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(54) **METHOD AND APPARATUS FOR
DISTRIBUTING AND DISPENSING ITEMS**

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(57) **ABSTRACT**

A system and method for distribution and dispensing of particulate items, and preferably to the distribution of bulk dry food in a sealed packaging unit, and the dispensing thereof. The bulk item dispenser is a two-part system, comprising a dispensing unit and a packaging unit. The packaging unit is filled with particulate items at a distribution location. The items are held within the unit with a sidably removable material-retaining element. The packaging unit is shipped to a distribution location, where the unit is assembled with a dispensing unit. Assembly is a two-step process. In the first step, the dispensing unit snap fits to a first location on the packaging unit. The element remains in the packaging unit. Next, the element is removed. The dispensing unit snap fits to a second location on the packaging unit. The second location is distal to where the element had been.

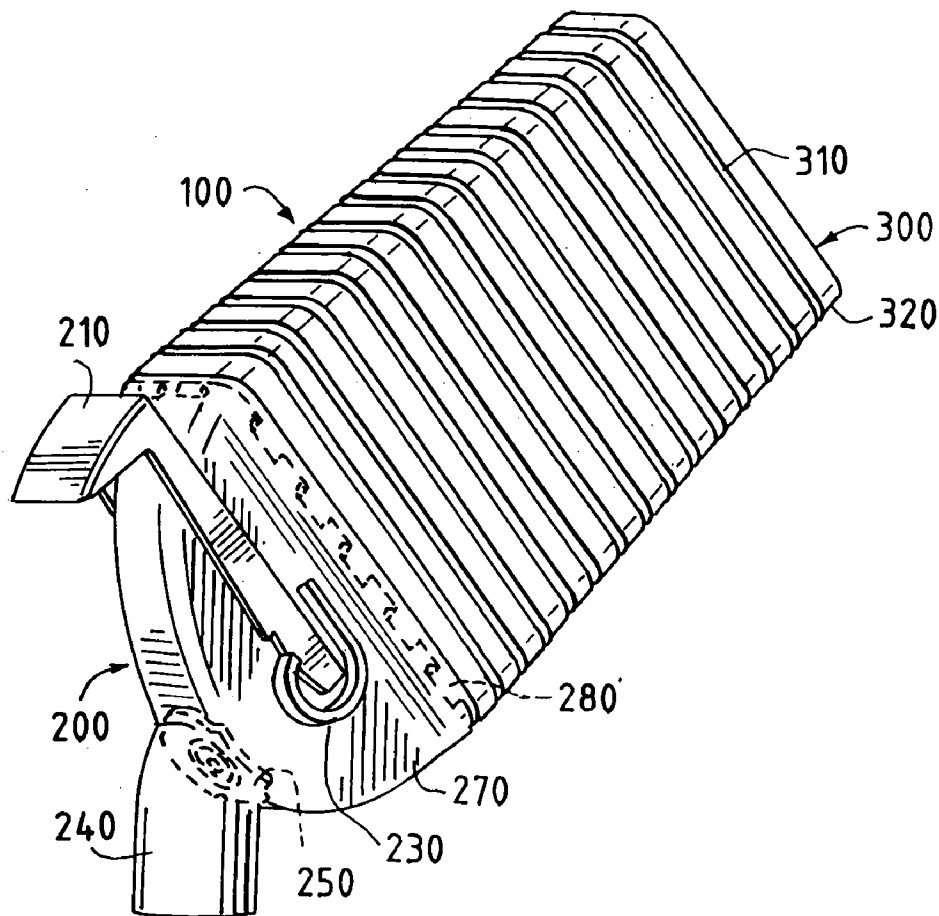
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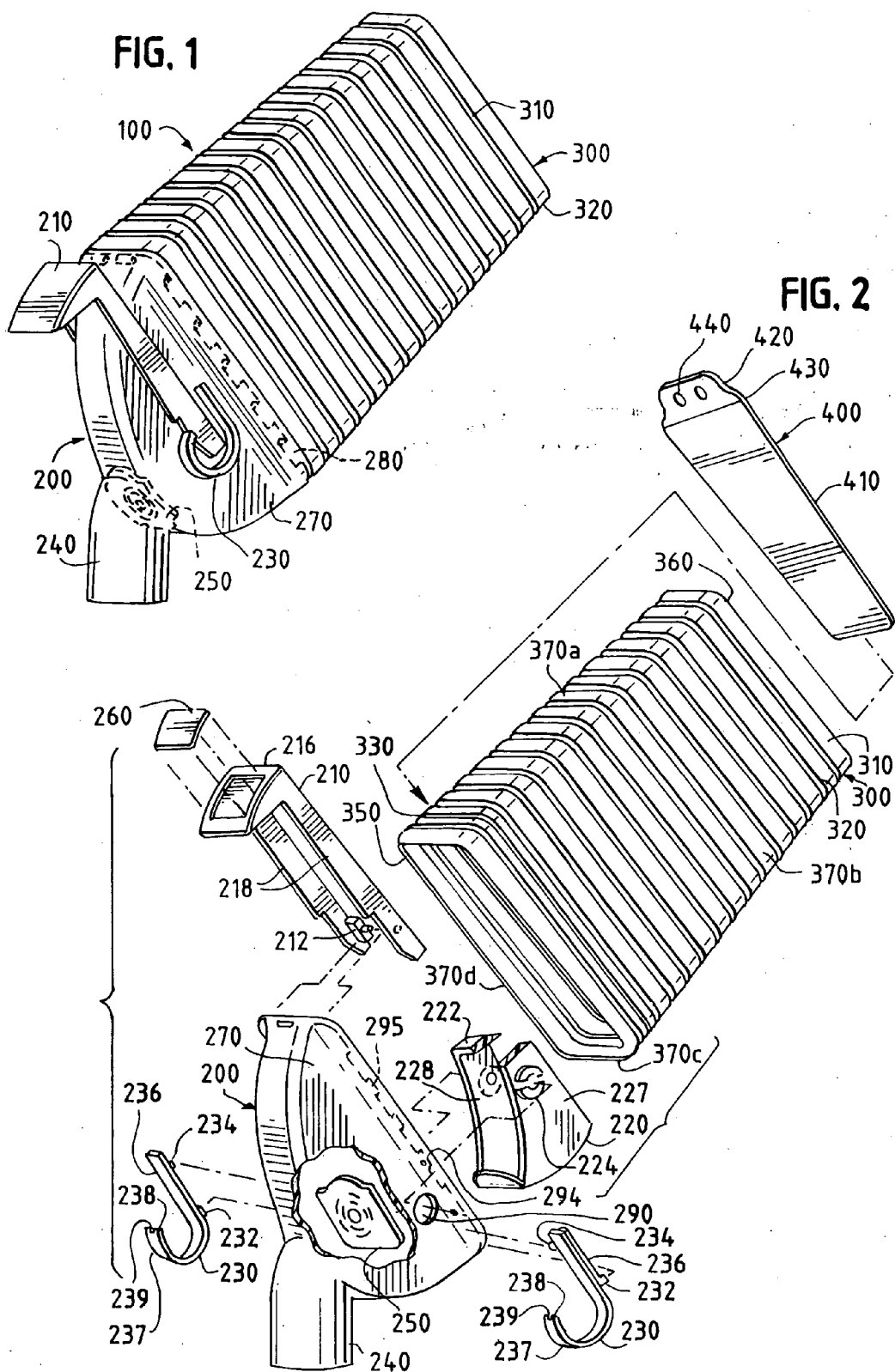


