom end flap and aligning it at least partially with the interior space, a stronger handle, i.e. less prone to tearing, is afforded while the interior space allows a user to better grasp the carton at the handle.

[0009] Those skilled in the art will appreciate the above stated advantages and other advantages and benefits of various additional embodiments reading the following detailed description of the embodiments with reference to the below-listed drawing figures.

[0010] According to common practice, the various features of the drawings discussed below are not necessarily drawn to scale. Dimensions of various features and elements in the drawings may be expanded or reduced to more clearly illustrate the embodiments of the disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Fig. 1 is a plan view of a blank for forming a carton according to a first embodiment of the disclosure.

[0012] Fig. 2 is a perspective view of the erected carton according to the first embodiment of the disclosure.

[0013] Figs. 3A and 3B are perspective views of a closed end of the carton of Fig. 2.

[0014] Fig. 3C is a schematic cross-sectional view of a portion of an end of the carton of Fig. 2.

[0015] Fig. 4 is a top view of the carton of Fig. 2 with a portion cut away to show a portion of the interior of the carton.

[0016] Fig. 4A is a side view of a container for being disposed in the carton of Fig. 4.

[0017] Fig. 5 is a perspective view of the carton of Fig. 2 with a dispenser partially actuated according to the first embodiment of the disclosure.

[0018] Fig. 6 is a plan view of a blank for forming a carton according to a second embodiment of the disclosure.

[0019] Fig. 7 is a plan view of a blank for forming a carton according to a third embodiment of the disclosure.

[0020] Fig. 8 is a plan view of a blank for forming a carton according to a fourth embodiment of the disclosure.

- [0021] Fig. 9 is a plan view of a blank for forming a carton according to a fifth embodiment of the disclosure.
- [0022] Fig. 10 is a perspective view of the erected carton according to the fifth embodiment of the disclosure.
- [0023] Fig. 11 is a plan view of a blank for forming a carton according to a sixth embodiment of the disclosure.
- [0024] Fig. 12 is a plan view of a blank for forming a carton according to a seventh embodiment of the disclosure.
- [0025] Corresponding parts are designated by corresponding reference numbers throughout the drawings.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENT

- [0026] The present disclosure generally relates to cartons that contain articles such as containers, bottles, cans, etc. The articles can be used for packaging food and beverage products and/or nonfood products, for example. The articles can be made from materials suitable in composition for packaging the particular food or beverage item, and the materials include, but are not limited to, glass; aluminum and/or other metals; plastics such as PET, LDPE, LLDPE, HDPE, PP, PS, PVC, EVOH, and Nylon; and the like, or any combination thereof.
- [0027] Cartons according to the present disclosure can accommodate articles of any shape. For the purpose of illustration and not for the purpose of limiting the scope of the disclosure, the following detailed description describes beverage containers (e.g., glass beverage bottles or aluminum cans) as disposed within the carton embodiments. In this specification, the terms “inner,” “outer,” “lower,” “bottom,” “upper,” and “top” indicate orientations determined in relation to fully erected and upright cartons.
- [0028] Fig. 1 is a plan view of the exterior side 1 of a blank, generally indicated at 3, used to form a carton 5 (Fig. 2) according to the first exemplary embodiment of the disclosure. The carton 5 can be used to house a plurality of articles such as containers in the form of beverage bottles B (e.g., Figs. 1, 4, and 4A). In one embodiment, the bottles B can have a wide bottom portion BP and a narrow upper portion or neck N (Figs. 4 and 4A). Alternatively, the containers in a carton of any of the illustrated and non-illustrated embodiments could be the beverage bottles B, generally cylindrical cans C (e.g., as shown schematically in Figs. 9, 11, and 12), or other containers. In the first embodiment, the carton 5 is sized and configured to contain twenty-six bottles B in a single layer in a

“nested” (e.g., an “internal” or “inverted” nested) arrangement having two outer rows R1 of seven bottles per row and two inner rows R2 of six bottles per row.

[0029] In general, the internal nesting arrangements can have one or more interior rows of containers B or C that are generally shorter than the outer rows of containers. For example, the outer row(s) R1 could have more containers each than the inner row(s) R2 respectively nested with the outer row(s). Exemplary variations could include outer row(s) R1 having eight containers and inner row(s) having seven containers, outer row(s) R1 having 4 containers and inner row(s) R2 having three containers, etc. In the alternative embodiments, the carton can be sized accordingly to accommodate the arrangement of the containers B or C. Other nested (e.g., fully nested arrangements, internal nested arrangements, and/or other arrangements) or non-nested arrangements of the containers including bottles B or cans C could be provided without departing from the disclosure. For example, additional rows could be included outside the outer rows R1 (e.g., the outer rows R1 are not necessarily the outermost rows), and the additional rows could have more, fewer, or the same number of containers as any of the rows R1, R2. Additionally, the inner rows R2 are not necessarily the innermost rows.

[0030] The blank 3 has a longitudinal axis L1 and a lateral axis L2. In the illustrated embodiment, the blank 3 comprises a bottom panel 10 foldably connected to a first side panel 20 at a first lateral fold line 21, a top panel 30 foldably connected to the first side panel 20 at a second lateral fold line 31, a second side panel 40 foldably connected to the top panel 30 at a third lateral fold line 41, and an attachment flap 50 foldably connected to the bottom panel 10 at a fourth lateral fold line 51. Any of the top and bottom panels 30, 10 and the side panels 20, 40 could be omitted or could be otherwise shaped, arranged, and/or configured without departing from the disclosure. For example, the attachment flap 50 could be foldably connected to the second side panel 40. Additionally, the blank 3 alternatively could include two top panels cooperating to form a top of the carton 5 or two bottom panels cooperating to form a bottom of the carton.

[0031] The bottom panel 10 is foldably connected to a bottom end flap 12, the first side panel 20 is foldably connected to a first side end flap 22, the top panel 30 is foldably connected to a first top end flap 32, and the second side panel 40 is foldably connected to a second side end flap 42. In one embodiment, the top and bottom end flaps 32 and 12 and the side end flaps 22, 42 extend along a marginal area of the blank 3 and are foldably connected at a first longitudinal fold line 62 that extends along the length of the blank. The longitudinal fold line 62 may be, for example, substantially straight, or offset at one or more locations to account for blank thickness or for other factors.

[0032] In the illustrated embodiment, the blank 3 is generally a mirror-image about its longitudinal centerline CL such that the end flaps 12, 22, 32, 42 that extend along one marginal area of the blank have similar or identical features at the second marginal area of the blank that are mirror images of the features at the first marginal area of the blank. The end flaps 12, 22, 32, 42 at the first marginal area of the blank are configured to close a first end 71 (Figs. 2, 3A, and 3B) of the carton 5 and the end flaps 12, 22, 32, 42 at the second marginal area of the blank are configured to close a second end 73 of the carton (Figs. 2 and 4). One or more of the bottom end flap 12, the side end flaps 22, 42, and the top end flaps 32 could be omitted or could be otherwise shaped, arranged, configured, and/or positioned without departing from the disclosure. Additionally, one or both of the ends 71, 73 of the carton could be otherwise shaped, arranged, configured, and/or positioned without departing from the disclosure.

[0033] As shown in Fig. 1, each of the side panels 20, 40 includes a respective lateral fold line 75, 77 extending across each respective side panel and across the respective side end flaps 22, 42. In the illustrated embodiment, the top panel 30 can be smaller than the bottom panel 10 in one or both of the longitudinal direction L1 and/or the lateral direction L2, and, as shown in Fig. 1, the portions of the longitudinal fold lines 62 between the fold lines 75, 77 and the respective fold lines 31, 41 can be angled to accommodate the smaller top panel 30. Accordingly, when the carton 5 is erected (Figs. 2, 3A, and 3B), the upper portion of the carton above the fold lines 75, 77 can be sloped inwardly at the portions of the side panels 20, 40 above the respective fold lines 75, 77 and at the portions of the closed ends 71, 73 above the fold lines 75, 77. In one embodiment, the inwardly sloped upper portion can help retain the narrower neck portions N of the bottles B in the interior of the carton 5 while the wider bottom portion of the carton 5 below the fold lines 75, 77 can extend adjacent the wider bottom portions BP of the bottles B. One or more of the fold lines 75, 77 could be omitted or could be otherwise shaped, arranged, configured, and/or positioned without departing from the disclosure without departing from the disclosure.

[0034] In one embodiment, the end flaps 12, 22, 32, 42 can have handle features for forming a handle 105 in each end 71, 73 of the carton 5 (Figs. 2-4). As shown in Fig. 1, the handle features include a first handle flap 107 extending in each of the bottom end flaps 12 adjacent a respective handle opening 108 and a second handle flap 109 extending in each of the top end flaps 32 adjacent a respective lowermost edge 120 of the respective top end flap. The first handle flap 107 is foldably connected to the bottom end flap 12 along a fold line 111 and is at least partially separable from the bottom end flap 12 along cut or tear lines 113. As shown in Fig. 1, the first handle flap 107 and the handle opening 108 are generally spaced from the free edges of the bottom end flap 12 and from the fold line 62. The second handle flap is foldably connected to the top end flap 32 along a fold line 115

adjacent a lowermost free edge 120 of the top end flap 32. The second handle flap 109 is at least partially separable from the top end flap 32 along cut or tear lines 118. In the illustrated embodiment, the fold lines 111, 115 generally can be arcuate, and the handle flaps 107, 109 can include respectively opposing fold lines 112, 116. Alternatively, one or more of the fold lines 111, 112, 115, 116 could be omitted or otherwise configured (e.g., one or more of the fold lines could be generally straight). When the carton 5 is erected, the first handle panel 107 can at least partially overlap and/or can be at least partially glued to the second handle panel 109 to form the handle 105 at each end 71, 73.

