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- (71) **Applicant:** MEADWESTVACO CORPORATION
[US/US]; 501 South 5th Street, Richmond, Virginia
23219-0501 (US).
- (72) **Inventor:** LOFTIN, Caleb S.; 1725 Wilmington Avenue,
Richmond, Virginia 23227 (US).
- (74) **Agents:** BAUER, Donald et al.; MeadWestvaco Corpora-
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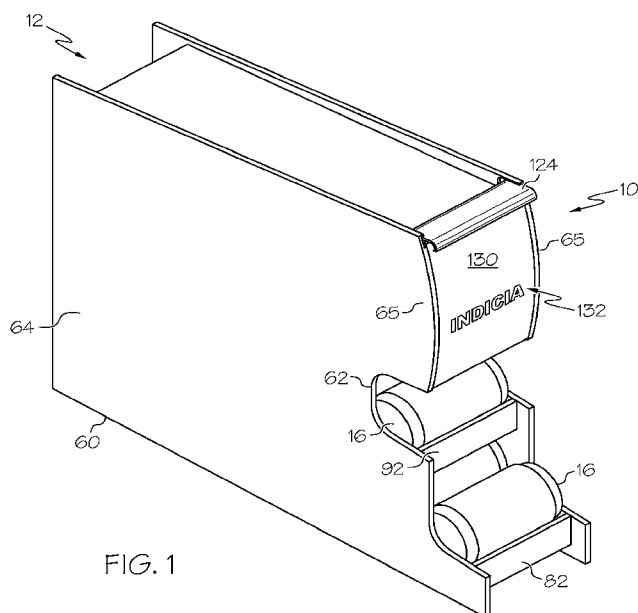
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- (54) **Title:** PRODUCT DISPENSING SYSTEM WITH DOOR



- (57) **Abstract:** A product dispensing frame having a left side wall, a right side wall, a front end, and a rear end, and including an upper support deck extending between the front end and the rear end, a lower support deck positioned below the upper support deck, the lower support deck extending between the front end and the rear end and defining a first product display area, and an upper support deck door pivotably connected between the left and right side walls to cover and enclose the upper support deck.

PRODUCT DISPENSING SYSTEM WITH DOOR

REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of priority of United States application serial number 13/595,316 filed on August 27, 2012, which is hereby incorporated by reference in its entirety.

FIELD

[0002] This application relates to the dispensing of products from packaging containers and, more particularly, to dispensers for dispensing products initially provided in packaging containers.

BACKGROUND

[0003] 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 beverages may be shipped to a retailer in a carton containing twelve or more individual cans. When the products are to be sold individually, the retailer must remove the individual product units from the carton and stack them on a display, such as a shelf.

[0004] Alternatives to the traditional package-ship-unpack-display model have been developed in an effort to improve operating efficiency. For example, U.S. Patent No. 7,922,437 issued on April 12, 2011, the entire contents of which are incorporated herein by reference, discloses a system for dispensing and displaying products packaged in a container. Specifically, the system includes a frame having a support structure, a product display area and an opening tool. The frame 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 frame. As the container is being placed onto the support structure, the opening tool of the frame opens the container in such a manner that product rolls from the container and down to the product display area of the frame under the force of gravity. When one product is removed from the product display area, another product from within the dispenser frame moves down to the product display area under the force of gravity.

[0005] Furthermore, multiple product dispensers may be positioned on a single display support surface, such as a store shelves. For example, at least one dispenser may be supported on a lower shelf and at least one other dispenser may be supported directly above on an upper shelf. In another example, a plurality of dispensers may be configured in a side-by-side orientation on a lower shelf and a second plurality of dispensers may be configured in a side-by-side orientation directly above on an upper shelf. Thus it may be advantageous to optimize the space provided for the display area by maximizing the number of shelves of a given shelving unit.

[0006] Despite advances already made in the field, those skilled in the art continue with research and development efforts directed to apparatus and systems for dispensing products initially provided in packaging containers.

SUMMARY

[0007] In one aspect, the disclosed product dispensing system may include a dispensing frame having a front end and a rear end, and including an upper support deck extending between the front end and the rear end, a lower support deck positioned below the upper support deck, the lower support deck extending between the front end and the rear end and defining a first product display area, an intermediate support deck positioned between the upper support deck and the lower support deck, the intermediate support deck extending between the front end and the rear end and defining a second product display area, and a door connected to the frame proximate the front end to access the upper support deck.

[0008] In another aspect, the disclosed product dispensing system may include a container initially housing a plurality of products, a frame having longitudinally opposed front and rear ends and including an upper support deck extending at least partially between the front and rear ends, a lower support deck positioned below the upper support deck, the lower support deck defining a first product display area, and an intermediate support deck positioned between the upper support deck and the lower support deck, the intermediate support deck defining a second product display area, a door connected to the frame proximate the front end to access the upper support deck, and an opening tool associated with the frame and arranged to open the container when the container is moved longitudinally along the upper support deck from the front end

toward the rear end and allow the products to be at least partially dispensed from the container into the first and second product display areas.

[0009] In yet another aspect, disclosed is a method for dispensing a plurality of product initially provided in a container. The method may include the steps of (1) providing a dispenser including a frame having a front end and a rear end, the frame including an upper support deck extending at least partially between the front end and the rear end, a lower support deck positioned below the upper support deck, the lower support deck defining a first product display area, an intermediate support deck positioned between the upper support deck and the lower support deck, the intermediate support deck defining a second product display area, and a door connected to the frame proximate the front end to access the upper support deck (2) forming an opening in the container, and (3) positioning the container on the upper support deck behind the door such that a first quantity of products passes through the opening and moves toward the first product display area and, when the lower support deck is filled with the first quantity of products, a second quantity of products passes through the opening and moves toward the second product display area.

[0010] Other aspects of the disclosed product dispensing system and method will become apparent from the following detailed description, the accompanying drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Fig. 1 is a front perspective view of one aspect of a disclosed product dispensing system with upper support deck door;

[0012] Fig. 2 is a front perspective view of the product dispensing system of Fig. 1 depicted with the upper support deck door in an open position;

[0013] Fig. 3 is a side elevation view, in section, of the product dispensing system of Fig. 1;

[0014] Fig. 4 is a front perspective view of a container of the product dispensing system of Fig. 2;

[0015] Fig. 5 is a front perspective view of the container of Fig. 4 shown in an open configuration

[0016] Fig. 6 is a partial exploded front perspective view of the dispensing system of Fig. 1 illustrating one aspect of a dispenser door;

[0017] Fig. 7 is a partial exploded front perspective view of the dispensing system of Fig. 1 illustrating another aspect of the dispenser door;

[0018] Fig. 8 is a partial exploded front perspective view of the dispensing system of Fig. 1 illustrating another aspect of the dispenser door;

[0019] Fig. 9 is an exploded front perspective view of another aspect of the dispenser door;

[0020] Fig. 10 is a side elevation view, in section, of another aspect of the disclosed product dispensing system with upper support deck door;

[0021] Fig. 11 is a top plan view of a portion of the upper support deck of the dispenser of the product dispensing system of Fig. 9;

[0022] Fig. 12 is a front perspective view of the container of the product dispensing system of Fig. 9;

[0023] Fig. 13 is a front perspective view of the container of Fig. 12 shown in an open configuration; and,

[0024] Fig. 14 is an environmental view of one implementation of a plurality of product dispensing systems.

DETAILED DESCRIPTION

[0025] Referring to Figs. 1 through 3, one aspect of the disclosed product dispensing system with dispenser door, generally designated 10, may include a dispenser 12, a dispenser door 13, and a container 14. The container 14, as described in more detail herein, may initially house multiple units of product 16, such as cans (e.g., canned soft drinks), jars (e.g., jarred soup) or

bottles (e.g., bottled sauce). The products 16 may be released from the container 14 into the dispenser 12 when the container 14 is opened and loaded onto the dispenser 12.

[0026] Referring next to Figs. 4 and 5, the container 14 may be any container capable of initially housing the products 16 and beneficially interacting with the dispenser 12. For example, the container 14 may be a paperboard carton or a corrugated box having six walls 18, 20, 22, 24, 26, 28 that define an internal volume 30 for receiving the products 16. Opposed walls may define the front wall 18 and the rear wall 20 of the container 14. Opposed walls may define the left side wall 22 and the right side wall 24 of the container 14. Opposed walls may define the lower base wall 26 and the upper wall 28 of the container 14.

[0027] In accordance with well-established techniques, the container 14 may be assembled on a container machine using a container blank that has been pre-cut from a sheet of stock material. As one example, the stock material may be a paperboard-based material, such as C1S paperboard, which may have a coating (e.g., clay) on a first major surface thereof, which may form the outer surface of the container 14, and an uncoated second major surface. As another example, the stock material may be C2S paperboard, which may have a coating (e.g., clay) on both major surfaces thereof. Optionally, the outer surface 32 (illustrated in Fig. 2) of the container 14 may be marked with various container indicia 34 (Fig. 2), such as printed text and graphics, for example to identify the type of product 16 or the manufacturer of the product 16.

[0028] Still referring to Fig. 4, the container 14 may include a removable opening feature 36. The removable opening feature 36 may be defined by weakened severance lines 38, 40, 42, 44, 46, 48 formed in the rear wall 20, left side wall 22, right side wall 24 and the base wall 26 of the container 14. The weakened severance lines 38, 40, 42, 44, 46, 48 may be formed by weakening the container 14, such as with score lines, perforations or zipper-like cuts, to facilitate tearing of the container 14 along the weakened severance lines 38, 40, 42, 44, 46, 48.

[0029] Thus, as shown in Fig. 5, the removable opening feature 36 may be removed from the container 14 to form an opening 50 to access the internal volume 30 of the container 14. The opening 50 may extend generally laterally between the left side wall 22 and the right side wall 24 of the container 14 and may be positioned proximate the rear wall 20 of the container 14, such that the products 16 (Fig. 1) may exit the container 14 through the opening 50. Those skilled in

the art will appreciate that the step of removing the removable opening feature 36 from the container 14 may be performed prior to loading the container 14 onto the dispenser 12.

[0030] Referring back to Figs. 1 through 3, the dispenser 12 may include a frame 60 that supports the container 14 in a desired configuration, as illustrated in Figs. 2 and 3 (the container 14 is shown in broken lines in Fig. 3). The frame 60 may include a first (e.g., right) side wall 62, a second (e.g., left) side wall 64, an upper support deck 66, a lower support deck 68 and one or more intermediate support decks 70 (only one intermediate support deck 70 is shown by example in Figs 1 through 3). The right side wall 62 may be laterally spaced from the left side wall 64, and may be generally parallel with the left side wall 64.

[0031] The lower support deck 68 may laterally extend between the right side wall 62 and the left side wall 64 of the frame 60 and may include a front end 72 that longitudinally extends toward the front end 74 of the frame 60 and a rear end 76 that longitudinally extends toward the rear end 78 of the frame 60. Therefore, the lower support deck 68 and the side walls 62, 64 may define a lower level 80 of the frame 60.

[0032] The lower support deck 68 may be inclined from the front end 72 to the rear end 76 (i.e., the rear end 76 may be elevated relative to the front end 72) such that products 16 deposited proximate the rear end 76 of the lower support deck 68 roll down to the front end 72 of the lower support deck 68 under the force of gravity. The extent of the incline of the lower support deck 68 may be dictated by, among other things, the coefficient of friction of the material used to form the frame 60 and the shape of the products 16 to be dispensed by the dispenser 12.

[0033] A lower stop 82 may be positioned proximate the front end 72 of the lower support deck 68 to prevent products 16 from rolling beyond the front end 72 of the lower support deck 68. Therefore, the stop 82 may collect products 16 at the front end 72 of the lower support deck 68, thereby defining a first product display area 84 proximate the front end 72 of the lower support deck 68.

