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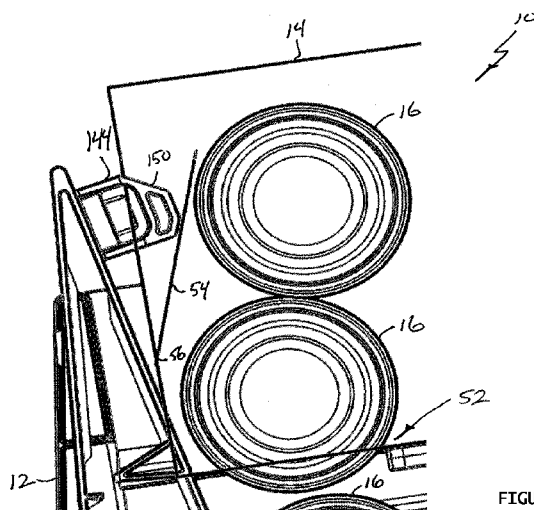


FIGURE 8

(57) Abstract: A product dispensing system (10) is disclosed that includes: a container (14) having a plurality of walls that define an internal volume wherein at least one of the walls defines a pivoting panel (54) that is partially separable from the wall along a weakened severance line (58); and a dispenser frame having a front end and a rear end. The dispenser frame includes a support deck (112, 114) extending between the front end and the rear end, and a stop (126) positioned proximate the front or the rear end to engage the pivoting panel (54) and urge the pivoting panel into the internal volume as the container is moved along the support deck into engagement with the stop.



PRODUCT DISPENSING CONTAINER AND SYSTEM WITH PIVOTING PANEL**FIELD**

[0001] This application relates to the dispensing of products from packaging containers and, more particularly, to packaging containers configured to cooperate with product dispensers to guide and dispense products.

BACKGROUND

[0002] Products are typically shipped to retailers in bulk by enclosing multiple individual product units in a container, such as a carton or box. For example, canned foods may be shipped to a retailer in a box containing twenty-four individual cans. Then, it is typically the retailer's obligation to remove the individual product units from the container and present them (e.g., on a shelf) to consumers.

[0003] Alternatives to the traditional package-ship-unpack-display model are being developed in an effort to improve operating efficiency. For example, U.S. Patent No. 7,922,437 discloses a new system for dispensing and displaying products packaged in a container. Specifically, the product dispensing system includes a dispenser having a support structure, a product display area and an opening tool. The dispenser may be positioned on a retailer's shelf and loaded with product simply by placing a container comprising multiple units of product onto the support structure of the dispenser. As the container is being placed onto the support structure, the opening tool of the dispenser opens the container in such a manner that product rolls from the container and down to the product display area of the dispenser under the force of gravity.

[0004] Unfortunately, such product dispensing systems may become jammed when a single product fails to properly exit the container. A jam may prevent products from moving to the product display area.

[0005] Accordingly, those skilled in the art continue with research and development efforts directed to apparatus and systems for dispensing products from packaging containers.

SUMMARY

[0006] In one aspect, the disclosed product dispensing system may include a container having a plurality of walls that define an internal volume wherein at least one of the walls defines a panel that is partially separable from the wall along a weakened severance line, and a dispenser frame having a front end and a rear end, wherein the dispenser frame includes: a support deck extending between the front end and the rear end, and a stop positioned proximate the front or the rear end to engage the panel and urge the pivoting panel into the internal volume as the container is moved along the support deck into engagement with the stop.

[0007] In another aspect, the disclosed product dispensing system may include: a container having a plurality of walls that define an internal volume wherein one of the walls defines a pivoting panel that is partially separable from the wall along a weakened severance line, another of the walls defines an opening; a plurality of products positioned in the internal volume; and a dispenser frame having a front end and a rear end wherein the dispenser frame includes a support deck extending between the front and rear ends and a stop assembly positioned proximate one of the front and rear ends, and wherein the stop assembly engages and severs the weakened severance line and urges the pivoting panel into the internal volume as the container is moved along the support deck into engagement with the stop assembly, thereby positioning the pivoting panel to guide the plurality of products to the opening.

[0008] In yet another aspect, the disclosed product dispensing container may include a plurality of walls that define an internal volume wherein at least one wall of the plurality of walls including a pre-formed pivot line and a weakened severance line that define a pivoting panel, and a plurality of products positioned in the internal volume, wherein the weakened severance line is severed and the pivoting panel pivots about said pre-formed pivot line into the internal volume when a longitudinal force is applied to the pivoting panel.

[0009] Other aspects of the disclosed product dispensing container and system with pivoting panel will become apparent from the following detailed description, the accompanying drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

- [0010] Fig. 1 is a front and side perspective view of one aspect of the disclosed product dispensing system with pivoting panel;
- [0011] Fig. 2 is a rear and bottom perspective view of the container of the product dispensing system of Fig. 1;
- [0012] Fig. 3 is bottom and rear perspective view of a portion of the container of Fig. 2, shown in an open configuration;
- [0013] Fig. 4 is a top plan view of a container blank that may be used to form the container of Fig. 2;
- [0014] Fig. 5 is a side elevational view, in section, of the product dispensing system of Fig. 1, shown with the pivoting panel in a deployed configuration;
- [0015] Fig. 6 is a rear perspective view of a portion of the product dispensing system of Fig. 5, shown prior to deploying the pivoting panel;
- [0016] Fig. 7 is a rear perspective view of the product dispensing system of Fig. 6, shown with the pivoting panel fully deployed; and
- [0017] Fig. 8 is a side elevational view, in section, of the product dispensing system of Fig. 7, showing the pivoting panel guide products to the opening in the container.

DETAILED DESCRIPTION

[0018] Referring to Fig. 1, one aspect of the disclosed product dispensing system with pivoting panel, generally designated 10, may include a dispenser 12 and a container 14. The container 14 may house multiple units of product 16, such as cans (e.g., canned food), jars (e.g., jarred sauce) or bottles (e.g., bottled soft drinks). As the container 14 is loaded onto the dispenser 12 by urging the container 14 along the dispenser 12, the dispenser 12 may open and engage the container 14 such that the container 14 guides the products 16 from the container 14 to the dispenser 12.

[0019] The container 14 may be any container capable of housing products 16 and beneficially interacting with the disclosed dispenser 12 to release and guide the products 16 to the dispenser 12. For example, the container 14 may be a paperboard carton or a corrugated box. Optionally, at least one major surface of the container 14 may be marked with various indicia, such as printed text and/or graphics.

[0020] As shown in Fig. 2, in one particular construction, the container 14 may be a generally rectilinear container having six walls 18, 20, 22, 24, 26, 28 that define an internal volume 30 for receiving the products 16 (Fig. 3). Opposed walls 20 and 24 may define the front and rear walls, respectively, of the container 14. Opposed walls 26 and 28 may define the first (e.g., right) and second (e.g., left) side walls, respectively, of the container 14. Opposed walls 18 and 22 may define the base and upper walls, respectively, of the container 14.

