(51) International Patent Classification:
B65D 5/52 (2006.01) B65D 25/24 (2006.01)
B65D 5/72 (2006.01) A47F 1/08 (2006.01)

(21) International Application Number:
PCT/US2010/056465

(22) International Filing Date:
12 November 2010 (12.1.2010)

(25) Filing Language:
English

(26) Publication Language:
English

(60) Priority Data:
61/263,767 23 November 2009 (23.1.2009) US
12/777,444 11 May 2010 (11.05.2010) US


(72) Inventors; and

(54) Title: DISPENSING SYSTEM AND PACKAGE FOR USER THEREWITH

(57) Abstract: A system for dispensing articles provided initially in a package is disclosed that comprises a frame configured to support the package of articles and a package-opening tool associated with the frame. The frame includes longitudinally opposed front and rear end sections, and an upper support deck extending at least partially between the front and rear end sections and below which a product display area is provided. The opening tool associated with the frame such that its open package when the package is moved longitudinally on the upper support deck and relative to the opening tool, thereby allowing the articles to be at least partially dispensed from the package into the product display area.

FIGURE 1B

110

18b

20

7b

18a

132
DISPENSING SYSTEM AND PACKAGE FOR USE THEREWITH

BACKGROUND OF THE DISCLOSURE

At point-of-sale (P.O.S.) or display units in retail outlets, it is convenient to present articles and products in an eye-catching and easily accessible manner. Furthermore, these point-of-sale or display units act as a storage area for articles and products. Thus, it is necessary to maximize the amount of storage space utilised, while at the same time enabling a customer to easily select and take products away for purchase. To achieve this, as articles are removed, it is desirable for the shelf to present the next stored article being forwardly filled for easy selection by a customer. Some dispensers have sprung-biased mechanisms that push articles forward. Some other known display devices use gravity feed mechanisms to cause articles to flow to the forward-most sale position.

U.S. Patent No. 5,396,997 discloses a dispensing device having upper and lower jar guides with a plurality of glass jar containers loaded on their sides through a container loading area. The dispenser racks successively feed one container at a time to the container dispensing area to thereby provide a self-feeding and self-facing storage, dispensing and display system. One drawback of such system is that loading of the dispensing device must be done manually and individually. A rotatable door panel is provided so that loading occurs through the openable upper jar guide. Accordingly, in such system the articles are fed one at a time into the upper jar guide. Loading in this manner can be slow. Additionally, the products being displayed in the dispensing device are usually transported to a retail outlet in a carton or box containing a number of such articles. If the dispensing device is not capable of holding all of the articles contained in the delivered carton or box, then any articles that could not be loaded into the dispensing device need to be stored elsewhere in the retail outlet in the part emptied carton or box until such time as the dispensing device can accommodate those articles.

It is therefore desirable to improve the manner in which the filling of the dispensing devices takes place. It is desirable that the filling is quick, enables full cartons of delivered goods to be accommodated in the dispensing device. Moreover, it is desirable that the requirement for storing any extra articles that cannot be displayed is avoided. Further, it is beneficial that such dispensing devices are made from a minimum amount of material. The
Dispensing devices should also be as eye-catching as possible to the customer and contain branding, advertising and marketing material for this purpose. Since the advertising and branding material is and graphics are frequently changed and altered in line with trends and promotions, it is desirable that the dispensing devices are adaptable to facilitate quick changeovers in the branding, advertising and marketing graphics displayed thereon.

**SUMMARY OF THE DISCLOSURE**

A system for dispensing articles provided initially in a package is disclosed that comprises a frame configured to support the package of articles and a package-opening tool associated with the frame. The frame includes longitudinally opposed front and rear end sections, and an upper support deck extending at least partially between the front and rear end sections and below which a product display area is provided. The opening tool associated with the frame such that it opens the package when the package is moved longitudinally on the upper support deck and relative to the opening tool, thereby allowing the articles to be at least partially dispensed from the package into the product display area. The package may include a paperboard carton.

The disclosed dispensing system is suitable for use at a point-of-sale unit. Further, it may allow for an automatic feeding of a first tier of the displayed articles to wards the front of the system and an automatic replenishing a second tier of the displayed articles, such that the displayed articles may easily be accessed and picked by a consumer off the point-of-sale unit.

When desired, the frame may include a lower display deck. Additionally, the frame may further include at least one of: a rear wall which is configured to guide articles to the product display area, and a laterally opposed side walls. When appropriate, the laterally opposed side walls may be adapted and configured for guiding the package as it is moved longitudinally along the upper support deck. Furthermore, the frame may include article related indicia. The frame may further include a lane divider to create two display channels within the product display area.

The upper support deck may be inclined at an acute angle with respect to a horizontal plane. Moreover, the upper support deck may include two longitudinally extending rails.
The opening tool is arranged to open the package when the package is moved longitudinally along the upper support deck of the frame from the front end section toward the rear end section. The opening tool may be engaged with at least one of: the upper support deck, the first lateral side wall, the second lateral side wall, or a rear wall of the frame. In certain constructions, the opening tool may include a centrally positioned cutting panel.

When desired, the opening tool may include a first cutting element attached to the first lateral side wall of the frame and a second cutting element attached to the second lateral side wall of the frame. It is envisioned that the first and second cutting elements may be removably attached to the first and second lateral side walls of the frame, respectively. Additionally, the opening tool may include a centrally positioned cutting panel.

Further, the present disclosure relates to a method for dispensing articles provided initially in a package, the method comprising steps of:

(a) providing a frame configured to support the package of articles, the frame including:

(i) longitudinally opposed front and rear end sections, and

(ii) an upper support deck extending at least partially between the front and rear end sections and below which a product display area is provided;

(b) associating an opening tool with the frame;

(c) moving the package longitudinally in relative to the opening tool so as to open the package and allow the articles to be at least partially dispensed from the package into the product display area.

A first aspect of the present disclosure provides a system for dispensing articles, the system comprising:

(a) a supporting element configured to support a package of articles, and

(b) a package-opening tool associated with the supporting element such that it is configured to engage and open the package of articles when the package of articles is placed on the supporting element of the system.

In one embodiment of the first aspect, the package-opening tool comprises at least one cutting member operable to be inserted into the package of articles for cutting open
that package of articles.

In one embodiment of the first aspect, the dispensing system further comprises:

(i) a structural framework configured and arranged to provide the supporting element and to provide a lower track in which the articles dispensed from the package can be accommodated and retained; and

(ii) a forward feeding mechanism configured to encourage the articles, when dispensed out of the opened package, to move toward a front end of the lower track.

In one embodiment, the forward feeding mechanism is provided by at least one of the following: by the supporting element being arranged at an inclined angle relative to a lower plane of the lower track; by an inclined floor of the lower track and the dispensing system comprising a back being scoop-shaped; by the dispensing system comprising a back and the forward feeding mechanism including one or more ramps extending at an inclined angle from the back toward a lower plane of the lower track.

In one embodiment, the dispensing system is a gravity feed system comprising:

(a) at least one track extending between front and rear opposed ends of the system to receive a row of articles for rolling movement along the at least one track, the at least one track including a lower supporting floor inclined downwardly toward the front end of the track;

(b) a supporting element being disposed above the at least one track for supporting a package of articles above the at least one track, the supporting element terminating at a vertical shaft area and being inclined toward the vertical shaft area to allow articles to gravity feed onto the at least one track through the vertical shaft area.

When desired, the vertical shaft area may be disposed adjacent the rear end of the dispensing system.

In one embodiment, at least one opening tool of the dispensing system may have an upper surface that is disposed at least in part above a part of the supporting element. The upper surface of the at least one opening tool may be disposed substantially parallel to a part of the supporting element. Additionally, the at least one opening tool may be vertically
spaced apart from the supporting element.

In one embodiment, the dispersing system comprises a pair of opposed side walls each extending along the at least one track to define the at least one track, and a back wall interconnecting the side walls to define the rear end of the dispersing system, wherein the at least one opening tool being mounted, directly or indirectly, on at least one of the side and back walls.

In one embodiment, at least one opening tool may comprise a pair of side cutting fins mounted on the side walls respectively, the side cutting fins extending toward each other. When desired, the side cutting fins may be movably mounted to the side walls to be movable toward and away from the respective side walls, the side cutting fins being urged toward each other by resilient elements. Furthermore, the side cutting fins may be disposed above a part of the supporting element.

In one embodiment, the at least one opening tool further comprises an end cutting fin mounted on the back wall, the end cutting fin extending substantially into the shaft area.

In one embodiment, the at least one opening tool comprises a transverse cutting panel disposed above a part of the supporting element floor and extending transversely of the side walls. When desired, the transverse cutting panel may extend entirely between the side walls and is mounted on the side walls.

In one embodiment, the at least one opening tool further comprises a vertical cutting element extending downwardly from the transverse cutting panel to connect between the transverse cutting panel and the supporting element.