FIG. 3

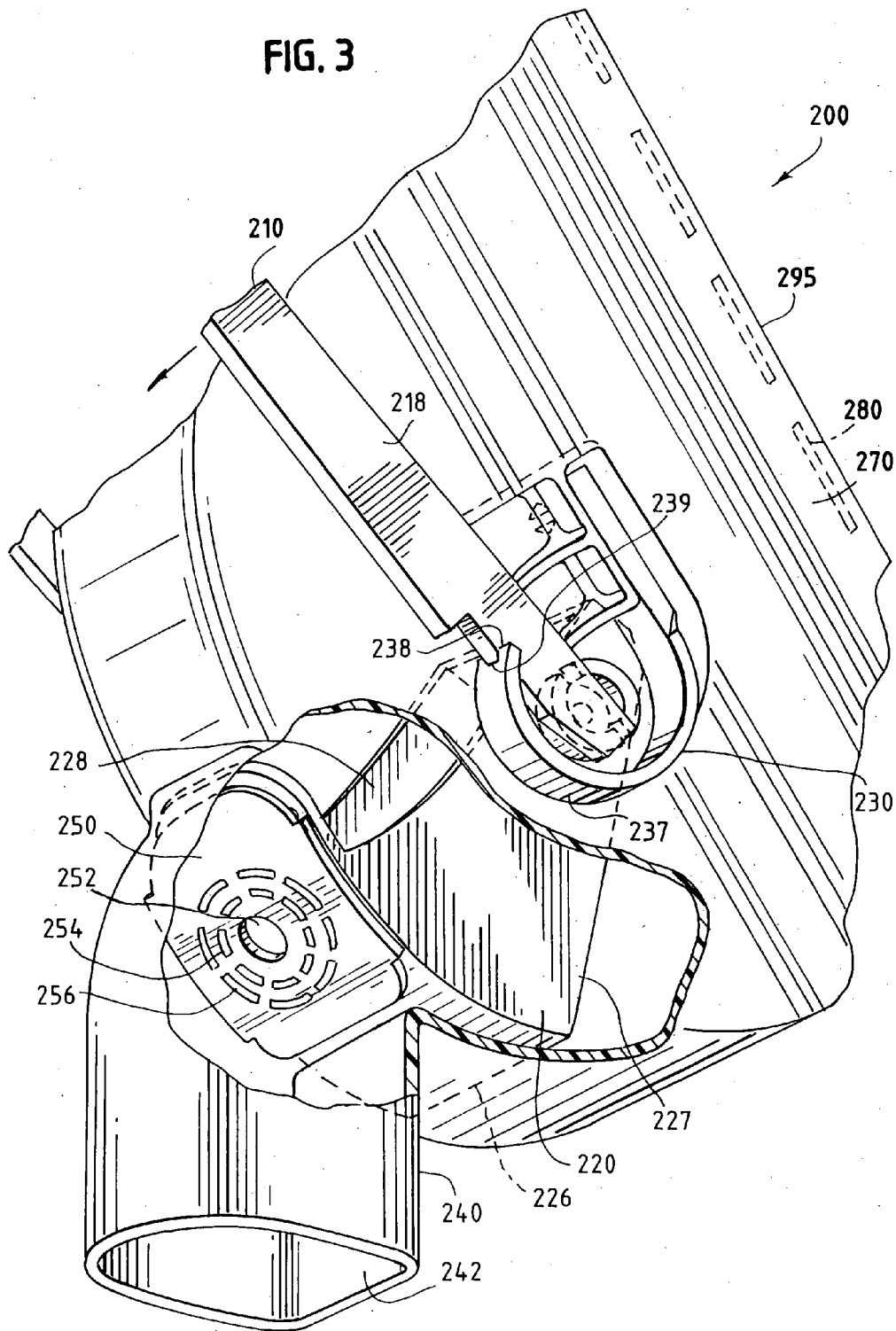


FIG. 4

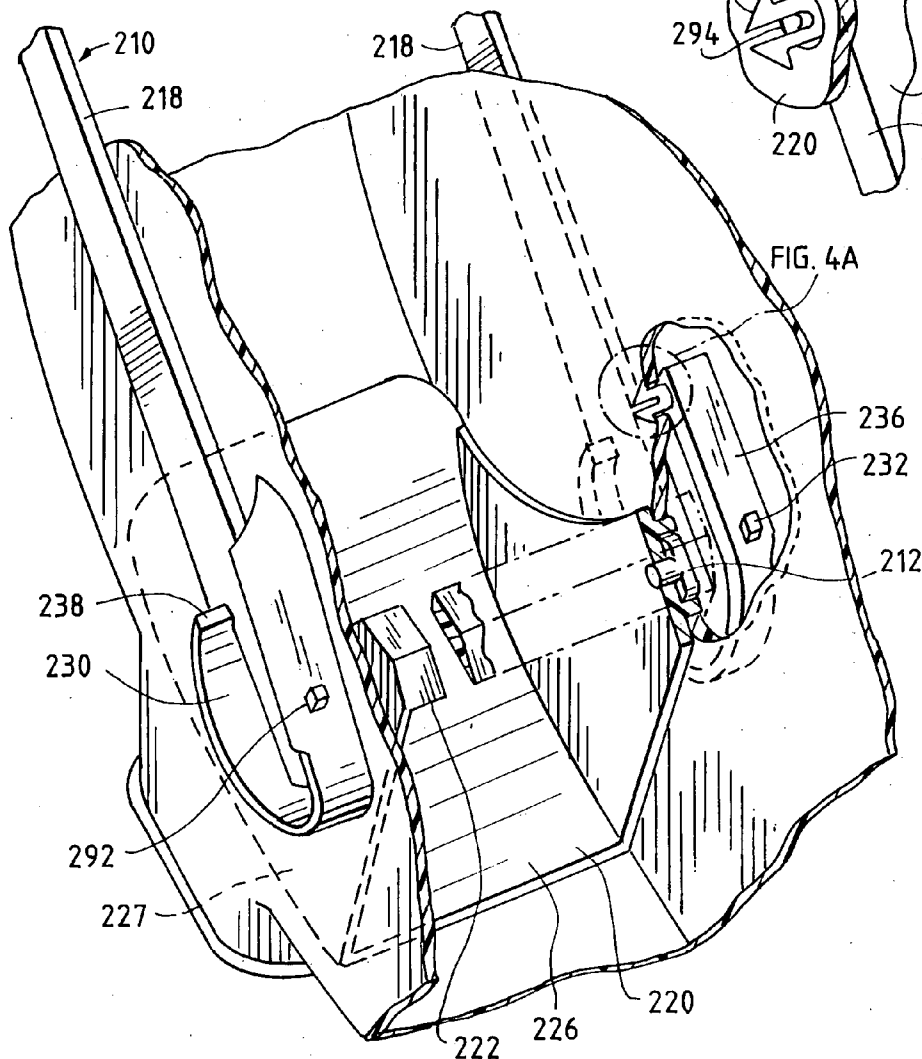


FIG. 4A

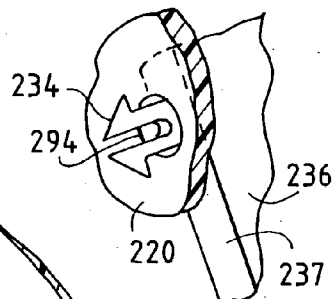
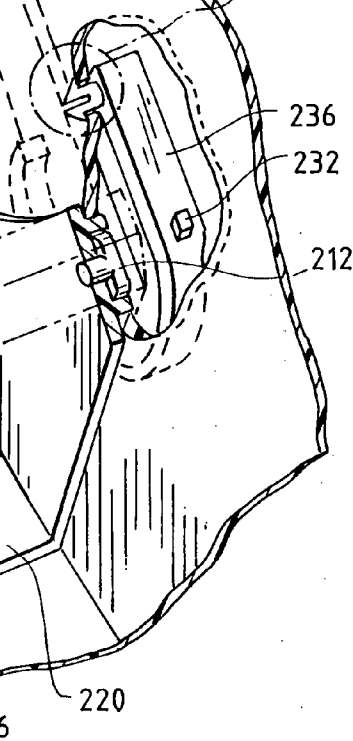