[0021] Optionally, the container 14 may include a partition 32 extending therethrough to divide the internal volume 30 into a first chamber 34 and a second chamber 36. The partition 32 may be a generally planar structure that is generally parallel with, but spaced apart from, the right 26 and left 28 side walls. Therefore, as shown in Fig. 3, a first quantity of product 16 may be housed in the first chamber 34 and a second quantity of product 16 may be housing in the second chamber 36.

[0022] The base wall 18 of the container 14 may define one or more door flaps 38, 40. The door flaps 38, 40 may be defined by a forward edge 42 laterally extending between the side walls 26, 28, a rear edge 44 laterally extending between the side walls 26, 28, and a weakened severance line 46 extending between the forward edge 42 and the rear edge 44. The rear edge 44 may be V-shaped, and the weakened severance line 46 may extend from proximate (i.e., at or near) the base of the "V" of the V-shaped rear edge 44 to proximate the forward edge 42. Therefore, the rear edge 44 may guide an opening tool (discussed below) to the weakened severance line 46.

[0023] The weakened severance line 46 may be formed by weakening the container 14 along the weakened severance line 46. Examples of weakening techniques useful in forming

the weakened severance line 46 include scoring the container 14, creasing the container 14, and forming perforations in the container 14.

[0024] As shown in Fig. 3, when the weakened severance line 46 is severed, the door flaps 38, 40 may pivot laterally outward (i.e., toward the side walls 26, 28) along the edges 48, 50 between the base wall 18 and the side walls 26, 28, thereby forming an opening 52 in the container 14 that provides access to the internal volume 30, and through which the products 16 may exit the container 14.

[0025] In one implementation, the door flaps 38, 40 may be formed as the container 14 is loaded onto the dispenser 12, as described in greater detail herein. In another implementation, the door flaps 38, 40 may be formed prior to loading the container 14 onto the dispenser 12, such as by manually severing the weakened severance line 46 (e.g., with a box cutter).

[0026] Still referring to Fig. 3, the rear wall 24 of the container 14 may include a pivoting panel 54 that is partially separable from the rear wall 24. The pivoting panel 54 may be defined by a pre-formed pivot line 56 (shown as a solid line) and one or more weakened severance lines 58 (shown as a broken line).

[0027] The weakened severance line 58 of the pivoting panel 54 may be formed by weakening the rear wall 24 of the container 14 along the weakened severance line 58 such that the weakened severance line 58 may be severed when a force (arrow **F** in Fig. 2), such as a pushing or punching force, is applied to the pivoting panel 54 along the longitudinal axis **A** (Fig. 2) of the container 14. For example, the weakened severance line 58 may be formed by perforating the rear wall 24 of the container 14.

[0028] The shape of the weakened severance line 58 may dictate that shape of the pivoting panel 54. For example, the weakened severance line 58 may be comprised of three connected, generally straight segments to form a generally rectangular pivoting panel 54. As another example, the weakened severance line 58 may provide the pivoting panel 54 the keystone shape shown in the drawings.

[0029] Thus, the pivoting panel 54 may be formed by severing the rear wall 24 of the container 14 along the weakened severance line 58, such as by applying a pushing or punching force **F** to the pivoting panel 54. Once the weakened severance line 58 has been severed, the pivoting panel 54 may remain hingedly connected to the rear wall 24 of the container 14 along the pre-formed pivot line 56, and may pivot relative to the rear wall 24 of the container 14 along the pre-formed pivot line 56.

[0030] As shown in Fig. 3, the pre-formed pivot line 56 of the pivoting panel 54 may be generally parallel with, and may be positioned proximate, the base edge 60 of the rear wall 24. The weakened severance line 58 may extend upward (i.e., toward upper edge 62) from the opposed ends 64, 66 of the pre-formed pivot line 56. Therefore, once the weakened severance line 58 has been severed, the partially separated pivoting panel 54 may pivot downward toward the base wall 18 of the container 14 about the pre-formed pivot line 56.

[0031] The pivoting panel 54 is shown in the drawings as having a generally keystone shape. Furthermore, the pivoting panel 54 is shown in the drawings as having a maximum vertical height that is about 50 percent of the vertical height of the rear wall 24 (i.e., the distance from edge 60 to edge 62) and a maximum lateral width that is about 65 percent of the lateral width of the rear wall 24 (i.e., the distance from edge 68 to edge 70). However, those skilled in the art will appreciate that pivoting panels 54 of various shapes and sizes may be used without departing from the scope of the present disclosure.

[0032] The container 14 may be formed from a paperboard container blank, such as the paperboard container blank 72 shown in Fig. 4. The container blank 72 may include a plurality of pre-formed fold lines 74, 76, 78, 80, 82, 84, 86, 88, 90 that define the base wall 18, the front wall 20 (comprised of front wall panels 20A and 20B), the upper wall 22, the rear wall 24 (comprised of rear wall panels 24A and 24B), the right side wall 26, the left side wall 28, the partition 32, a transition panel 92 and sealing flaps 94, 96, 98, 100, 101.

[0033] The pivoting panel 54 may be formed in the rear wall panel 24B. An aperture 102 may be formed in the rear wall panel 24A. The aperture 102 may have a shape that closely corresponds to the shape of the pivoting panel 54. However, the aperture 102 may be slightly smaller than the pivoting panel 54 such that, when the pivoting panel 54 is

separated from rear wall panel 24B along the weakened severance line 58, the separated pivoting panel 54 may not pass through the aperture 102.

[0034] The container 14 may be assembled by folding the container blank 72 along the longitudinal fold lines 74, 76, 78, 80, 82, 84 and connecting the upper wall 22 to the transition panel 92 to form the three-dimensional body of the container 14. Additionally, sealing flap 94 may be connected to the base wall 18 to secure the partition 32 between the side walls 26, 28 of the container 14. The front wall panels 20A and 20B and the sealing flaps 96, 98, 100 may be assembled to form the front wall 20 of the container 14. Finally, the rear wall 24 may be formed by assembling the rear wall panels 24A and 24B and the sealing flap 101 such that the rear wall panel 24A is positioned over the rear wall panel 24B, thereby aligning the aperture 102 over the pivoting panel 54.

[0035] While a specific paperboard container blank 72 is shown and described, those skilled in the art will appreciate that various techniques and materials may be used to form the container 14. Folded paperboard containers are only one specific and non-limiting example of the disclosed container 14.

[0036] Referring to Fig. 5, the dispenser 12 may include a frame 104 and an opening tool 106. The frame 104 of the dispenser 12 may support the container 14 in a desired configuration and may provide the force **F** (Fig. 2) required to sever the weakened severance line 58 (Fig. 3) and pivot the pivoting panel 54 about the pre-formed pivot line 56 (Fig. 3). The opening tool 106 may sever the weakened severance line 46 (Fig. 2) to form the door flaps 38, 40 and, ultimately, the opening 52, as the container 14 is loaded onto the frame 104 of the dispenser 12, thereby releasing the products 16 from the container 14 to the dispenser 12.

[0037] Those skilled in the art will appreciate that the dispenser 12 may include additional components and features, such as one or more of the components and features of the dispensers disclosed in U.S. Patent No. 7,922,437 without departing from the scope of the present disclosure.