In one embodiment, the at least one opening tool further comprises a foot connected to a lower end of the vertical cutting element to connect between the vertical cutting element and the supporting element.

A second aspect of the present disclosure provides an dispersing system comprising:
(a) a rack device for supporting and displaying articles;
(b) a package-opening tool mounted on the rack device; and
(c) a package of articles placed on the rack device in engagement with the package-opening arrangement such that the package is opened.
In one embodiment of the second aspect, the opening tool comprises at least one cutting member. Furthermore, in one embodiment, the package comprises an opening access which is configured to be activated to allow the package to open, and wherein the at least one opening tool is disposed in cutting engagement with the package to activate the opening access.

In one embodiment of the second aspect, the rack device comprises a loading station where the package is placed in engagement with the at least one opening tool, the loading station including a tilted upper supporting floor so that the package is downwardly inclined to the opening tool. When desired, the opening tool is activated to define in the package an opening access through which the articles can exit the package and gravity feed onto the rack device.

In one embodiment, each of the articles is substantially cylindrical in shape and the rack device further comprises at least one track disposed below the loading station, the at least one track extending between front and rear opposed ends of the rack device to receive a row of the articles for rolling movement along the at least one track, the at least one track including a lower supporting floor inclined downward toward the front end of the rack device.

In one embodiment, the rack device further comprises a vertical shaft area adjacent to the rear end of the rack device, the upper supporting floor terminating at the vertical shaft area so that the articles exiting the package are allowed to gravity feed onto the at least one track through the vertical shaft area.

In one embodiment, the articles contained in the package include a lowermost row of articles, and a base wall with which the articles of the lowermost row are in rolling contact, wherein the package is placed on the upper supporting floor with the base wall in contact with the upper supporting floor.

In one embodiment, the package-opening tool comprises at least one cutting member that is inserted at least partially into the package when the package is on the upper supporting floor such that the at least one cutting member is disposed between a base wall of the package and at least one of the articles in the package.

In one embodiment, the at least one opening tools is disposed at a distance from the
rear end of the rack device, the distance being greater than the diameter of each of the articles.

In one embodiment, the at least one opening tool has an upper surface that is disposed at least in part above a part of the upper supporting floor.

In one embodiment, the at least one opening tool is vertically spaced apart from the upper supporting floor.

In one embodiment, the rack device further comprises a pair of opposed side walls each extending along the at least one track to define the at least one track, and a back wall interconnecting the side walls to define the rear end of the rack device, wherein the package is placed on the loading station with a rear wall of the package in abutment on the back wall of the rack device. When desired, the side walls of the rack device may be disposed alongside side walls of the package respectively.

In one embodiment, the package comprises an opening access that has been activated by the package-opening tool, wherein the opening access when activated defines an opening access in the package, and the opening access is disposed in alignment with the shaft area so that the articles exiting the package through the opening access are allowed to gravity feed through the shaft area.

A third aspect of the present disclosure provides kit of parts for forming a dispensing system, the kit comprising:

(a) at least one supporting element being configurable to support a package of articles; and
(b) a package-opening tool including fixing means for mounting the package-opening tool on the system such that the package-opening tool is disposable relative to the supporting element such that it is configured to engage and configured to open a package of articles when the package of articles is placed on the supporting means of the rack device.

In one embodiment of the third aspect, the supporting element is integrally formed as part of a side panel of the system, and the kit comprises at least two such side panels and a back panel, wherein each side panel comprises a fixing element for attaching the side panel to the back panel and wherein the package-opening tool comprises at least two
cutting elements each having fixing means for mounting the cutting element to one of the side walls in a position vertically aligned and vertically spaced from the supporting element.

In one embodiment, a forward feeding element is affixed to at least one face of each of the side panels and wherein the forward feeding element is formed as an inclined ramp.

A fourth aspect of the present disclosure provides a carton comprising:
(a) first and second walls connected together along a first severance line;
(b) a severance initiation area formed at least in part in the first wall such that the severance line is interrupted by the severance initiation area; and
(c) a second severance line disposed substantially in the plane of the second wall, the second severance line extending generally perpendicularly to the first severance line.

In one embodiment of the fourth aspect, the package comprises: a substantially tubular structure; opposed top and bottom walls; and opposed side walls adjoining the top and bottom walls, wherein the bottom wall comprises two opening access either side of the second severance line, the opening access defined by the first severance line, the severance initiation area and the second severance line.

A fifth aspect of the present disclosure provides a blank for forming a package, the blank comprising a series of panels for forming the walls of the package including a bottom panel and adjoined by a weakened line to a bottom end flap, wherein a pair of access flaps is defined by a severance initiation area formed at least in part in weakened line adjoining the bottom panel and end flap: a first severance line disposed substantially parallel to and spaced from that weakened line, and a second severance line extending generally perpendicularly to the first severance line, intersecting the first severance line and terminating proximate the weakened line.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1A is a perspective view from the front and side of a dispensing system and a package being loaded into the dispensing system according to a first embodiment of the disclosure.

FIG. 1B is a perspective view from the front and side of the dispensing system of FIG. 1A with the package fully loaded into the dispensing system and articles having being emptied from the package into the dispensing system and disolaved.
FIG. 1C is a perspective view from the front and side of three dispensing system of FIG. 1B disposed in side by side relationship on a store shelf.

FIG. 2 is a perspective view from the front and side of two dispensing systems according to a second embodiment of the disclosure that are disposed in side by side relationship on a store shelf with four packages shown as having been fully loaded into the dispensing systems and articles having being emptied from the packages into a lower track of the dispensing systems.

FIG. 3A is a blank for forming a package according to a first package embodiment, as illustrated in FIGs. 3B to 3D, the first embodiment for use with dispensing systems such as those illustrated in FIG. 2 and FIG. 4A to 4C.

FIG. 3B is a transparent perspective view from the front and side of a package formed from the blank of FIG. 3A wherein bottom opening access have been opened.

FIG. 3C is a side view of the package of FIG. 3B.

FIG. 3D is a perspective view from the front, side and bottom of the package of FIG. 3B, showing in dotted outline, the final position of an opening tool of the dispensing system of FIGs. 4A to 4C.

FIGs. 4A to 4C show top, side and perspective views respectively of a dispensing system according to a third embodiment of the disclosure having a trowel shaped opening tool.

Fig. 4D shows a perspective view of the trowel shaped opening tool used in the dispensing system of FIGs. 4A to 4C.

FIG. 5A is a blank for forming a package according to a second package embodiment, which package is suitable for use with dispensing systems shown in FIGs. 1A-1C, FIGs. 6A to 6C, and FIGs. 7A - 7C.

FIGs. 5B to 5D show perspective views and a side view respectively of a package formed from the blank of FIG. 5A having an access means positioned to the rear of the bottom panel of the package.

FIGs. 6A to 6B show top, perspective and side views respectively of a dispensing system according to a fourth embodiment of the disclosure having two side opening tools.

FIGs. 7A to 7C show side and top views of a dispensing system and a close up view of an opening tool respectively according to a fifth embodiment of the disclosure.

FIG. 8A is a blank for forming a package according to yet a third package embodiment of the disclosure, which package is suitable for use with disoensine system shown in FIGs. 9A to
13C.

FIGs. 8B to 8C show a transparent perspective and side view respectively of the package formed from the blank of FIG. 8A.

FIGs. 9A to 9B show perspective and top views respectively of a dispensing system according to a sixth embodiment of the disclosure having three opening tools.

FIGs. 10A to 10D show cross-sectional views of a pivotally retractable opening tool and a side view of the retractable opening tool usable for example in the dispensing systems of FIGs. 6A to 6D and 9A and 9B.

FIG. 11 shows a perspective view of a dispensing system and opening tool according to a seventh embodiment of the disclosure having a single opening tool disposed transversely across and toward the middle of the dispensing system.

FIGs. 12A to 12C show top, perspective and side views of a dispensing system according to an eighth embodiment of the disclosure having a single opening tool disposed transversely across and toward the front of the dispensing system.

FIGs. 13A to 13G show side and perspective views of a dispensing system according to a ninth embodiment of the disclosure having a front positioned lever opening tool.

FIGs. 14A to 14E illustrate perspective, front and side views respectively of an exemplary modular system for forming dispensing systems, such as those shown in dispensing system embodiments 1 to 9.

FIG. 15 shows a first exemplary modular fixing for a side positioned cutting tool.

FIG. 16 shows a second exemplary modular fixing for a side positioned cutting tool.

FIG. 17 shows a third exemplary modular fixing for a side positioned cutting tool.

FIG. 18 shows a fourth exemplary modular fixing for a side positioned cutting tool.

FIGs. 19A to 19B show perspective and cross-section views of a fifth exemplary modular fixing for a side positioned cutting tool.