FIG. 4A



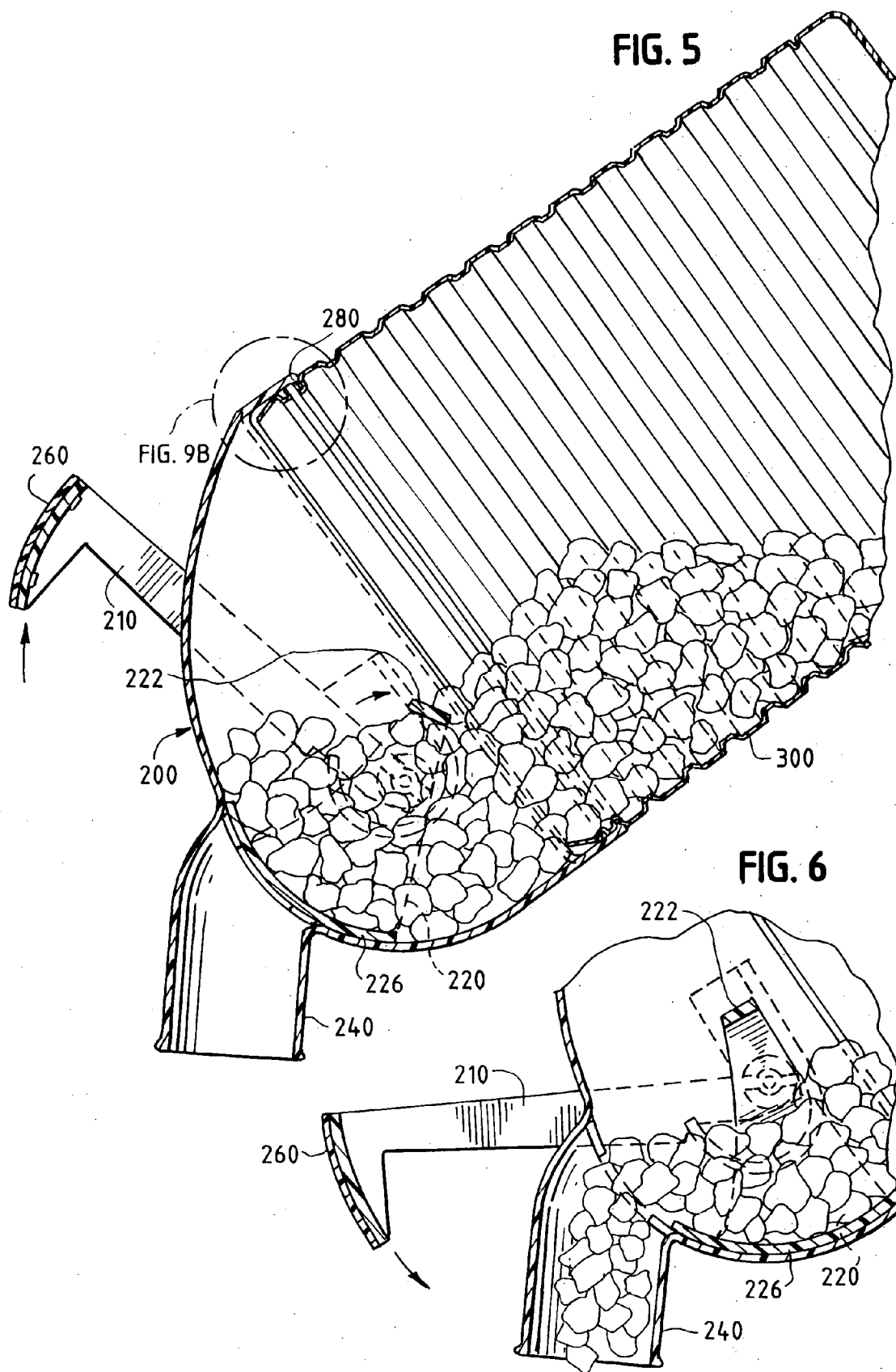


FIG. 7

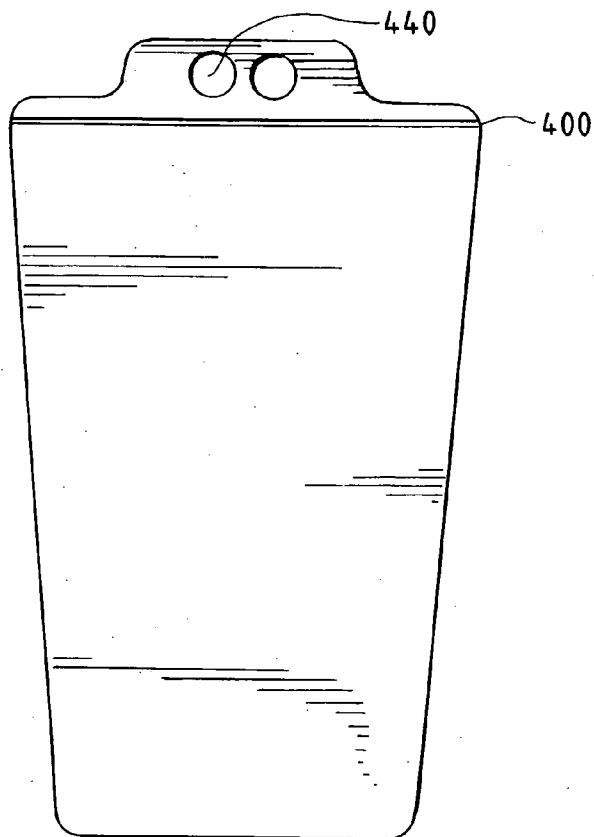


FIG. 8A

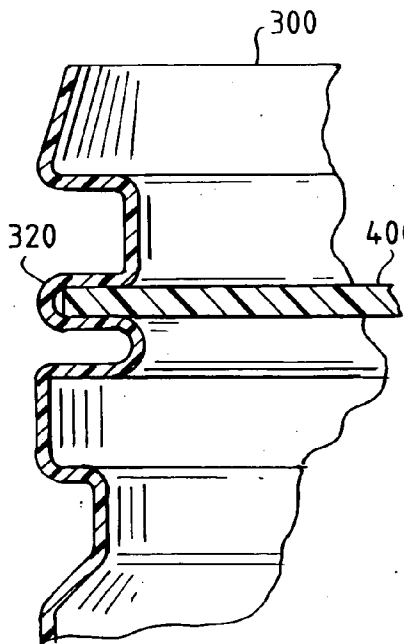


FIG. 8B

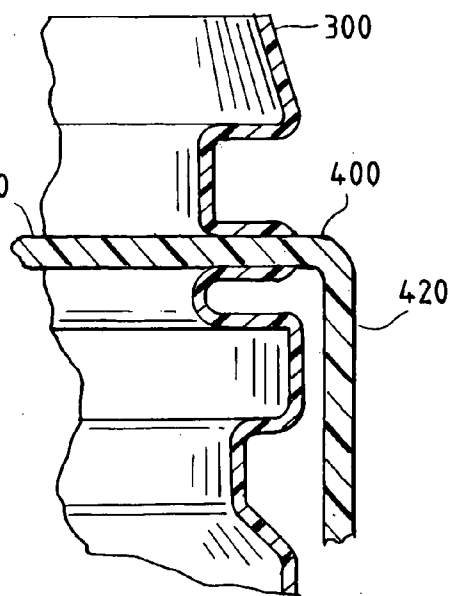


FIG. 9A

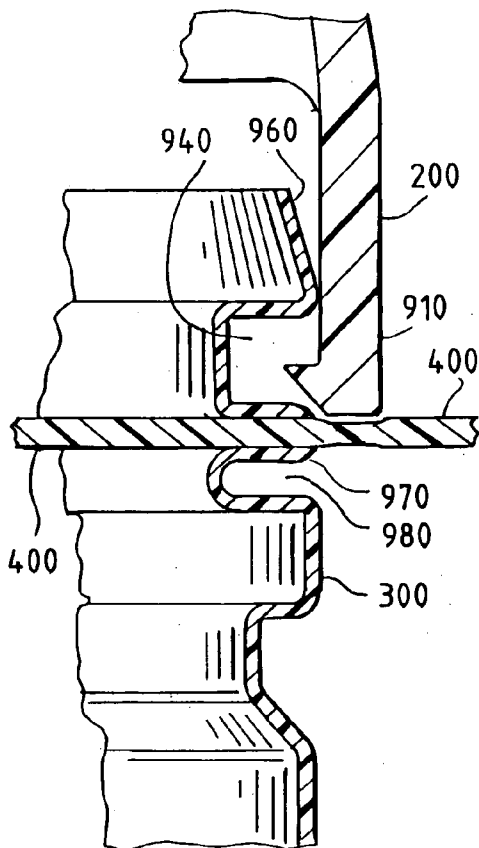


FIG. 9B

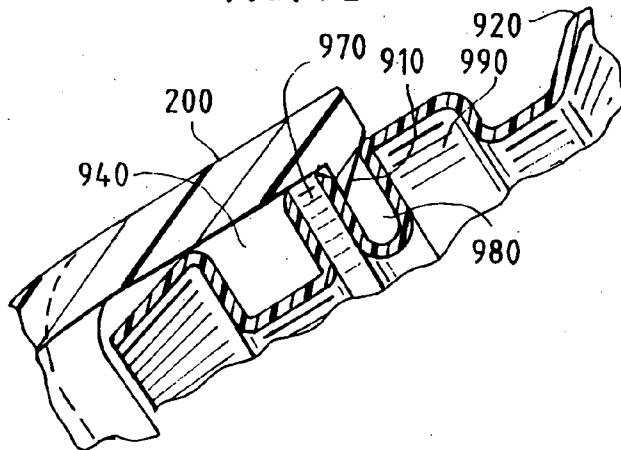


FIG. 10

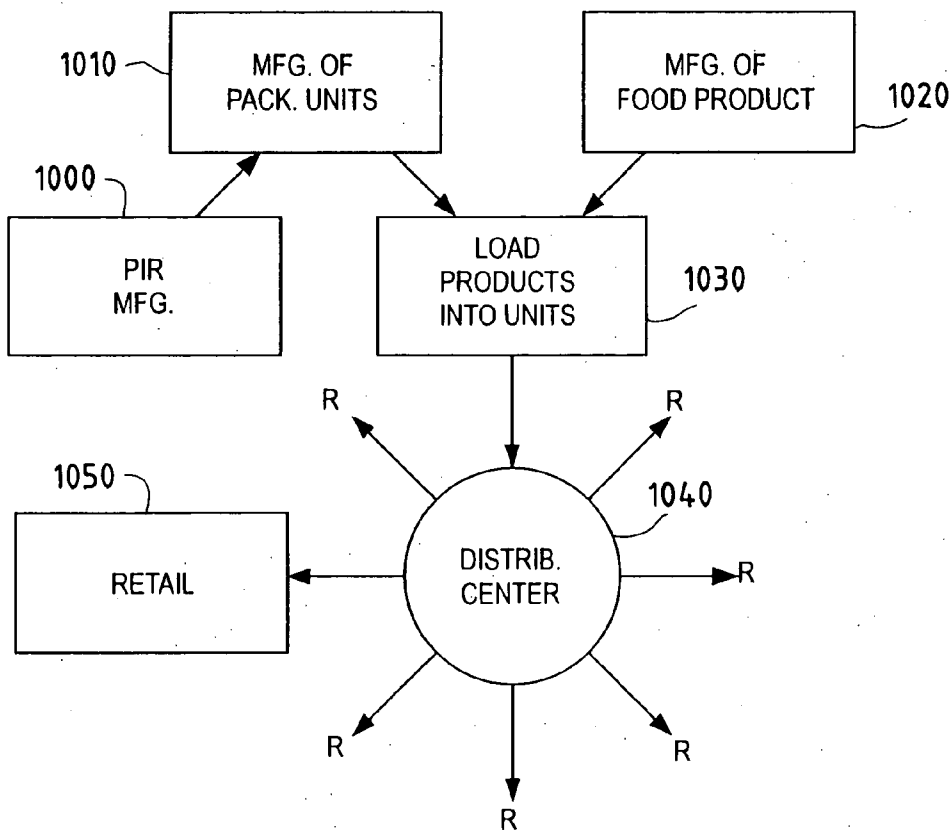


FIG. 11

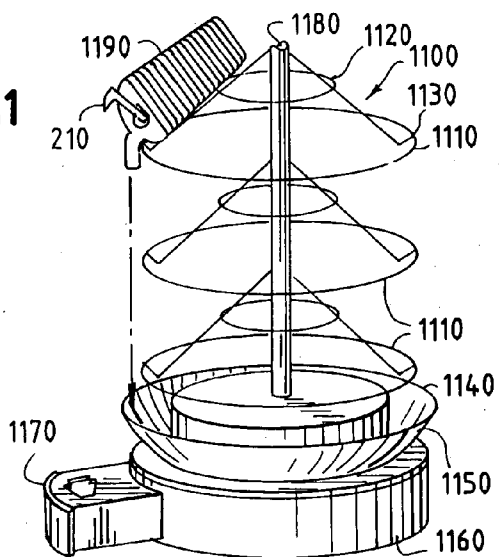


FIG. 12

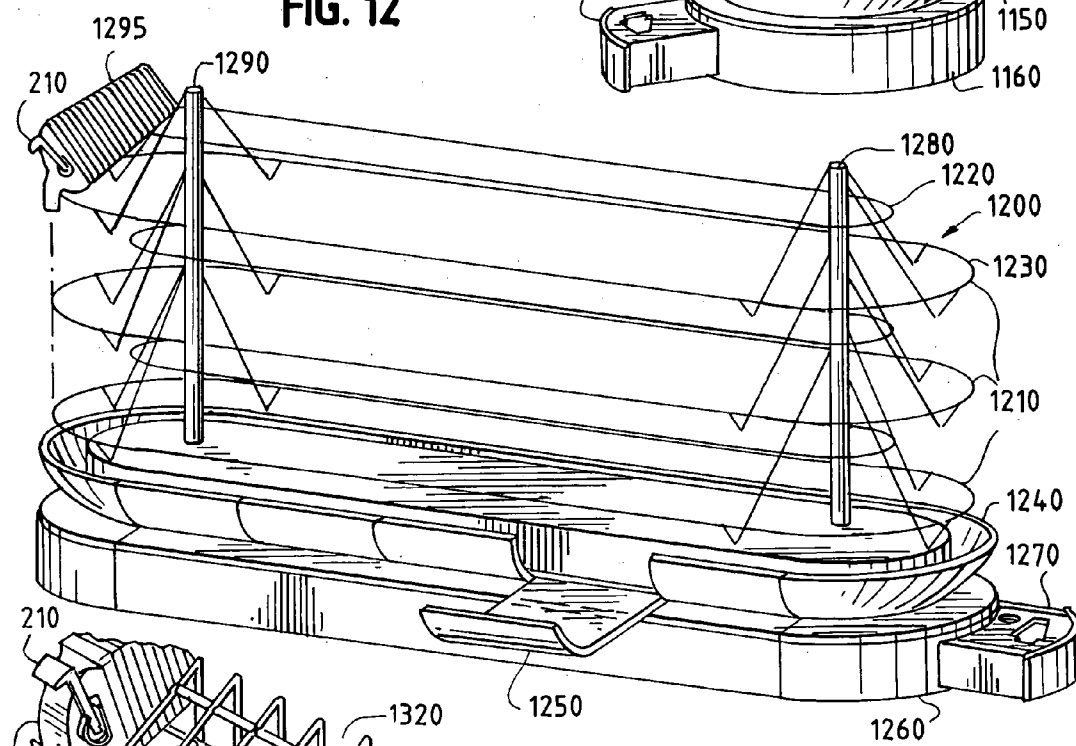


FIG. 13

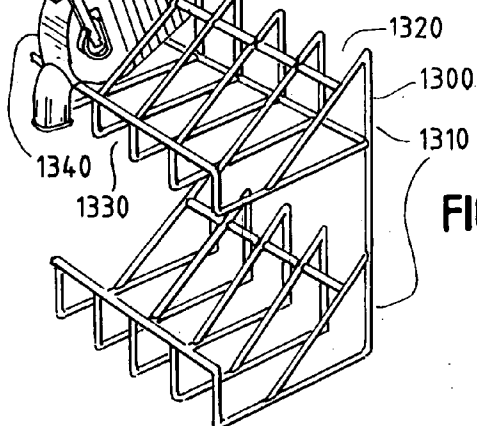


FIG. 14

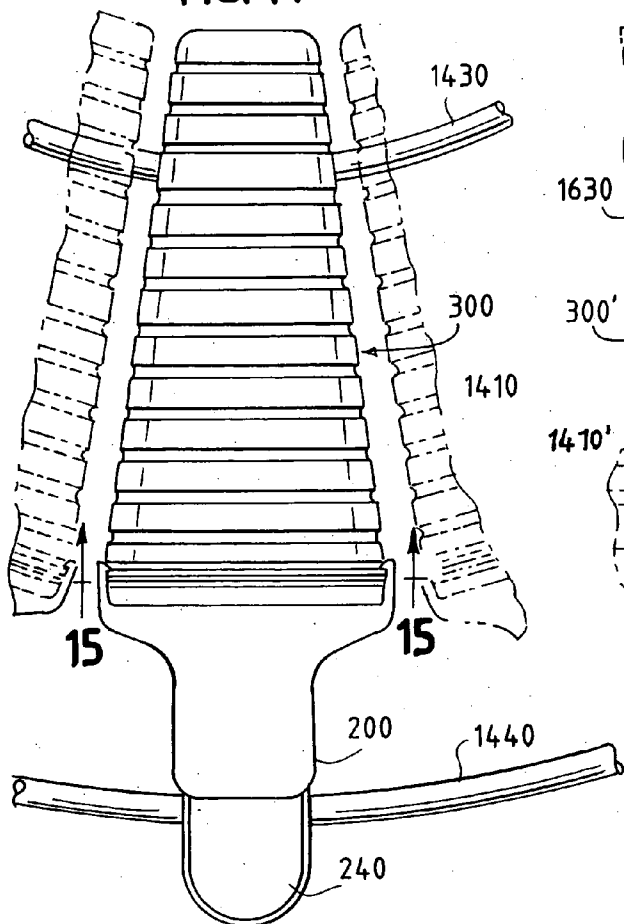


FIG. 16

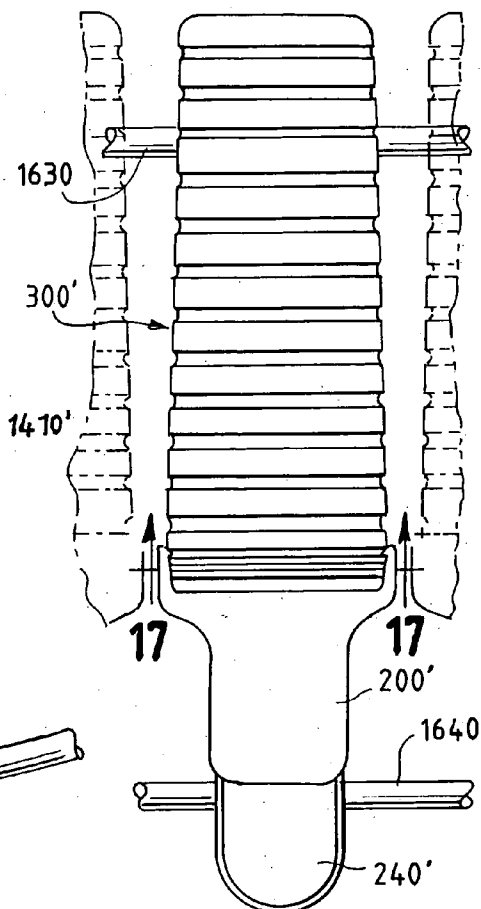


FIG. 15

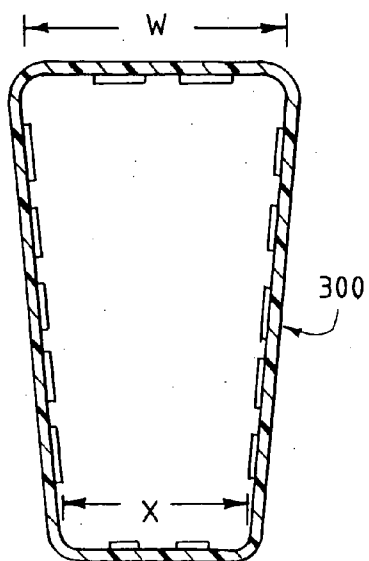


FIG. 17

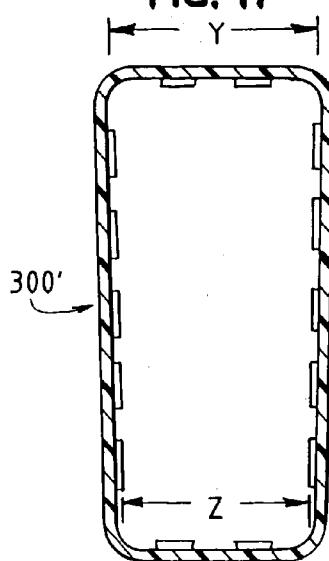


FIG. 18

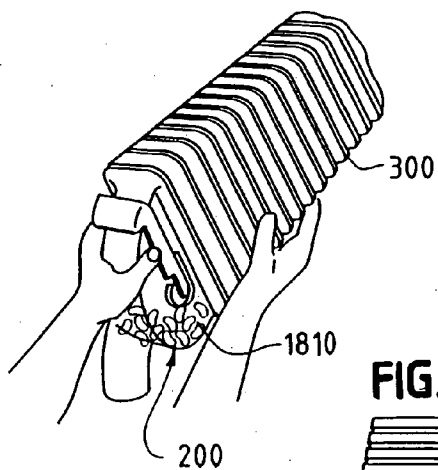


FIG. 19

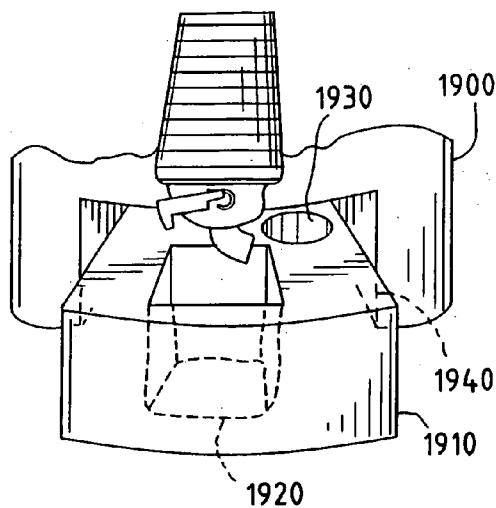


FIG. 19A

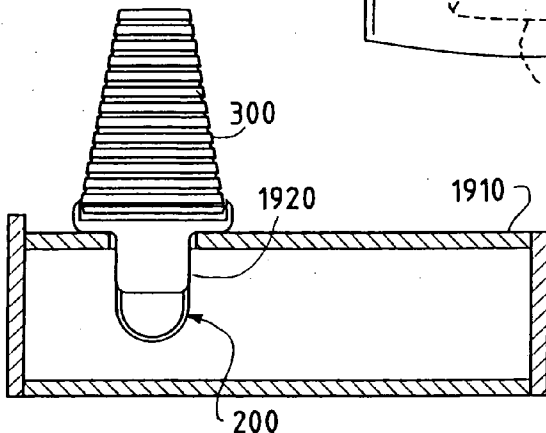


FIG. 20

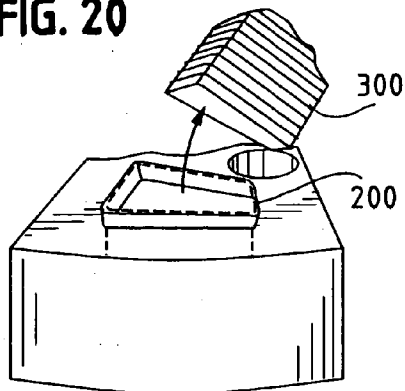


FIG. 21

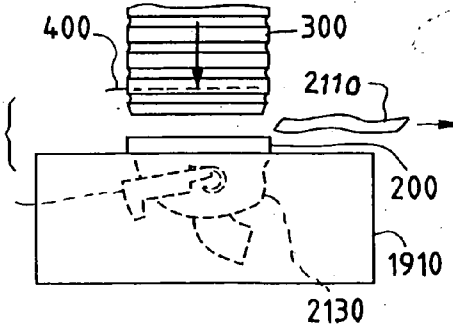


FIG. 22

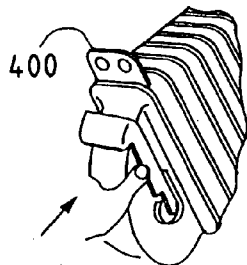


FIG. 23

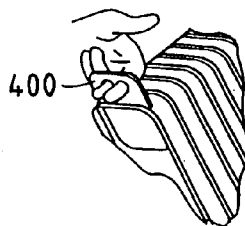


FIG. 24

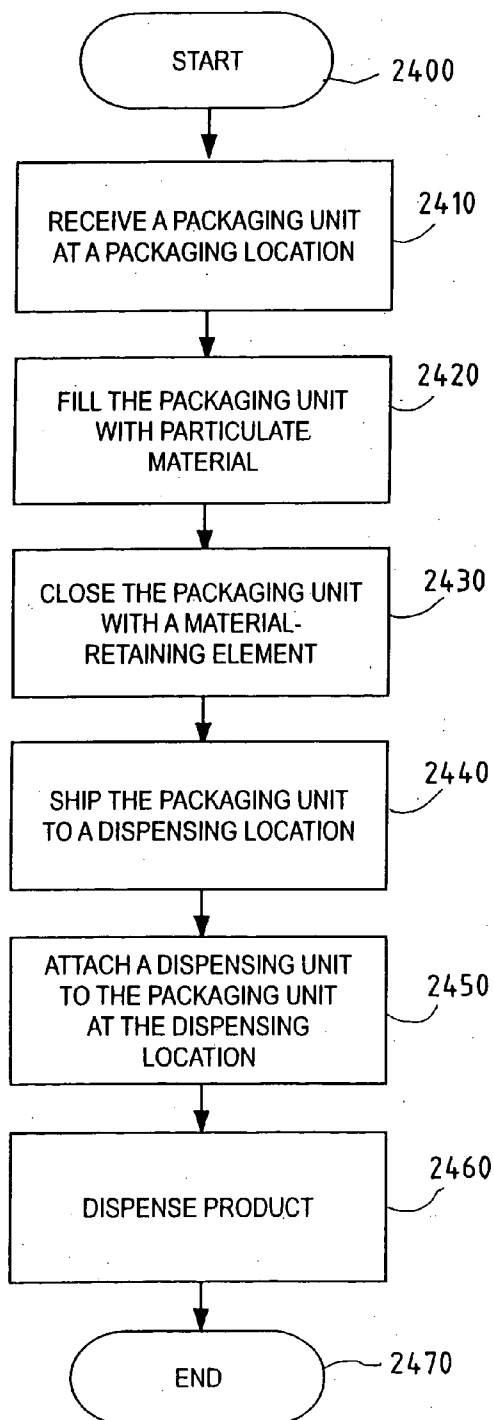


FIG. 25

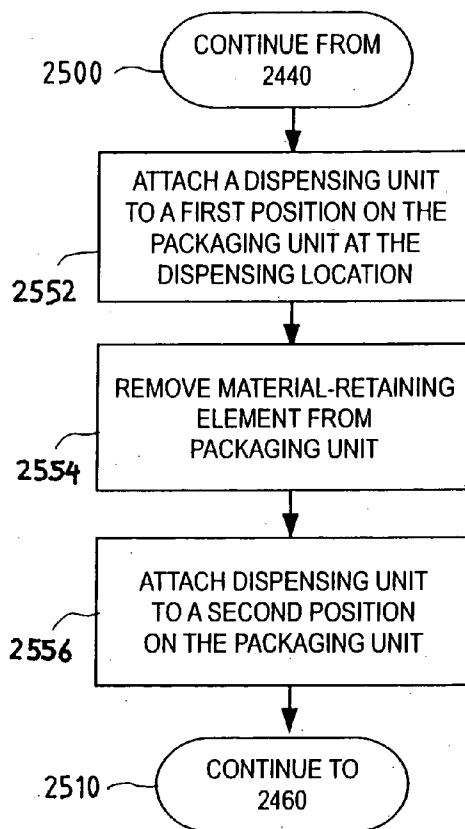


FIG. 27

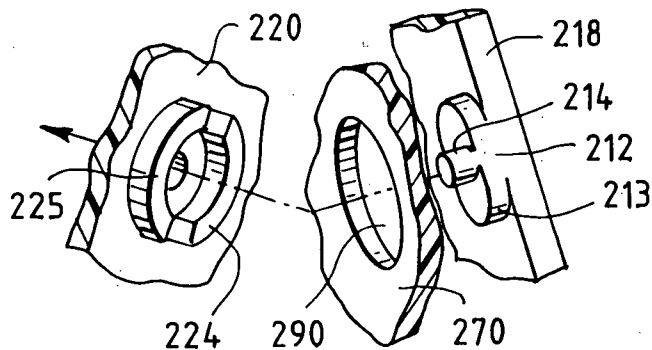
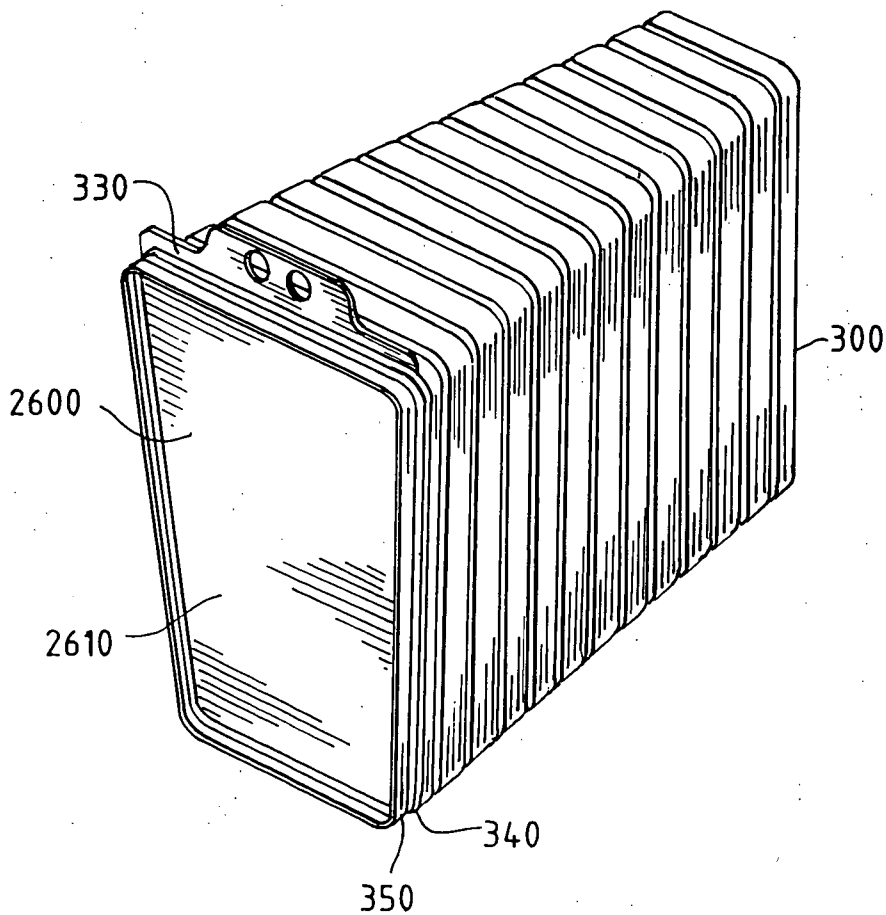


FIG. 26



METHOD AND APPARATUS FOR DISTRIBUTING AND DISPENSING ITEMS

RELATED APPLICATIONS

[0001] The present application claims the benefit of U.S. Provisional Application Serial No. 60/468,872, entitled "Packaging, Dispensing and Display Rack System", filed May 8, 2003, and incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The instant invention relates to the distribution and dispensing of items, and preferably to the distribution of bulk dry food in a sealed packaging unit, and the dispensing thereof.

BACKGROUND OF THE INVENTION

[0003] An increasingly popular method for distributing and selling food has been through the use of bulk dry food dispensers. Purchasing food in bulk allows the consumer to determine the exact amount they would like to purchase instead of having it dictated to them by the major companies. Initially, retailers and manufacturers used open bins to distribute bulk food. However, health regulations and laws have made the use of open bins problematic. The retailer is worried about the hygienic aspect of the open bins and liability. Moreover, the use of open bins is prohibited in some countries.

[0004] There are essentially three entities comprising the distribution chain for bulk dry food: manufacturers, retailers and consumers. Generally, manufacturers are concerned with the following aspects of bulk dry food distribution: first, to ensure product quality and freshness; second, to ensure that only their products are used in bins; and third, the efficient utilization of space. Retailers are generally concerned with the following aspects of bulk dry food distribution: first, to ensure product quality and freshness; second, to offer a large variety of products; and third, the efficient utilization of space. Consumers are generally concerned with the following aspects of bulk dry food products; and third, ease of dispenser use.