[0035] The handle features also can include cutouts 117 in the respective side end flaps 22, 42 for being aligned with the handle flaps 107, 109 when the respective ends 71, 73 of the carton 5 are closed. In the illustrated embodiment, the cutouts 117 could be notches extending from respective free edges of the side end flaps 22, 42. Accordingly, the cutouts 117 can form an opening at each end 71, 73 of the carton for allowing the handle flaps 107, 109 to fold inwardly past the side end flaps 22, 42 when the handles 105 are grasped by a user. Additionally, the portions of the side end flaps 22, 42 above each of the handles 105 can cooperate with the respective portions of the top end flap 32 and the bottom end flap 12 above the respective handle 105 to provide an at least three-ply wall to help reinforce the respective handle. Either of the handles 105 and/or any of the handle features could be omitted or could be otherwise shaped, arranged, configured, and/or positioned without departing from the disclosure.

[0036] As shown in Fig. 1, the blank 3 can include a dispenser 80 with two dispenser panels 81 at least partially separable from the top panel 30 and the respective side panels 20, 40 by tear lines 83. The dispenser panels 81 are separable from one another along a tear or cut line 84. An access feature 85 extends in each of the side panels 20, 40 for helping to initiate tearing of the tear lines 83 to actuate the dispenser 80. One or both of the dispenser panels 81 can be at least partially removed to form a dispenser opening 87 in the carton 5 (e.g., Fig. 5). The dispenser 80 could be omitted or could be otherwise shaped, arranged, configured, and/or positioned without departing from the disclosure.

[0037] In the illustrated embodiment, the bottom panel 10 includes ten article protection flaps 13 foldably connected to the bottom panel. The article protection flaps 13 are for being upwardly folded relative to the bottom panel 10 to be located between adjacent bottles B. The article protection flaps 13 can help protect the bottles B by providing cushioning between adjacent containers that reduces breakage of the containers. In one embodiment, the article protection flaps 13 and/or other article protection features can be similar or identical to the features described in any of the embodiments disclosed in U.S. Patent Application No. 13/419,740, which was filed on March 14, 2012, U.S. Patent Application No. 13/768,079, which was filed on February 15, 2013, and U.S. Patent Application No.

13/833,542, which was filed on March 15, 2013. Any of the article protection flaps 13 could be omitted or could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure. For example, the article protection flaps 13 that are aligned with the inner rows R2 could be omitted since the bottles B in the inner rows R2 are spaced apart from the ends 71, 73 and, accordingly, can be at a lower risk of breaking.

[0038] In the illustrated embodiment, the carton 5 can be erected by folding the panels 10, 20, 30, 40 along the lateral fold lines 21, 31, 41, 51 and gluing the attachment flap 50 to the second side panel 40 to form an open-ended sleeve (not shown). One or both of the ends 71, 73 can be at least partially closed by folding the end flaps 12, 22, 32, 42 along the fold lines 62 over the respective end. In one embodiment, the side end flaps 22, 42 can be folded over the end, the top end flap 32 can be downwardly folded to at least partially overlap the side end flaps so that the handle flap 109 is generally aligned with the cutouts 117, and the bottom end flap 12 is upwardly folded to overlap the side end flaps 22, 42 and the top end flap 32 so that the handle flap 107 is generally aligned with the handle flap 109 and the cutouts 117. The erected carton 5 is shown generally in Fig. 2, and the closed first end 71 is shown generally in Figs. 3A and 3B.

[0039] In the illustrated embodiment, the top panel 30 can be smaller than the bottom panel 10 in at least one of the directions L1, L2 so that the side panels 20, 40 and the closed ends 71, 73 are at least partially sloped toward the top of the carton 5. In one embodiment (e.g., wherein the fold lines 75, 77 are generally aligned with the transitions between the bottom portions BP and the necks N of the bottles B), the portions of the side panels 20, 40 and the closed ends 71, 73 above the fold lines 75, 77 can be sloped inwardly toward the top panel 30, and the bottom portions of the side panels 20, 40, and ends 71, 73 below the fold lines 75, 77 can be generally vertical. According the sloped sides and or ends of the carton can help retain the narrower tops of the bottles B. The carton 5 could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

[0040] In one embodiment, the top end flap 32 can be glued to the side end flaps 22, 42 in multiple locations, including adjacent the handle flap 109 and the cutouts 117. Additionally, the bottom end flap 32 can be glued to the side end flaps 22, 42 and the top end flap 32 at multiple locations, including to the top end flap 32 adjacent the handle panels 107, 109. Accordingly, when the respective end of the carton 5 is closed, two at least three-ply handle reinforcement portions 119 can be formed above the handle, each including a portion of the respective side end flaps 22, 42, the top end flap 32, and the bottom end flap 12. One of the handle reinforcement portions 119 is shown schematically in Fig. 3C showing the cross-section of a portion of the first end 71 of the carton 5. Fig. 3C schematically shows glue G adhering the overlapped portions of the end flaps 12, 22, 32

together. The carton 5 can be erected and/or the ends 71, 73 could be closed by other forming or folding steps as described herein without departing from the disclosure. For example, the side end flaps 22, 42 could be longer and/or could at least partially overlap so that the closed end includes a continuous reinforcement portion over the handle 105.

[0041] In one embodiment, the bottles B can be loaded into the open-ended sleeve (not shown) or the carton 5 before or after either of the ends 71, 73 is closed. In the illustrated embodiment, the bottles B are arranged in an internal nested arrangement (e.g., as shown in Figs. 1 and 4) prior to, during, or after loading of the containers. In one embodiment, the rows R1, R2 could be considered to include a first row (e.g., outer row R1 adjacent the fold line 21 and the first side panel 20), and a second row (e.g., inner row R2 nested with the first row), the first row having at least one more bottle B than the second row and the second row being spaced from the first side panel 20 by at least the first row. Additionally, the rows R1, R2 can include a third row (e.g., the outer row R1 adjacent the fold line 51, the attachment flap 50, and the second side panel 40), and a fourth row (e.g., the inner row R2 nested with the third row), the third row having at least one more bottle B than the fourth row, the third row being spaced from the second row by at least the fourth row, and the fourth row being spaced from the second side panel by at least the third row. Any or all of the rows R1, R2 could be omitted or could be otherwise shaped, arranged, configured, and/or positioned without departing from the disclosure.

[0042] As shown in Fig. 1, each of the inner rows R2 include one fewer bottle B than each of the outer rows R1 and each of the inner rows R2 is nested with the respective outer rows R1. Accordingly, as shown in Fig. 4, wherein a portion of the carton 5 is cut away to show the nested bottles B in the interior 100 of the carton adjacent the closed end 71, the inner rows R2 are spaced apart from the first end 71 (and the fold line 62) by a distance D1 in the illustrated embodiment (Figs. 1 and 4). The bottles B are similarly configured at the second end 73 so that the bottles B of the inner rows R2 are spaced from the second end 73 by the distance D1. Accordingly, there is a void, gap, or interior space 90 between the end bottles B2 of each of the inner rows R2 and each of the closed ends 71, 73 and adjacent the end bottles B1 of each of the outer rows R1 as shown in Fig. 4. The interior spaces 90 can provide a space for a user to reach into the interior of the carton 5 at the handles 105 between the ends 71, 73 and the bottles B. For example, the partially torn-away view of Fig. 4 shows the handle flap 107, 109 of the handle 105 at the first end 71 folded into the interior space 90 (though only the handle flap 109 is visible in Fig. 4). The inwardly folded handle flaps 107, 109 are shown from the exterior of the closed end 71 in Fig. 3B in one exemplary embodiment.

[0043] The internal nesting of the bottles B in the illustrated embodiment and the interior spaces 90 allow the handles 105 to be positioned in a lower portion of the carton 5 adjacent the wider base portions BP of the bottles B, which would normally provide a barrier at the ends of the carton and block the handle 105 if not for the interior spaces 90. For example, as shown in Fig. 3A, the handle 105 is spaced from the bottom panel 10 by a distance D2 and is spaced from the top panel 20 by the distance D3, and the distance D3 can be greater than the distance D2 so that the handle 105 is generally in the lower portion of the carton 5 and/or is has a center that is spaced below the midpoint of the end of the carton. In an exemplary embodiment, the handle 105 can be at least partially or mostly below the fold lines 75, 77 in the carton 5. A lower handle 105 can be easier to grasp and carry in one embodiment.

[0044] The carton 5 could be otherwise erected and/or the bottles B could be otherwise loaded into the carton 5 without departing from the disclosure.

[0045] Fig. 6 is a plan view of a blank 203 for forming a carton (not shown) of a second embodiment of the disclosure. The second embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. The blank 203 is configured (e.g., sized and proportioned) to contain 14 bottles B in a single layer in an internal nested arrangement having two outer rows R1 of four bottles per row and two inner rows R2 of three bottles per row. The blank 203 could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

[0046] Fig. 7 is a plan view of a blank 403 for forming a carton (not shown) of a third embodiment of the disclosure. The third embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. The blank 403 is configured (e.g., sized and proportioned) to contain 22 bottles B in a single layer in an internal nested arrangement having two outer rows R1 of six bottles per row and two inner rows R2 of five bottles per row. The blank 403 could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

[0047] Fig. 8 is a plan view of a blank 603 for forming a carton (not shown) of a fourth embodiment of the disclosure. The fourth embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. The blank 603 is configured to contain 27 bottles B in a single layer in an

alternatively nested arrangement (e.g., an external nesting arrangement) having two outer rows R4 of five bottles per row, two inner rows R5 of six bottles per row, and a central row R6 of five bottles. The inner rows R5 are similar to the outer rows R1 of the above embodiments, and the central row R6 is similar to the inner rows R2 of the above embodiments. However, the arrangement shown in Fig. 8 is different wherein the outer rows R4 are nested with the longer inner rows R5. Additionally, the interior space 690 is smaller than the interior space 90 of the above embodiments since there is only one central row R6 forming the interior space 690, and the above embodiments have two adjacent inner rows R2 forming the interior space 90. The smaller interior space 690 can still provide room for the handle flaps 107, 109 to fold into the interior of the carton (not shown) and for a hand to reach into the carton through the handle opening 108. The blank 603 could be otherwise shaped, arranged, positioned, and/or configured without departing from the disclosure.