FIGs. 20 and 21 are front and rear perspective views of a dispensing system or frame according to one exemplary embodiment.

FIG. 22 is a perspective view of an opening tool for the dispensing system of FIGs. 20 and 21.

FIG. 23 is a perspective view of a flag element for the dispensing system of FIGs. 20 and 21.

FIG. 24 is a perspective view of an opening tool for the dispensing system of FIGs. 20 and 21.

FIG. 25 is a perspective view taken from below of a floor member used in the dispensing system of FIGs. 20 and 21.
FIG. 26 is an exploded perspective view of the dispensing system or frame used in the dispensing system of FIGs. 20 and 21.

FIG. 27 provides a cross-sectional view of the dispensing system of FIGs. 20 and 21 which illustrates the pivoting movement of the flag element.

FIG. 28 shows one embodiment of a blank for forming a package suitable for use with dispensing systems shown in FIGs. 20 and 21.

FIG. 29 is a perspective view showing the bottom of the package which has been constructed using the package of FIG. 28.

FIG. 30 is a close-up perspective view of the hinged doors formed in the bottom of the package of FIG. 29.

FIG. 31 is a close-up perspective view of the hinged doors formed in the bottom of the package of FIG. 29 shown in the open position.

FIG. 32 provides a perspective view of a dispensing system that includes the dispensing system of FIGs. 20 and 21 and the package of FIG. 29.

DETAILED DESCRIPTION OF THE DISCLOSURE

Detailed descriptions of specific embodiments of the dispensing device apparatus and cartons are disclosed herein. It will be understood that the disclosed embodiments are merely examples of the way in which certain aspects of the disclosure can be implemented and do not represent an exhaustive list of all of the ways the disclosure may be embodied. Indeed, it will be understood that the apparatus and cartons described herein may be embodied in various and alternative forms. The figures are not necessarily to scale and some features may be exaggerated or minimised to show details of particular components. Well-known components, materials or methods are not necessarily described in great detail in order to avoid obscuring the present disclosure. Any specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the disclosure.

Figures 1A and 1B show one embodiment of the disclosed system for dispersing and displaying a plurality of articles. Figure 1C shows the three dispersing and displaying systems disposed side-by-side. The disclosed dispensing system 8 is configured to support a
package 110 (shown in more detail in Figures 5A to 5E) which contains a plurality of articles A. In this example, the articles are bottles arranged in a 3 x 4 array with each bottle disposed upon their sides with the lowermost row in rolling contact with a base 136 of the package 110.

As shown in Figures 1A to 1C, the dispensing system 8 comprises a frame 12 that is configured to support the package 110, and a package-opening tool.

The frame 12 includes:
(a) longitudinally front and rear end sections; and
(b) an upper support deck 14 supporting the package 110 from the package base 136 and extending at least partially between the front and rear end sections and below which a product display area is provided.

When desired, the frame 12 may include the sides 18a and 18b which define upper and lower levels, guide the package 110 along the upper support deck 14, as well as serve to guide articles A along the lower level, once being released from the package 110, toward the front end section of the frame 12. Additionally, the sides 18a, 18b may be formed with grooves or railings 7a, 7b in which a lower rim and upper rim of each article A is guided.

The articles A are released from the package 110 via an opening access 132. The opening access 132 may be moved from a closed position, wherein the articles A are securely retained within the package 110, to an opened position, wherein the opening access 132 is moved out of the plane of the base of the carton 110 to create an opening through which articles A held within the package may fall free of the package 110 and onto the dispensing system 8, where they are guided, one-by-one, by the grooves 7a, 7b in the lower level sides 18a, 18b toward the front end section of the frame 12. When desired, the opening access 132 may be designed such that it does not moved into a fully open position until the package 110 is fully installed or nearly fully installed on the upper support deck 14 of the dispensing system 8.

The opening access 132 is moved into its open position by a packaging-opening tool associated with the frame 12. The opening tool is co-operable with the opening access of the package and engages perforations 158a, 158a (Figure 5A) which define the opening access 132, once the package 110 is installed by sliding movement along the supporting ledges at the upper support deck 14. Once the package 110 is so installed and the opening
created, the articles A are automatically released from the package 110 into a product display area, which is the lower level of the frame 12.

The articles A may be successively released from the package 110 with the assistance of gravity. The upper support deck 14 may be angled or inclined relative to the plane of the lower level of the frame 12 to encourage the articles A in the package to gently roll toward the opening access in the package 110. When desired, the frame 12 may include a scoop shaped or arcuate back portion to prevent the articles from rolling out of the frame 12 and beneficially encourages the articles, by providing a path for them to follow, to roll around and down onto the lower level of the frame. The gravity feed mechanism causes the articles A to be supplied automatically to the front section end of the lower level of the frame 12. A stopping mechanism 20 formed as an upturned or radiused portion of grooves 7a, 7b (provided on each lower side 18a, 18b) prevents the front-most article A, contained in dispensing position 24, from rolling completely out of the frame 12. The stopping mechanism 20 acts to retain the articles A within the lower level of the frame 12.

In Figure 2, the display unit including two dispensing systems 108 are shown. Each dispensing system 108 is wide enough to receive two packages 10, disposed in side-by-side relationship on the upper support deck 114 (or alternatively one double width package) of the respective frame. The packages 10 are guided into the upper support deck 114 by means of the packages fitting closely and slidably between side walls 118a, 118b which extend alongside both the upper and lower level of the frame 112. The extended side walls 118a, 118b also help to guide the articles A as they are emptied from the packages 10 toward a stopping mechanism 120 provided as a front edge or front lip integrally formed with the sides 118a, 118b of the respective frame 112. The front edge 120 is optionally integrally formed with a shelf fixing device 122 to enable the dispensing system 108 to be secured to a shelf 74 in a store or retail outlet. The shelf fixing device 122 is formed as an extension of the stopping device 120 and extends as a clip with the stopping device or front lip 120. The shelf fixing device 122 has a 'C shaped (or square-'C shaped) cross-section which fits on top of the shelf 74, down the front-edge or front face 75 of the shelf 74 and underneath the shelf 74. The shelf fixing device 122 has a depth 'd' approximately equal to the depth of the shelf 74 (as illustrated by the front edge 75 and reference 'd' in Figure 2).

When desired the frame 112 does not necessarily comprise a bottom portion, but
rather the shelf 74 may provide a surface onto which the dispensed lower level articles A can rest. The frame 112 comprises a ramp to encourage the articles rolling out of the package to roll toward the stopping mechanism or front lip 120. A back portion of the frame provides structural support to the frame 112 as well as a rear stopping device to prevent articles exiting the package from rolling free of the rear of the frame 112. The sides 118a, 118b are shaped to follow the path of the rolling articles in the lower level. The upper support deck 114 may be inclined downward and backward to encourage rolling of the articles toward the dispensing position 124 (the position of the front most article that will be picked out first by a customer).

The principle of operation of the dispensing system of Figures 1A to 1C and Figure 2 is similar to the principle of operation of the various display and dispensing systems to be herein described with reference to the remaining figures 3A to 19B. The package 110 provides a single and ordered collection or a magazine of articles A that is easy to handle and manipulate. The package 110 is loaded onto and guided by an upper support deck of the frame 12 and as such a full set of articles A is loaded in one single operation into the dispensing system 8. The dispensing system 8 comprises a package-opening tool which is operable in-conjunction with a complimentary formed opening access 132 provided on the package 110. As the package is loaded into the dispensing system 8 or 108, the opening tool engages or interacts or manipulates the opening access 132 of the package 110 to create an opening in the package base 136 of the package 110 through which the articles A may be individually released into the lower level of the frame 12. The dispensing system is thereby stocked and articles A are either stored in the package 110 for subsequent dispensing into the system 8 or the articles A are displayed in the lower level of the frame 12 for retrieval by a customer. Upon removal of the front most article A, a forward feed mechanism causes automatic replenishment of the lower level and front most position of the lower level of the dispensing system 8 from the supply of articles A contained in the package 110. Once the package 110 is empty, the empty package 110 can be removed from the dispensing system (simply by lifting out or by sliding withdrawal along the upper support deck 14) and replaced by a new one. When the last article A drops out of the package 110, the lower level of the dispensing system may be full. This means that the front-most article location 124 contains an article A and as such the display and presentation of articles for being picked by a
customer is in its optimum position.

The package 110 may remain on the upper level even after it has been emptied, to serve as billboard panel. To this end the package 110 and its front end wall in particular may be printed with graphics including trademarks and/or any other advertising indicia. However, the package 110 may be replaced by a new one, as soon as it is emptied, to mitigate the chance that an article A will be taken from the lower level of the frame 12 before a fresh supply of articles is available to replenish the lower level and the front-most position 124. The need for any secondary storage of articles contained in the package but not displayed by the dispensing system is mitigated by the loading of only completely full packages onto the dispensing system.