[0005] Prior art gravity bins cannot ensure the manufacturers product quality and freshness. The manufacturers package their products in large bags and send them to the retailers. The retailers take these large bags and fill the gravity bins, but there is a significant amount of contact with the product, therefore, product quality and freshness is compromised. The refilling process is therefore, complicated and inefficient.

[0006] Moreover, both manufacturers and retailers have a need for an efficient use of available retail space. Prior art dispensing units are cumbersome. Prior art displays take up a great deal of retail space. As a result, space that could be used to display products is wasted. Further, many prior art displays take up existing shelf space in the retail store.

[0007] Finally, prior art dispensers are not capable of dispensing sticky/difficult food products. Prior art dispensing units lack the ability to move products forward because these dispensers rely only on gravity to move the product forward. Therefore, the variety of dry food products that can be dispensed from prior art dispensers is limited because it

is not possible for the units to dispense, for example, Gummi Bears™, and other sticky food products.

SUMMARY OF THE INVENTION

[0008] Some aspects of the present invention provide the ability to contain a wide variety of products in a reduced space, and others enhance product quality and freshness control, and/or efficient refill capability, and/or automatic product rotation, and/or the ability to dispense sticky food products, for example, Gummi Bears™, efficiently.

[0009] The dispenser is a two-part system, comprising a dispensing unit and a disposable packaging unit. The packaging unit is filled and sealed at the production point, therefore assuring product quality and freshness, and shipped directly to the retailer. Moreover, an individual may easily replace the packaging unit when emptied with a filled one without direct contact with the product until the contents are ready for final consumption. Further, the packaging unit allows individual ordering thereof by the retailer, thereby eliminating previously required inventory space.

[0010] In one embodiment of the invention, the dispensing unit and packaging unit form an air and moisture tight seal when assembled, maintaining the dryness and freshness of the product. In one embodiment of the invention, the product is dispensed when a handle on the dispensing unit is pulled in a downward motion. This action activates a scoop function. The product is dispensed in a first-in, first-out manner. The dispensing unit agitates the product by means of its scoop and moves it forward through a discharge opening. In one embodiment of the invention, a flow control device may be attached to the inside of the dispensing unit spout in order to avoid product overflow. The amount of product being dispensed is not predetermined, but is dependent on the product and its flow rate and the amount of time the user holds the handle down.

[0011] The present invention provides a manufacturer with the ability to package and ship their products in individual sealed packaging units. This ability enhances quality control. The packaging unit preferably comprises a rigid body container initially open at one end. At the filling location, the packaging unit is oriented with its open end at the top thereof so the product to be packaged is dropped into this open end to fill the container. This initially open end of the container has a slot slidably to receive a packaging unit-closing slide element, which covers over the open end of the container. After filling, this element is slid into place and a piece of sealing paper is then applied over this now closed end of the container to seal the packaging unit-forming container.