[0048] Fig. 9 is a plan view of a blank 803 for forming a carton 805 (Fig. 10) of a fifth embodiment of the disclosure. The fifth embodiment is generally similar to the first embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. The blank 803 is configured to contain 18 containers (e.g., beverage cans C) in a single layer in an internal nesting arrangement having two outer rows R1 of five cans per row and two inner rows R2 of four cans per row. The blank 803 includes a bottom panel 820 foldably connected to a front panel 830 along a lateral fold line 831 and a back panel 810 along a lateral fold line 821, a first top panel portion 840 foldably connected to the front panel 830 along a lateral fold line 841, and a second top panel portion 850 foldably connected to the back panel 810 along a lateral fold line 851. In the illustrated embodiment, the top panel portions 840, 850 are overlapped and glued together to form the top panel 860 (Fig. 10) of the carton 805 opposite to the bottom panel 820. In one embodiment, the overlapped top panel portions 840, 850 can be reinforced by, for example, a reinforcing tape and/or a reinforcing flap (not shown).

[0049] Similarly to the first embodiment, the back panel 810 can be foldably connected to two back end flaps 812, the bottom panel 820 can be foldably connected to two bottom end flaps 822, the front panel 830 can be foldably connected to two front end flaps 832, the first top panel portion 840 can be foldably connected to two top end flaps 842, and the second top panel portion 850 can be foldably connected to two top end flaps 852. The end flaps 812, 822, 832, 842, 852 at each marginal portion of the blank 803 can be foldably connected to the respective panels along respective longitudinal fold lines 862 extending along the length of the blank 803. The longitudinal fold lines 862 may be, for example, substantially straight, or offset at one or more locations to account for blank

thickness or for other factors. The end flaps 812, 822, 832, 842, 852 can be at least partially overlapped at each end of the carton to form the closed ends 871, 873 of the carton 805 (Fig. 10).

[0050] The blank 803 can include handle features for forming a handle 905 in the carton 805 (Fig. 10) including handle flaps 907 foldably connected to respective grip portions in the respective top panel portions 840, 850 adjacent respective handle openings 908 in the top panel portions. Accordingly, the handle features can form a “race track” style handle in the top panel 860 (Fig. 10) formed by the top panels portions 840, 850. The handle flaps 907 can be foldably connected to the respective top panel portions 840, 850 along respective fold lines 911.

[0051] Similarly to the first embodiment, the containers in the inner rows R2 can be spaced apart from the closed ends 871, 873 of the carton 805 (Fig. 10) by a distance D4 (Fig. 9) to form an interior space 90 at each end of the carton. Whereas the distance D1 in the first embodiment can be generally equal to half the width or cross-sectional diameter of one of the containers (e.g., bottles B), in one embodiment, the distance D4 can be generally equal to half the width or cross-sectional diameter of one of the containers (e.g., cans C).

[0052] The blank 803 and/or the carton 805 could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

[0053] Fig. 11 is a plan view of a blank 1003 for forming a carton (not shown) of a sixth embodiment of the disclosure. The sixth embodiment is generally similar to the fifth embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art. Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. The blank 1003 is configured to contain 38 cans C in a single layer in a “modified” internal nested arrangement having two outer rows R1 of eight cans per row, two inner rows R2 of seven cans per row, and a central row R3 of eight cans. In the illustrated embodiment, each row R1, R2, R3 is nested with a respectively adjacent row. Accordingly, the inner rows R2 can be spaced apart from the closed ends of the carton (not shown) to form an interior space 1090 on either side of the central row R3 at each end of the carton. Similarly, to the interior spaces 690 of the embodiment shown in Fig. 8, the interior spaces 1090 of Fig. 11 are formed by a single respective inner row R2 and are narrower with respect to the interior spaces 90 shown in other embodiments. The blank 1003 could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

[0054] Fig. 12 is a plan view of a blank 1203 for forming a carton (not shown) of a seventh embodiment of the disclosure. The seventh embodiment is generally similar to the sixth embodiment, except for variations noted and variations that will be apparent to one of ordinary skill in the art.

Accordingly, similar or identical features of the embodiments have been given like or similar reference numbers. The blank 1203 is configured to contain 18 containers C in a single layer in a modified internal nested arrangement (e.g., similar to the arrangement in Fig. 11) having two outer rows R1 of four cans per row, two inner rows R2 of three cans per row, and a central row R3 of four cans. The blank 1203 can include a dispenser 1280 in the front panel 1230. In the illustrated embodiment, the dispenser 1280 can include two dispenser panels 1281 in the front panel 1230. The dispenser panels 1281 can be separable from at least the front panel 1230 along tear lines 1283 and from one another along tear line 1284. As shown in Fig. 12, the handle flap features can be omitted in the top panel portion 1250, and a handle flap 1307 can extend in the top panel portion 840 for forming an asymmetric handle in the carton (not shown). The blank 1203 could be otherwise shaped, arranged, and/or configured without departing from the disclosure.

[0055] Any of the features of the various embodiments of the disclosure can be combined with, replaced by, and/or otherwise configured with other features of other embodiments of the disclosure without departing from the scope of this disclosure. Further, it is noted that the nesting arrangements of the various embodiments can be incorporated into a carton having any carton style or panel configuration. The carton styles and panel configurations described above are included by way of example.

[0056] The blanks according to any of the embodiments of the present disclosure can be, for example, formed from coated paperboard and similar materials. For example, the interior and/or exterior sides of the blank can be coated with a clay coating. The clay coating may then be printed over with product, advertising, price coding, and other information or images. The blank may then be coated with a varnish to protect any information printed on the blank. The blank may also be coated with, for example, a moisture barrier layer, on either or both sides of the blank. In accordance with the above-described embodiments, the blank may be constructed of paperboard of a caliper such that it is heavier and more rigid than ordinary paper. The blank can also be constructed of other materials, such as cardboard, hard paper, or any other material having properties suitable for enabling the carton to function at least generally as described herein. The blank can also be laminated or coated with one or more sheet-like materials at selected panels or panel sections.

[0057] In accordance with the above-described embodiments of the present disclosure, a fold line can be any substantially linear, although not necessarily straight, form of weakening that facilitates folding therealong. More specifically, but not for the purpose of narrowing the scope of the present disclosure, fold lines include: a score line, such as lines formed with a blunt scoring knife, or the like, which creates a crushed portion in the material along the desired line of weakness; a cut that extends partially into a material along the desired line of weakness, and/or a series of cuts that extend

partially into and/or completely through the material along the desired line of weakness; and various combinations of these features.

[0058] As an example, a tear line can include: a slit that extends partially into the material along the desired line of weakness, and/or a series of spaced apart slits that extend partially into and/or completely through the material along the desired line of weakness, or various combinations of these features. As a more specific example, one type tear line is in the form of a series of spaced apart slits that extend completely through the material, with adjacent slits being spaced apart slightly so that a nick (e.g., a small somewhat bridging-like piece of the material) is defined between the adjacent slits for typically temporarily connecting the material across the tear line. The nicks are broken during tearing along the tear line. The nicks typically are a relatively small percentage of the tear line, and alternatively the nicks can be omitted from or torn in a tear line such that the tear line is a continuous cut line. That is, it is within the scope of the present disclosure for each of the tear lines to be replaced with a continuous slit, or the like. For example, a cut line can be a continuous slit or could be wider than a slit without departing from the present disclosure.

[0059] The above embodiments may be described as having one or more panels adhered together by glue during erection of the carton embodiments. The term “glue” is intended to encompass all manner of adhesives commonly used to secure carton panels in place.

[0060] The foregoing description of the disclosure illustrates and describes various exemplary embodiments. Various additions, modifications, changes, etc., could be made to the exemplary embodiments without departing from the spirit and scope of the disclosure. It is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense. Additionally, the disclosure shows and describes only selected embodiments of the disclosure, but the disclosure is capable of use in various other combinations, modifications, and environments and is capable of changes or modifications within the scope of the inventive concept as expressed herein, commensurate with the above teachings, and/or within the skill or knowledge of the relevant art. Furthermore, certain features and characteristics of each embodiment may be selectively interchanged and applied to other illustrated and non-illustrated embodiments of the disclosure.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A carton containing a plurality of articles, the carton comprising:
 - a plurality of panels that extends at least partially around an interior of the carton, the plurality of panels comprising at least a bottom panel, a top panel, and a side panel;
 - at least two end flaps respectively foldably attached to respective panels of the plurality of panels, the at least two end flaps being at least partially overlapped with respect to one another and thereby at least partially form a closed end of the carton, and the at least two end flaps comprising at least a bottom end flap foldably connected to the bottom panel and a top end flap foldably connected to the top panel;
 - a handle extending in at least the bottom end flap, the handle comprises a first handle flap foldably connected to the bottom end flap and a second handle flap foldably connected to the top end flap, the first handle flap at least partially overlapping the second handle flap; and
 - the plurality of articles, disposed in the interior of the carton and arranged in at least a first row and a second row, the first row having at least one more article than the second row so that an interior space is defined between the second row and the closed end of the carton, the handle is at least partially aligned with the interior space.
2. The carton of claim 1, wherein the handle is spaced apart from the top panel by a first distance and is spaced apart from the bottom panel by a second distance, and the first distance is greater than the second distance.
3. The carton of claim 1, wherein the at least two end flaps further comprise a side end flap foldably connected to the side panel, the handle further comprising a cutout extending in the side end flap and at least partially aligned with the first handle flap in the bottom end flap.
4. The carton of claim 1, wherein the handle further comprises a handle opening in the bottom end flap and the second handle flap is formed at a lowermost edge of the top end flap.
5. The carton of claim 1, wherein the handle comprises a handle opening extending in the bottom end flap.
6. The carton of claim 1, wherein the articles of the plurality of articles in the second row are nested with the articles of the first row.