In view of the fact that the principle of operation of the dispensing systems of later embodiments is the same or similar to that of the first dispensing systems described above, in the foregoing description of later embodiments only differences and additional technical features will be described in greater detail.

Figures 3A to 3D show one embodiment of the packages, wherein the package is co-operable with the dispensing systems of Figure 2 and Figures 4A to 4D.

Figures 5A to 5E show one embodiment of the packages, wherein the package is co-operable with the dispensing system 8 shown in Figures 1A-1C, in Figures 6A-6D; in figure 7A 7C; and the dispensing system utilizing the variant retractable cutting tools shown in figures 10A-10D.

Figures 8A to 8C show one embodiment of the packages, wherein the package is co-operable with the dispensing system of Figures 9A to 13G.

In the various embodiments illustrated like reference numerals have, where possible been used to denote like features generally albeit with a different numerical pre-fix ('100', '200' 1 000', etc.) to distinguish the different embodiments from one another. For example, the packages shown in Figures 3B, 5B and 8B are numbered as 10, 110 and 210 respectively.

Figure 3A shows one embodiment of the blank 30 for forming a package that is suitable for use with the disclosed dispensing system. When desired, the blank may made of paperboard. The blank 30 is generally for a known type of fully enclosed end loading style package and comprises: a top panel 40, first side panel 38, bottom panel 36, second
side panel 34, glue flap 33 and end closure panels 42a, 44a, 46a, 48a, 42b, 44b, 46b, 48b.
The main panels (the top panel 40, first side panel 38, bottom panel 36 and second side
panel 34) are hinged one to the next in series along fold lines 58, 56, and 54, respectively.
The glue flap 33 is connected to the second side panel 34 along fold line 52. The end closure
panels 42a, 44a, 46a, 48a, 42b, 44b, 46b, 48b are hinged to opposite ends of the main
panels along fold lines 60a and 60b respectively. The blank 30 is foldable into a formed
structure where the glue flap is secured to the inner face of top panel 40 and the top panel
40 and first side panel 38 have been folded into overlapping face contacting relationship
with the first side panel 38 and bottom panel 36. The formed structure is openable into an
open ended tubular structure and loaded from one or both ends with articles A. The end
closure flaps 42a, 44a, 46a, 48a, 42b, 44b, 46b, 48b are foldable and securable (using
adhesive or other suitable securing means including mechanical fastenings) to form a
composite front end wall 45a and a composite rear end wall 45b respectively (see Figure
3B). In this way, a fully formed and loaded package that secures articles therein is formed.

Figures 5A and 8A show one embodiment of the blanks 130, 230 for forming the
packages suitable for use with the dispensing systems 110 and 210. The blanks 130, 230
have the same basic structure as that described in the preceding paragraph with respect to
blank 30. Therefore, in later paragraphs when these blanks 230, 330 are further described,
only the differences between the bottom panels 36, 136, 236. Thus, the access structures
32a/32b, 132, 232 will be discussed in detail.

In Figure 3A, the bottom panel 36 of the blank 30 is provided in a pre-formed
weakened arrangement or series of perforations, folds and cut lines for creating an opening
access. Toward the rear end of bottom panel 36, a transverse cut line or severance line 64 is
provided. This cut line 64 defines in part each of two opening access 32a, 32b. The opening
access 32a, 32b are further defined by a longitudinal cut line or second severance line 62
extending medially along the bottom panel 36, from the first severance line 70 adjoining
end flap 44b to the bottom panel 36, between the two opening access 32a, 32b, across the
cut line 64 and terminating approximately half way along the bottom panel 36 at end point
66. The start of longitudinal cut line 66 is positioned on the first severance line 70 (denoted
by reference 72 in Figure 3A). A perforation 68 is defined about a portion of that fold line
70. The perforation 68 defines an elliptical weakened piece or severance initiation area that
extends into end flap 44b and into bottom panel 36.

To open the opening access 32a, 32b, the severance line 64 is broken first. Then, the severance initiation area, defined by perforation 68, is presses inwardly of the package. This is assisted by the presence of the starting end 72 of longitudinal cut line 62. Once the severance initiation area 68 is broken, the remainder of the severance line 70 on the opposite sides of the area 68 and the severance line 66 are completely broken to allow the opening access 32a, 32b to fold downwardly from the bottom panel 36 about fold lines 54 and 56 respectively. The open position of the package 10 is shown in Figure 3B. Optionally, severance lines 62, 64 are severance-assisting lines that are not significantly weakened but can be broken by means of a cutting tool. In this way the bottom panel 36 retains its structural strength during the time the package 10 acts as a secure packaging means for transporting and protecting the articles A contained therein. However, once opening of the package 10 is required, the severance-assisting lines 62, 64 are easily broken to gain access to the articles A.

Further views of the open carton 10 are shown in Figure 3C and Figure 3D. In Figure 3D, an outline of a cutting tool or opening device “J” of the dispensing device 1212 of Figures 4A to 4C is shown in dotted outline to illustrate the final position of that opening device 1280 once a package, such as package 10, has been installed in the dispensing system 1212 of Figures 4A to 4C.

Figures 4A and 4B show one embodiment of the disclosed dispensing system. The dispensing system 1212 is suitable for co-operative use with the package 10 having opening access 32a, 32b.

Dispensing system 1212 may be formed for a variety of materials. These include, but are not limited to, lightweight yet suitably strong plastics, plastic-fiber composite material, metal, wood, ply wood, and combination thereof. The dispensing system 1212 comprises side walls 1218a, 1218b and a front stopping mechanism 1220 adjoined thereto and a back wall 1216 also adjoined to the side walls 1218a, 1218b in a sturdy frame-like structure. Optionally, the dispensing system 1212 may not include a base component; once installed at a point of sale unit, the store shelf will provide the base onto which dispensed articles may be placed.
When desired, the dispensing system may comprise a ramp 1283 formed as an integral component of the dispensing system and a support deck 1214 onto which a package (such as package 10) can be disposed. The ramp 1283 extends from the back 1216 toward the plane of the lowest level of the side walls 1218a, 1218b, back 1216 and stopping mechanism 1220. The ramp 1283 may be formed as a single, solid unitary extension of the back 1216 and encourage rolling of dispensed articles A toward the front dispensing position. Front stopping mechanism 1220 (provided as a solid wall of material) prevents those articles from undesirably rolling free of the dispensing system 1212. The forward feeding mechanism or ramp 1283 and front stopping mechanism 1220 in other embodiments are provided as a track and/or framework rather than a solid wall of material.

In addition, the dispensing system comprises a cutting means or cutting tool (also referred to as an opening mechanism or package-opening tool) 1280 formed of plastic or metal that is shaped in a "trowel" like manner having five-sides with a pointed front portion (see Figure 4A for top view of opening device 1280). The opening tool 1280 is mounted on the support deck 1214 and further comprises one or more (shown with two in Figure 4D) keel elements the forward one of which is a cutting element 1282. The keel elements 1282 are disposed as vertical extensions from the planar "trowel." The forward keel element provides a further cutting blade or cutting means for opening a package, such as package 10.

From the side view of Figure 4B in conjunction with Figure 3C, it will be understood that as the package 10 is slidably loaded or installed onto support deck 1214, feeding the rear-end composite wall 45b first, that the pointed portion or leading edge of the opening tool 1280 is inserted into the opening defined by severance initiation area 68. In this way as an operator pushes the package along the support deck 1214 toward the back 1216 of the dispensing system 1212, the opening tool 1280 is pushed further into the package 10 between the bottom wall 36 and the lowest most row of articles A. The diverging or widening shape of the opening tool 1280 causes the severance lines or perforate lines 70 on either side of the severance initiation area 68 to break. When the package 10 is pushed further and comes into contact with the keel elements 1282, these elements assist the breaking, or cutting open of severance line 62 and the separation of the two opening access 32a, 32b. The keel structures 1282 also may help to encourage the access panels 32a, 32b.
to fold either side of the keel structures 1282. The opening operation may be assisted by the weight of the articles held in the package sitting on the weakening bottom wall 36. The downward force of their weight applies additional pressure to assist in opening the access 32a, 32b. For example, the severance line 64 may be designed such that it can automatically break due to the weight of the articles as the other severance lines 70 and 62 are broken. Otherwise, the severance line 64 may be manually broken prior to the placement of the package onto the dispensing device.