[0034] The intermediate support deck 70 may be positioned between the upper support deck 66 and the lower support deck 68. The intermediate support deck 70 may laterally extend between the right side wall 62 and the left side wall 64 of the frame 60 and may include a front end 86

that longitudinally extends toward the front end 74 of the frame 60 and a rear end 88 that longitudinally extends toward, but not to, the rear end 78 of the frame 60. Therefore, the intermediate support deck 70 and the side walls 62, 64 may define an intermediate level 90 of the frame 60.

[0035] The spacing between the rear end 88 of the intermediate support deck 70 and the rear end 78 of the frame 60 may define an intermediate opening 89, which may function as a chute to allow products 16 to move from the intermediate level 90 down to the lower level 80 of the frame 60 under the force of gravity.

[0036] The intermediate support deck 70 may be inclined from the front end 86 to the rear end 88 (i.e., the rear end 88 may be elevated relative to the front end 86) such that products 16 deposited proximate the rear end 88 of the intermediate support deck 70 roll down to the front end 86 of the intermediate support deck 70 under the force of gravity. The extent of the incline of the intermediate support deck 70 may be dictated by, among other things, the coefficient of friction of the material used to form the frame 60 and the shape of the products 16 to be dispensed by the dispenser 12.

[0037] An intermediate stop 92 may be positioned proximate the front end 86 of the intermediate support deck 70 to prevent products 16 from rolling beyond the front end 86 of the intermediate support deck 70. Therefore, the stop 92 may collect products 16 at the front end 86 of the intermediate support deck 70, thereby defining a second product display area 94 proximate the front end 86 of the intermediate support deck 70. The second product display area 94 may be longitudinally displaced (e.g., inwardly) relative to the first product display area 84. The second product display area 94 may also be vertically displaced (e.g., upwardly) relative to the first product display area 84.

[0038] The upper support deck 66 may laterally extend between the right side wall 62 and the left side wall 64 of the frame 60 and may include a front end 96 that longitudinally extends toward the front end 74 of the frame 60 and a rear end 98 that longitudinally extends toward, but not to, the rear end 78 of the frame 60. Therefore, the upper support deck 66 and the side walls 62, 64 may define an upper level 100 of the frame 60.

[0039] The spacing between the rear end 98 of the upper support deck 66 and the rear end 78 of the frame 60 may define an upper opening 102, which may function as a chute to allow products 16 to move from the upper level 100 down to the intermediate 90 and lower 80 levels of the frame 60 under the force of gravity.

[0040] The upper support deck 66 may be declined from the front end 96 to the rear end 98 (i.e., the front end 96 may be elevated relative to the rear end 98). Therefore, products 16 supported on the upper support deck 66 may roll under the force of gravity down to the rear end 98 of the upper support deck 66, through the opening 102, to the lower and intermediate levels 80, 90 of the frame 60 and, ultimately, to the first product display area 84 and the second product display 94.

[0041] Optionally, a container stop 104 may be connected proximate the rear end 78 of the frame 60. The stop 104 may laterally extend between the right side wall 62 and the left side wall 64 of the frame 60 proximate the upper level 100 of the frame 60 to inhibit rearward horizontal movement of the container 14 along the upper support deck 66 beyond the stop 104.

[0042] A guide 106 may be connected proximate the rear end 78 of the frame 60. The guide may laterally extend between the right side wall 62 and the left side wall 64 of the frame 60 and may include a generally vertical upper end 108 that extends toward the upper support deck 66 and a declined lower end 110 that extends toward the rear end 76 of the lower support deck 68. The guide 106 may extend from proximate the upper opening 102 in the upper level 100 defined by the upper support deck 66, down through the intermediate opening 89 in the intermediate level 90 defined by the intermediate support deck 70 and, ultimately, down to the lower level 80 proximate the rear end 76 of the lower support deck 68.

[0043] Thus, the guide 106 may receive products 16 exiting through the opening 50 in the container 14 and may guide the products 16 down proximate the rear end 76 of the lower support deck 68, thereby allowing the products 16 guided to the lower level 80 to ultimately move to the first product display area 84. Once the lower level 80 of the frame 60 has been filled with products 16 such that the opening 89 in the intermediate level 90 is bridged by a product 16 (Fig. 3), the guide 106 may guide the products 16 down proximate the rear end 88 of the

intermediate support deck 70, thereby allowing the products 16 guided to the intermediate level 90 to ultimately move to the second product display area 94.

[0044] The product dispensing system 10 may be assembled by opening the container 14 (e.g., tearing away the removable opening feature 36 at the severance lines 38, 40, 42, 46, 48) and urging the opened container 14 along the upper support deck 66 of the frame 60 until the rear wall 20 of the container 14 comes into abutting engagement with the stop 104. With the opened container 14 loaded onto the dispenser 12, the force of gravity may urge the products 16 housed in the container 14 through the opening 50 in the container 14, down through the opening 102 in the upper level 100 of the frame 60 and, ultimately, to the first and second product display areas 84, 94.

[0045] A dispenser door 13 may be connected to the frame 60 proximate the front end 74 to access the upper support deck 66. The door 13 may laterally extend between the right side wall 62 and the left side wall 64 of the frame 60 proximate the upper level 100 of the frame 60 to close off the upper level 100 when in a closed position (Figs. 1 and 3). The door 13 may be pivotably opened about a lower end to provide access to the upper support deck 66 for loading the opened container 14 onto the dispenser 12.

[0046] The dispenser door 13 may include a generally flat upper edge configured to be in a coplanar relationship with an upper edge of the front end 74 of the frame 60 and at least extending to an upper edge of the container 14 proximate the front end 74 of the frame 60. A door handle 124 may protrude outwardly from the upper edge of the door 13, as will be described in greater detail herein. As illustrated in Figs. 8 through 8, the door handle 124 may be coplanar with the top surface of the door 13. Alternatively, the door handle 124 may be positioned below the upper edge of the door 13. Thus, the position of the handle 124 relative to the upper edge of the door 13 allows for manual opening and closing of the door 13 from the front and does not require engagement of the door 13 from above or about the upper edge of the door 13. This arrangement may allow for a minimal required offset distance between the upper edge of the front end 74 of the frame 60 and the upper edge of the door 13 relative to another structure positioned directly above the dispenser 12, such as an additional dispenser 12 or dispenser support, as illustrated in Fig. 14.

[0047] Referring next to Figs. 6 through 8, the door 13 may include a door panel 122 and the door handle 124 connected to an upper end 126 of the door panel 122. A lower end 128 of the door panel 122 may be pivotably connected at opposing lateral sides to the right side wall 62 and the left side wall 64, respectively. The upper end 126 of the door panel 122 may be releasably secured at opposing lateral sides between the right side wall 62 and the left side wall 64, respectively.

[0048] The door panel 122 may have a flat or curved profile which suitably matches an upper edge 65 of the front end 74 of the frame 60 (Figs. 1 and 2). Optionally, the outer surface 130 (illustrated in Fig. 1) of the door panel 122 may be marked with various door panel indicia 132 (Fig. 1), such as printed text and graphics, for example to identify the container 14, the type of product 16, or the manufacturer of the product 16 loaded within the dispenser. Alternatively, the door panel 122 may be transparent to provide visual access to the container indicia 34 displayed on the container outer surface 32.

[0049] The lower end 128 of the door panel 122 may be pivotably connected between the right side wall 62 and the left side wall 64 of the frame 60 by a hinge feature 133, such that the door 13 pivots downwardly about the hinge feature 133 into the open position (Fig.2). The lower end 128 of the door panel 122 may include a door hinge feature 134 pivotably connected to side wall hinge features 136 disposed on oppositely facing interior surfaces of the right side wall 62 and left side wall 64.

[0050] As illustrated in Fig. 6, in one aspect of dispenser door 13, the door hinge feature 134 may be a pair of apertures 138 formed through opposing outside edges of the lower end 128 of the door panel 122. The side wall hinge features 136 may be horizontally aligned protrusions 140 extending outwardly from the interior surfaces of the right side wall 62 and left side wall 64. The apertures 138 may receivably engage the protrusions 140 to pivotably connect the door 13 to the frame 60.

[0051] As illustrated in Fig. 7, in another aspect of the door 13, the door hinge feature 134 may be an integral tubular member 142 extending along an entire bottom edge of the lower end 128 of the door panel 122. The side wall hinge features 136 may be horizontally aligned side wall apertures 144 disposed completely through the right side wall 62 and left side wall 64. When

ends of the tubular member 142 are aligned with the side wall apertures 144 between the side walls 62, 64, a pin 146 may extend laterally from the aperture 144 of the right side wall 62 to the aperture 144 of the left side wall 64 entirely through the tubular member 142 to pivotably connect the door 13 to the frame 60.

[0052] As illustrated in Fig. 8, in another aspect of the door 13, the door hinge feature 134 may be a pair of protrusions 148 extending outwardly from opposing sides of the lower end 128 of the door panel 122. The side wall hinge features 136 may be horizontally aligned side wall apertures 144 disposed partially through oppositely facing interior surfaces of the right side wall 62 and the left side wall 64 or completely through the right side wall 62 and left side wall 64. The apertures 144 of the side walls 62, 64 may receivably engage the protrusions 148 of the door panel 122 to pivotably connect the door 13 to the frame 60.

[0053] The upper end 126 of the door panel 122 may be operatively connected between the right side wall 62 and the left side wall 64 of the frame 60 by an interference friction fit, a hook, a latch, a pin or similar retaining feature 149 to releasably secure the door 13 in the closed position (Figs. 1 and 3). The upper end 126 of the door panel 122 may include a door retaining feature 150 operatively connectable to side wall retaining features 152 disposed on oppositely facing interior surfaces of the right side wall 62 and the left side wall 64.

[0054] As illustrated in Fig. 6, in one aspect of the door 13, the door retaining feature 150 may be a coiled spring 154 and the side wall retaining features 152 may be a pair of horizontally aligned grooves 156 disposed partially through oppositely facing interior surfaces of the right side wall 62 and left side wall 64 (the groove 156 of the right side wall 62 is hidden in the drawing view and is thus shown with broken lines). The spring 154 may include at least one elongated coil of resilient spring material protruding outwardly from and extending along a rear side of the upper end 126 of the door panel 122. Alternatively, a pair of shortened coiled springs 154 may extend outwardly from opposing ends of the rear side of the upper end of the door panel 122 (not shown). The grooves 156 may have a width slightly smaller than a diameter of the coil of the spring 154 in an uncompressed condition. Upon insertion of the spring 154 within the grooves 156, the spring 154 is slightly compressed such that the outer surface of the spring 154 is

in contact with the upper and lower surfaces of the groove 156 to releasably retain the door 13 in the closed position.

[0055] As illustrated in Fig. 7, in another aspect of door 13, the door retaining feature 150 may be a pair of recesses 158 formed through opposing outside edges of the upper end 126 of the door panel 122. The side wall retaining features 152 may be horizontally aligned protrusions 160 extending outwardly from the interior surfaces of the right side wall 62 and left side wall 64 of the frame 60. The recesses 158 may receivably engage the protrusions 160 to releasably retain the door 13 in the closed position.

[0056] As illustrated in Fig. 8, in another aspect of the door 13, the door retaining feature 150 may be a pair of protrusions 162 extending outwardly from opposing sides of the upper end 126 of the door panel 122. The side wall retaining feature 152 may be a pair of horizontally aligned side wall recesses 164 disposed partially through oppositely facing interior surfaces of the right side wall 62 and the left side wall 64 (the recess 164 of the right side wall 62 is hidden in the drawing view and is thus shown with broken lines). The recesses 164 of the side walls 62, 64 may receivably engage the protrusions 162 of the door panel 122 to releasably retain the door 13 in the closed position.

[0057] In another aspect of the door 13, a spring hinge may be used as the hinge feature 133 to provide the pivotal connection of the door panel 122 to the frame 60 and as the retaining feature 149 to releasably secure the door panel 122 in the closed position through a spring-force bias (not shown).