[0012] Upon arrival at the retailer, the filled packaging unit is then attached to the dispensing unit without the need to handle the product. Another one of the features of the invention involves the manner in which a filled packaging unit is attached to the dispensing unit. The dispensing unit preferably has an open packaging unit-receiving upper end and a normally closed bottom discharge end. A holder for the dispensing unit is provided which could be in a pullout drawer of a display rack unit forming another aspect of the invention. The initially open end of the packaging unit covered by the slide element is preferably dropped into the open upper end of the dispensing unit that snap fits with the packaging unit. The interfitted assembly of the packaging

and dispensing unit is then placed onto a display and product dispensing rack, the slide element is then pulled from the then bottom end of the dispensing unit so that the contents of the packaging unit drop into the dispensing unit and the unit is ready to dispense its contents. The dispensing unit is situated at the bottom of the assembly so that the operation of the handle will cause a desired quantity of the product involved to drop into a bag held under the dispensing unit by the purchaser.

[0013] The refilling process is simple and more efficient than those of the prior art, and provides the manufacturer the product quality and freshness control they desire during shipment and after arrival at the retailer. The dispensing and packaging unit assemblies can be arranged on said display rack in a 360-degree circle. This gives the ability to display product on a freestanding, walk around display. Additionally, product can be exhibited on two other displays that are free standing and make the most efficient use of existing space while still offering a wide variety of products to the final customer. These additional display units include an end-cap display and in-line display. The end-cap display and in-line displays can be combined to create a display that meets the individual needs of the retailer. Displays do not take up existing retail shelf space, and can fit in areas of the store that could not normally have a display because of their various designs and flexibility in the display combinations to meet specific retailer needs. In one embodiment of the invention, the dispensing unit has the ability to move products forward into the dispenser opening by means of the specially equipped scoop. In this embodiment, the dispenser handle is attached to the scoop, which agitates and moves the product forward when the handle is pulled down, thereby increasing the amount of products that can be offered to the final consumer. Manufacturers have a great variety of products, including hard to dispense goods such as Gummi Bears™, and the dispensing unit is the only existing dispensing unit that is equipped to dispense gummy or sticky food products efficiently.