[0038] The frame 104 may include a first (e.g., right) side wall 108, a second (e.g., left) side wall 110 (Fig. 1), an upper support deck 112 and a lower support deck 114. The right side

wall 108 may be laterally spaced from the left side wall 110, and may be generally parallel with the left side wall 110.

[0039] The lower support deck 114 may laterally extend between the right 108 and left 110 side walls, and may include a front end 116 that longitudinally extends toward the front end 118 of the frame 104 and a rear end 120 that longitudinally extends toward the rear end 122 of the frame 104. Therefore, the lower support deck 114 and the side walls 108, 110 may define a lower level 124 of the frame 104.

[0040] The lower support deck 114 may be inclined from the front end 116 to the rear end 120 (i.e., the rear end 120 may be elevated relative to the front end 116) such that products 16 deposited proximate the rear end 120 of the lower support deck 114 roll down to the front end 116 of the lower support deck 114 under the force of gravity. The extent of the incline of the lower support deck 114 may be dictated by, among other things, the coefficient of friction of the material used to form the frame 104 and the shape of the products 16 to be dispensed by the dispenser 12.

[0041] One or more stops 126 may be positioned proximate the front end 116 of the lower support deck 114 to prevent products 16 from rolling beyond the front end 116 of the lower support deck 114. For example, the stop 126 may be connected to (e.g., integral with) the lower support deck 114, and may form an upward curve at the front end 116 of the lower support deck 114. Therefore, the stop 126 may collect products 16 at the front end 116 of the lower support deck 114, thereby defining a product display area 128 at the front end 116 of the lower support deck 114.

[0042] As shown in Figs. 1 and 5, in one particular implementation, the frame 104 may include a divider 130 extending from the front end 116 of the lower support deck 114 to the rear end 120 of the lower support deck 114 to divide the lower level 124 into a first product channel 132 and a second product channel 134. The first product channel 132 may be defined by the lower support deck 114, the right side wall 108 and the divider 130, and may extend from proximate the rear end 120 of the lower support deck 114 to the front end 116 of the lower support deck 114. The second product channel 134 may be defined by the lower support deck 114, the left side wall 110 and the divider 130, and may extend from

proximate the rear end 120 of the lower support deck 114 to the front end 116 of the lower support deck 114. While two product channels 132, 134 are shown and described, those skilled in the art will appreciate that the frame 104 may be constructed to provide only one product channel or more than two product channels, without departing from the scope of the present disclosure.

[0043] The upper support deck 112 may laterally extend between the right 108 and left 110 side walls, and may include a front end 136 that longitudinally extends toward the front end 118 of the frame 104 and a rear end 138 that longitudinally extends toward, but not to, the rear end 122 of the frame 104. Therefore, the upper support deck 112 and the side walls 108, 110 may define an upper level 140 of the frame 104.

[0044] The spacing between the rear end 138 of the upper support deck 112 and the rear end 122 of the frame 104 may define an opening 142, which may function as a chute to allow products 16 to move from the upper level 140 to the lower level 124 of the frame 104.

[0045] The upper support deck 112 may be declined from the front end 136 to the rear end 138 (i.e., the front end 136 may be elevated relative to the rear end 138). Therefore, products 16 supported by the upper support deck 112 may roll under the force of gravity down to the rear end 128 of the upper support deck 112, through the opening 142, to the lower level 124 of the frame 104 and, ultimately, to the product display area 128.

[0046] A stop assembly 144 may be supported in the upper level 140 of the frame 104 proximate the rear end 122 of the frame 104. The stop assembly 144 may be configured to inhibit rearward movement of the container 14 beyond the stop assembly 144, and to supply a force **F** (Fig. 2) to the rear wall 24 of the container 14 to sever the weakened severance line 58 (Fig. 3) and pivot the pivoting panel 54 about the pre-formed pivot line 56 (Fig. 3) into the internal volume 30 of the container 14 as the container 14 is loaded onto the dispenser 12.

[0047] Referring to Fig. 6, the stop assembly 144 may include first and second stop members 146, 148 and first and second protruding members 150, 152. The first and second stop members 146, 148 may be positioned to engage the rear wall 24 of the container 14 as the container 14 is urged along the upper support deck 112 (Fig. 5) into engagement with

the stop assembly 144. The first and second protruding members 150, 152 may be positioned to pass through the aperture 102 into engagement with the pivoting panel 54 as the container 14 is urged along the upper support deck 112 (Fig. 5) into engagement with the stop assembly 144.

[0048] As shown in Fig. 7, as the container 14 engages the stop assembly 144, the first and second stop members 146, 148 may inhibit further rearward movement of the container 14 and the first and second protruding members 150, 152 may apply a force **F** (Fig. 2) to the pivoting panel 54 to sever the weakened severance line 58 (Fig. 3) and urge the pivoting panel 54 about the pre-formed pivot line 56 (Fig. 3) into the internal volume 30 (Fig. 2) of the container 14.

[0049] Referring back to Fig. 5, an optional rear wall 154 may be positioned at the rear end 122 of the frame 104 between the right 108 and left 110 side walls. The stop assembly 144 may be connected to the rear wall 154 such that the rear wall 154 may structurally reinforce the stop assembly 144, and may support the stop assembly 144 in the desired position.

[0050] A guide 156 may be connected to the rear wall 154 of the frame 104, and may extend through the opening 142 in the frame 104, from the upper level 140 to the lower level 124. The guide 156 may be positioned to receive products 16 exiting the opening 52 (Fig. 3) in the container 14 and passing through the opening 142 in the frame 104, and may guide the products 16 to the rear end 120 of the lower support deck 114.

[0051] Optionally, the guide 156 may be springingly connected to the rear wall 154 of the frame 104 at a connection point 158, and may include a protrusion 160 extending toward the rear wall 154. As a product 16 drops into engagement with the receiving end 162 of the guide 156, the force of the product 16 acting on the guide 156 may urge the guide 156, and specifically the protrusion 160, into engagement with the rear wall 154. Therefore, as the guide 156 receives a product 16, the guide 156 may affect a “tapping” of the rear wall 154. The vibration of the “tapping” may be transferred throughout the system 10, including the products 16 remaining in the container 14, thereby encouraging products 16 to move from the container 14 to the dispenser 12. As the product 16 disengages the guide 156 and

moves toward the product display area 128, the spring-loaded guide 156 may return to its original position (Fig. 5) to await another dispensing product 16.

[0052] The opening tool 106 may extend into the upper level 140 of the frame 104 to sever the weakened severance line 46 (Fig. 2) of the container 14 as the container 14 is urged along the upper support deck 112 of the frame 104. The type of opening tool 106 used, as well as the position of the opening tool 106, are design considerations, and may be selected such that the opening tool 106 is capable of opening the container 14 (e.g., severing the weakened severance line 46), but creates little or no interference with the movement of the container 14 along the upper support deck 112.