[0058] At this point, those skilled in the art will appreciate that the various hinge features 133 and retaining features 149 of the aspects of the door 13 illustrated in Figs. 6 through 8 can be implemented in any combination and as such, the combinations shown are not meant to limit the scope of the present disclosure. It can also be appreciated by one skilled in the art that various alternative structural features may be utilized to form the pivotal connection of the hinge feature 133 between the lower end 128 of the door panel 122 and the side walls 62, 64 of the frame 60 and the operative connection of the retaining feature 149 between the upper end 126 of the door panel 122 and the side walls 62, 64 of the frame 60 other than the aspects described herein, and as such, the aspects described herein are not meant to limit the scope of the present disclosure.

[0059] Referring to Fig. 9, the door panel 122 may be formed by a transparent front panel wall 170 and a parallel rear panel wall 172 defining an internal slot 174. The slot 174 may be suitably sized to insertably receive a product placard 176 or similar product identifying card or sign. In accordance with well-established techniques, the placard 176 may be formed from a sheet of stock material or plastic and may be marked with various placard indicia 178, such as printed text and graphics, for example to identify the container 14, the type of product 16, or the manufacturer of the product 16 loaded within the dispenser 12.

[0060] Referring still to Figs. 6-9, the handle 124 protrudes outwardly from and extends along a front side of the upper end 126 of the door panel 122. The handle 124 may include a stand-off 180 disposed generally perpendicularly to the upper end 126 of the door panel 122 and a lip 182 extending generally downwardly from an end of the stand-off 180 opposite the door panel 122. The lip 182 may be straight or curved to provide a grip recess suitably sized to receive at least one human finger. An interior surface of the lip 182, facing the door panel 122 provides a contact surface in order to manually pivot the door 13 into the open position. The interior surface of the lip 182 may also include a textured, knurled, or contoured surface to increase the coefficient of friction between the lip 182 and the finger or fingers.

[0061] Referring again to Figs. 6 and 9, in one aspect of the door 13, the handle 124 and the door retaining feature 150 may be a unitary member 184 connected to a top edge of the upper end 126 of the door panel 122. The top surfaces of the handle 124 and door retaining feature 150 may form a coplanar unitary top surface and the bottom surfaces of the handle 124 and door retaining feature 150 may form a coplanar unitary bottom surface. A channel 186 may longitudinally extend along the unitary bottom surface to receivably connect to the top edge of the upper end 126 of the door panel 122. The unitary member 184 may be easily removed and replaced if either the handle 124 or the door retaining feature 150 were to become damaged or otherwise fail without the need to replace the entire door 13. The unitary member 184 may also be removed to insert, remove, or replace the placard 176 (Fig. 9).

[0062] Referring to Fig. 10, another aspect of the disclosed product dispensing system with upper support deck door, generally designated 200, may include a dispenser 202, a dispenser door 203, and a container 204. The container 204 may initially house multiple units of product

206 and may be opened to release the products 206 into the dispenser 202 when the container 204 is loaded onto the dispenser 202.

[0063] Referring to Figs. 12 and 13, the container 204 may have six walls 208, 210, 212, 214, 216, 218 that define an internal volume 220 for receiving the products 206 (Fig. 12). Opposed walls may define the front wall 208 and the rear wall 210 of the container 204. Opposed walls may define the left side wall 212 and the right side wall 214 of the container 204. Opposed walls may define the lower base wall 216 and the upper wall 218 of the container 204.

[0064] The base wall 216 of the container 204 may define an access panel 222 that is openable to release the products 206 (Fig. 13) from the container 204. The access panel 222 may be defined by a free edge 224, a pre-formed pivot line 226, a first severance line 228 and a second severance line 230.

[0065] The pre-formed pivot line 226 may laterally extend across the base wall 216 (or the edge between the base wall 216 and the rear wall 210) of the container 204 from proximate the left side wall 212 to proximate the right side wall 214. The longitudinal distance D between the pre-formed pivot line 226 and the free edge 224 may define the longitudinal length of the access panel 222, and may be greater than the greatest diameter of the products 206 housed in the container 204.

[0066] The pre-formed pivot line 226 may be formed by weakening the container 204 along the pre-formed pivot line 226. Examples of weakening techniques useful in forming the pre-formed pivot line 226 include scoring the container 204, forming a crease in the container 204 and forming perforations in the container 204.

[0067] The first severance line 228 may longitudinally extend from the free edge 224 to the pre-formed pivot line 226. For example, the first severance line 228 may extend from the free edge 224 to the pre-formed pivot line 226 proximate the edge 232 between the base wall 216 and the left side wall 212.

[0068] The second severance line 230 may longitudinally extend from the free edge 224 to the pre-formed pivot line 226. For example, the second severance line 230 may extend from the free

edge 224 to the pre-formed pivot line 226 proximate the edge 234 between the base wall 216 and the right side wall 214.

[0069] The first and second severance lines 228, 230 may be weakened to make it easier to sever the first and second severance lines 228, 230. However, the first and second severance lines 228, 230 may have sufficient strength such that the first and second severance lines 228, 230 are not severed merely due to the weight of the products 206 housed in the container 204 acting on the access panel 222. Several examples of techniques that may be used to weaken the first and second severance lines 228, 230 include forming perforations in the container 204 along the first and second severance lines 228, 230, scoring the container 204 and forming creases in the container 204.

[0070] The free edge 224 may laterally extend across the base wall 216 of the container 204 from proximate the left side wall 212 to proximate the right side wall 214. The free edge 224 may be spaced a longitudinal distance D from the pre-formed pivot line 226.

[0071] In one implementation, the free edge 224 may be defined by a severance line that must be severed to free the free edge 224. In a first expression, the free edge 224 may be freed by severing the severance line defining the free edge 224 prior to loading the container 204 onto the dispenser 202. For example, the free edge 224 may be freed by pulling a zipper strip from the container 204 prior to loading the container 204 onto the dispenser 202. In a second expression, the free edge 224 may be freed by severing the severance line defining the free edge 224 as the container 204 is being loaded onto the dispenser 202.

[0072] As shown in Fig. 13, when the free edge 224 is free and the first and second severance lines 228, 230 have been severed, the access panel 222 may pivot relative to the base wall 216 about the pre-formed pivot line 226 to form an opening 236. The opening 236 may be of a sufficient size and shape to allow products 206 (Fig. 10) to pass therethrough.

[0073] In one implementation, the first and second severance lines 228, 230 may be severed to release the access panel 222 as the container 204 is loaded onto the dispenser 202, as described in greater detail herein. In another implementation, the first and second severance lines 228, 230 may be severed to release the access panel 222 prior to loading the container 204 onto the

dispenser 202, such as by manually severing the first and second severance lines 228, 230 (e.g., with a knife or box cutter).

[0074] Referring to Figs. 10 and 11, the dispenser 202 may include a frame 240 and one or more opening tools 242, 244. The frame 240 may support the container 204 in a desired configuration, as shown in Fig. 10. The opening tools 242, 244 may sever the first and second severance lines 228, 230 (Fig. 12) to release the access door 222 and form the opening 236 (Fig. 13) in the container 204 as the container 204 is loaded onto the frame 240, thereby releasing the products 206 from the container 204 to the dispenser 202.

[0075] The frame 240 may include left and right side walls 246, 248, an upper support deck 250, a lower support deck 252 and an intermediate support deck 254 positioned between the upper support deck 250 and the lower support deck 252. The right side wall 248 may be laterally spaced from the left side wall 246 and may be generally parallel with the left side wall 246.

[0076] The lower support deck 252 may laterally extend between the side walls 246, 248, and may include a front end 256 that longitudinally extends toward the front end 258 of the frame 240 and a rear end 260 that longitudinally extends toward the rear end 262 of the frame 240. Therefore, the lower support deck 252 and the side walls 246, 248 may define a lower level 264 of the frame 240.

[0077] The lower support deck 252 may be inclined from the front end 256 to the rear end 260, and may include a lower stop 266 positioned proximate the front end 256 of the lower support deck 252, thereby defining a first product display area 268 proximate the front end 256 of the lower support deck 252.

[0078] The intermediate support deck 254 may be positioned between the upper support deck 250 and the lower support deck 252. The intermediate support deck 254 may laterally extend between the side walls 246, 248, and may include a front end 270 that longitudinally extends toward the front end 258 of the frame 240 and a rear end 272 that longitudinally extends toward, but not to, the rear end 262 of the frame 240. Therefore, the intermediate support deck 254 and the side walls 246, 248 may define an intermediate level 274 of the frame 60.

[0079] The spacing between the rear end 272 of the intermediate support deck 254 and the rear end 262 of the frame 240 may define an intermediate opening 276, which may function as a chute to allow products 206 to move from the intermediate level 274 down to the lower level 264 of the frame 240 under the force of gravity.

[0080] The intermediate support deck 254 may be inclined from the front end 270 to the rear end 272, and may include an intermediate stop 278 positioned proximate the front end 270 of the intermediate support deck 254, thereby defining a second product display area 280 proximate the front end 270 of the intermediate support deck 254.

[0081] Additional intermediate support decks (not shown), which may define additional intermediate levels and associated product display areas, may be provided between the upper support deck 250 and the lower support deck 252 without departing from the scope of the present disclosure.

[0082] The upper support deck 250 may laterally extend between the side walls 246, 248, and may include a front end 282 that longitudinally extends toward the front end 258 of the frame 240 and a rear end 284 that longitudinally extends toward, but not to, the rear end 262 of the frame 240. Therefore, the upper support deck 250 and the side walls 246, 248 may define an upper level 286 of the frame 240.

[0083] The spacing between the rear end 284 of the upper support deck 250 and the rear end 262 of the frame 240 may define an upper opening 288, which may function as a chute to allow products 206 to move from the upper level 286 down to the intermediate 274 and lower 264 levels of the frame 240 under the force of gravity.

[0084] The upper support deck 250 may be declined from the front end 282 to the rear end 284 such that products 206 supported on the upper support deck 250 may roll under the force of gravity down to the rear end 284 of the upper support deck 250, through the upper opening 288, to the lower and intermediate levels 264, 274, respectively, of the frame 240 and, ultimately, to the first and second product display areas 268, 280.

[0085] An optional container stop 290 may be disposed proximate the rear end 262 of the frame 240. The stop 290 may laterally extend between the side walls 246, 248 of the frame 60

proximate the upper level 286 of the frame 240 to inhibit rearward horizontal movement of the container 204 along the upper support deck 250 beyond the stop 290.

[0086] A guide 292 may be connected proximate the rear end 262 of the frame 240. The guide 292 may receive products 206 exiting through the opening 236 (Fig. 13) in the container 204 and may guide the products 206 down through the upper opening 288 in the upper level 286, through the intermediate opening 276 in the intermediate level 274 and, ultimately, proximate the rear end 260 of the lower support deck 252, thereby allowing the products 206 to move to the first product display area 268 under the force of gravity. Once the lower level 264 of the frame 240 has been filled with products 206 such that the opening 276 in the intermediate level 274 is bridged by a product 206' (Fig. 10), the products 206 guided through the opening 288 in the upper level 286 may accumulate on the intermediate support deck 254, thereby allowing the products 206 to move to the second product display area 280 under the force of gravity.

[0087] A dispenser door 203 may be connected to the frame 240 proximate the front end 258 to access the upper support deck 250. The door 203 may laterally extend between the right side wall 248 and the left side wall 246 of the frame 240 proximate the upper level 286 of the frame 240 to close off the upper level 286 when in a closed position (Figs. 10). The door 203 may be pivotably opened about a lower end to provide access to the upper support deck 250 for loading the opened container 204 onto the dispenser 202.