[0014] Other features and advantages of the invention will be apparent from the following specification taken in conjunction with the following drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is a perspective view which shows the assembly of the dispensing and packaging units in condition to be placed upon the display rack.

[0016] FIG. 2 is an exploded perspective view of all of the parts of the dispensing and packaging units.

[0017] FIG. 3 is a fragmentary, broken-away perspective view, in partial section, of the dispensing unit.

[0018] FIG. 4 is another fragmentary broken-away perspective view, in partial section, of the dispensing unit viewed from a different angle from that shown in FIG. 3.

[0019] FIG. 4A is an enlarged, fragmentary, perspective view in partial section showing the attachment of a spring to the dispensing unit which holds parts of the dispensing unit together.

[0020] FIG. 5 is a fragmentary longitudinal cross-section view of the assembly of the dispensing and packaging units

after the packaging unit closing slide element has been removed from the packaging unit.

[0021] FIG. 6 is a longitudinal cross-section view of the dispensing unit shown in FIG. 5 as the handle thereof is pulled down to discharge the contents in the previously closed bottom of the dispensing unit through the discharge spout thereof; the drawing further showing the scoop rotating and pushing particulate forward through the spout.

[0022] FIG. 7 is an elevational view of the packaging unit showing the slot therein which slidably receives the slide element.

[0023] FIG. 8A is a fragmentary cross-section through the packaging unit with the slide element in place thereon.

[0024] FIG. 8B is another fragmentary sectional view through the packaging unit showing the end of the slide element folded over adjacent to the side of the packaging.

[0025] FIGS. 9A-9B illustrate the process of attaching a dispensing unit to a packaging unit in one embodiment of the invention.

[0026] FIG. 10 illustrates one embodiment of the relationship between the various entities in the dry food packaging and distribution supply chain.

[0027] FIG. 11 is a perspective view of a circular walk-around display rack unit with an assembled ready-to-dispense dispensing and packaging unit mounted thereon.

[0028] FIG. 12 is a perspective view of an elongated walk-around display rack unit with one such assembly mounted thereon.

[0029] FIG. 13 is a fragmentary perspective view of an in-line display rack unit with one such assembly mounted thereon.

[0030] FIG. 14 is an elevational view of an assembly of a dispensing and packaging unit in its orientation when mounted on a circular display rack.

[0031] FIG. 15 is a cross-section of the packaging unit of FIG. 14, as seen in section plane 15-15.

[0032] FIG. 16 is an elevational view of an assembly of a dispensing and packaging unit in its orientation when mounted either in an in-line display rack unit or along a straight section of an island display rack unit.

[0033] FIG. 17 illustrates a cross-section of the packaging unit of FIG. 16, taken along section plane 17-17 thereof.

[0034] FIG. 18 shows an empty, fully used assembly of a dispensing and packaging unit being removed from a display rack unit.

[0035] FIG. 19 illustrates the empty assembly shown in FIG. 18 being placed into a receptacle of an assembly drawer of a display rack unit base.

[0036] FIG. 19A is a sectional view through the receptacle assembly drawer shown in FIG. 19 after the empty assembly there shown has been fully inserted into said assembly drawer receptacle.

[0037] FIG. 20 shows the empty packaging unit being removed from the dispensing unit supported in the assembly drawer of the display rack unit shown in FIG. 19A.

[0038] FIG. 21 shows the first step in the process of assembling a new filled packaging unit with an empty dispensing unit placed in this assembly drawer.

[0039] FIG. 22 shows the thus assembled packaging and dispensing units being placed into a row of a display rack unit.

[0040] FIG. 23 shows the material-retaining slide element being removed from the full packaging unit just placed onto the display rack unit.

[0041] FIG. 24 is a flowchart illustrating an embodiment of the method of packaging and distributing particulate materials of the present invention.

[0042] FIG. 25 is a flowchart illustrating in greater detail one embodiment of the step of attaching a dispensing unit to the packaging unit.

[0043] FIG. 26 is a perspective view of a packaging unit in which a material-retaining slide element has been inserted.

[0044] FIG. 27 is an enlarged fragmentary view which illustrates in detail the connection of the pull-down handle of the dispensing unit to the scoop.

DETAILED DESCRIPTION OF THE DRAWINGS

[0045] While this invention is susceptible of embodiments in many different forms, there is shown in the drawings and will herein be described in detail a preferred embodiment of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the broad aspect of the invention to the embodiment illustrated.

[0046] FIGS. 1-4 and 26 illustrate an embodiment of a particulate material dispenser in accordance with the invention. As shown in FIG. 1-2, the dispenser 100 is a two-part system, comprising a dispensing unit 200 and a packaging unit 300. As best shown in FIG. 2, the packaging unit 300 comprises a blow molded plastic shell 310 forming a rigid container body having an open end 350, a closed end 360, and four walls 370a, 370b, 370c and 370d adjoining the open end 350 and extending to the closed end 360. In one embodiment, the packaging unit 300 has a plurality of ribs 320 formed in the walls 370a, 370b, 370c and 370d. The plurality of ribs 320 strengthens the packaging unit 300 for shipping purposes. Further, wall 370a of the packaging unit 300 has a slot 330 proximal to the open end 350 thereof and through which a material-retaining slide element 400 is slidably received.

[0047] FIG. 26 shows the slide element 400 inserted into the packaging unit 300 to close and seal the packaging unit to protect the packaging unit 300 for shipping to a retailer and storage before use.

[0048] As best shown in FIG. 2, the slide element 400 is a thin, rigid, plate-like structure which fits and slides into the slot 330. It has a bendable rigid handle 420 projecting from an edge of the slide element. The rigid handle 420 joins the rest of the slide element at a groove 430 shown in FIG. 2, permitting the handle to be folded away from the rest of the slide element. The handle 420 contains two holes 440 through which the handle may be grasped for removal of the slide element from the packaging unit 300.

[0049] FIG. 8A is an illustration of a cross-section of a material-retaining element emplaced into a packaging unit in accordance with one embodiment of the invention. As shown in FIG. 8A, the packaging unit 300 has a slide element receiving area 320, which receives the slide element 400 as it is slidably inserted into the packaging unit 300. The packaging unit 300 expands as the slide element 400 is inserted. This action secures the slide element in place and forms an airtight seal in the packaging unit.

[0050] FIG. 8B is a cross-section including that of the slide element 400 and its handle 420 and the packaging unit. The slide element 400 is shown inserted into the slot 330 of the packaging unit. The rigid handle 420 of the slide element is shown bent so that the rigid handle 420 is flush with a wall of the packaging unit 300. This configuration enables the packaging unit 300 in combination with the slide element 400 and its handle 420 to occupy a minimum of space when transported with other packaging units in an exterior container.

[0051] Returning to FIGS. 1-4, in one embodiment of the invention, the dispensing unit 200 is constructed of an injection molded plastic shell 270 integrated with a spout 240. The spout 240 ends at a bottom opening 242 through which particulate items are dispensed. The dispensing unit 200 also has an open assembly end 295 at which the dispensing unit 200 is attached to the packaging unit 300. Opposing holes 290, 292 and 294 are located on the shell 270 distal to the spout 240. Additionally, a plurality of fasteners 280 are located in the interior of the shell 270 proximate to the open assembly end 295. In one embodiment of the invention, fourteen fasteners 280, five to each side of the dispensing unit 200, and two each to the top and bottom of the dispensing unit 200, are located directly inside the distal end of the dispensing unit 200. The injection mold process effectively increases the clarity and durability of the dispensing unit 200. This production method also improves the precision fit and interaction between the various parts of the dispensing unit 200. The injection mold process also eliminates secondary operations, e.g., manually drilled holes, which in turn eliminate structural inconsistencies in the dispensing unit 200.

[0052] The dispensing unit also comprises an optional flow control device 250 shown in FIG. 3. In one embodiment of the invention, the flow control device 250 is a plastic plate having a central hole 252 surrounded by one or more perforated concentric rings 254. In practice, the manufacturer or retailer may adjust the size of the hole in the flow control device 250 by removing material between the perforations 256 of the one or more perforated concentric rings 254.

[0053] The flow control device 250 is shown in FIG. 3 covering the inlet to the spout 240 in the interior of the shell 270. Thus the flow control device 250 limits the flow of particulate items through the spout 240, significantly reducing the amount of spillage. Therefore, the flow rate of particulate items out of the dispensing unit 200 increases with the overall area occupied by the holes 252, 254, and 256 in the flow control device. The flow control device also allows for the dispensing of slow flowing particulate materials, eliminating the need to replace the entire dispensing unit.

[0054] The dispensing unit 200 further comprises a handle 210, a plurality of springs 230, and a scoop 220. In one

embodiment of the invention, the dispensing unit also comprises a label cover **260** best shown in **FIG. 6**.

[0055] As is illustrated in **FIGS. 2 and 27**, the handle **210** comprises a base **216**, and two arms **218** projecting from the base **216**. The handle **210** further comprises a mounting element **212** on each of the two arms **218**. Each mounting element **212** is located adjacent to the ends of the two arms **218**. Each mounting element **212** comprises a pin **214** projecting from an abutment **213** best shown in **FIG. 27**.

[0056] As best shown in **FIG. 2**, the scoop **220** comprises a plate **226** connected to an agitator **222** by a first wall **227** and a second wall **228**. The plate is molded to follow the contours of the shell **270**. The agitator **222** is a connecting rod running along the back end of the scoop **220**. In one embodiment of the invention, the agitator **222** has a triangular cross-section. As shown in **FIGS. 3 and 27**, the scoop further comprises a brace **224** on the exterior of each of the first wall **227** and the second wall **228**. Interior to each brace **224** is a receiving hole **225**.

[0057] The handle **210** is mounted to the scoop **220** through the hole **290** in the shell **270**. The pin **214** and abutment **213** of each mounting element **212** are engaged with each brace **224** and receiving hole **225**, respectively, of the scoop **220**.

[0058] As is illustrated in **FIGS. 4 and/or 4A**, each of the plurality of springs **230** is substantially C-shaped and has a first end **236** for attachment to the shell **270**. Projecting from a first edge **237** of the first end **236** is a first pin **232** and a second pin **234**. Each of the plurality of springs **230** also has a second end **237**. A notch **238** is embedded in a second edge **238** of the second end **237**.

[0059] Each of the plurality of springs **230** is attached to the shell **270** by mounting pin **232** into hole **292** and mounting pin **234** into hole **294**. The plurality of springs engage the arms **218** of the handle **210** at the notch **238**.

[0060] As best shown in **FIG. 6**, in one embodiment of the invention, the label cover **260** is attached to the base **216** of the handle.