[0053] In one particular construction, the opening tool 106 may include a forward cutting edge 164 positioned (e.g., centered) between the side walls 108, 110 of the frame 104 proximate the rear end 138 of the upper support deck 112. Therefore, the opening tool 106 may sever the weakened severance line 46 (Fig. 2) and may form the door flaps 38, 40 (Fig. 3) just prior to the separated door flaps 38, 40 reaching the opening 142 in the frame 104.

[0054] Accordingly, as the container 14 is urged along the upper support deck 112 of the frame 104, the opening tool 106 may automatically open the container 14 and the engagement between the stop assembly 144 of the dispenser 12 and the rear wall 24 of the container 14 may separate the pivoting panel 54 from the rear wall 24 and may urge the separated pivoting panel 54 into the internal volume 30 of the container 14 such that the pivoting panel 54 may guide products 16 to the opening 52 (Fig. 3) in the container 14, as shown in Fig. 8.

[0055] Although various aspects of the disclosed product dispensing container and system with pivoting panel have been shown and described, modifications may occur to those skilled in the art upon reading the specification. The present application includes such modifications and is limited only by the scope of the claims.

Claims:

1. A product dispensing system comprising:

a container comprising a plurality of walls that define an internal volume, at least one wall of said plurality of walls defining a panel; and

a dispenser frame having a front end and a rear end, said dispenser frame comprising:

a support deck extending between said front end and said rear end; and

a stop assembly positioned proximate one of said front end and said rear end to engage said panel and urge said panel into said internal volume as said container is moved along said support deck into contact with said stop assembly.

2. The product dispensing system of claim 1 wherein said panel is partially separable from said wall along a weakened severance line, and wherein said weakened severance line is severed when said stop assembly engages said panel.

3. The product dispensing system of claim 2 wherein said weakened severance line comprises perforations.

4. The product dispensing system of claim 2 wherein said panel is defined by said weakened severance line and a pre-formed pivot line, and wherein said panel pivots relative to said wall about said pre-formed pivot line when said weakened severance line has been severed.

5. The product dispensing system of claim 4 wherein said weakened severance line extends upward from said pre-formed pivot line.

6. The product dispensing system of claim 4 wherein said pre-formed pivot line comprises a first end and a second end, and wherein said weakened severance line extends from proximate said first end to proximate said second end.

7. The product dispensing system of claim 2 wherein said weakened severance line is comprised of multiple segments.

8. The product dispensing system of claim 1 further comprising a plurality of products positioned in said internal volume.
9. The product dispensing system of claim 8 wherein said container comprises an opening, and wherein said panel is positioned to guide said plurality of products to said opening when said panel has been urged into said internal volume.
10. The product dispensing system of claim 9 wherein said plurality of walls includes a base wall, and wherein said opening is formed in said base wall.
11. The product dispensing system of claim 8 further comprising an opening tool positioned to form an opening in said container as said container is moved along said support deck toward said stop assembly, wherein said panel is positioned to guide said plurality of products to said opening when said panel has been urged into said internal volume.
12. The product dispensing system of claim 11 wherein said plurality of walls includes a base wall that defines door flaps connected by a weakened severance line, and wherein said opening tool severs said weakened severance line of said base wall to form said opening as said container is moved along said support deck toward said stop assembly.
13. The product dispensing system of claim 8 wherein each product of said plurality of products is capable of rolling about a rolling axis.
14. The product dispensing system of claim 1 wherein said container comprises paperboard
15. A product dispensing system comprising:
 - a container comprising a plurality of walls that define an internal volume, a first wall of said plurality of walls defining a panel that is partially separable from said first wall along a weakened severance line, a second wall of said plurality of walls defining an opening;
 - a plurality of products positioned in said internal volume; and
 - a dispenser frame having a front end and a rear end, said dispenser frame comprising:

a support deck extending between said front end and said rear end; and
a stop assembly positioned proximate one of said front end and said rear end to contact said panel and sever said weakened severance line so as to urge said panel into said internal volume as said container is moved along said support deck into contact with said stop assembly.

16. The product dispensing system of claim 15 further comprising an opening tool positioned to form said opening in said container as said container is moved along said support deck toward said stop assembly.

17. The product dispensing system of claim 16 wherein said second wall defines door flaps connected by a weakened severance line, and wherein said opening tool severs said weakened severance line of said second wall to form said opening as said container is moved along said support deck toward said stop assembly.

18. The product dispensing system of claim 15 wherein said panel is defined by said weakened severance line and a pre-formed pivot line, and wherein said panel pivots relative to said first wall about said pre-formed pivot line when said weakened severance line has been severed.

19. The product dispensing system of claim 15 wherein said weakened severance line comprises perforations.

20. A product dispensing container comprising:

a plurality of walls that define an internal volume, at least one wall of said plurality of walls comprising a pre-formed pivot line and a weakened severance line that define a panel; and

a plurality of products positioned in said internal volume,
wherein said weakened severance line is severed and said panel pivots about said pre-formed pivot line into said internal volume when a longitudinal force is applied to said panel.