[0088] The dispenser door 203 may include a generally flat upper edge configured to be in a coplanar relationship with an upper edge of the front end 258 of the frame 240 and at least extending to an upper edge of the container 204 proximate the front end 258 of the frame 240. A door handle 298 may protrude outwardly from the upper edge of the door 203, as will be described in greater detail herein. As described previously herein, the door handle 298 may be coplanar with the top surface of the door 203. Alternatively, the door handle 298 may be positioned below the upper edge of the door 203. Thus, the position of the handle 298 relative to the upper edge of the door 203 allows for manual opening and closing of the door 203 from the front and does not require engagement of the door 203 from above or about the upper edge of the door 203. This arrangement may allow for a minimal required offset distance between the upper edge of the front end 258 of the frame 240 and the upper edge of the door 203 relative to another

structure positioned directly above the dispenser 202, such as an additional dispenser 202 or dispenser support, as illustrated in Fig. 14.

[0089] The door 203 may include a door panel 296 and the door handle 298 connected to an upper end 300 of the door panel 296. A lower end 302 of the door panel 296 may be pivotably connected at opposing lateral sides to the right side wall 248 and the left side wall 246, respectively. The upper end 300 of the door panel 296 may be releasably secured at opposing lateral sides between the right side wall 248 and the left side wall 246, respectively. The door panel 296 may have a flat or curved profile which suitably matches an upper edge of the front end 258 of the frame 240. The aspects of the door 203 may include features substantially similar to those described herein above and illustrated in Figs. 1-3 and 6-9 for the door 13.

[0090] The lower end 302 of the door panel 296 may be pivotably connected between the right side wall 248 and the left side wall 246 of the frame 240 by a hinge feature 304, such that the upper support deck door 294 pivots downwardly about the hinge feature 304 into the open position. The hinge feature 304 may be any suitable pivotal connection as described herein above and illustrated in Figs. 6-8 for the hinge feature 133. The upper end 300 of the door panel 296 may be operatively connected between the right side wall 248 and the left side wall 246 of the frame 240 by an interference friction fit, a hook, a latch, a pin or similar retaining feature 306 to releasably secure the door 203 in the closed position. The retaining feature 306 may be any suitable operative connection as described herein above and illustrated in Figs 6-8 for the retaining feature 149.

[0091] The handle 298 protrudes outwardly from and extends along a front side of the upper end 300 of the door panel 296. The handle 298 may include a stand-off 310 disposed generally perpendicularly to the door panel 296 and a lip 312 extending generally downwardly from an end of the stand-off 310 opposite the door panel 296. The lip 312 may be straight or curved to provide a grip recess suitably sized to receive at least one human finger. An interior surface of the lip 312, facing the door panel 296 provides a contact surface in order to manually pivot the door 203 into the open position. The interior surface of the lip 312 may also include a textured, knurled, or contoured surface to increase the coefficient of friction between the lip 312 and the finger or fingers.

[0092] In one aspect of the dispenser door 203, the handle 298 and a door retaining feature 314 may be a unitary member 316 connected to a top edge of the upper end 300 of the door panel 296. The top surfaces of the handle 298 and door retaining feature 314 may form a coplanar unitary top surface and the bottom surfaces of the handle 298 and door retaining feature 314 may form a coplanar unitary bottom surface. A channel 318 may longitudinally extend along the unitary bottom surface to receivably connect to the top edge of the upper end 300 of the door panel 296. The unitary member 316 may be easily removed and replaced if either the handle 298 or the door retaining feature 314 were to become damaged or otherwise fail without the need to replace the entire door 203. The unitary member 316 may also be removed to insert, remove, or replace a placard, similar to that illustrated in Fig. 9.

[0093] The opening tools 242, 244 may be positioned in the upper level 286 of the frame 240 to sever the first and second severance lines 228, 230 (Fig. 12), respectively, of the container 204 as the container 204 is urged along the upper support deck 250 of the frame 240. The type of opening tools 242, 244 used, as well as the position of the opening tools 242, 244 relative to the frame 240, may depend on the configuration of the access panel 222 (Fig. 13) of the container 204, among other things.

[0094] As illustrated in Fig. 11, in one particular construction, the opening tools 242, 244 may be cutting elements (e.g., knife blades) that inwardly protrude from the side walls 246, 248 proximate the rear end 284 of the upper support deck 250. For example, opening tool 242 may be connected to the left side wall 246 of the frame 240 and opening tool 244 may be connected to the right side wall 248 of the frame 240. Therefore, the opening tools 242, 244 may sever the first and second severance lines 228, 230 (Fig. 12) as the container 204 is urged toward the stop 290 along the upper support deck 250 of the frame 240, thereby allowing the access panel 222 to pivot about the pre-formed pivot line 226 to form the opening 236 (Fig. 13) in the container 204.

[0095] At this point, those skilled in the art will appreciate that opening tools 242, 244 are only one specific example of suitable opening tools, and that various alternative opening tools may be used without departing from the scope of the present disclosure. As one example, the opening tool may include a cutting element positioned to form access panels in the container 204 that open laterally outward, as described in U.S. Patent No. 7,922,437 (discussed above). As another

example, the opening tool may include a forward-protruding catch element, such as the forward-protruding catch element disclosed in U.S. Ser. No. 12/891,391 filed on September 27, 2010, the entire contents of which are incorporated herein by reference, or the forward-protruding catch element disclosed in U.S. Ser. No. 13/032,734 filed on February 23, 2011, the entire contents of which are incorporated herein by reference. As yet another example, the opening tool may include a rear-protruding catch element, such as the rear-protruding catch element disclosed in U.S. Ser. No. 12/970,683 filed on December 16, 2010, the entire contents of which are incorporated herein by reference.

[0096] The product dispensing system 200 may be assembled to dispense products 206 by positioning the container 204 onto the front end 282 of the upper support deck 250 of the frame 240, behind the door 203, and urging the container 204 along the upper support deck 250 toward the stop 290 then closing the door 203. As the container moves relative to the opening tools 242, 244, the opening tools 242, 244 may sever the first and second severance lines 228, 230, thereby allowing the access panel 222 to pivot relative to the base wall 216 about the pre-formed pivot line 226. As the container 204 continues to move rearward, the access panel 222 may drop through the opening 288 in the upper level 286 of the frame 240 to form the opening 236 in the container 204, thereby allowing the products 206 in the container 204 to exit the container 204 through the opening 236 under the force of gravity. As the products 206 exit the container 204, the guide 292 may guide the products 206 down through the opening 288 in the upper level 286 of the frame 240 and, ultimately, to the first and second product display areas 268, 280.

[0097] In use, a plurality of product dispensing systems 10 may be positioned in a side-by-side orientation, a stacked orientation, or both. It can be appreciated that the dispensing system 10 may be positioned on and supported by any suitable generally horizontal display support surface 17, such as a table top, a counter top, a shelf, or a rack of shelves. As illustrated in Fig. 14, in one implementation of a plurality of dispenser systems 10, the handle 124 allows for the door 13 to be easily opened manually irrespective of the amount of space between the top of the dispenser 12 of a lower dispenser system 10' supported on a lower support surface 17' and the bottom edge of an upper support surface 17'' positioned directly above the lower support surface 17' to support the dispenser 12 of an upper dispenser system 10''. The minimal offset distance between the top of the lower dispenser system 10' and the bottom of the upper support surface

17'' may make it difficult to reach between the upper end of the dispenser frame 60 of the lower dispenser system 10' and the bottom of the upper support surface 17'' in order to open the door 13. As described above, the frontward or coplanar position of the handle 124 relative to the upper edge of the door 13 and the rearward or coplanar position of the retaining feature 149 relative to the upper edge of the door 13 overcomes this problem.

[0098] In another implementation of a plurality of dispenser systems 10, the handle 124 allows for the door 13 to be easily opened manually irrespective of the amount of space between the top of a dispenser 12 of a lower dispenser system 10 and the bottom of the dispenser 12 of an upper dispenser system 10 which may be stacked on top of the lower dispenser system 10.

[0099] Accordingly, the disclosed product dispensing systems may employ multiple support decks with multiple product display areas, thereby increasing the amount of product being displayed to potential consumers and increasing the amount of product that may be supported by a given dispenser. Furthermore, the disclosed product dispensing systems may improve stocking efficiency by optionally employing an opening tool configured to automatically open a container as the container is loaded onto the dispenser. Furthermore, the disclosed product dispensing system may enclose and discreetly cover the loaded container and upper support deck with a downwardly opening door having a handle the allows the door to be opened given very little space between the top of the product dispensing system and the bottom of an overhead dispenser support surface.

[00100] Although various aspects of the disclosed product dispensing system with upper support deck door 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.

[00101] What is claimed is:

What is claimed is:

1. A product dispensing system comprising:

a dispenser frame having a front end and a rear end, said dispenser frame comprising:
an upper support deck extending between said front end and said rear end; and
a lower support deck positioned below said upper support deck, said lower support deck extending between said front end and said rear end and defining a product display area; and
a door connected to said frame proximate said upper support deck, said door comprising a handle frontwardly protruding from said door.

2. The product dispensing system of Claim 1 wherein said door comprises a lower end pivotably connected to said frame by a hinge feature proximate said upper support deck.

3. The product dispensing system of Claim 1 wherein said door comprises an upper end releasably connected to said frame by a retaining feature.

4. The product dispensing system of Claim 1 wherein said handle is positioned proximate said upper end.

5. The product dispensing system of Claim 1 wherein said handle comprises a lip.

6. The product dispensing system of Claim 1 wherein said door comprises:

a hinge feature positioned about a lower end of said door and pivotably connected to said frame proximate said upper support deck; and

a retaining feature positioned about a rear side of an upper end of said door and releasably connected to said frame,

wherein said handle is positioned about a front side of said upper end of said door, and
wherein said door is openable in response to a force applied to said handle.

7. The product dispensing system of Claim 1 further comprising:

a container on said upper support deck behind said door; and,
a plurality of products initially housed in said container.

8. The product dispensing system of Claim 7 wherein at least one product of said plurality of products is positioned in said product display area.
9. The product dispensing system of Claim 7 further comprising at least one opening tool positioned to open said container and allow at least one product of said plurality of products to move from said container to said first product display area as said container is moved along said upper support deck from said front end toward said rear end.
10. A product dispensing system comprising:
- a container initially housing a plurality of products;
 - a frame having longitudinally opposed front and rear ends, said frame comprising:
 - an upper support deck extending at least partially between said front end and said rear end; and
 - a lower support deck positioned below said upper support deck, said lower support deck defining a product display area; and
 - a door connected to said frame proximate said front end to access said upper support deck, said door comprising a frontwardly protruding handle; and
 - an opening tool associated with said frame and arranged to open said container when said container is moved longitudinally along said upper support deck and allow said plurality of products to be at least partially dispensed from said container to said product display area.
11. The product dispensing system of Claim 10 wherein said product display area is proximate said front end.
12. The product dispensing system of Claim 10 wherein said door is hingedly connected proximate said upper support deck.
13. The product dispensing system of Claim 10 wherein said door comprises a lower end, and wherein said lower end is hingedly connected proximate said upper support deck.

14. The product dispensing system of Claim 10 wherein said door comprises an upper end releasably connected to said frame.

15. The product dispensing system of Claim 14 wherein said upper end is releasably connected to said frame by a retaining feature.

16. The product dispensing system of Claim 15 wherein said retaining feature comprises a protrusion extending rearwardly from said upper end of said frame.

17. The product dispensing system of Claim 10 wherein said frame includes first and second laterally opposed side walls.

18. The product dispensing system of Claim 17 wherein said door comprises:

- a lower end pivotably connected to said first and second side walls by a hinge feature proximate said upper support deck;

- an upper end releasably connected to said first and second side walls by a retaining feature extending rearwardly from said upper end of said frame; and

- a handle extending forwardly from said upper end of said door,

- wherein said door is openable in response to a force applied to said handle.