7. A method for forming a package comprising a carton holding a plurality of articles, the method comprising:

obtaining the plurality of articles;

obtaining a blank comprising a plurality of panels comprising at least a bottom panel, a top panel, and a side panel, at least two end flaps respectively foldably attached to respective panels of the plurality of panels, the at least two end flaps comprising at least a bottom end flap foldably connected to the bottom panel and a top end flap foldably connected to the top panel, and handle features extending in at least the bottom end flap, the handle features comprises a first handle flap foldably connected to the bottom end flap and a second handle flap foldably connected to the top end flap;

forming an interior of the carton at least partially defined by the plurality of panels;

inserting the plurality of articles into the interior of the carton;

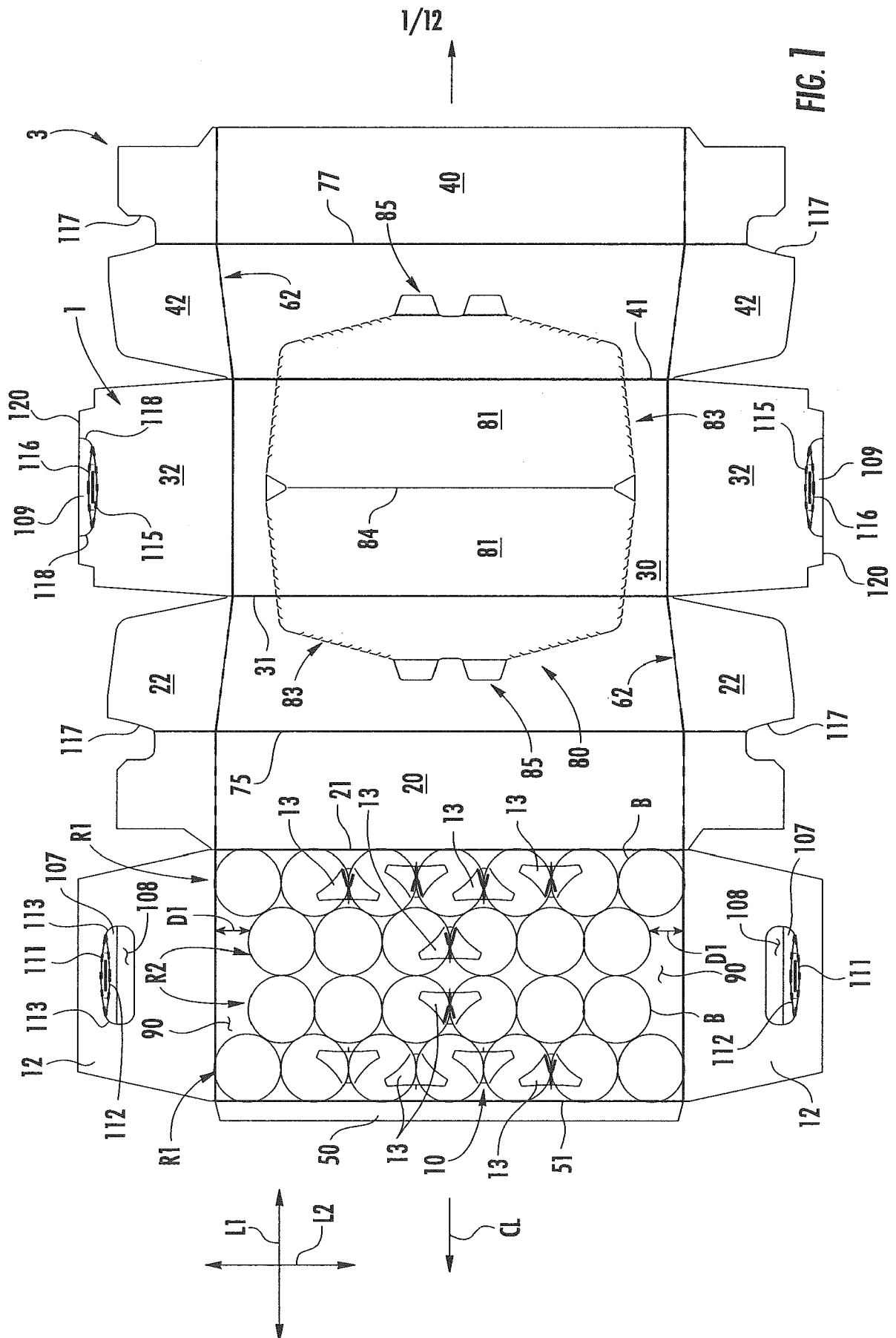
at least partially overlapping the at least two end flaps with respect to one another to at least partially form a closed end of the carton, wherein the inserting the plurality of articles comprises arranging the plurality of articles in at least a first row and a second row in the interior of the carton, the first row comprises at least one more article than the second row so that an interior space is defined between the second row and the closed end; and

forming a handle in the closed end from the handle features, the handle being at least partially aligned with the interior space and the first handle flap at least partially overlapping the second handle flap.

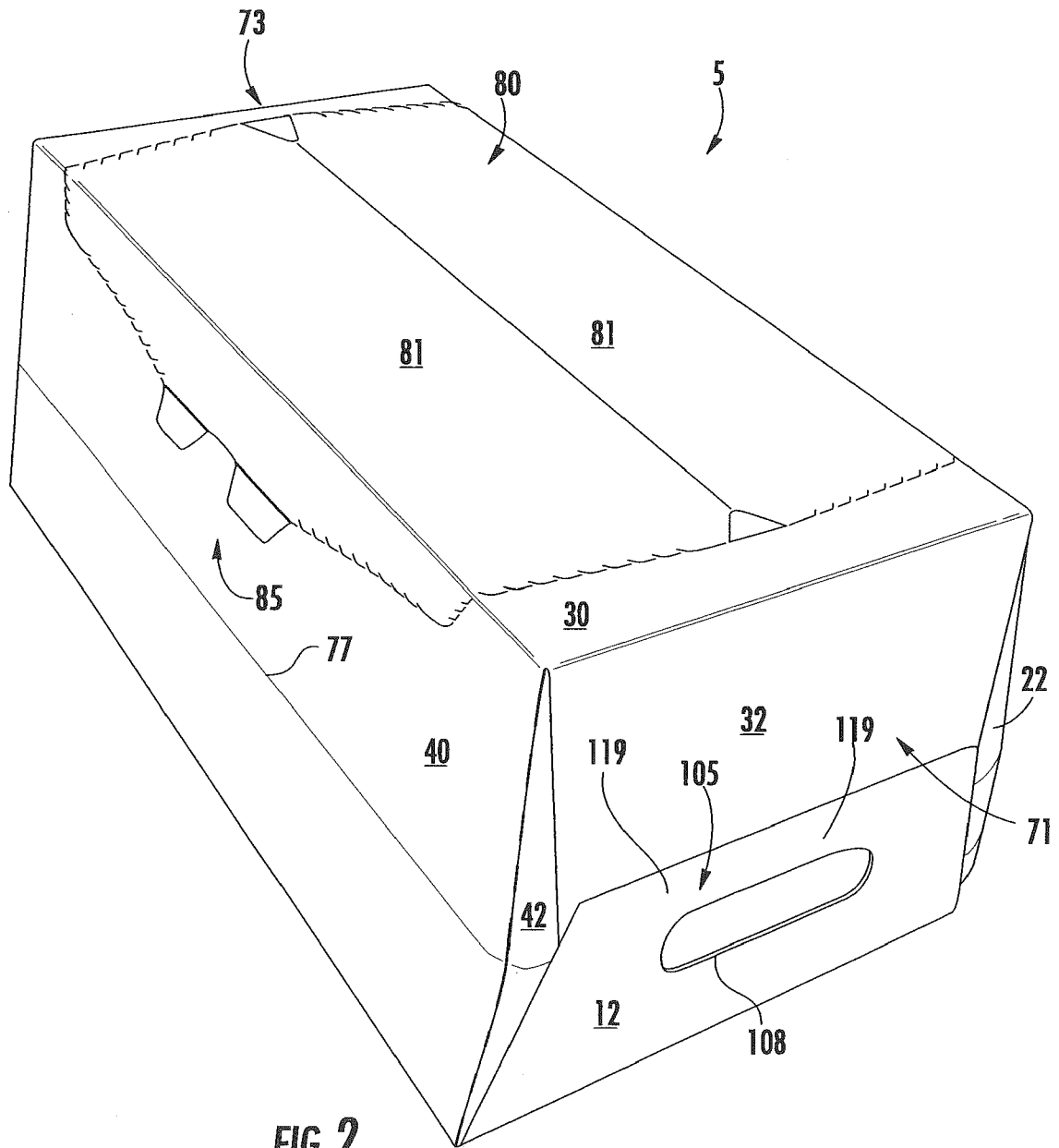
8. The method of claim 7, wherein the forming the handle comprises positioning the handle features so that the handle is spaced apart from the top panel by a first distance and is spaced apart from the bottom panel a second distance, and the first distance is greater than the second distance.

9. The method of claim 7, wherein the at least two end flaps further comprise a side end flap foldably connected to the side panel, the handle features further comprise a cutout in the side end flap, and the forming the handle further comprises at least partially aligning the first handle flap and the second handle flap with the cutout.

10. The method of claim 7, wherein the disposing the articles of the plurality of articles in the first row and the second row comprises nesting the articles of the second row with the articles of the first row.