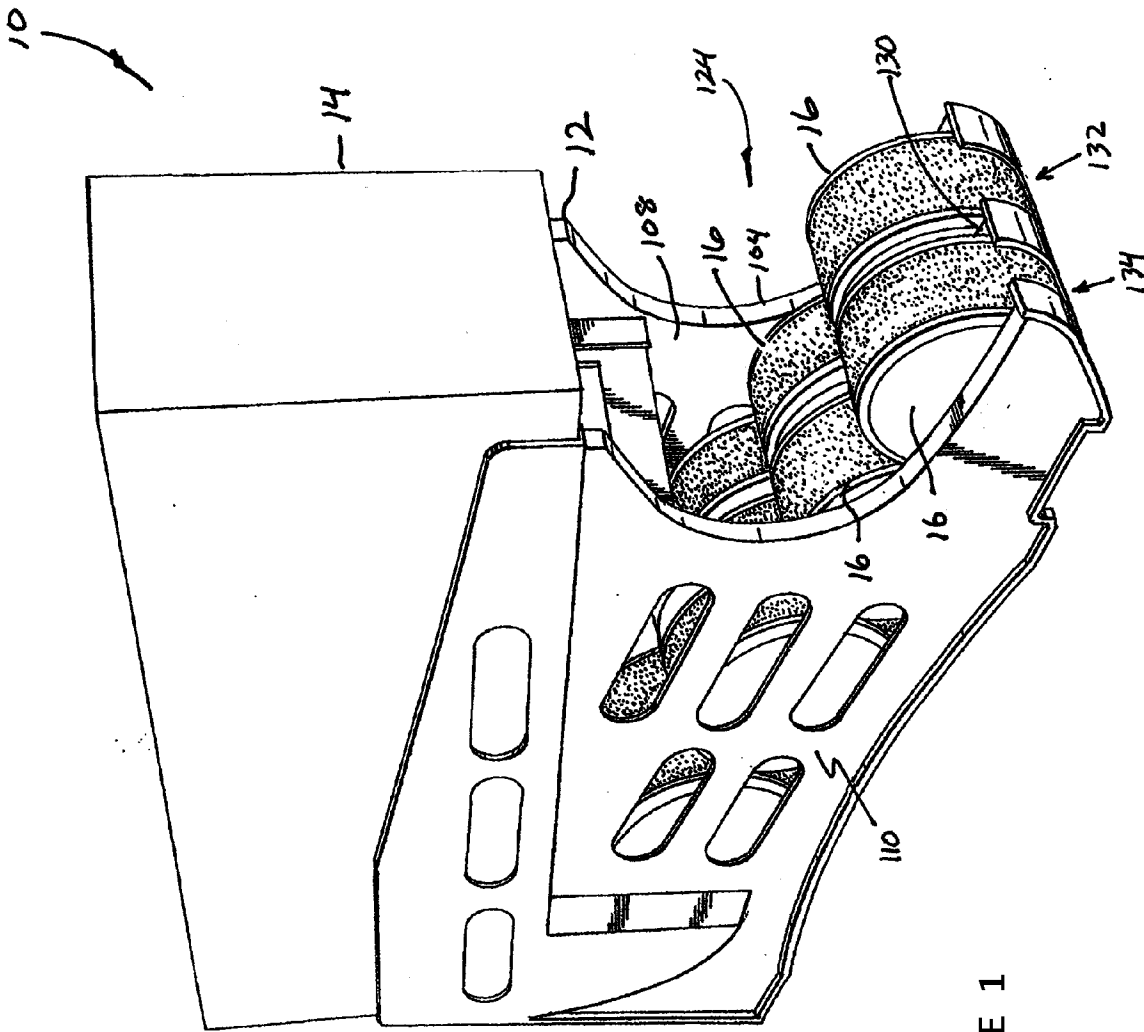
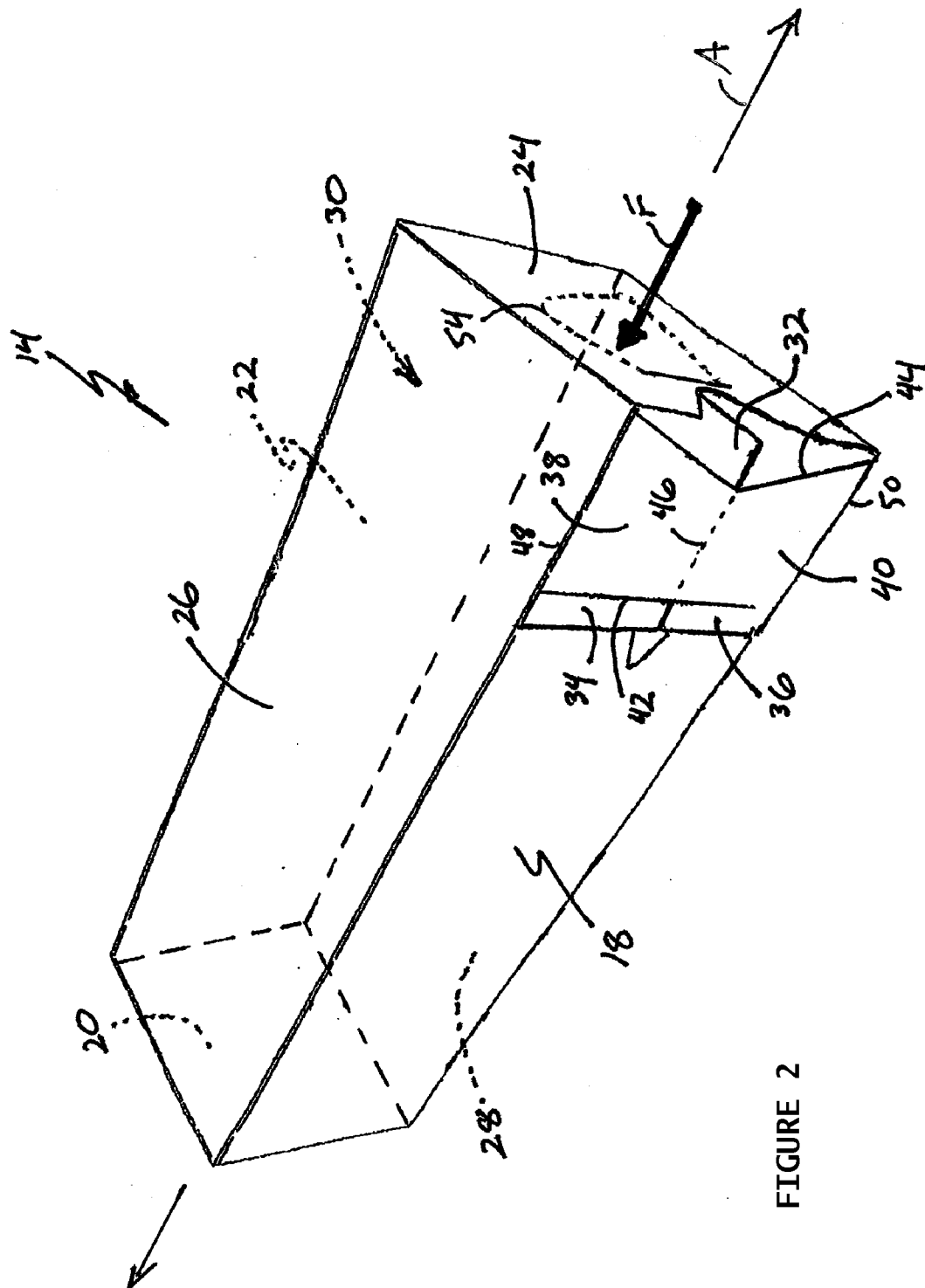