The overall size of the opening tool 1280 is such that the opening tool 1280 provides, itself, a stop to prevent articles dropping through the bottom of the package, until the package has been further installed into the dispensing system 1212. As the opening created by the downwardly folded access 32a, 32b passes the opening tool 1280, the opening becomes clear of obstruction and available for the dispensing of articles. The position of the cutting tool 1280 relative to the bottom panel 36 and opening access 32a, 32b once the package 10 has been fully installed in the dispensing system 1212 is shown in Figure 3D. It can be seen that the substantially rectangular opening created by the opening of the access 32a, 32b is further to the rear of the dispensing system 1212 and articles disposed above that opening will fall from the package down a notional vertical shaft and onto the lower tier or lower track provided between side walls 1218a, 1218b and guided by the forward feeding mechanism or ramp 1283. The lower tier between side walls 1218a, 1218b and back 1216 and stopping mechanism 1220 provides a gravity feed track into which the articles A can roll.

The package-opening tool or cutting element 1280 is shown in Figure 4D in a perspective illustration from the front of the package opening system 1280. The opening tool is optionally mounted by means of the vertical keel element 1282 onto a platform 1284. The platform 1284 comprises fixing means 1293, which take the form of screw retaining holes, through which screws are used to attach the platform 1284 directly onto the support deck 1214. The platform 1284 is optional. In other envisaged embodiments, the opening tool 1280 may integrally formed with the support deck 1214. The fixing means 1293 is also optional, but where present may take many and various forms. Examples of such fixing means include, but are not limited to mechanical fastenings such as nails, pins, clips, nuts, tape; bindings; or chemical bonding such as glue adhesive, plastic weld, heat melt glue.
Figure 5A showed one embodiment of the blank for forming the package suitable for use with the disclosed dispensing system. The blank 130 comprises an opening access 132 defined by a transverse severance line 164, opposed pairs of severance lines 156a, 158a and the portion of fold line 160b between rear end closure flap 144b and bottom panel 136.

In one embodiment, the package comprises a pair of severance initiation areas in the form of apertures 168a, 168b. The package-opening tools of suitably formed dispensing system can engage the package 110 formed from the blank 130 by first being inserted into the pair of opening apertures 168a, 168b.

In one embodiment, the package comprises a pair of severance initiation areas in the form of weakened corner portions. Figures 6A to 7C show exemplary disclosed dispensing systems that are co-operable with the package 110 or co-operable with similar packages wherein a pair of severance initiation areas in the form of weakened corner portions rather than apertures.

Figures 6A to 6D show one embodiment of the dispensing system, wherein the system comprises a pair of opposite side walls 318a, 318b adjoined by a back 316. The side walls 318a, 318b define in part a track and a support deck above the track. The support deck is further defined by pairs of deck elements or supporting ledges 314a, 314b onto which a package 110 can be positioned. The dispensing system also comprises a forward feeding mechanism 383 provided in the form of an inclined ramp extending from the back 316 toward a plane containing the lowest plane of the sides 318a, 318b and hence toward to the lowest plane of the lower track. The deck elements 314a, 314b may be inclined to encourage articles A in the package 110 to roll toward the rear end of the package 110. A pair of opening tools in the form of cutting fins 380a, 380b is provided in vertical alignment with the deck elements 314a, 314b respectively. The cutting fins 380a, 380b are substantially planar elements and are disposed in substantially parallel alignment with the deck elements 314a, 314b. Where the deck elements 314a, 314b are inclined, the opening tools 380a, 380b may also be similarly inclined. In other embodiments, the deck elements 314a, 314b may not be disposed in vertical alignment with the opening tools 380a, 380b. For example, the deck elements 314a, 314b may be extended from the back 316 (substantially centrally of the dispensing system 312) and the opening tools 380a, 380b extend from the sides 318a, 318b.
The opening tools 380a, 380b are, in this illustrated example, triangular in shape. The tapered shape of the opening tools 380a, 380b enables the package to be gradually pushed onto the opening tools 380a, 380b as the package 110 is installed or loaded into the dispensing system 312 by sliding the bottom 136 of the package along the deck elements 314a, 314b. The pointed narrowest portion of each opening tools 380a, 380b is inserted into the severance initiation opening 168a, 168b. As the package 110 is further installed into the system 312, wider portions of the tapered opening tools 380a, 380b are pushed into and through the opening apertures 168a, 168b progressively breaking the severance lines 158a, 158b. Once the severance lines 158a, 158b are completely broken, the opening access 312 can fold downwardly (encouraged by the weight of the articles disposed in the package above the opening access), thereby the opening tools have engaged the package 110 to create an opening in the package through which articles are dispensed into the lower tier or lower track of the dispensing system 312. It should be appreciated that the severance line 164 may be designed such that it can break automatically as due to the weight of the articles in the package as the severance lines 156a and 158a are broken. Otherwise, the severance line 164 may be manually pre-broken before the package 110 is placed on the dispensing system 312.

It will be understood by those skilled in the art, having read the foregoing description of opening tools 380a, 380b, that other shapes of opening tools are suitable for achieving breaking of a weakened portion of a package and that many variations of packages and opening tools may be used in implementing the present disclosure. For example, the leading portion of the opening tools may be squared off, rounded, pointed, or angled. Furthermore, the taper angle of the opening tools may be many. The pair of opening tools 380a, 380b may not be symmetrical. The opening tools 380a, 380b may not be triangular.

Figures 7A and 7C illustrate embodiments in which a pair of opening tools 1380a, 1380b is disposed adjacent to and in substantially parallel alignment with side walls 1318a, 1318b of the dispersing system 1312. The pair of opening tools 1380a, 1380b is optionally affixed to the sides 1318a, 1318b via a screw fixing 1393 mating in a plug of screw socket 1396. The pair of opening tools 1380a, 1380b are substantially planar elements. Several materials may be used for the opening tools. These include, but are not limited to, plastics, metal, or a combination of plastic with a metal blade portion 1395. Each opening tool
1380a, 1380b is hook shaped having a tip 1394. The shape of the tip 1394 permits the narrow tip to be inserted into an aperture 168a, 168b and allows the blade 1395 (which may be metal and may be sharp) to be shielded from being contacted by a user or customer while allowing the blade 1395 to contact and cut along lines of perforation 158a, 156a as the package 110 is installed in the dispersing system as shown in Figure 7A and 7B. The opening tools 1380a, 1380b may be formed sufficiently thinly to fit between a side panel 138, 134 of the package and the articles A contained in the package. In Figure 7C, a can is shown as a generally cylindrical article disposed in the package 110 and the opening tools fit between the end of the can and the side panel 138, 134.

Figure 8A showed one embodiment of the blank for forming the package suitable for use with the disclosed dispersing system. The blank 230 comprises a severance initiation opening portion 268 disposed along severance line or perforate line 243. An opening access 232 is defined by opposed severance lines 258a and a fold line 264. To open the opening access 232, lines 243 and 258a are broken. Thus, the opening access 232 hinges about fold line 264 as illustrated in Figures 8B and 8C such that a substantially rectangular opening is created at the rear end of the bottom wall 236 and the opening access hinges about fold line 264 disposed about a one article diameter or more from the end of the package 210.

Figures 9A and 9B illustrate one embodiment of the disclosed dispersing system, wherein the system facilitates the automatic opening of the package 210 as the package is loaded into a dispensing system. The dispensing system 412 does not comprise a stopping mechanism as this can be provided by a store shelf itself. Furthermore, in other embodiments, the dispensing system 412 may not include a stopping mechanism. In some embodiments, the dispensing system may optionally include a front lip. Attached to sides 418a, 418b is a pair of support elements 414a, 414b and a pair of opening tool 480a, 480b. The opening tool 480a, 480b are similar to those described in relation to Figures 6A to 6D. However, in order for the opening access 232 to be accessible, perforate line 243 must be broken. This is optionally achieved by a third or rear opening tool 480c affixed or integrally formed with the back 416 of the system 412. As the package is fully installed into the system 412, the last push to fit the package 210 into the system causes the rear opening tool 416 to break the perforate line 243. Thereafter, the opening access 232 is folded about fold line 264 away from the bottom panel 136 to create the opening through which the
articles A can be dispensed.

The opening tools described so far are optionally fixed in the position described and do not move. However, as a further variation, a retractable mechanism can be provided in conjunction with each opening tool to enable the cutting element to be biased into a stowed position within the structural framework of the system. For example, it may be at the side, back or supporting element. An exemplary retractable mechanism is illustrated in Figures 10A and 10B. It will be understood that the retractable mechanism is exemplary only and other mechanisms for biasing a cutting element into a stowed position and for causing the opening tool to be moved into a use position in response to the initial loading of a package into the system are envisaged.