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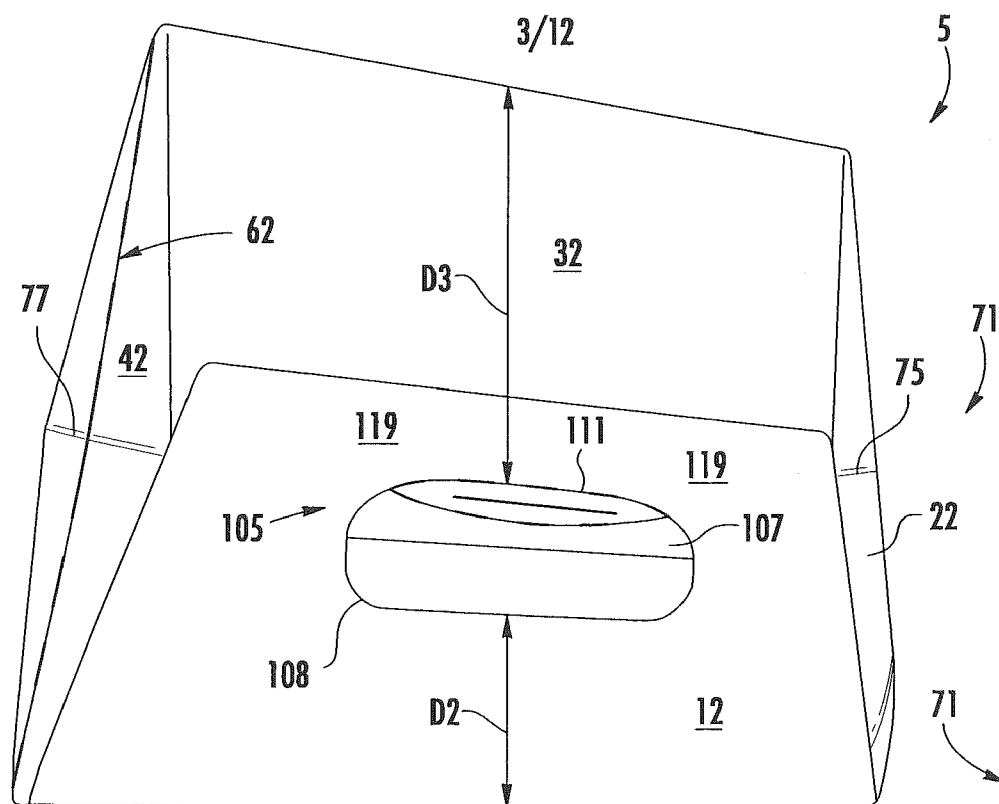


FIG. 3A

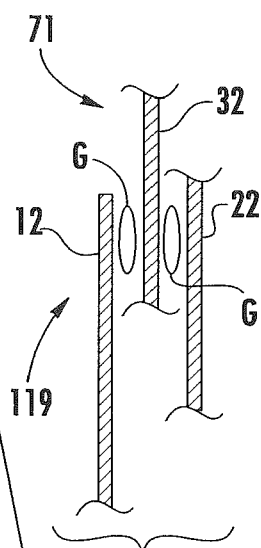


FIG. 3C

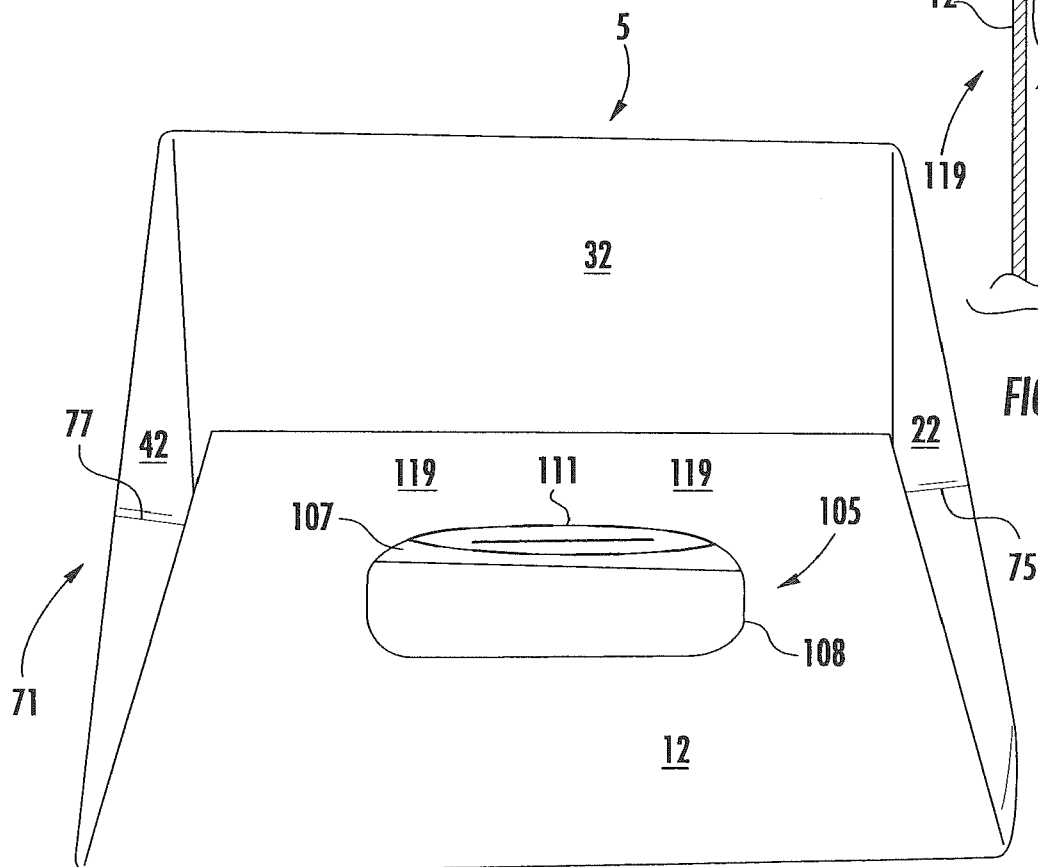
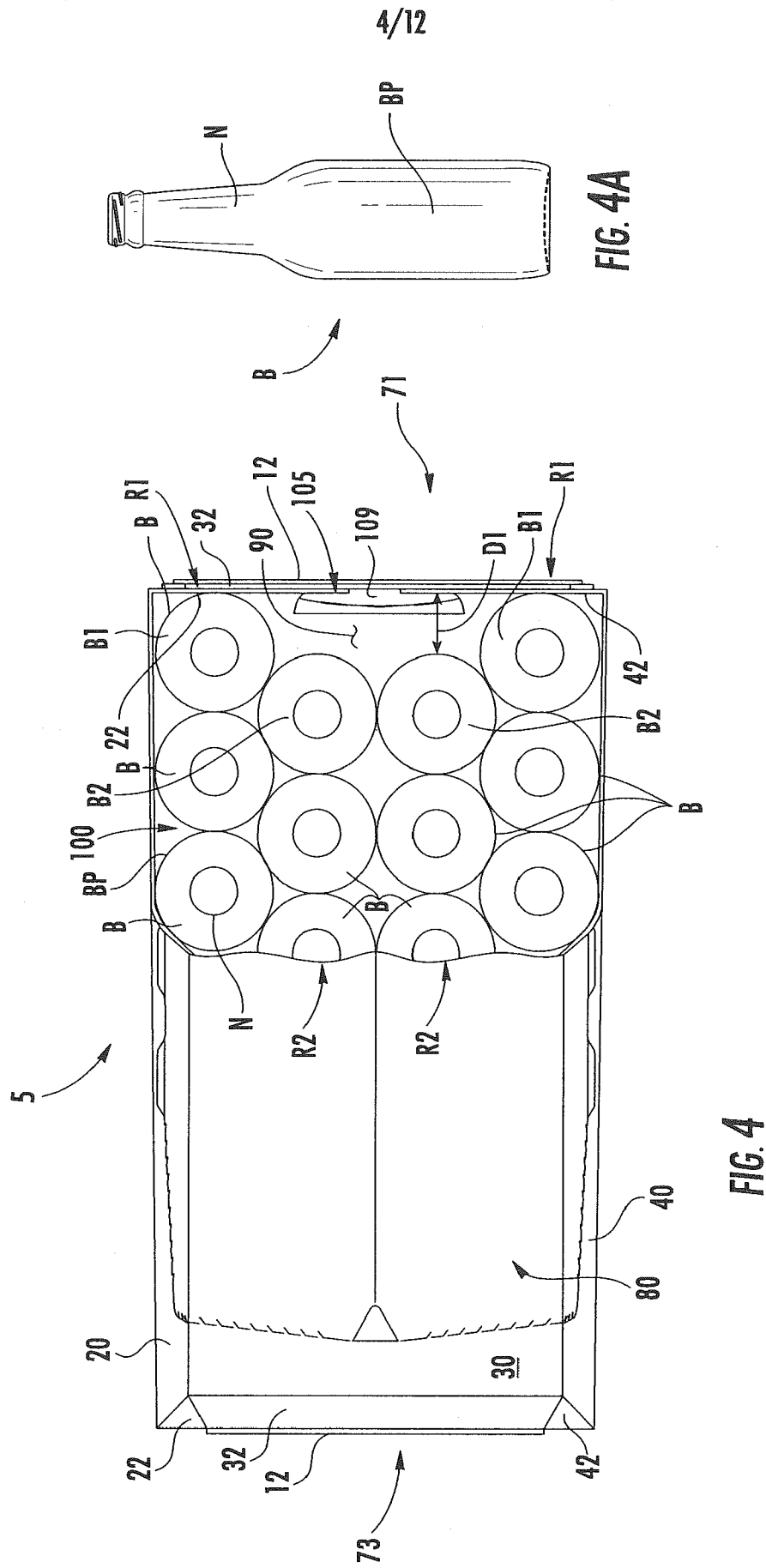
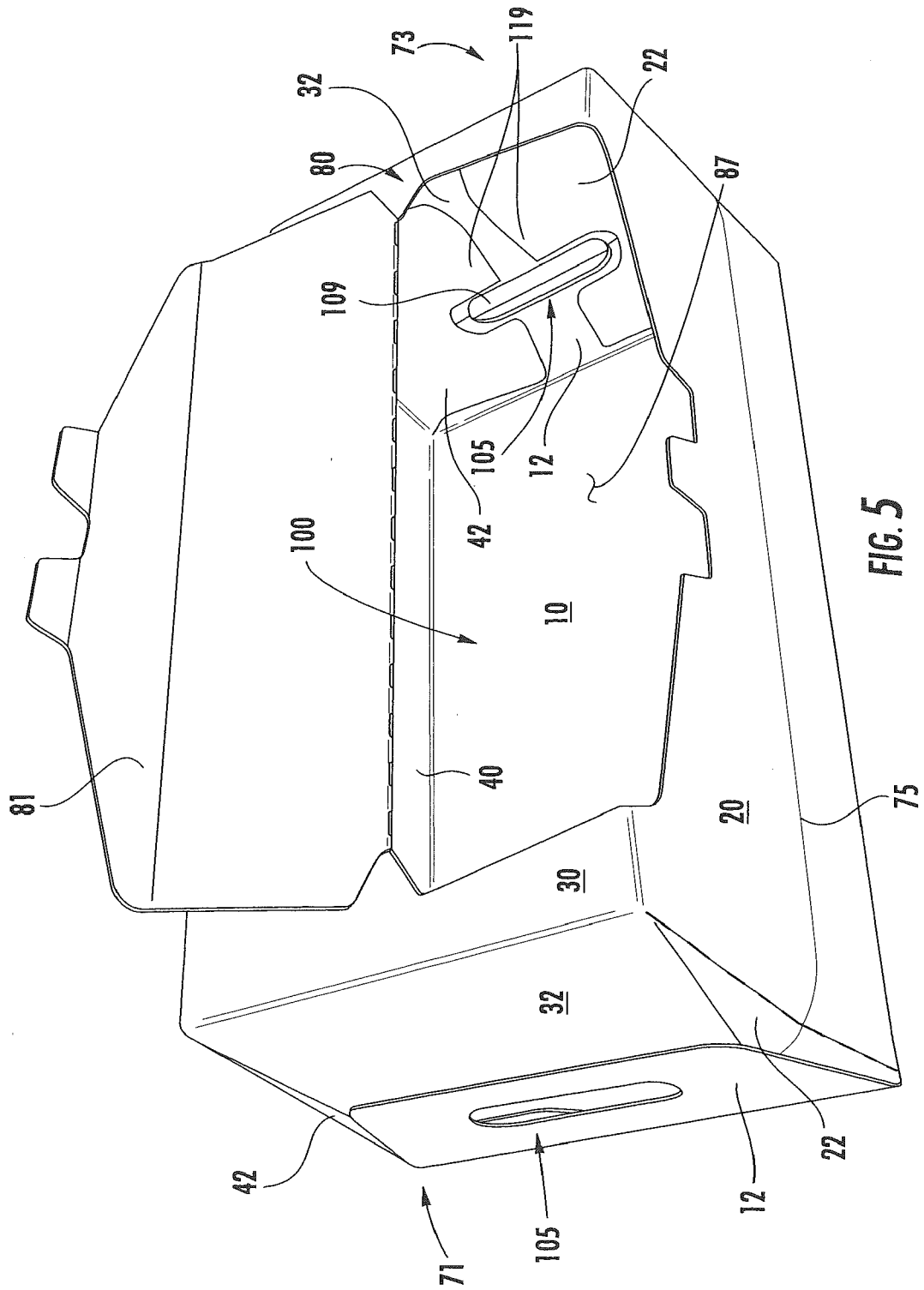