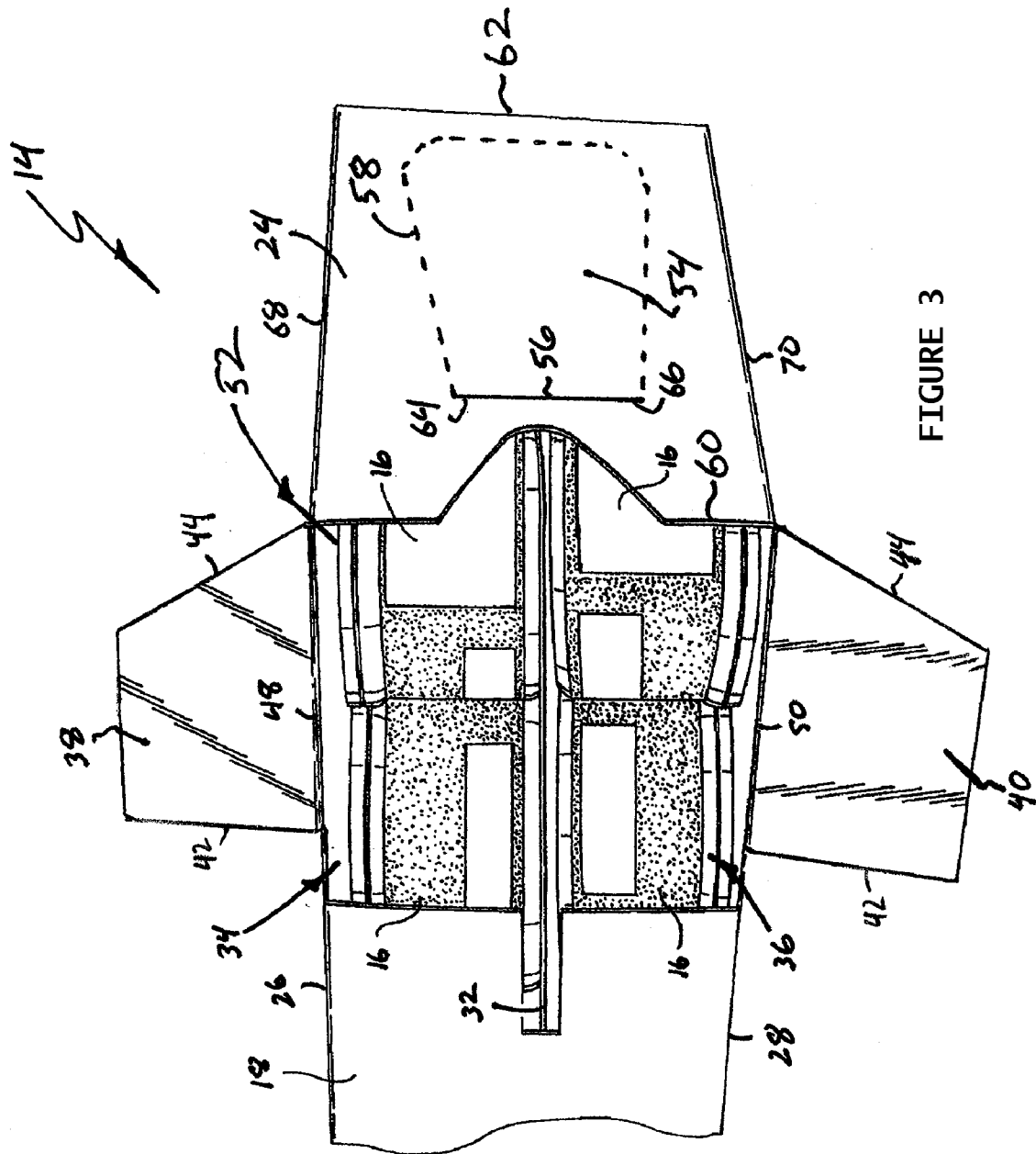