Figures 10A to 10D show one embodiment of the opening tool 580 comprising a hooked tip 587, a pivotal element 593a, an optional blade 585 (optionally formed of metal), a levering button 589, and a biasing member 593b. The opening tool 580 is arranged to fit within a stowing void 581 within a side wall 518b of the disclosed system. The opening tool 580 is pivotally mountable using a pivotal element 593a (in this arrangement a round aperture mountable on a pin), such that the tip 587 of the opening tool 280 or the levering button 589 is disposed outside of the stowing void 581 within the side wall 518b. The biasing member 593b is oriented and configured to cause the levering button 589 to be projecting out of the stowing void 581 and away from the side wall when the system is in a state of not being used. When a package is loaded into the system by sliding the package 110 along supporting elements, the levering button 589 automatically is depressed and causes the opening tool 280 to pivot about pivotal fixing 593a and the cutting tip 587 and optional blade 585 to be moved out of the stowing void and into the path of the package 110. The weight of the package 110 maintains the opening tools 580 in the use position. As the package 110 is further installed (as is illustrated in Figures 10B and IOC), the opening tool 110 engages the weakened area of the opening access 132 and causes the package to be opened for dispensing of articles. Once the package 110 is removed from the system, the biasing member encourages the bladed tip 587/585 to retract into the stowed position and projects the levering button ready for further activation of the opening tool when required. A benefit of this arrangement is that in the embodiments where it is required to provide a sharpened blade opening tool that could cause possible injury, the sharpened...
blade opening tool is stowed out of harms way when the system is empty and is only allowed to project from that position when the levering button is deliberately pressed, such as by a package 110 and thus the risk of injury is mitigated.

A further display and dispensing system 612 suitable for receiving and automatically opening a package 210 is illustrated in Figure 11 wherein a transverse opening tool 680 extends between side walls 618a, 618b. The opening tool 680 is shaped such that a leading edge of the opening tool 680 is disposed substantially centrally and is operable to engage a severance initiation point such as aperture 268 for causing further breaking of weakened lines 243, 258a, and 258b for releasing opening access 232. The opening tool 680 is disposed in vertical and substantially parallel alignment with each of two opposing deck elements or supporting ledges 614a, 614b.

In one embodiment, the disclosed system 612 is a unitary formation formed as a one piece moulded plastic. Although the system 612 does not comprise a stopping mechanism, in other embodiments a stopping mechanism may be incorporated. In those embodiments where no stopping mechanism is incorporated, a front lip of an in-store shelf may be used to stop articles A from rolling straight out of the system. Likewise, the system 612 may not comprise a base portion, and the store shelf may instead provide a surface onto which articles A dispensed into the lower track are held.

A variation of the system 612 is shown in Figures 12A-12C, the difference being that the opening tool 780 is disposed more toward the front of the system 712 rather than in the system 612 wherein the opening tool 680 is disposed toward the middle of the system. The directional references "toward the middle" and "toward the front" are used relative to the positions of the front and back of the systems 612, 712. The precise position of the opening tool 680, 780 is determined by the size of system, size of packages used, size of articles (and hence size of opening access), as well as type of opening access used. A stopping mechanism 720 may be integrally provided as part of system 712. Nonetheless, as described, this stopping mechanism feature is optional.

A further embodiment of the disclosed dispensing system is shown in Figures 13A to 13G. The package-opening tool comprises an angled plate 880 disposed, in this illustrated arrangement in close proximity to the front of the system 812. A package is opened by
leveraging the weakened part of the opening access of the package about the opening tool 880 as is shown in the accompanying illustrations. The package 210 is first angled so that the severance initiation opening 268 of package 210 is impaled onto the front tip 887 of the opening tool 880; the package 210 is held at an angle similar to that of the opening tool 880 in order to achieve this.

Once the package 210 is fed further onto the opening tool 880 during operation, perforate lines 243, 258a and 258b are broken to release opening access flap (see Figure 13B). The opening tool 880 thereafter provides a barrier to prevent early release of articles. Likewise, the deck elements or supporting ledges are disposed across the front and middle parts of the system 812 so that as the package 210 is moved further into the system 812, the opposed supporting ledges 814 provide a barrier to close the opening and prevent premature release of articles A. As the package 210 is further installed, the opening access 232 is folded between the supporting ledges 14 and the bottom of the package 236 (see Figures 13C to E). Once the package is fully installed, the opening is aligned with a notional vertical shaft and articles are free to roll out of the package 210 and into the lower track (see Figure 13F). In some embodiment of the present disclosure, the supporting ledges 814 are not inclined. The opening causes sufficient dislodgement of the articles that nearly all, if not all, of the articles roll out of the package. The alight incline offered by the folded opening access 232 may provide a sufficient forward feeding mechanism to cause the last article to roll out.

Though in the aforementioned embodiments of dispensing system, many of the systems have had a unitary structure or moulded form, it is also envisaged that such dispensing systems can be assembled from a kit of modular parts. Figures 14A to 14E show one embodiment of how the disclosed dispensing system may be assembled from a kit of modular parts.

In Figure 14A, a series of side panels having at least one, optionally inclined, supporting ledge 914a, 914, secured thereto and having at least one forward feeding mechanism (optionally a ramp) 983 secured thereto are shown. Middle side panels 918c comprise two supporting ledges 914a, 914b and two ramp elements 983. Right and Left-hand end panels 918a, 918b comprise only one supporting ledge 914b, 914a and only one ramp element 983. A stopping mechanism 920 is provided as a separate piece. The side
panels are attachable by fixing elements 919 to a back panel 916 (see Figure 14D and 14E). The back panel 916 comprises a series of grooves, apertures or the like for receiving the peg or hook style fixing elements 919 of the side panels so that the side panels can be removably affixed to the back 916. By providing a series of grooves or apertures along the back 916, a variety of locations are available for attaching side panels 918a, 918b, 918c. Furthermore, in this way the dispensing systems 912 of different widths may be created (see Figure 14C). This also may be beneficial where it is required to stock and display articles A1 of a first size alongside articles A2 of a second size, and where the dispensing system accommodates packages 10, 310 of different sizes due to the different articles types A1, A2.

A further feature of a modular system is that the opening tools may be removable affixed to the side panels so that, if a package having a different access mechanism is to be stored in the dispensing system, a more appropriate opening tool 980 may be mounted on the dispensing system. In Figures 15-19B, five examples of the module 984, 1184, 1484, 1584 onto which the opening tool 980, 1080, 1180, 1480, 1580 is mounted are shown.

In Figure 15, the module is H-shaped in cross-section and is received in an 'H'-shaped socket of the side 918b. Side edges 988a, 988b of the tool module 984 are mated using a frictional fit against inner side walls 987a, 987b of the socket 985. The tool module 984 has front and rear faces 990b, 990a that are designed to fit physically and aesthetically within the side wall 918b. Though the bottom face 986b of the tool module 984 cannot be seen once the tool module is installed, the outer top face 986a may be formed to match the side panel 918b or formed to contrast therewith as required by design considerations. The plug and socket type fit of the tool module with the side wall 918b enables a modular formation of the display and dispensing devices and/or a retro-fitting of cutting tools and/or swapping of tools for more suitable tools or replacement tools in case of breakage.

The tool mounting of Figure 16 is dovetail shaped and slots into a similarly shaped dovetail socket having tapered sides 1087a, 1087b that match the oblique sides 1088a, 1088b of the tool module. Again, the front, rear and top faces 1090b, 1086a of the tool module may be formed to match the colour and texture of the side panel.

In Figures 17 onwards, the tool modules fits transversely into the body of the side panel...
wall rather than slotting downwardly into the sides. The plug and socket mechanisms discussed may have many and various complimentary formed fittings compared to that shown. In Figure 19B, a socket mechanism has sprung biased balls and a tool module having arcuate mating portions is realisably held within the socket.

Figures 20 to 31 illustrate the disclosed dispensing system that has been constructed in accordance with yet another embodiment of the present disclosure.

Figures 20 to 27 provide various views of dispensing system 1608, including front and rear perspective views of the system (Figures 20 and 21, respectively), perspective views of various component parts which make up the dispensing system (Figures 22-25), an exploded perspective view of the dispensing system (Figure 26), and a cross-sectional view of the dispensing system (Figure 27).

Similar to the previously described embodiments, the disclosed disperse system 1608 includes a frame 1612 and an opening tool 1680.

The frame 1612 includes:

(a) laterally opposed side walls 1618a/1618b extending between the front end section 1615 of the frame and the rear end section 1617 of the frame; and
(b) an upper support deck 1619 extending at least partially between the front and rear ends 1615/1617 and below which a product display area is provided.

The upper support deck 1619 is formed in part by laterally opposed rails 1614a and 1614b of side walls 1618a/1618b. The laterally opposed side walls 1618a/1618b are adapted and configured for guiding a package as it is moved longitudinally along the upper support deck 1619.

A floor member 1613 extends between the rails 1614a/1614b and forms the remainder of the upper support deck 1619. As shown in Figure 25, floor member 1613 includes a front panel 1620 that can have product related indicia printed, etched or formed thereon or can include structure for holding product related indicia or material, including but not limited to, coupons. Front panel 1620 of floor member 1613 has a viewing window 1693 formed therein, the purpose of which will be described herein below.