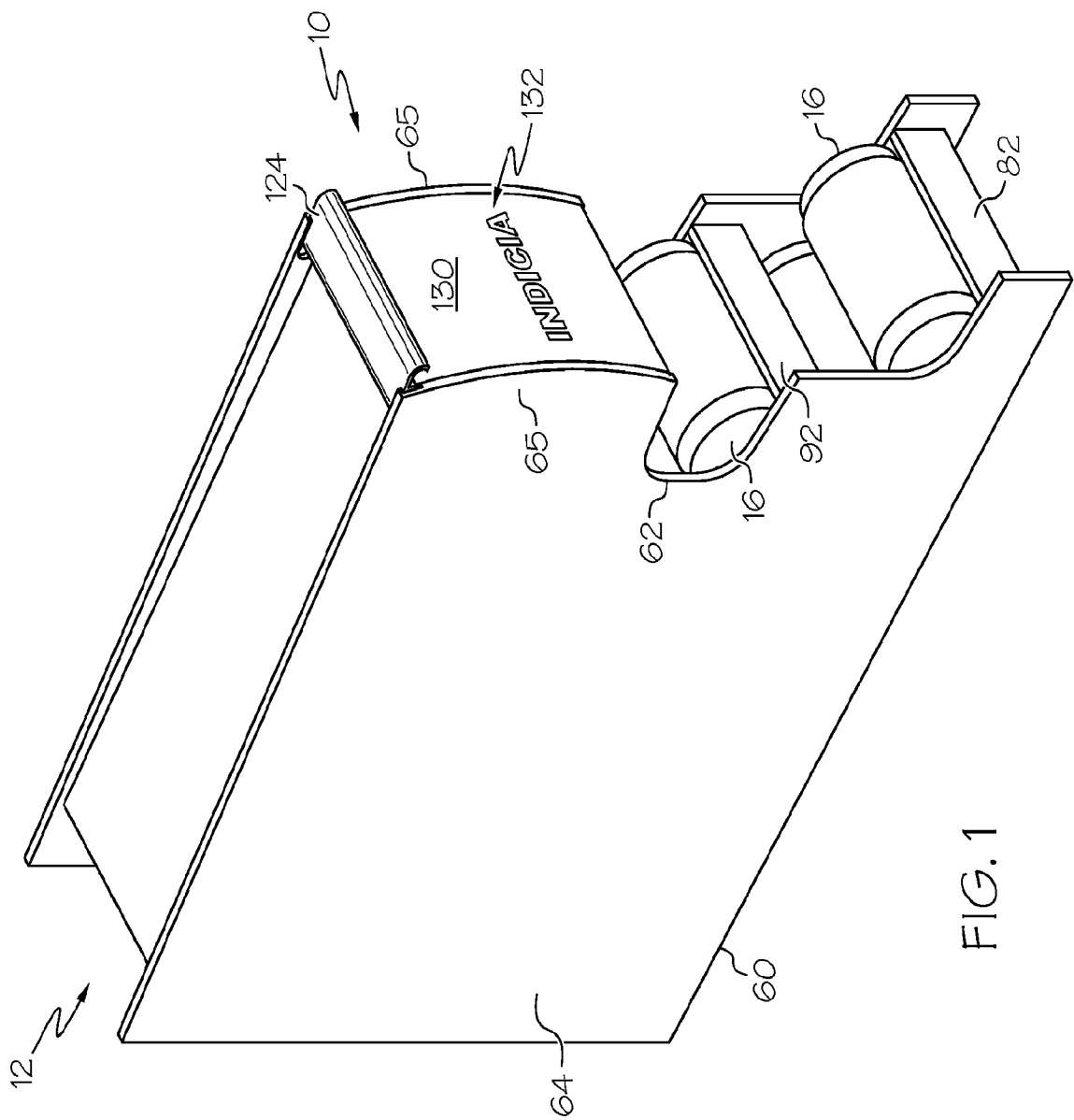
19. A method for dispensing a plurality of product initially provided in a container, said method comprising the steps of:

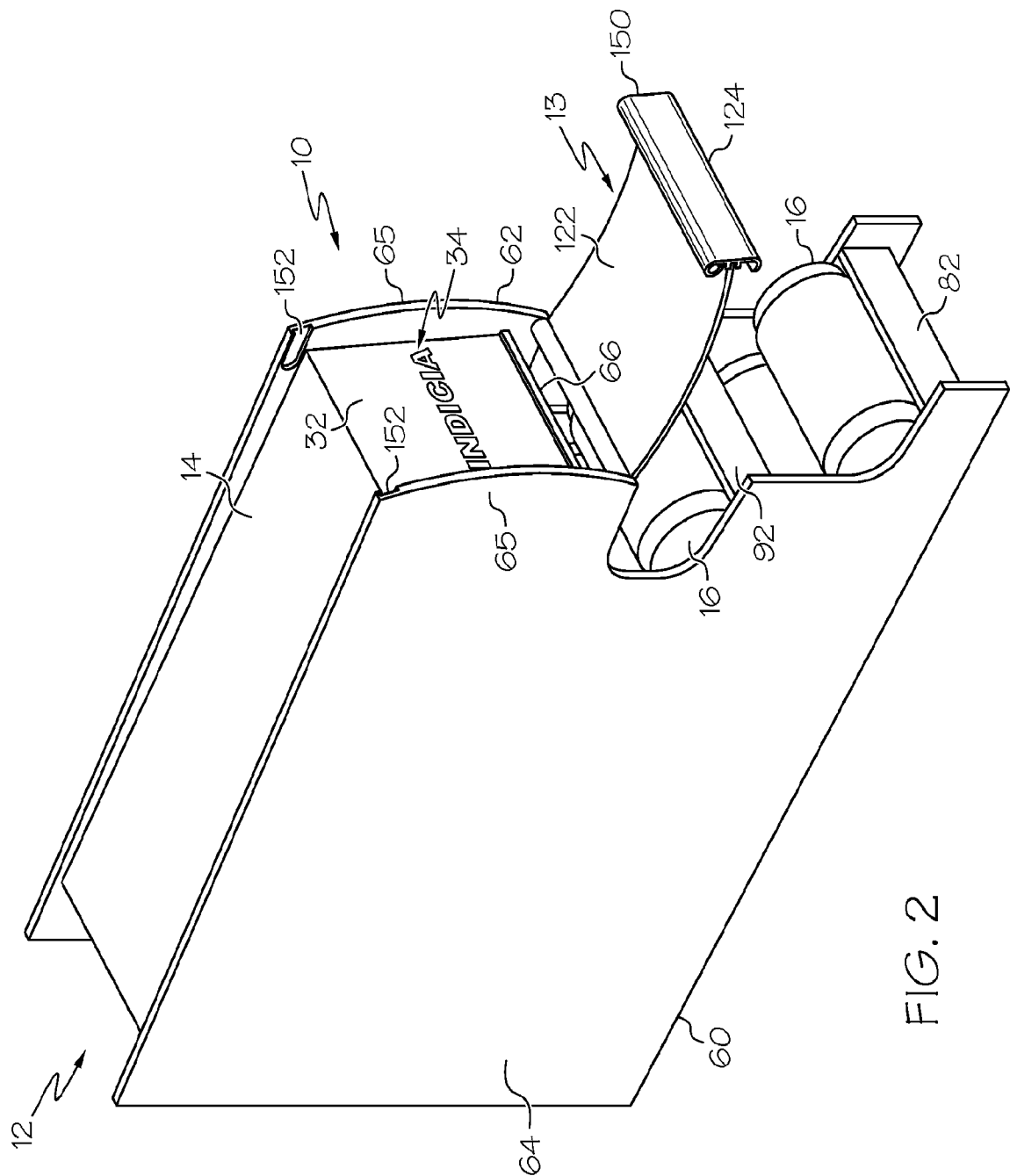
- providing a dispenser comprising:

- a frame having a front end and a rear end, an upper support deck extending at least partially between said front end and said rear end, and a lower support deck positioned below said upper support deck, said lower support deck defining a product display area; and

- a door pivotably connected to said frame proximate said front end; and
- opening said door to provide access to said upper support deck; and
- positioning said container on said upper support deck behind said door.