[0061] In operation, the plate **226** moves adjacent to the shell **270** and optionally the flow control device **250** as the handle **210** is moved. The movement of the plate **226** opens and closes the dispensing unit **200** at the spout **240**. Moreover, the plate **226** rotates and pushes the particulate items forward through the spout **240**. The agitator **222** moves particulate items forward to the spout **240**. Further, the agitator **222** helps prevent products from becoming stuck in the dispensing unit **200**.

[0062] **FIGS. 5 and 6** illustrate how the addition of a scoop **220** operated by the dispensing unit pull-down handle **210** aids in the discharge of the particulate material from the dispensing unit. **FIG. 5** shows the scoop **220** covering the inlet of the discharge spout **240** of the dispensing unit. As is shown in **FIG. 5**, the scoop **220** closes the spout **240** when the handle **210** is in its raised position.

[0063] **FIG. 6** is a longitudinal cross-sectional view of the dispensing unit **200** showing the scoop position when the handle **210** is pulled down to rotate the scoop **220** to uncover the inlet to the discharge spout **240**. In so doing, it also pushes the particulate material forward through the spout **240**.

[0064] **FIGS. 9A-9B** illustrate the process of attaching a dispensing unit to a packaging unit in one embodiment of the invention. As illustrated, the packaging unit **300** has a first stop **940** and a second stop **980**. The first stop **940** is a slot formed between a first rib **960** and a slide element receiving area **970** of the packaging unit **300**. The second stop **980** is a slot formed between the slide element receiving area **970** and a second rib **990** of the packaging unit **300**. The dispensing unit attaches to the first stop **940** and the second stop **980** of the packaging unit **920** by one or more fasteners **910**.

[0065] As is illustrated in **FIG. 9A**, in the first step of the process, a dispensing unit **200** is attached to a packaging unit **300** at the first stop **940** in the packaging unit **300**. As is further illustrated in **FIG. 9A**, a slide element is in place in the slide element receiving area **970** of the packaging unit **300**. The presence of the slide element prevents the dispensing unit **900** from engaging the packaging unit at the second stop **980**.

[0066] **FIG. 9B** illustrates the second step of the attachment process. As shown in **FIG. 9B**, the slide element **400** has been removed from the packaging unit **300**. At this point, the dispensing unit **200** is free to attach to the packaging unit **300** at the second stop **980** by the one or more of the fasteners **910**.

[0067] The process illustrated in **FIGS. 9A-9B** ensures that an airtight seal is created when the dispensing unit **200** is attached to the packaging unit **300** after removal of the slide element and the further insertion of the packaging unit into the dispensing unit occurring when the second stop is reached as just described. In accordance with another aspect of the invention the initial assembly of the of the packaging and display units and the removal of the slide element from the packaging unit takes place in a pull-out drawer **1170** in the base of display rack units **1170** or **1270** shown in **FIGS. 11 and 12**. These assembled packaging and dispensing units after removal of the slide elements thereof are mounted on these racks in the store involved.

[0068] **FIG. 11** illustrates an embodiment of a circular walk-around display unit in accordance with the invention. As shown in **FIG. 11**, the walk-around display unit **1100** has a plurality of vertically spaced circular rows **1110** of packaging and dispensing unit support sections each including an upper holding ring **1120** and a lower holding ring **1130**. The walk-around display unit **1100** has a circular base **1160** comprising at least one assembly drawer **1170** and an open top circular spill tray **1140**. The spill tray **1140** has a curved cross-section and comprises a plurality of subtrays **1150**. The walk-around display unit **1100** has a central support member **1180**.

[0069] The central support member **1180** is mounted to the circular base **1160** and supports each of the plurality of the referred to support sections. Further, the plurality of subtrays **1150** fit into and are held in place by the circular base **1160**.

[0070] Each of these support sections holds one or more assembled pairs of dispensing and packaging units arranged in a circle about the support post. Each of these pairs of assembled packaging and dispensing units is held in place on the rack with the spout of the dispensing unit facing outward and downward from the central support member **1180**. A user holds the open top of the bag to be filled around

the open bottom of a selected dispensing unit. The spill tray **1140** catches extraneous particulate material which does not fall into the bag held by the user around the discharge spout involved.

[0071] **FIG. 19** illustrates one embodiment of an assembly drawer in accordance with the invention. As shown in **FIG. 19**, the assembly drawer **1910** slidably interacts with a circular base **1900**. The assembly drawer **1910** comprises an upper surface **1940** into which a dispensing unit receptacle **1920** and a trash receptacle **1930** are emplaced.

[0072] **FIG. 12** illustrates one embodiment of an island display rack unit in accordance with the invention. As shown in **FIG. 12**, the island display rack unit **1200** has a plurality of oblong rows **1210** of support racks. Each of the plurality of oblong rows **1210** of support racks comprises an upper holding structure **1220** and a lower holding structure **1230**. In one embodiment of the invention, the island display unit **1200** has an oblong base **1260** comprising one or more assembly drawers **1270**. The island display unit **1200** has an oblong spill tray **1240**. The spill tray **1240** has a curved cross-section. The spill tray **1240** comprises a plurality of subtrays **1250**. The island display unit **1200** further comprises two or more support members **1280**, **1290**.

[0073] The two or more support members **1280**, **1290** are mounted to the oblong base **1260**. Moreover, the two or more support members **1280**, **1290** support each of the plurality of oblong rows **1210**. Further, the plurality of subtrays **1250** fit into and are held in place by the oblong base **1260**. As is shown in **FIG. 12**, one subtray is shown in a second position where it may be removed from the island display unit **1200**.

[0074] Each of the plurality of oblong rows **1210** of support racks holds one or more assembled pairs of assembled dispensing and packaging units **1295** in a position so that the spout of the dispensing unit faces outward and downward from the interior of the island display unit **1200**. Further, each particulate item dispenser **1295** is held in each row **1210** at an angle sufficient for the force of gravity to enhance the flow of particulate material from the spout of the dispensing unit involved when its handle **210** is pulled down. The spill tray **1240** catches extraneous particulate material as the material falls from the spout.

[0075] **FIG. 13** illustrates one embodiment of a support rack for an in-line display rack unit. As shown in **FIG. 13**, the support rack **1300** has a plurality of straight rows **1310** of rack slots for holding assembled pairs of dispensing and packaging units. Each of the plurality of straight rows **1310** of rack slots contains an upper holding structure **1320** and a lower holding structure **1330**. Each of the plurality of straight rows **1310** of rack slots holds one or more assembled pairs of assembled dispensing and packaging units **1340**. Each assembled pair of these units is held in place so that the spout of the dispensing unit faces outward and downward at an angle sufficient for the force of gravity to enhance the flow of particulate items from the spout of the assembled particulate item dispenser **1340**.

[0076] **FIGS. 14 and 16** illustrate two embodiments of an assembled dispensing and packaging unit respectively used in circular and straight line or elongated racks in accordance with the invention. **FIG. 14** illustrates a first embodiment of such an assembly **1410** a dispenser emplaced in a circular

display unit with its slide element removed. As shown in **FIG. 14**, the assembly includes a tapered packaging unit **300** and a dispensing unit **200** attached to the open bottom end of the packaging unit **300**. The packaging unit rests on an upper ring **1430** and the dispensing unit **200** rests on a lower ring **1440**. The spout **240** of the dispensing unit **200** is positioned so that particulate material may be dispensed outside the lower ring **1440**.

[0077] **FIG. 15** illustrates a cross-section of the tapered packaging unit **300** of **FIG. 14**. As shown in **FIG. 15**, the packaging unit is trapezoidal in cross-section. More specifically, the packaging unit is wider at the top of the unit, **W**, than the bottom, **X**. This trapezoidal configuration maximizes spatial efficiency for the emplacement of a plurality of the assemblies in a walk-around display unit.

[0078] **FIG. 16** illustrates a second embodiment where the packaging unit **300'** is not tapered so that it is more suitable for support on either a display rack of an in-line display unit or along a straight section of an oblong row of an island display rack unit. As shown in **FIG. 16**, the assembly there shown comprises a packaging unit **300'** and a dispensing unit **200'**. The packaging unit **300'** rests on an upper holding structure **1630** and a lower holding structure **1640**. The spout **240** dispensing unit **200'** of the dispensing unit **200'** is positioned so that particulate material may be dispensed outside the lower holding structure **1640**.

[0079] **FIG. 17** illustrates a cross-section of the packaging unit **300'** of **FIG. 16**. As shown in **FIG. 17**, the packaging unit is rectangular in cross-section. More specifically, the dimensions of the packaging unit are similar at the top of the unit at **Y**, and at the bottom of the unit at **Z**. This rectangular configuration maximizes spatial efficiency for the emplacement of a plurality of assemblies **1410'** in either a rack of an in-line display rack unit or along a straight section of a row of an island display rack unit.

[0080] **FIGS. 18-23** illustrate the process of replacing a used packaging unit **300** still attached to a dispensing unit **200** with a new full packaging unit. **FIG. 18** illustrates a used packaging unit **200** still attached to a dispensing unit **200** as it is being removed from a display rack unit. The dispensing unit is shown containing some particulate material **1810**. **FIG. 19** illustrates the assembly of **FIG. 18** being placed into a dispensing unit receptacle **1920** of display rack drawer **1910**. Placement of the used assembly into the receptacle **1920** enhances the efficient replacement of the empty packaging unit. Moreover, placement of an initially unattached dispensing unit into the receptacle **1920** enables the efficient assembly of the dispensing unit to a packaging unit. **FIG. 19A** shows the used dispensing unit **200** attached to the used packaging unit **300** of **FIG. 18** in the receptacle **1920** of the assembly drawer **1910** of the display rack unit base **1900** of **FIG. 19**.

[0081] **FIG. 20** shows removal of the used packaging unit **300** from the dispensing unit **200** by pulling it from the dispensing unit. Any remaining particulate material **1810** should remain within the dispensing unit **200**.

[0082] **FIG. 21** shows the first step in the process of assembling a dispensing unit **200** to an unused packaging unit **300**. As shown in **FIG. 21**, in one embodiment of the invention, an unused packaging unit contains a seal **2110**. In one embodiment, the seal **2110** is paper. In a second embodi-

ment, the seal **2110** is constructed of a plastic material. The seal **2110** protects the packaging unit from damage during transport and storage. As is shown in **FIG. 21**, the seal **2110** is removed from the packaging unit before it is assembled to the dispensing unit. As is further shown in **FIG. 21**, the packaging unit also contains a material-retaining slide element **400**.

[**0083**] The packaging unit **300** is placed into the dispensing unit **200**, and attaches to the dispensing unit **200** by the force of gravity. In doing so, it snaps the previously mentioned first stop position.