FIG. 3B



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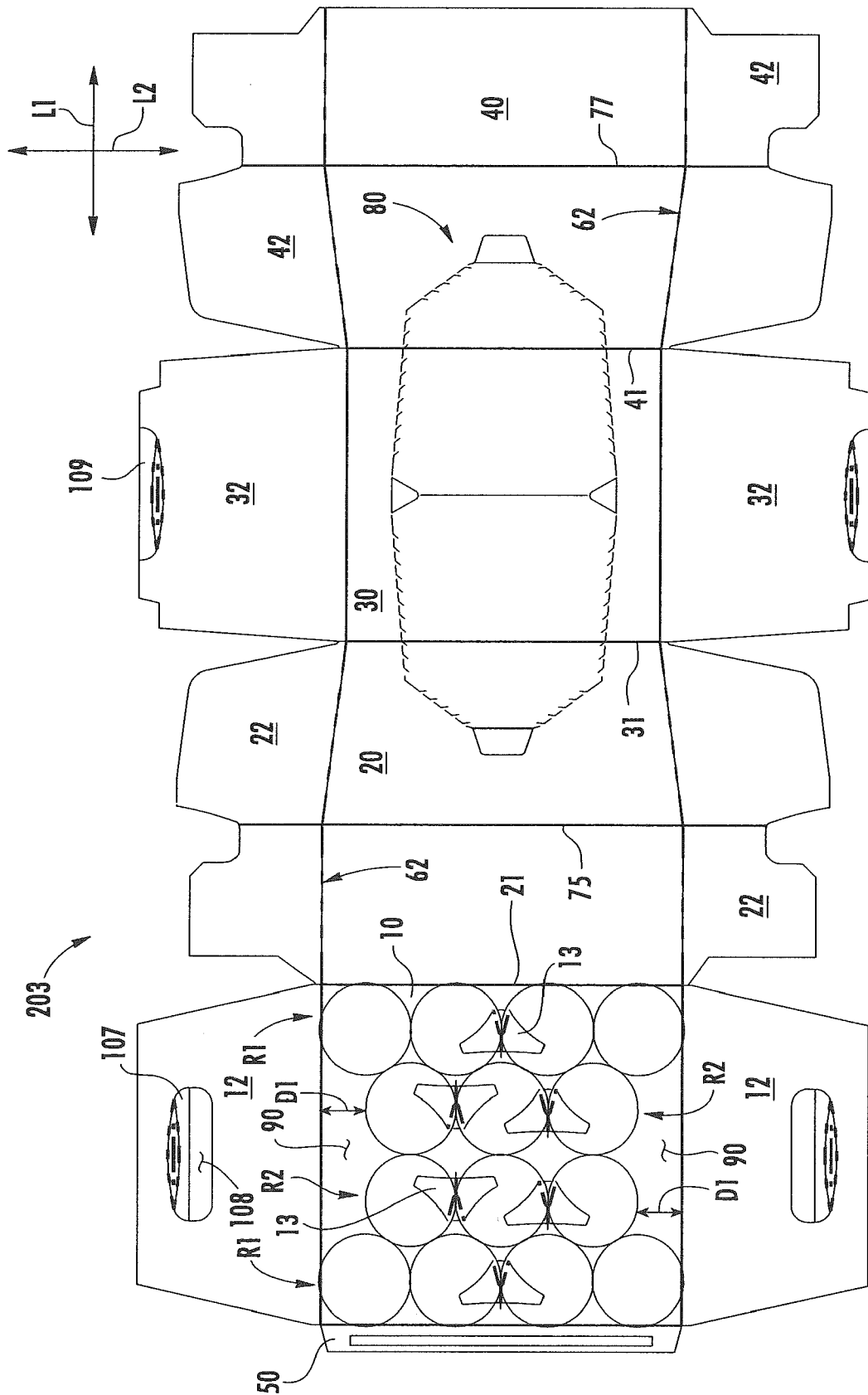
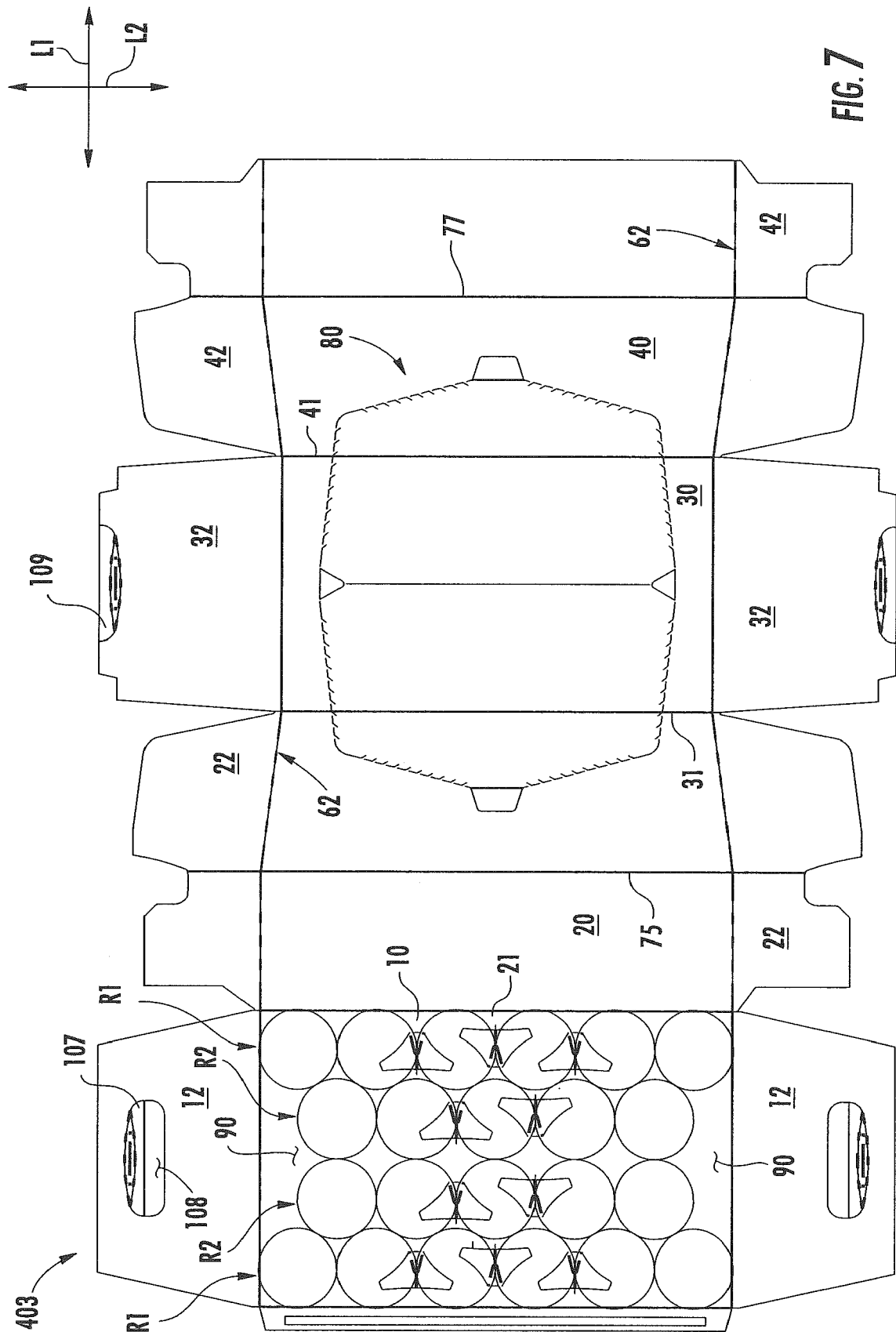
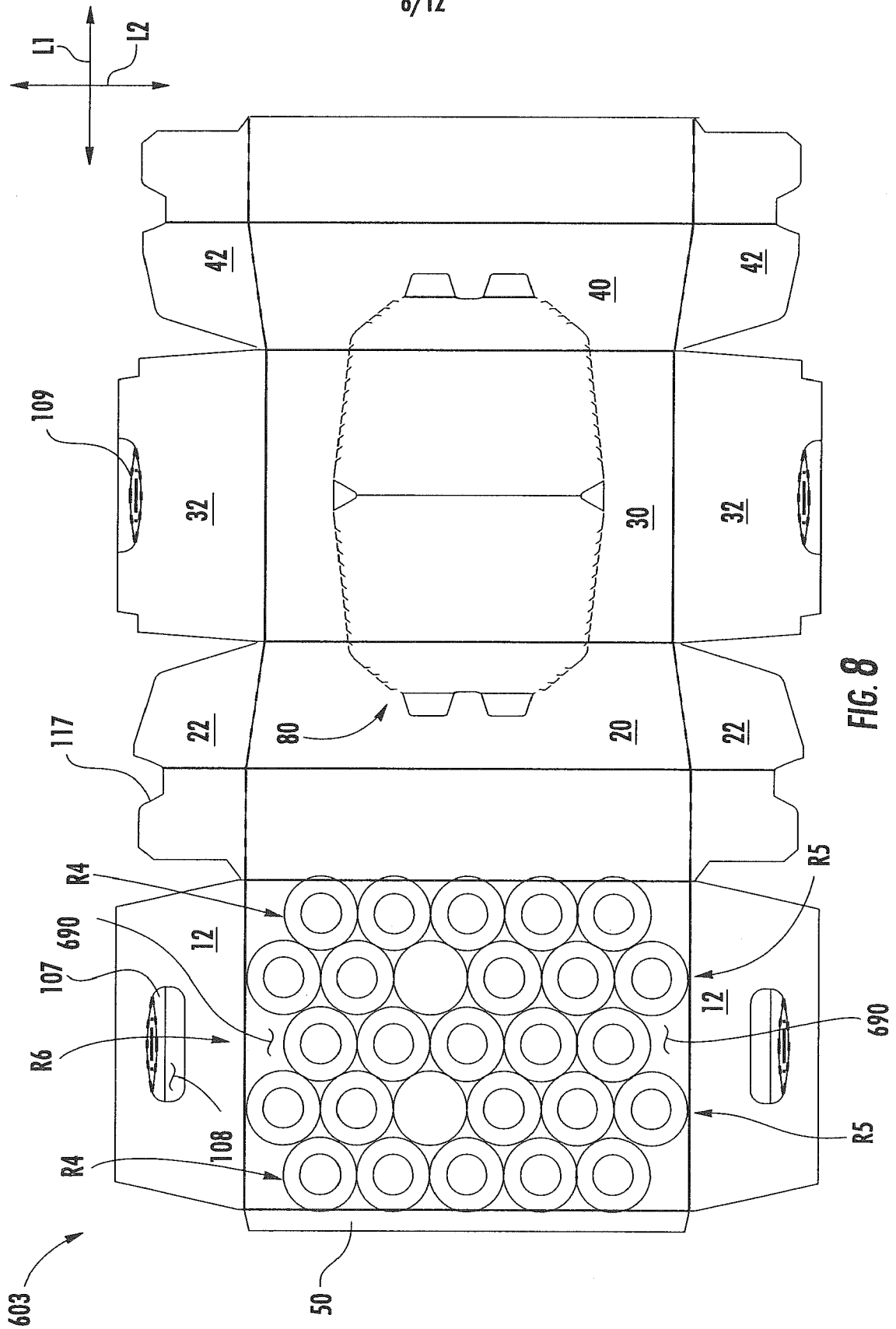