20. The method of Claim 19 wherein said container is automatically opened during said positioning step.





3 / 12

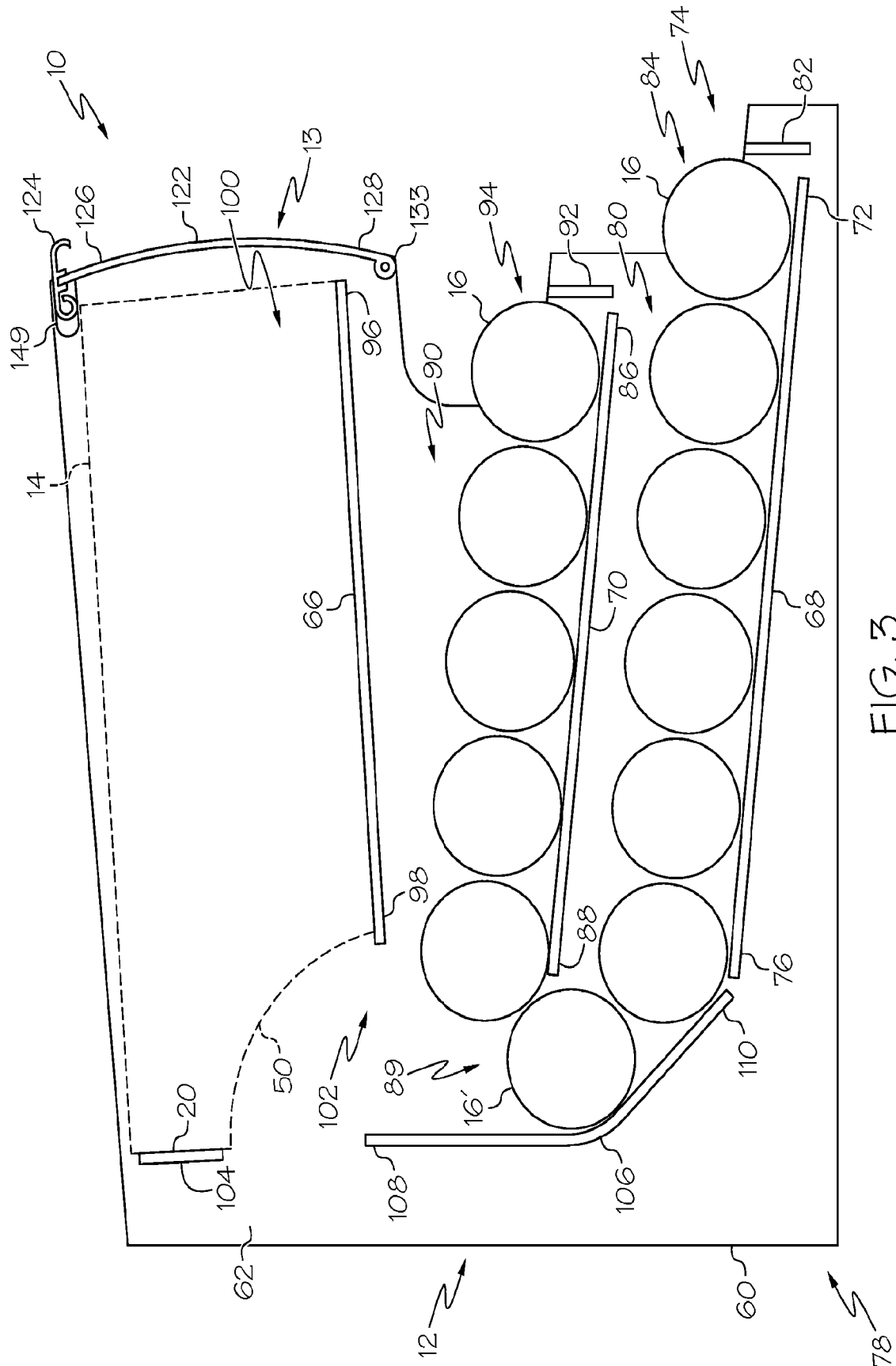
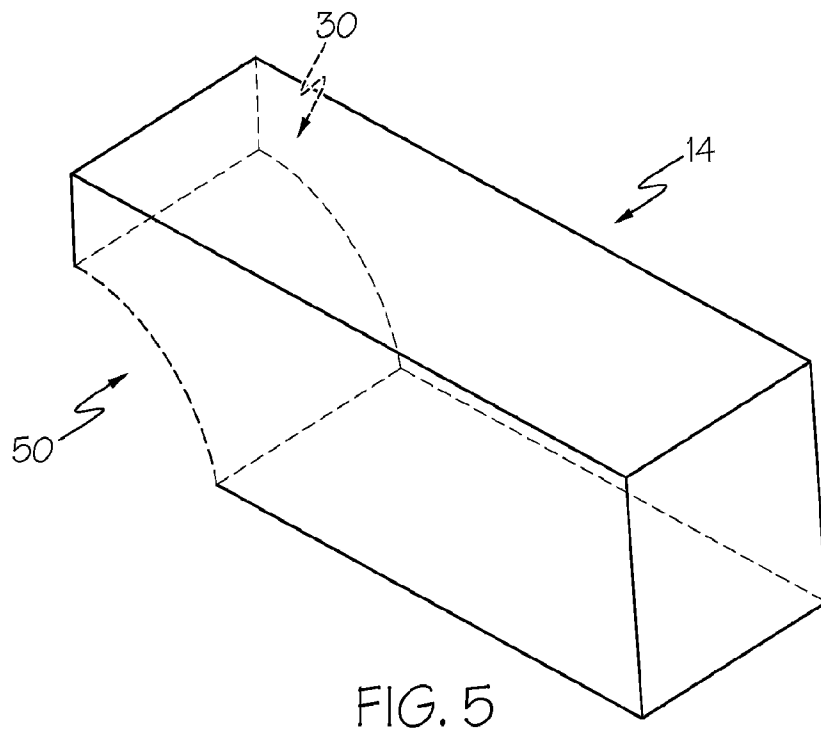
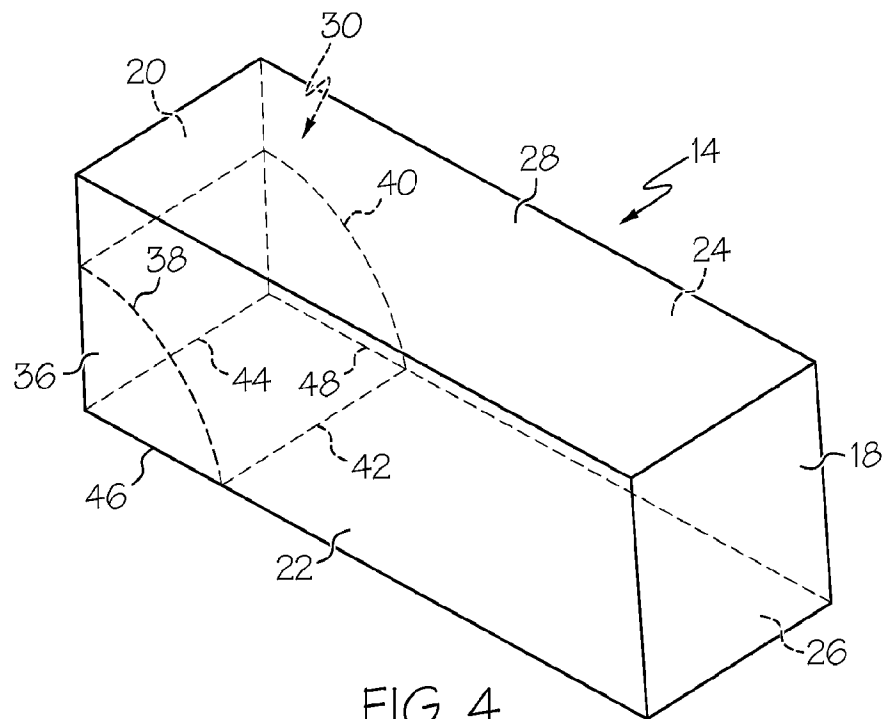


FIG. 3

4 / 12



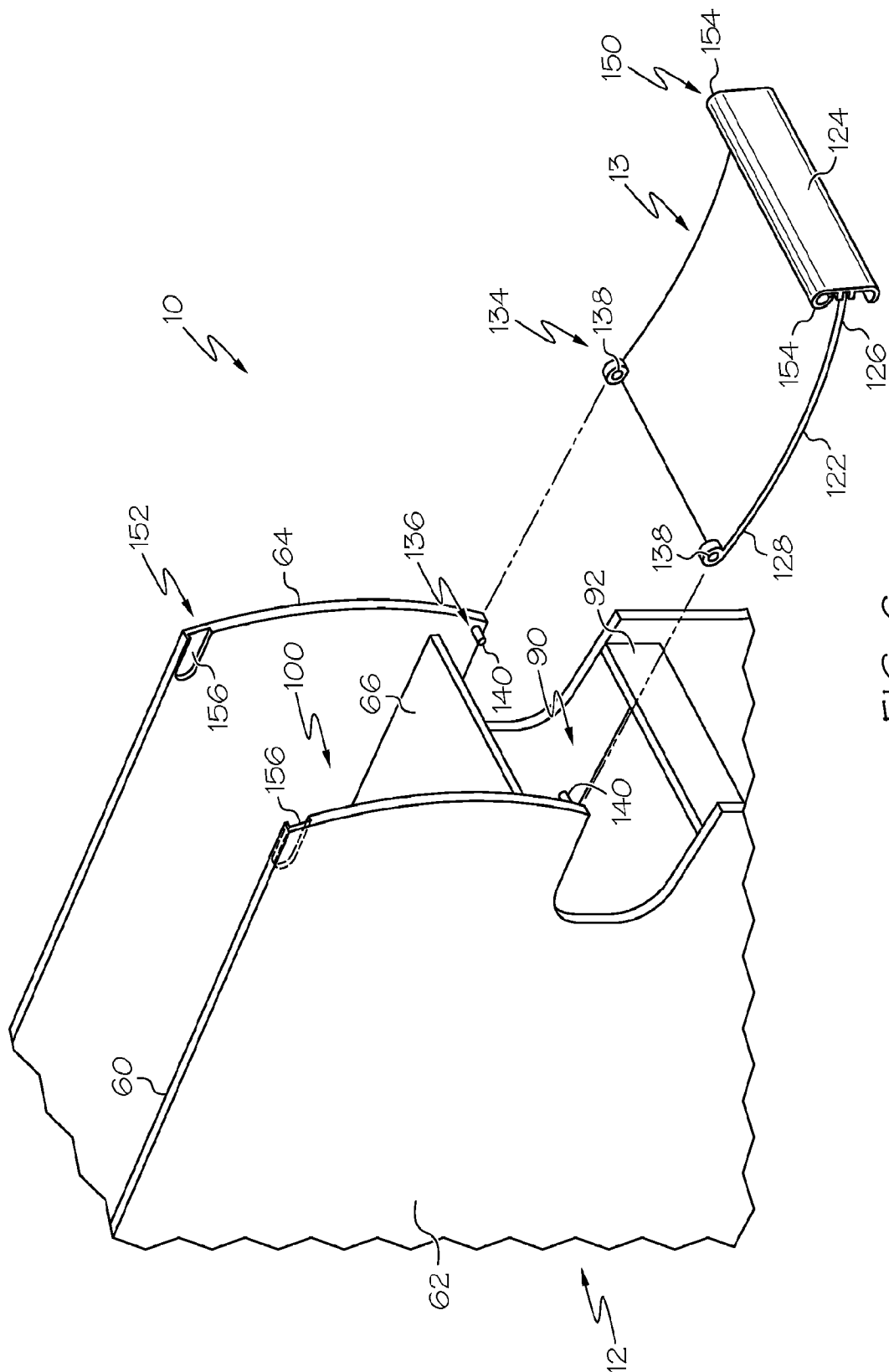


Fig. 6.