The underside of floor member 1613 also includes fulcrum member 1632 which includes a female engaging member into which a corresponding male feature 1676 formed
on the topside of the flag element 1691 is inserted. As a result, the flag element 1691 is capable of pivoting about the fulcrum member 1632, the purpose of which will be described herein below.

Frame 1612 also includes a base panel or lower display deck 1683 and a rear wall 1616 which is configured to guide articles to the product display area. As best shown in Figures 26 and 27, the interior surface of rear wall 1616 defines a ramp or curved surface which assists the transition of the dispensed articles to the product display area. Moreover, lower display deck 1683 includes a lane divider 1695 which establishes two product distribution channels within the lower display area of the frame 1612.

Figure 22 provides a perspective view of one embodiment of the opening tool 1680. Opening tool 1680 has an upwardly projecting cutting or severing panel 1671 which extends between a mounting tab 1672 and a tongue member 1674. The cutting panel 1671 is provided with a forward edge 1673, which, as will be discussed in detail below, is adapted for cutting or severing a package as it is slid along the upper support deck 1619.

Mounting tab 1672 is adapted and configured to snap into a corresponding socket formed in the rear wall 1616 of frame 1612. As shown in Figure 26, tongue member 1674 is inserted into a channel 1630 formed on the underside of the floor member 1613. The channel 1630 is best viewed in Figure 25. A protuberance 1632 is provided on an upper surface of tongue member 1674, which engages within a recess 1634 formed on the underside of the floor member 1613 and thereby secures the tongue member 1674 with channel 1630. The floor member 1613 is also provided with a slot 1636 into which the forward end or edge 1673 of cutting panel 1671 is inserted.

Figure 24 illustrates a further embodiment of an opening tool that can be used in display device 1608 and has been designated as reference numeral 1780. Like opening tool 1680, opening tool 1780 includes an upwardly projecting cutting or severing panel 1771 which extends between a mounting tab 1772 and a tongue member 1774. The cutting panel 1771 is provided with a forward edge 1773 which, as will be discussed in detail below, is adapted for cutting or severing a package as it is slid along the upper support deck 1619.

Opening tool 1780 is secured in a similar fashion as opening tool 1680 to frame 1612 using mounting tab 1772 and tongue member 1774. However, unlike opening tool 1680,
the severing panel 1771 of opening tool 1780 includes laterally opposed guide ribs 1777 (near side shown) formed on each side of the panel. The guide ribs 1777 are adapted and configured to guide or urge the opening access 1878/1879 associated with package 1810 to open outwardly and not inwardly.

Figure 27 provides a cross-sectional view of frame 1612. In this figure, it is readily apparent that the upper support deck 1619 and the lower deck 1683 of the frame 1612 are arranged at an angle with respect to horizontal. The upper support deck 1619 slopes in a downward direction from the front end 1615 to the rear end 1617 of the frame, while the lower deck 1683 slopes downward in the opposite direction. As discussed previously, this arrangement allows gravity to be used to move the articles from within the package down into the lower display area and towards the front end 1615 of the frame 1612 where they can be accessed by consumers.

Figure 28 shows one embodiment of the blank 1830 suitable for a construction of package 1810. The blank 1830 includes a bottom panel 1836, a first side panel 1834, a second side panel 1838, an outer top panel 1840a, an inner top panel 1840b, a center panel 1850, and a glue flap 1871. These panels hinged together in series along fold lines 1852, 1853, 1854, 1856, 1858, and 1859. The blank also includes end flaps 1848a-b, 1842a-b, 1844, 1846a-b and 1872.

Bottom panel 1836 of the blank 1830 has a first longitudinally extending severance line 1862 positioned about its centerline which extends from a severance initiation notch 1868a to a second laterally extending severance line 1873. Moreover, fold lines 1874 and 1875 are provided on the lateral edges of the bottom panel 1836. Two triangular cutouts and a rectangular cutout 1876 have been provided in bottom panel 1836. End closure flap 1842a includes a severance notch 1868b and center panel 1850 includes a notch 1877, the purpose of these features will be discussed herein below.

Blank 1830 is foldable along lateral fold lines 1860a-b and longitudinal fold lines 1852, 1853, 1854, 1856, 1858, and 1859 into a package 1810 that has two longitudinally extending compartments separated by center panel 1850. As described with respect to previous embodiments, the end closure flaps 1848a-b, 1842a-b, 1844, 1846a-b and 1872 may be secured in overlapping, face contacting relationship using adhesive or other suitable
securing techniques. Figures 29 and 30 provide perspective views taken from below of the assembled package 1810. Figure 31 shows the package 1810 after the severance lines 1862 and 1873 have been cut, so as to create opening access 1878 and 1879.

In use, package 1810, which is filled with two rows of articles "P", is placed onto the front end of the upper support deck 1619 of frame 1612. Then the package 1810 is slid longitudinally towards the rear end 1617 of the frame 1612 until the forward edge 1673 of cutting panel 1671 is received within severance notches 1868a-b of the package 1810. Further, longitudinal sliding of the package causes the opening tool 1680 to sever initially the first longitudinal severance line 1862 and then the second lateral severance line 1873. Figure 32 shows the arrangement where package 1810 has been moved into contact with back or rear wall 1616 of the frame 1612, and the opening access 1878/1879 formed in the bottom panel 1836 have been opened; thereby allowing at least a portion of articles P to dispense from the package 1810 onto the lower display deck 1683 and into the lower display area.

Referring now to Figure 27 which provides a cross-sectional view of frame 1612 and illustrates a method of indicating whether the dispensing and display system is near empty and therefore a new package should be loaded onto the upper support deck 1619. As shown therein, the flag element 1691 is mounted on fulcrum member 1634 and can pivot between a first position, shown using solid lines, and a second position, shown using dashed lines. When a sufficient number of products are stored in the lower display area, the tail end 1634 of the flag element 1691 contacts at least one product and is raised. As a result, the front face 1692 of the flag element 1691 is lowered and the flag element 1691 is in the first position. When the dispensing and display system nears empty, the tail end 1634 of the flag element is not in contact any products and therefore the flag element 1691 moves to the second position in which its front end 1692 is raised and is visible through the viewing window 1693 provided in the front panel 1620 of the floor member 1613. The front end 1692 of the flag element 1691 can be painted red, for example, in order to provide a visual indication in the viewing window 1693 that the display and dispensing system is near empty. Those skilled in the art would readily appreciate that other methods for indicating that the system is near empty can be employed without departing from the inventive aspects of the present disclosure.
It can be appreciated that various changes may be made within the scope of the present disclosure, for example, the size and shape of the panels and apertures may be adjusted to accommodate articles of differing sizes or shapes. Where as many embodiments of the disclosure have been illustrated using cartons containing twelve articles disposed in a 4 x 3 array, it is envisaged that in other embodiments of the disclosure the packages or cartons contain a greater or lesser number of articles than twelve and the articles are arranged in any suitable configuration such as a 2 x 6 array.

Furthermore, though the disclosure has been described in the contact of a paperboard carton and plastic dispensing device, in other embodiments of the disclosure it is envisaged that other suitable foldable sheet material may be used for forming the package (such as cardboard, plastics material and the like) or that the carton or magazine for articles may formed as a reusable dispenser with a reusable opening mechanism. Additionally, the dispensing device may be formed from other materials or combinations of materials for example: metal, wood, fibre glass, glass-reinforced plastic.

The carton 10, 110, 210 may take various forms. In the above disclosure, detailed description and illustration of three different and exemplary cartons 10, 110, 210 are provided (see Figures 3A-3D; 5A-5D and 8A-8D). Each of these cartons 10, 110, 210 is a fully enclosed carton of the end loading type, however, it will be understood that the benefits described herein can be obtained by using other types of cartons, for example, partially enclosed cartons; top-loading cartons; trays; and wraparound cartons as non-exhaustive examples.

Though the articles illustrated are either bottles (Figures 1A-2) or cans (Figures 7A-7C & 13A-13G), the disclosure is applicable to a wide variety of products contained in various containers. When desired, the containers may have at least a cylindrical portion to encourage rolling of the articles from the carton through the lower level of the display device and into the dispensing position. However, the dispensing device apparatus of the present disclosure is applicable to other types and/or shapes and/or sizes of articles. Nonetheless, where advantage cannot be taken of the gravity and rolling to provide the forward feed mechanism, other devices may be provided, for example: a sprung biased mechanism or other suitable means.
It is also envisaged that the packages in other embodiments are provided with a means for detecting when the package is empty of articles without having to lift or too closely inspect the carton. Such means for detecting when the carton is empty of articles may take the form of a window, i.e. an aperture or shaped cut-out in the carton. Such a window may be disposed close to the bottom of the package so that the presence or absence of articles in the lowermost tier of the carton can be detected by observation. In some embodiments, the window could be provided by piece, strip or section of clear, transparent or translucent material, such as plastic sheet to enable the interior of the carton to be viewed, yet maintaining the structural integrity and barrier to dust etc of the carton.