FIG. 6

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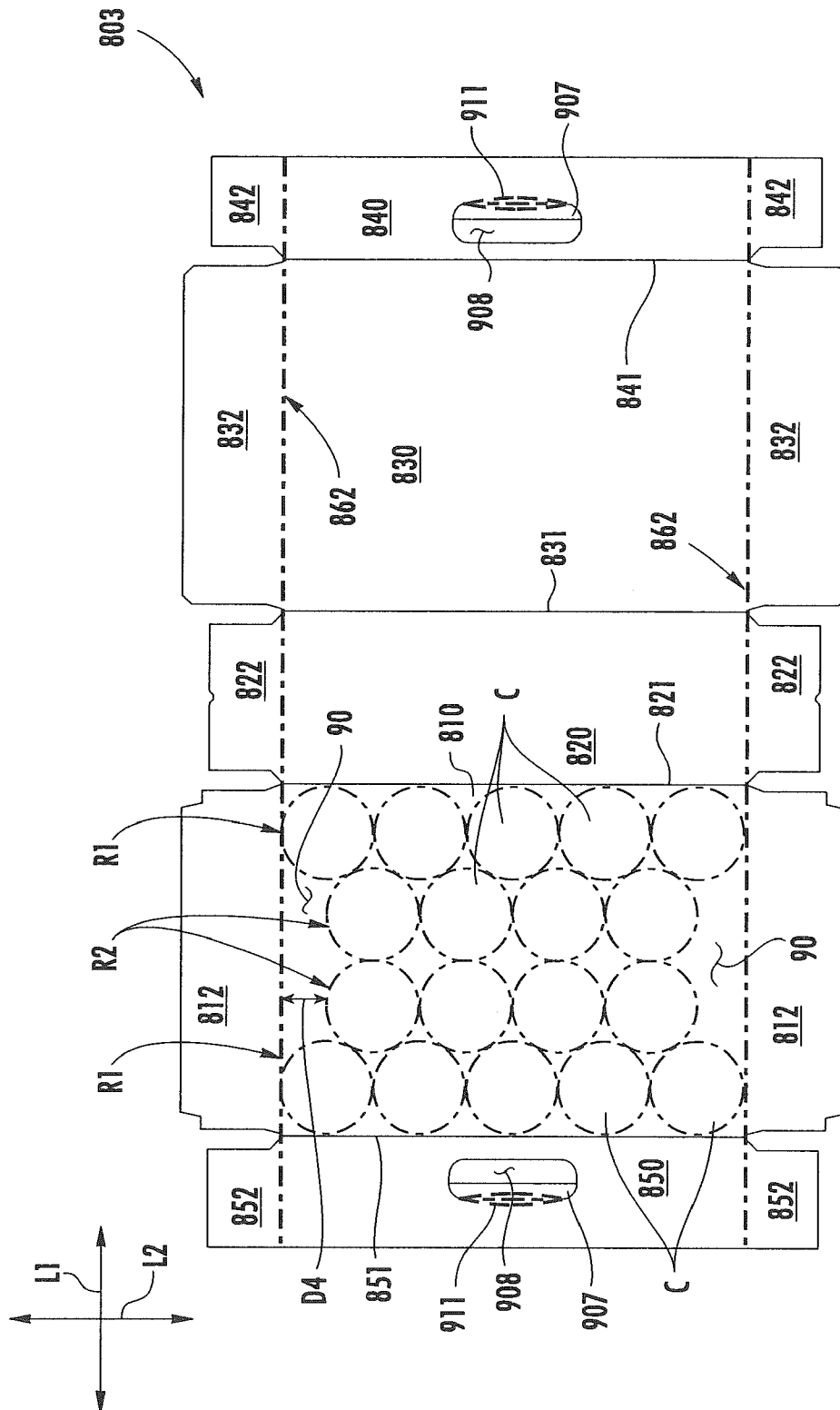