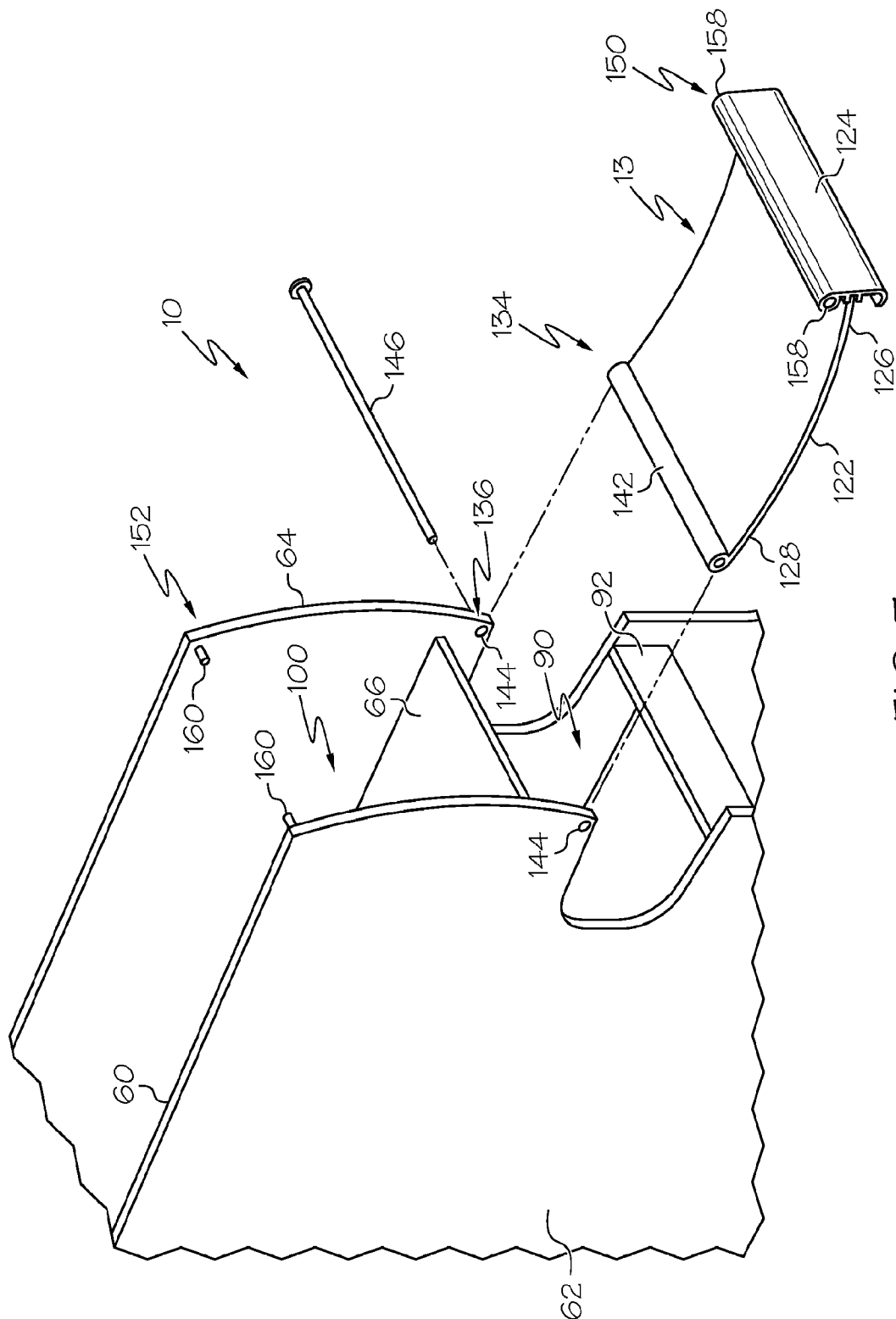
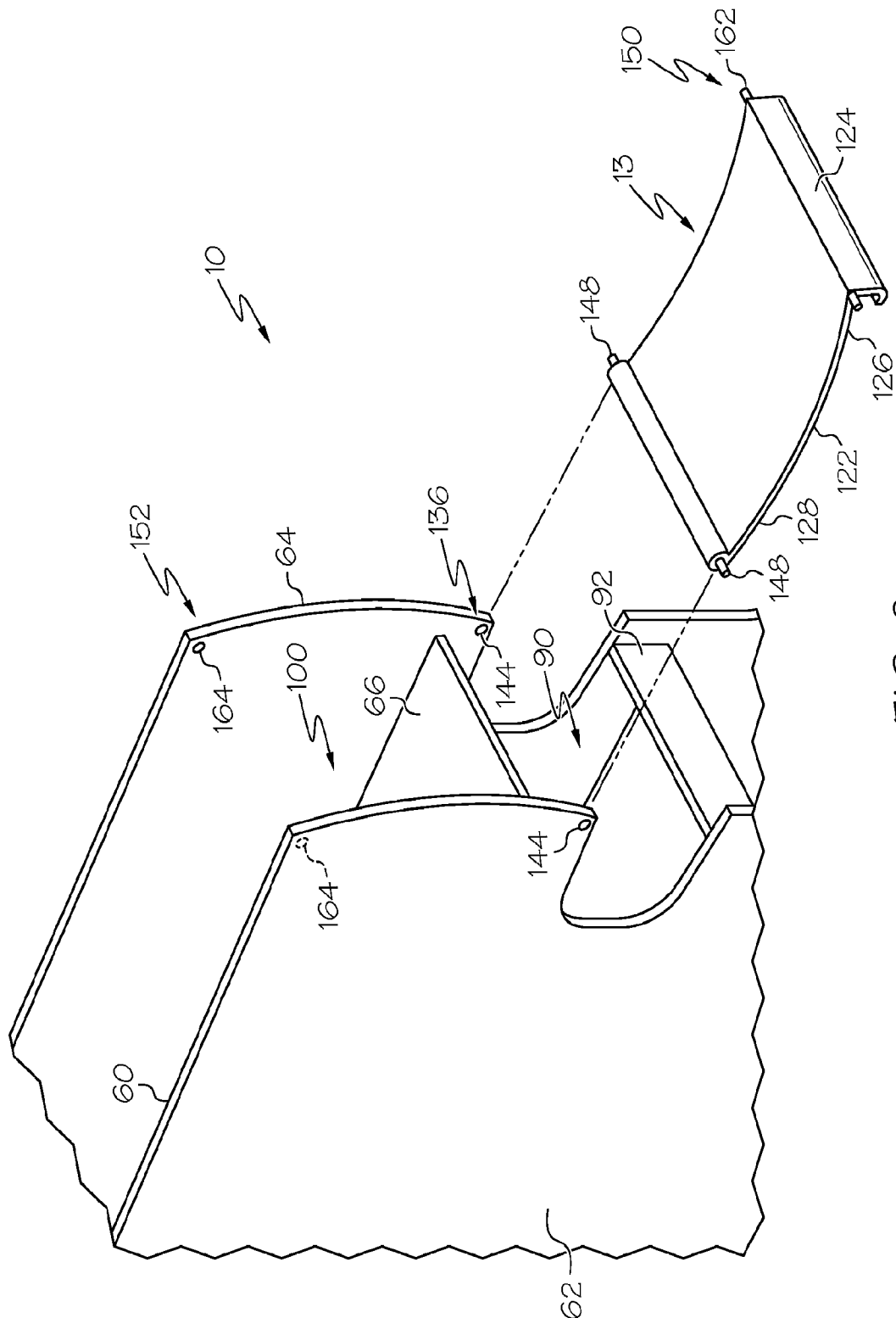


FIG. 7



F/G. 8.