[**0084**] **FIG. 22** shows the assembled dispensing and new packaging unit being placed into a row of a display rack unit. At this step, the material-retaining slide element **400** remains in the packaging unit **300**.

[**0085**] **FIG. 23** shows the material-retaining slide element **400** being removed from the packaging unit. At this step, the dispensing unit **200** becomes attached to the packaging unit **300** by snapping into the said second stop position.

[**0086**] **FIG. 24** is a flowchart illustrating an embodiment of the method of packaging and distributing particulate materials of the present invention. As shown in **FIG. 24**, the method begins at step **2400**, and continues to step **2410**, in which a packaging unit is received at a packaging location. A packaging location may be a warehouse or factory at which a particulate material manufacturer or subcontractor fills, seals and ships a packaging unit to a distribution location.

[**0087**] Next, at step **2420**, the packaging unit is filled with particulate material. Next, at step **2430**, the packaging unit is sealed with a material-retaining slide element. In one embodiment, the material-retaining slide element forms an integral seal with the packaging unit. Additionally, the packaging unit may be sealed with a second protective seal before being prepared for shipping.

[**0088**] Next, at step **2440**, the packaging unit is shipped to a dispensing location. A dispensing location may be a supermarket, or any location where the particulate material is distributed. The method continues at step **2450**, where a dispensing unit is attached to the packaging unit at the dispensing location. Next, at step **2460**, the particulate material is dispensed. Finally, at step **2470**, the method ends.

[**0089**] **FIG. 25** is a flowchart illustrating in greater detail one embodiment of the step of attaching a dispensing unit to the packaging unit. As shown in **FIG. 25**, the method begins at step **2500**, where it continues from step **2440** of **FIG. 24**. Next, at step **2552**, a dispensing unit is attached to a first position on the packaging unit. The method continues at step **2554**, where the material-retaining slide element is removed from the packaging unit. Next, at step **2556**, the dispensing unit is finally attached to the packaging unit at a second position on the dispensing unit. Finally, at step **2510**, the method continues at step **2460** of **FIG. 24**.

[**0090**] **FIG. 10** illustrates one embodiment of the relationship between entities in the particulate material packaging and distribution supply chain. As shown in **FIG. 10**, a material-retaining slide element manufacturer **1000** distributes material-retaining slide elements to a manufacturer of packaging units **1010**. The packaging unit manufacturer **1010** distributes both packaging units and retaining elements

to a particulate material packager. A manufacturer of particulate material products **1020** is also involved in the supply chain. The particulate material manufacturer also distributes particulate items to a particulate material packager. The particulate item packager loads the particulate material into the packaging units **1030**.

[**0091**] Next, the particulate material packager distributes sealed packaging units to a distribution center **1040**, where the sealed packaging units are next distributed to one or more retail centers **1050**.

[**0092**] While the specific embodiment has been illustrated and described, numerous modifications come to mind without significantly departing from the spirit of the invention, and the scope of protection is only limited by the scope of the accompanying Claims.

1. A method of packaging particulate materials at a packaging location and then dispensing the particulate materials at a dispensing location, the method comprising the steps of:

providing a packaging unit comprising a container initially open at one end where the packaging unit is designed to be first filled with the material at the packaging station;

filling the packaging unit with the particulate material at the packaging location through the open end thereof;

placing a material retainer proximate the open end of the packaging unit in a package closing position to close the open end to prevent the spillage when the unit is shipped to the dispensing location;

shipping the packaging unit to the dispensing location and providing thereat a dispensing unit having a normally closed bottom dispensing opening and a handle which opens the normally closed dispensing opening when manually operated and a normally open end at the top thereof;

dropping the end of the packaging unit closed by the material retainer to allow the particulate material to drop by force of gravity when allowed to do so into the dispensing unit, while supporting the packaging unit in this position;

removing said material retainer from said package closing position so said material can drop into said dispensing unit; and

manually operating the dispensing unit handle to open the then bottom end of the packaging unit to allow a desired amount of the particulate material to be discharged from the dispensing unit.

2. The method of claim 1 wherein the material retainer is a rigid strip slidably mounted proximate the end of the packaging unit.

3. The method of claim 1 wherein the handle is a pull-down handle.

4. The method of claim 3 wherein the pull-down handle is connected to a material moving element which stirs the particulate material.

5. The method of claim 4 wherein the material moving element moves the particulate material toward the dispensing opening.

6. The method of claim 5 wherein the material moving element moves the particulate material toward the dispensing opening when the handle is operated.

7. The method of claim 1 wherein a removable metering element is disposed in the path of travel of the particulate material dropping from the dispensing opening and having a selected opening size to control an amount of material dropping into the dispensing opening when the handle is operated.

8. The method of claim 1 wherein a display rack is provided for supporting a plurality of dispensing units with a separate one of the dispensing units attached to the open end of each packaging unit with its material retainer removed therefrom to permit the particulate material to be dispensed therefrom.

9. The method of claim 8 wherein the display rack is round and each packaging unit is mounted on the rack at an angle with the open end of each such unit being positioned near the bottom thereof and the length of each such unit being tapered to allow the maximum number of dispensing units in contiguous side-by-side relation to be mounted on the rack.

10. A packaging unit, comprising:

a container constructed of at least a semi-rigid material, the container comprising:

an open end;

a first wall adjoining the open end; and

a material retainer-receiving slot incorporated into the first wall proximate to the open end; and,

and,

a material retainer to be slidably inserted into said slot, the material retainer comprising:

a first region approximately equal in dimension to a cross-section of the container

at the slot and to be inserted in said slot and,

a second region connected to said first region and to extend beyond said container when said material retainer is inserted in said slot so that it can be grasped to remove the material retainer from said slot.

11. (Canceled)

12. The packaging unit of claim 10, wherein the container expands as the material retainer element is inserted into said slot to seal at the receiving area as the first region is received, where the expansion secures the material retainer in place and seals the packaging unit.

13. The packaging unit of claim 10, wherein the container is corrugated into parallel ribs on the first wall and each wall adjoining the first wall and the open end.

14. The packaging unit of claim 10, wherein the material retainer is constructed of a rigid material.

15. A dispensing unit for dispensing particulate material, comprising:

a shell, the shell comprising:

a normally closed bottom dispensing opening; and

a normally open end at the top thereof;

a handle rotatably engaged to the shell; and

a scoop attached to the handle, wherein the scoop operates to close the bottom dispensing opening when the handle is in a first position, and the scoop operates to open the bottom dispensing opening when the handle is moved to a second position, the opening at the second position allowing a desired amount of particulate material to be discharged from the dispensing opening.

16. The dispensing unit of claim 15, further comprising:

one or more springs, the one or more springs positioned outside the shell and engaging the handle and the shell for positioning the handle in the first position.

17. The dispensing unit of claim 15, wherein the scoop further operates to agitate the particulate material.

18. The dispensing unit of claim 17, wherein the scoop moves the particulate material through the dispensing opening in a first-in/first-out (FIFO) manner.

19. The dispensing unit of claim 16, further comprising:

a flow control device for regulating the dispensing of the particulate material from the bottom dispensing opening, the flow control device located inside the shell and distal to the bottom-dispensing opening.

20. The dispensing unit of claim 19, wherein the flow control device comprises:

a first central orifice; and

a concentric ring about the central orifice, the central ring being formed from two or more curved perforations in the flow control device.

21. The dispensing unit of claim 20, wherein a second central orifice may be emplaced in the flow control device by removing material from between the curved perforations.

22. The dispensing unit of claim 15, further comprising:

one or more fasteners for attachment to a packaging unit, the one or more fasteners located at the open end.

23. A display unit for holding a plurality of particulate item dispensers each having a bottom dispensing opening, comprising:

a base;

an assembly drawer, the assembly drawer positioned at the base;

a row for holding the particulate item dispensers, comprising:

an upper holding structure; and

a lower holding structure, wherein the dispensers are supported against and between these structures and so that the lower holding structure supports the bottom of each dispenser; and a spill tray positioned below the lower holding structure so as to catch particulate matter dispensed from the dispenser.

24. The display unit of claim 23, wherein the row holds the dispensers at an angle so as to increase the flow of particulate items from the dispenser.

25. The display unit of claim 23, wherein the assembly drawer slides from a first position to a second position, where at the second position a dispensing unit of the dispenser is capable of being placed in a receptacle, the receptacle incorporated into the drawer, so that a packaging unit may be assembled to or disassembled from the dispensing unit.

26. The dispensing unit of claim 17 wherein the scoop also operates to move the particulate material through the dispensing opening.

27. A plurality of parts to form a package to be filled with particulate material comprising:

a container body for holding said material and having an open end and a closed end;

said container body having a slide element-receiving slot extending generally parallel to said open end; and

a slide element to be fitted into said slot to close said open end of said body when it is filled with said material, as when said body is oriented with the open end at the top of the container body where said material can be dropped into said open end.

28. The plurality of parts of claim 27 wherein said slide element has a pull tab which will project beyond the container body when said slide element is fully inserted into said slot to close the container body and which can be grasped to remove the same from the container body.

29. The plurality of parts of claim 27 where said container body is made of a semi-rigid material which expands when a slide element is forced into said slot to seal the container body interior, said slide element being dimensioned to tightly fit into said slot to expand said container body to form said seal therewith.

30. The plurality of parts of claim 27 assembled to form a slide element-sealed container;

a dispensing unit to receive said assembly, said dispensing unit having an open end sized to receive the slide-element containing end of said assembly and an opposite end with a projecting spout around which may be placed a bag to receive particulate material dropping therefrom, said spout having an upper inlet end to receive particulate material dropping into the same and a lower end;

and a dispensing unit closing structure having an exterior handle attached to a closure element which is moved by operation of said handle from a normal dispensing element closing position preventing the particulate material from dropping from said spout to a position allowing said material to drop from said spout.

31. The plurality of parts and dispensing unit of claim 30 wherein the upper end of said dispensing unit having means for interlocking with the slide element-containing end of said container body when said body is placed into the open upper end thereof.

32. The plurality of parts and dispensing unit of claim 31 where said interlocking means including means on said dispensing unit contacted by said pull tab of said slide element when inserted into and projecting from said container body to prevent further insertion of said container body into said dispensing unit, upon removal of said slide element from said container body said container body being further insertable into said dispensing unit into a fully interlocked condition.

33. The plurality of parts and dispensing unit of claim 32 combined with a structure for assembling said container body and dispensing unit, said structure being a receptacle into which said dispensing unit can be dropped with its open end facing upward to receive the slide element-containing end of said container body inserted into the open top thereof.

34. The plurality of parts, dispensing unit and receptacle of claim 33 combined with a display rack upon which a plurality of pairs of said packaging units attached to said dispensing units can be supported in positions where the dispensing spouts thereof face downwardly to receive said bags therearound which become filled with said particulate material when said slide element is removed from said container body and said handle is operated.

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