FIG. 9

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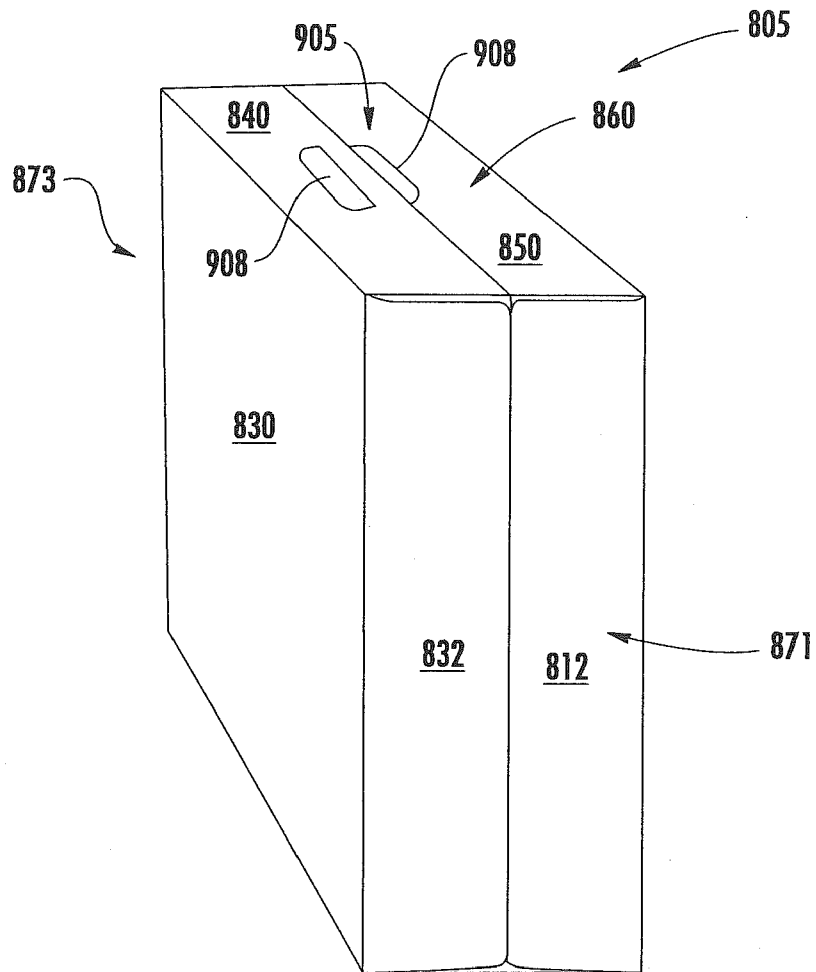
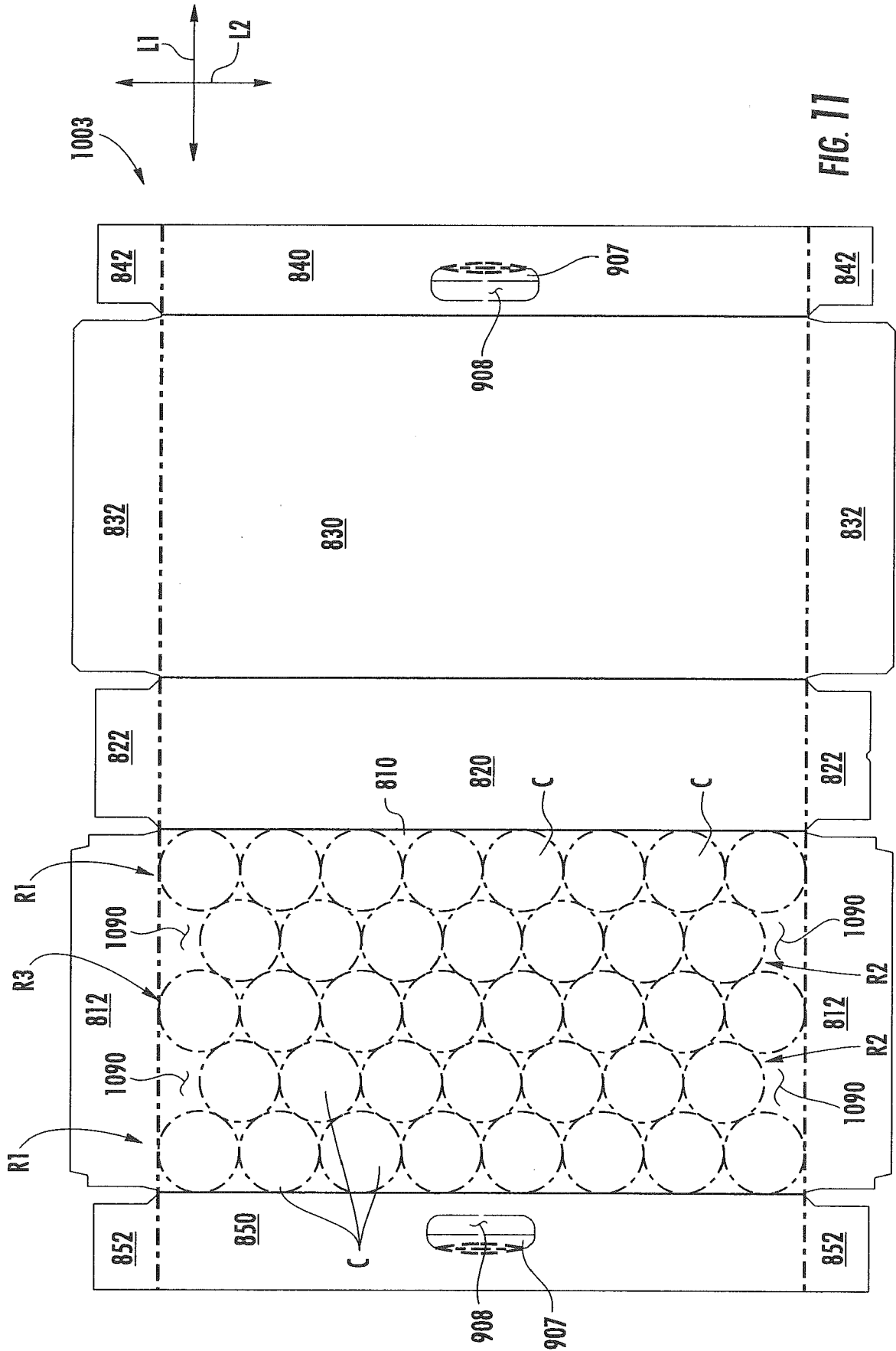


FIG. 10

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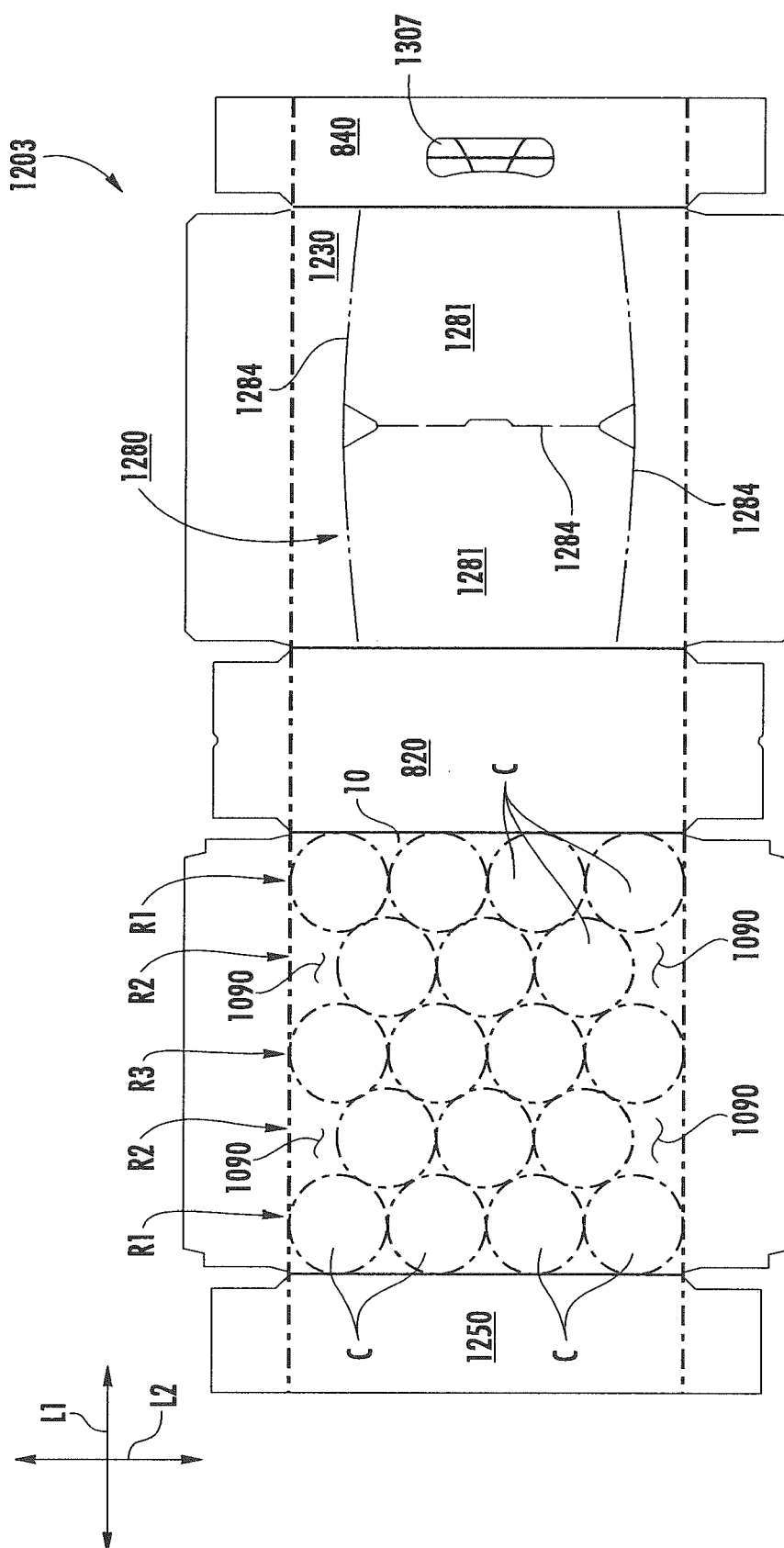


FIG. 12