FIGURE 1





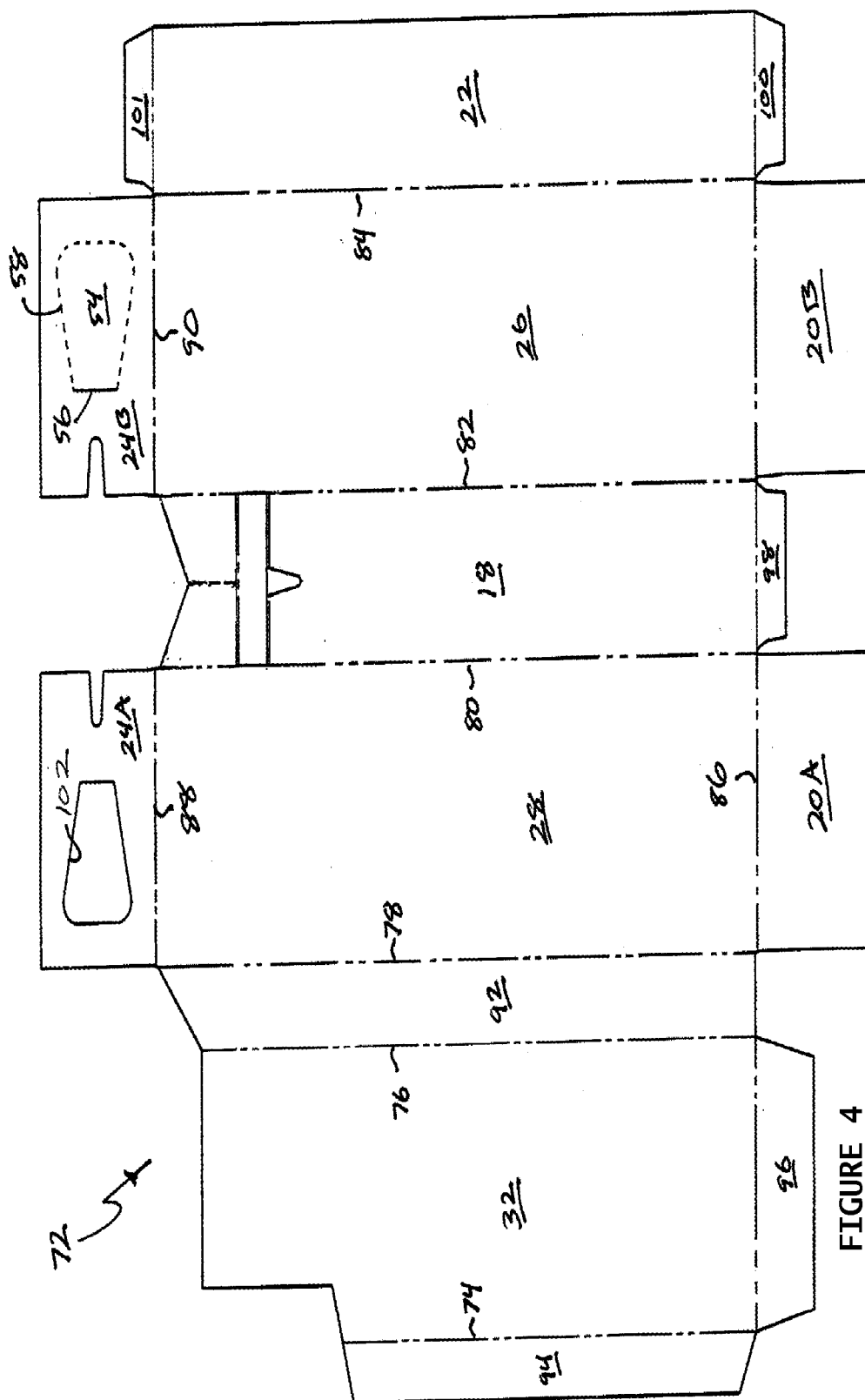


FIGURE 4

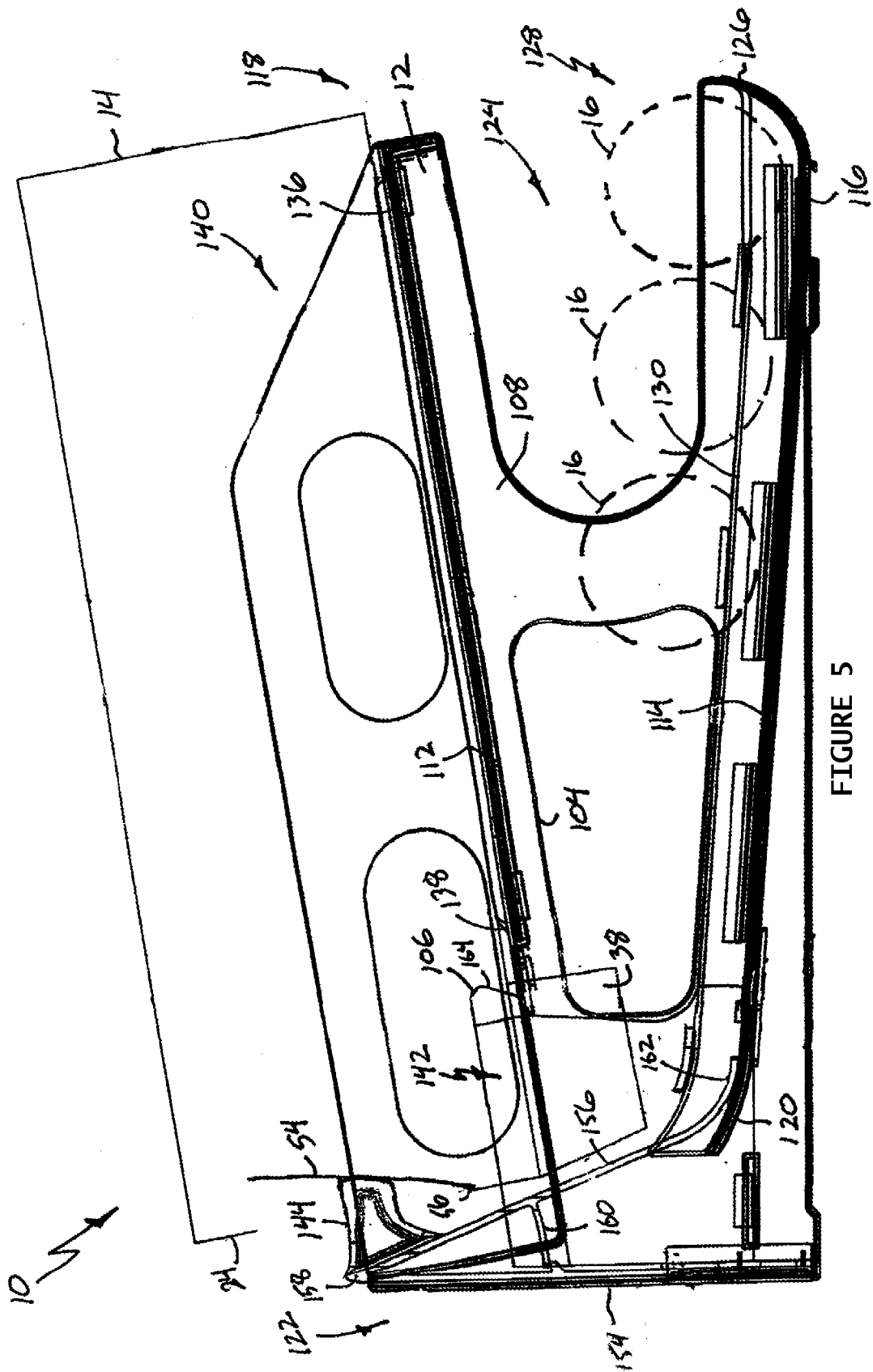
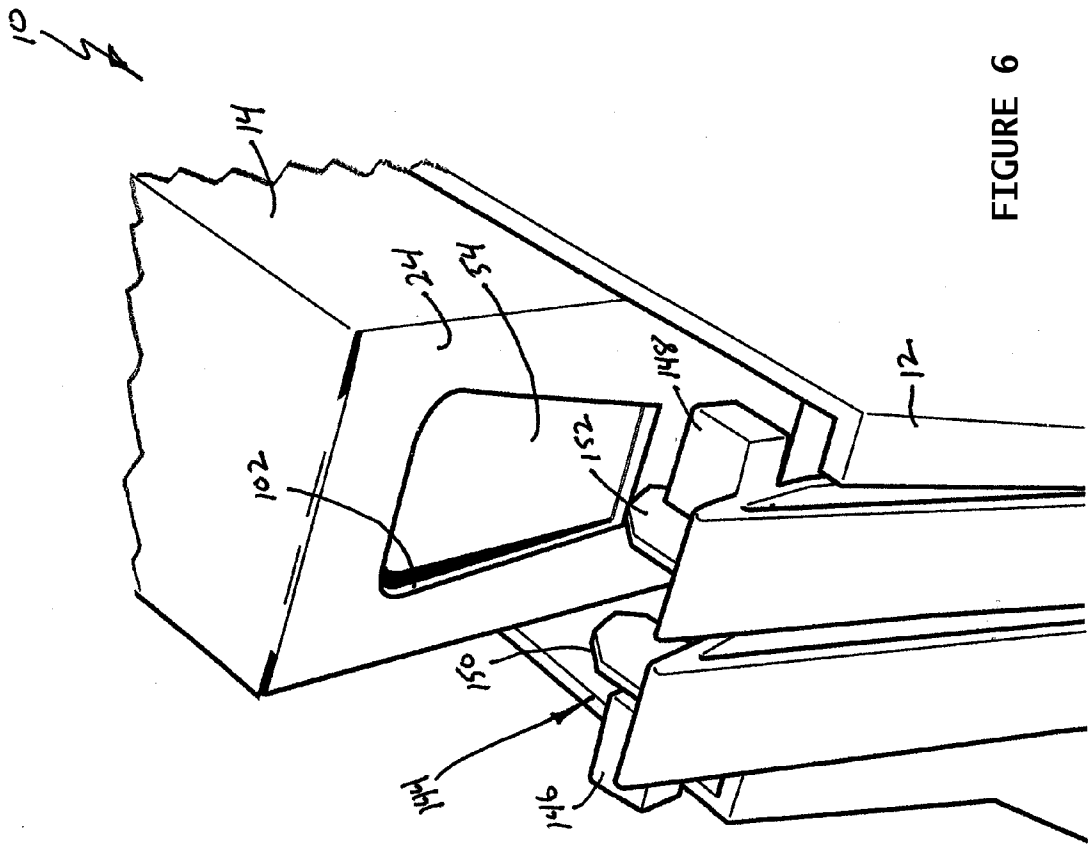