8 / 12

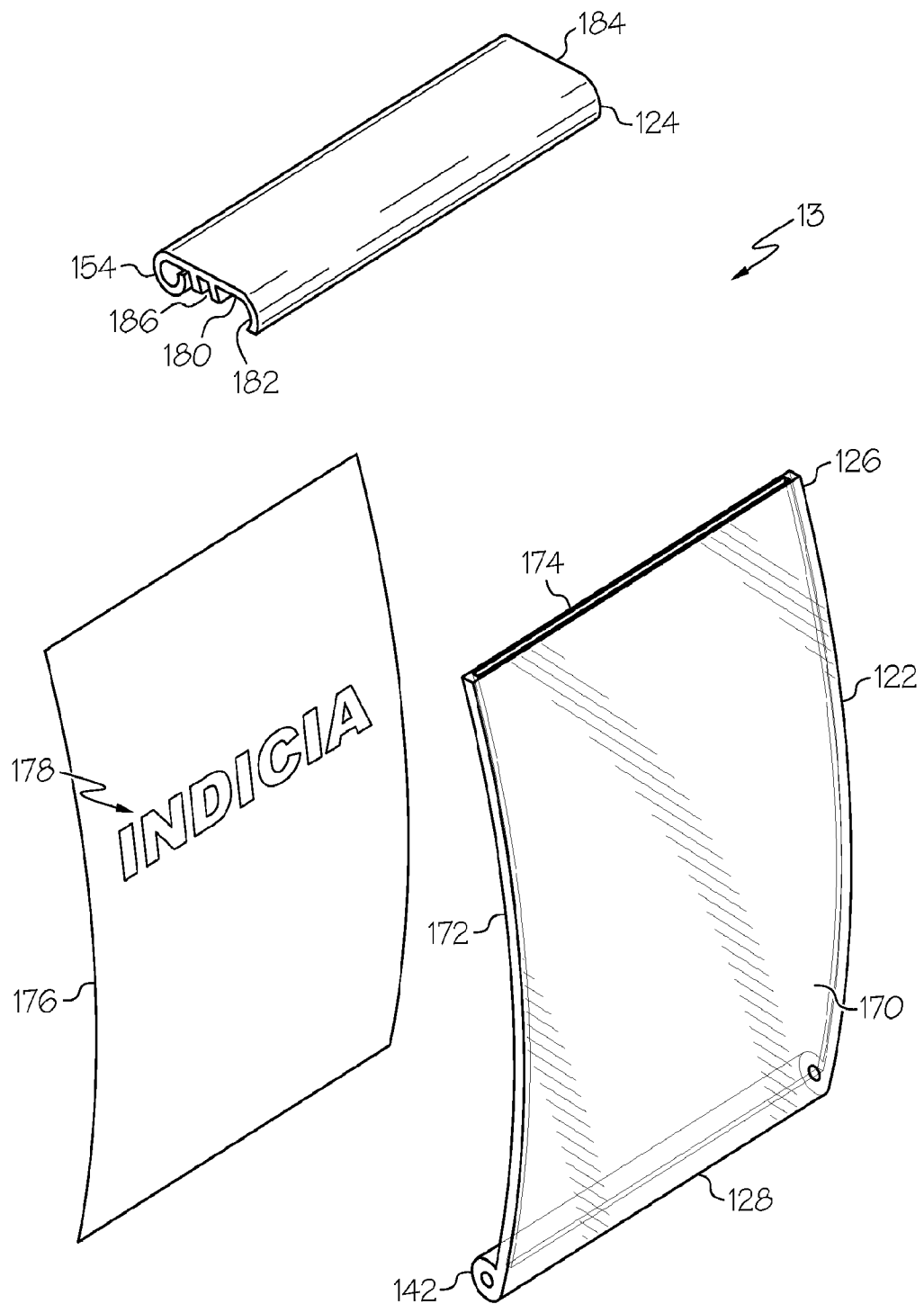


FIG. 9

9 / 12

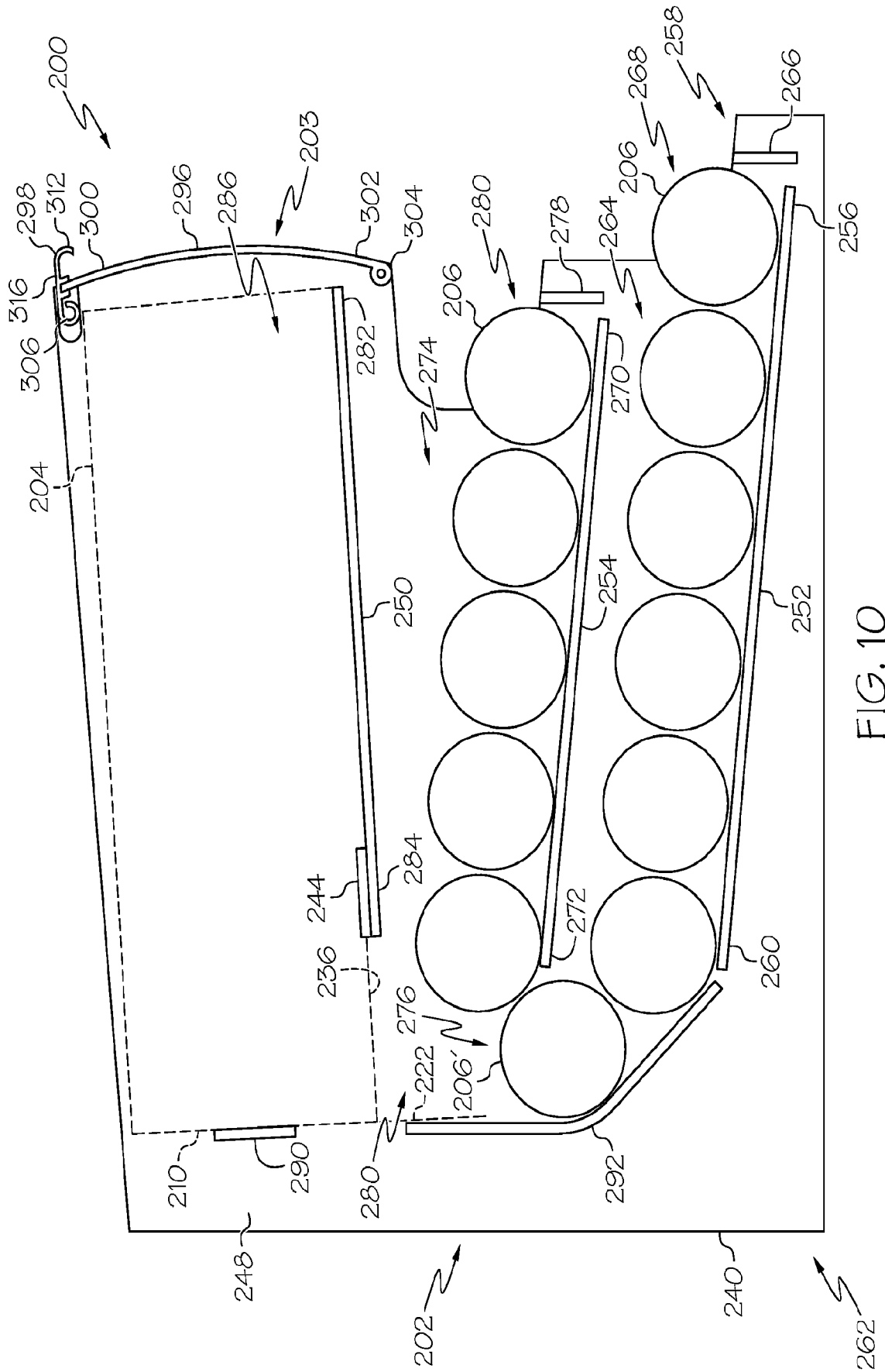


FIG. 10

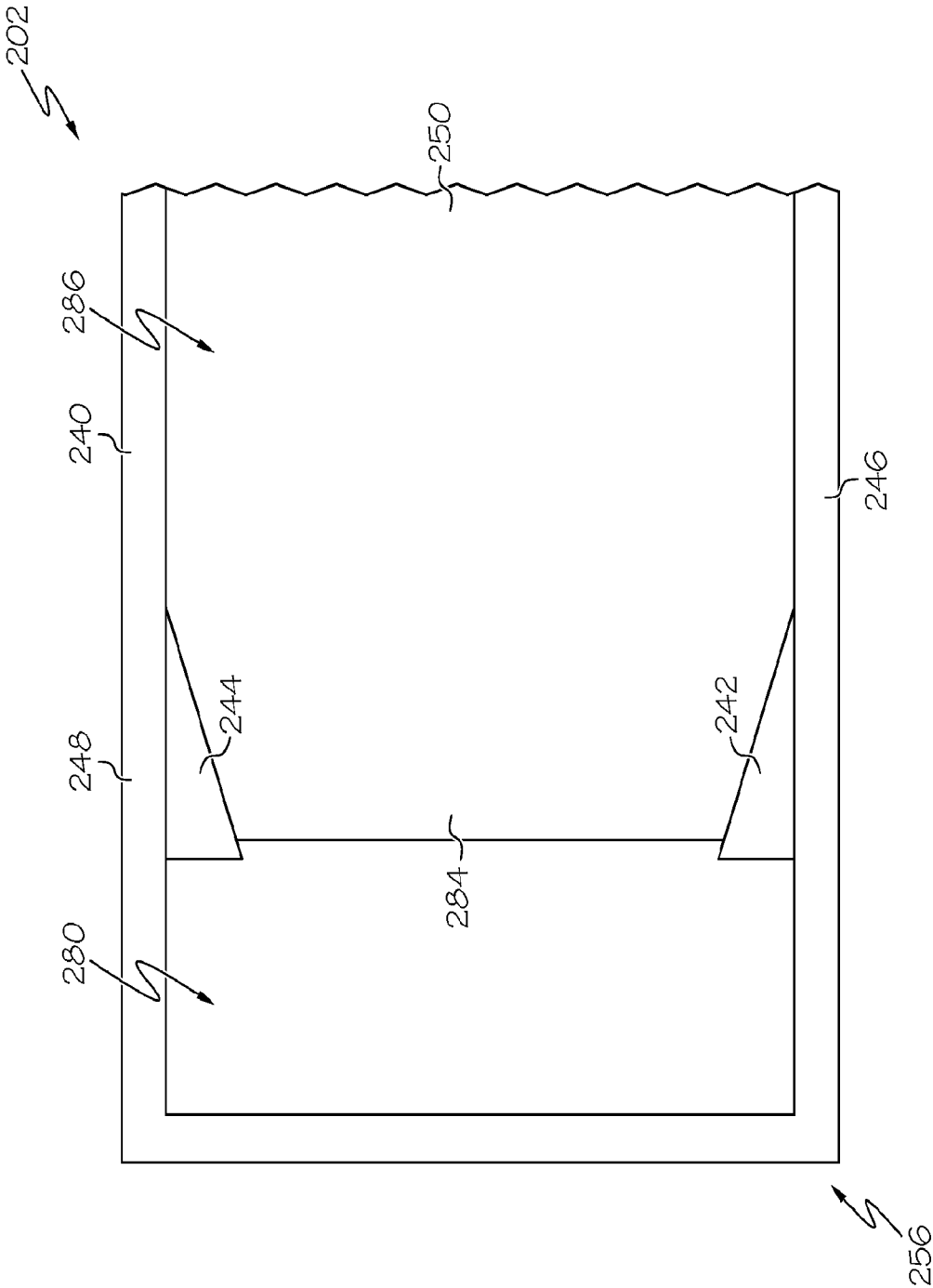


FIG. 11

11 / 12

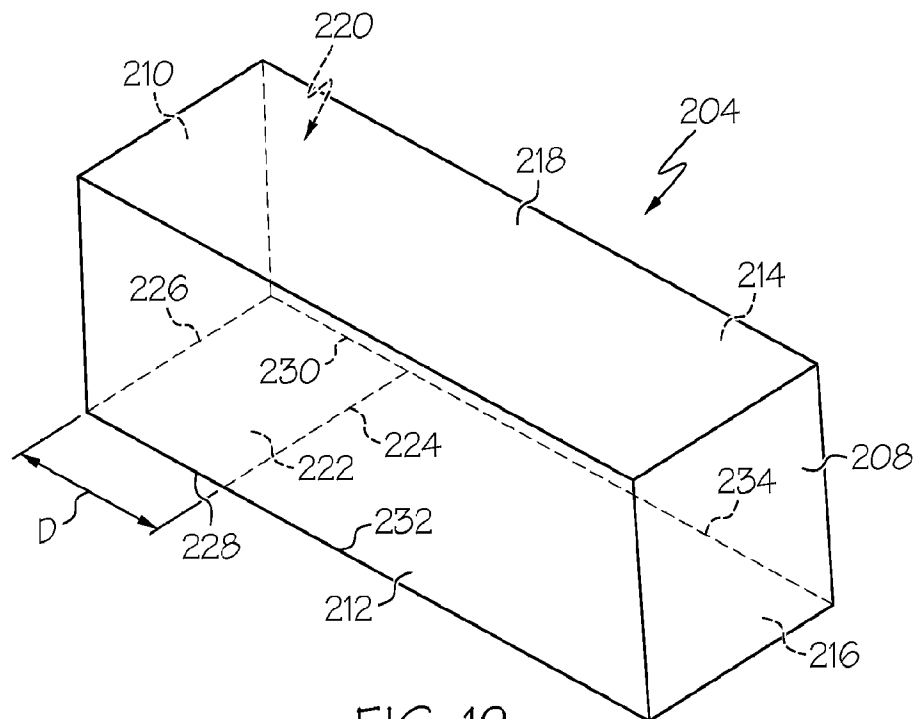


FIG. 12

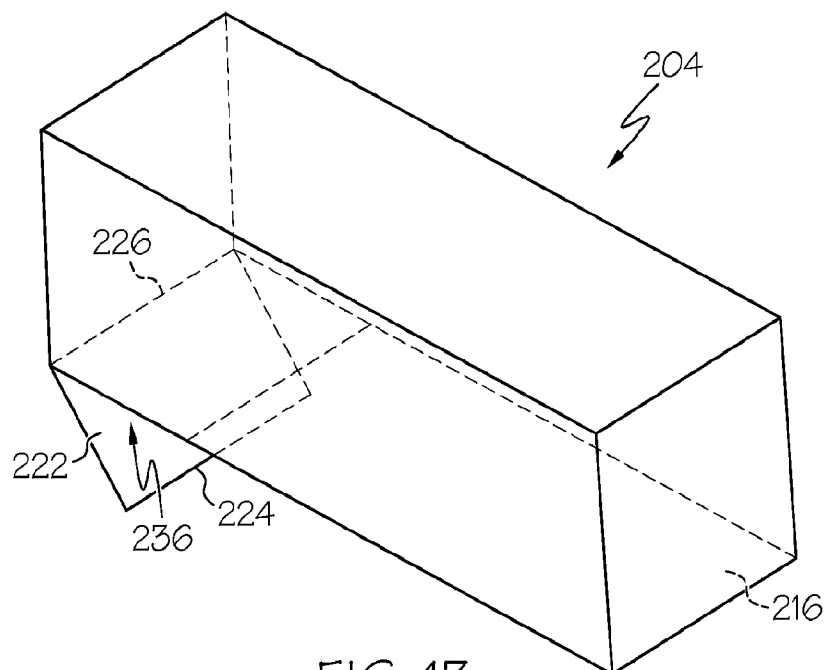


FIG. 13

12 / 12

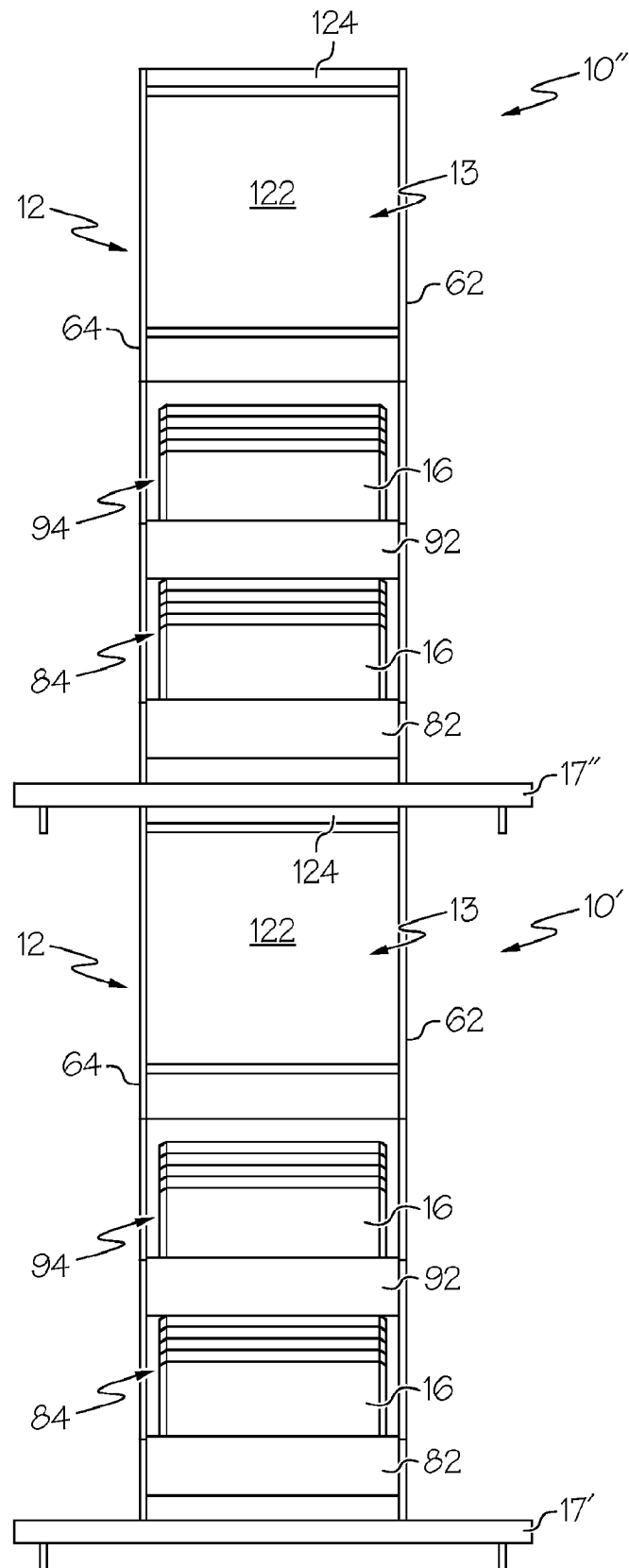


FIG. 14

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/052684

A. CLASSIFICATION OF SUBJECT MATTER
INV. 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)
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.
X	US 2010/096401 A1 (SAINATO ANTHONY V [US] ET AL) 22 April 2010 (2010-04-22) the whole document	1-20
X	WO 2011/025483 A1 (BAUER JAMIE [US]; GIRAFFX DESIGN LLC [US]) 3 March 2011 (2011-03-03) the whole document	1-20
X	US 5 462 198 A (SCHWIMMER ALAN F [US]) 31 October 1995 (1995-10-31) the whole document	1-20
A	US 7 922 437 B1 (LOFTIN CALEB S [US] ET AL) 12 April 2011 (2011-04-12) cited in the application the whole document	1-20



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

21 January 2014

Date of mailing of the international search report

27/01/2014

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Ottesen, Rune

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/052684

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010096401	A1	22-04-2010	NONE
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