FIGURE 5



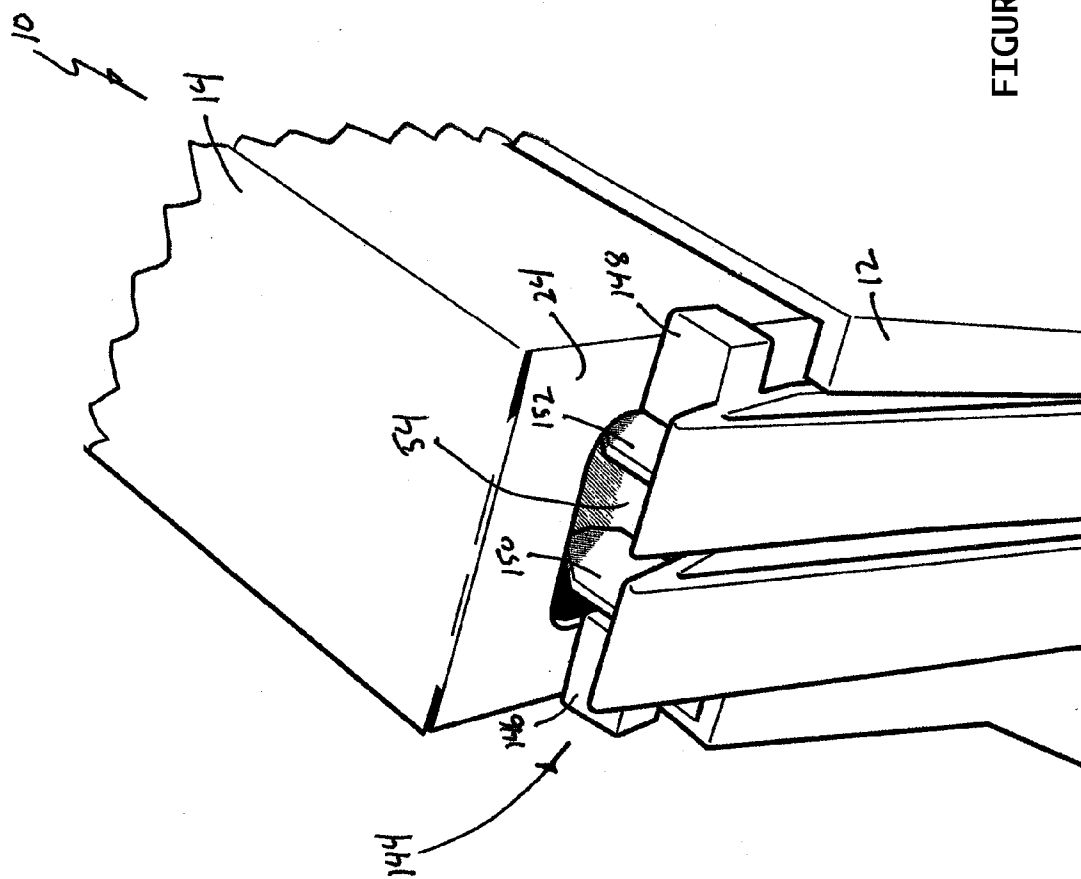


FIGURE 7

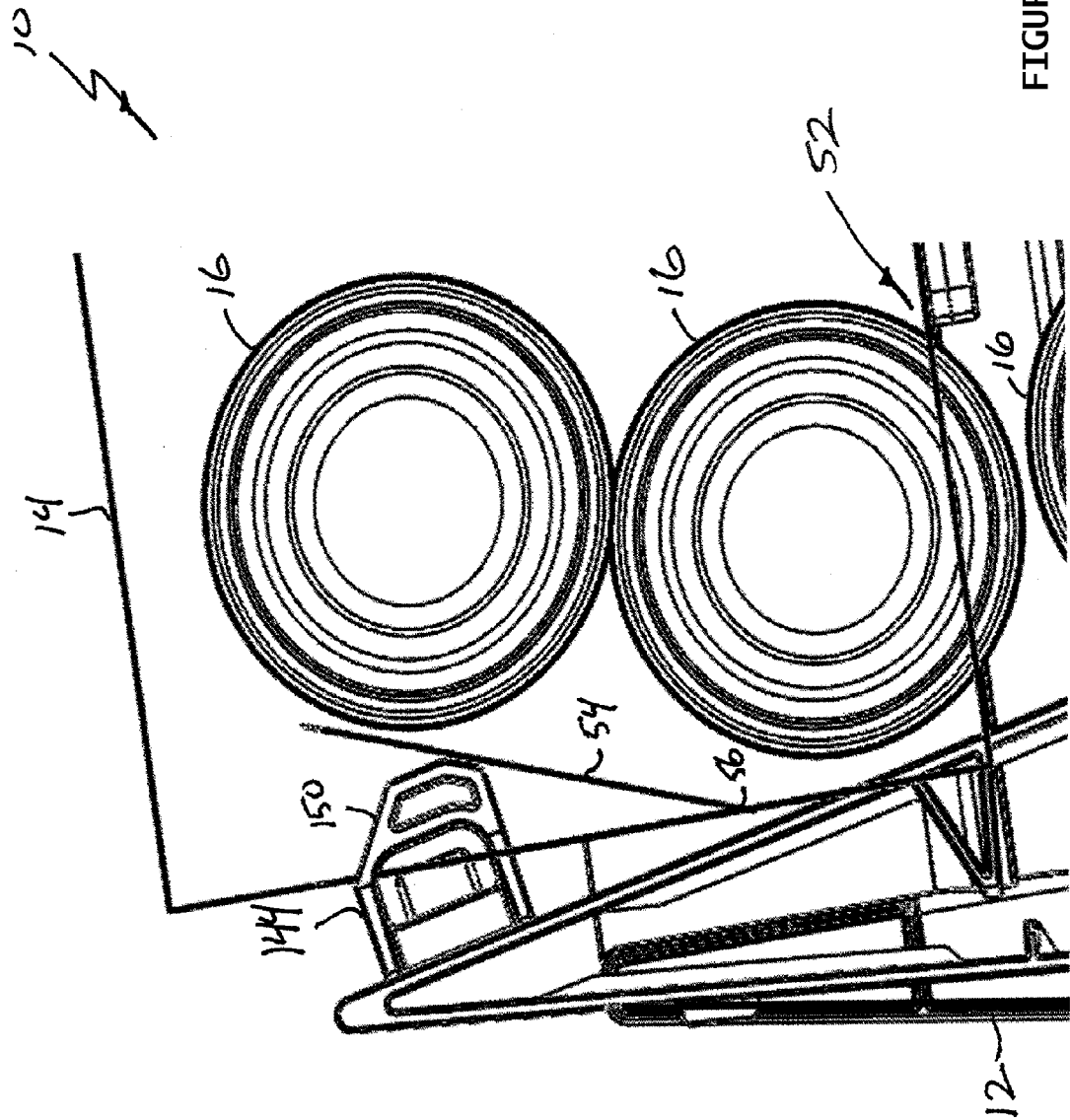


FIGURE 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/026848

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D5/72 A47F1/08
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D A47F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2009/212066 A1 (BAUER JAMIE [US]) 27 August 2009 (2009-08-27) paragraph [0041] - paragraph [0058]; claims 1-5; figures 1-12b -----	1-19
X	WO 93/21074 A1 (HENKEL KGAA [DE]) 28 October 1993 (1993-10-28) page 5, paragraph 2 - page 6, paragraph 1; claim 1; figure 1 -----	20
X	US 5 190 155 A (GRUNWALD HERBERT [DE]) 2 March 1993 (1993-03-02) column 3, line 6 - line 33; claim 1; figures 1-3 -----	20



Further documents are listed in the continuation of Box C.



See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search

4 June 2012

Date of mailing of the international search report

14/06/2012

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/026848

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009212066	A1	27-08-2009	NONE
WO 9321074	A1	28-10-1993	DE 4212323 A1 14-10-1993 WO 9321074 A1 28-10-1993
US 5190155	A	02-03-1993	NONE