Alternatively, an inspection hole or aperture may be provided into which a pen or other instrument could be inserted in order to feel for the presence of articles in the lowermost row.

Whereas cutting elements shown in the illustrated examples may have been shown in a fixed position, these fixed cutting elements alternatively could be provided with means for enabling the cutting elements to be retracted, such as the retractable means shown in Figures 10A and 10B. The retractable mechanism described herein provides an exemplary format of a mechanism suitable for enabling a package opening arrangement to be retracted into a stowed position. The shape of the tool, shape of the levering button, the shape of the pivotal fixing and shape of the biasing member could be varied in other embodiments from that shown. It will be understood that the mechanism described and illustrated is one example only and this aspect of the disclosure can be variously employed without requiring the particular shapes, materials, configurations and sizes shown herein.

Whereas reference has been made to inclined ramps 283, inclined grooves 7a, 7b, and the support element 14a, 14b being inclined, it will be understood that these features act individually or in combination to provide a forward feeding mechanism that encourages articles that have been dispensed from the carton or package to roll out of the package, onto the lower tier or lower track and then toward the front-end of the lower track. Such a forward feeding mechanism takes the form of an inclined surface or groove where the forward feeding mechanism utilizes the force of gravity and hence the articles suitable for being dispensed in this manner have a rounded portion (i.e. jars, bottles, cans, rounded yoghurt pots, conical articles, and lipsticks as examples). It will be understood that in taking
advantage of a gravity feed mechanism that the forward feed mechanism may be provided in a number of ways using ramps, grooves and even features integral to the package itself (for example an internal ramp disposed within the package to encourage the front lower most article to roll toward the access opening would alleviate the need for the supporting element itself to be inclined). The following described examples of the forward feeding mechanism being provided by the supporting element being arranged at an inclined angle relative to a lower plane of the lower track, and/or by an inclined floor of the lower track and/or by the back being scoop-shaped or suitably shaped to encourage forward rolling of articles and/or by one or more ramps extending at an inclined angle from the back toward a lower plane of the lower track are mere examples. In other applications, the articles may not be rounded and the force of gravity may need to be supplemented with an additional or alternative mechanism to encourage articles to be fed-forward to the front-most dispensing position. Such additional or alternative mechanism could be provided by a biasing member; a piston or plunger as examples.

Reference has been made to cutting element, opening tool and package opening device to cover the element of the dispensing system that engages with a package installed in the system to break weakened areas of that package for causing an opening to be created. As such cutting element may not actually have a sharpened blade capable of slicing through material, but rather may be an abutment or projection that is positioned to co-operate with the pre-formed weakened area of a package to cause the breaking of perforations when the package is pushed against the cutting element. In some embodiments, a bladed element or sharpened blade may be provided. In other embodiments, cutting element is taken to mean any projection or obstacle that interacts or engages with the package as that package is installed to break open that package. The opening tool/cutting elements may take a variety of shapes, sizes, positions, numbers and be formed from a variety of materials in other envisaged implementations of the disclosure and therefore the opening tool should not be taken to be limited to only those illustrated and described herein.

Whereas in the illustrated embodiments, the opening tool co-operates with the opening tool by causing part of the opening tool to be broken, as the opening tool is pushed or slidably installed into the dispensing system, it is envisaged that in other embodiments
the opening tool provided will co-operate with the opening tool to cause an opening to be
created by causing the package to be maintained stationary or substantially motionless. For
example, in another envisaged embodiment, the package comprises an outer sleeve and an
inner packaging component (e.g., an inner tray, drawer or tubular structure) having an open
bottom that is sealed by the presence of the outer sleeve. One or more opening tools
provided on the system are insertable into the inner packaging component and thereby hold
that inner carton component substantially stationary. The outer sleeve is then moved
relative to the inner packaging component, by pulling, or pushing for example, to cause
sliding movement of the outer sleeve relative to the inner packaging component and
thereby exposing at least part of the bottom opening of the inner component so that
articles can be dispensed therefrom. In this manner, the opening tool does not necessarily
directly cause a cutting or breaking of the package in order for an access opening to be
created for the package. The opening tool does interact with the package to cause opening
of the package whilst the package is installed in the dispensing system. In one embodiment,
it is envisaged that the opening device is formed as a pair of hooked pins, each insertable
into an aperture or weakened tab of the inner packaging component to engage that
component. The outer sleeve has a pair of apertures or slots aligned with the aperture or
weakened tab of the inner packaging component to allow for easy insertion of the opening
tool into the inner packaging component. The outer sleeve may be affixed or adjoined in
some manner (such as by adhesive or by a panel) that is broken by the relative movement
between the inner packaging component and outer sleeve to allow the opening in the
bottom of the inner packaging component to be exposed for dispensing articles.

It will be recognised that as used herein, directional references such as "top",
"bottom", "front", "back", "end", "side", "inner", "outer", "upper" and "lower" do not limit
the respective panels to such orientation, but merely serve to distinguish these panels from
one another. Any reference to hinged connection should not be construed as necessarily
referring to a single fold line only; indeed it is envisaged that hinged connection can be
formed from one or more of the following, a short slit, a frangible line or a fold line without
departing from the scope of the disclosure.
We claim:

1. A system for dispensing articles provided initially in a package, wherein the system comprises a frame and a package-opening tool,
   
   (d) the frame being configured to support the package of articles, and including:
   
   (i) longitudinally opposed front and rear end sections, and
   
   (ii) an upper support deck extending at least partially between the front and rear end sections and below which a product display area is provided; and
   
   (e) the opening tool associated with the frame and arranged to open the package when the package is moved longitudinally towards the opening tool and allow the articles to be at least partially dispensed from the package into the product display area.

2. The dispensing system of Claim 1, wherein the frame further includes a lower display deck associated with the product display area.

3. The dispensing system of Claim 1, wherein the frame further includes a rear wall configured to guide the articles to the product display area.

4. The dispensing system of Claim 1, wherein the upper support deck is inclined at an acute angle with respect to a horizontal plane.

5. The dispensing system of Claim 1, wherein the opening tool is integrally connected to the frame.

6. The dispensing system of Claim 1, wherein the opening tool is removably connected to the frame.

7. The dispensing system of Claim 1, wherein the frame further includes first and second laterally opposed side walls adapted and configured for guiding the package as it is moved longitudinally along the upper support deck.
8. The dispensing system of Claim 7, wherein the opening tool is attached to at least one of: the first laterally opposed side wall, the second laterally opposed side wall, the upper support deck, and the rear end section of the frame.

9. The dispensing system of Claim 1, wherein the frame includes a lane divider to create two display channels within the product display area.

10. The dispensing system of Claim 1, further comprising the package containing articles.

11. The dispensing system of Claim 10, wherein the package is a paperboard carton including a pair of severance lines which are severed by the opening tool when the package is moved longitudinally towards the opening tool thereby allowing the articles to be at least partially dispensed from the package into the product display area.

12. A kit of parts for forming the dispensing system of Claim 1.

13. A blank for forming a package, wherein the blank comprises a series of panels for forming walls of the package, the panels including:

(a) a bottom panel and an adjacent panel adjoined together by a first severance line;

(b) a severance initiation area formed at least in part in one of the bottom panel and the adjacent panel such that the first severance line is interrupted by the severance initiation area; and

(c) a second severance line disposed generally perpendicularly to the first severance line.

14. The blank of Claim 13, derived from a material includes a member selected from a group consisting of paper-based material, paperboard, carton board, plastics, plastic-fiber composites, and combinations thereof.

16. A method of dispensing articles provided initially in a package, the method comprising steps of:

(i) providing a frame configured to support the package of articles, the frame including:
   (a) longitudinally opposed front and rear end sections, and
   (b) an upper support deck extending at least partially between the front and rear end sections and below which a product display area is provided;

(ii) associating an opening tool with the frame;

(iii) moving the package longitudinally relative to the opening tool so as to open the package and allow the articles to be at least partially dispensed from the package into the product display area.

17. The method of claim 16 further comprising a step of providing the package, wherein the package includes:

(a) first and second walls;
(b) a first severance line connecting the first and second walls;
(c) severance initiation area formed at least in part in one of the first and second walls such that the first severance line is interrupted by the severance initiation area; and
(d) a second severance line disposed substantially in a plane of the second wall, the second severance line extending generally perpendicularly to the first severance line.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D5/52 B65D5/72 B65D25/24 A47F1/08

B. FIELDS SEARCHED

B65D A47F

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 1 753 957 A (CHAFFIN WASHBURN WALTER BAI LEY) 8 April 1930 (1930-04-08)</td>
<td>1-3, 5-8, 10, 12, 16</td>
</tr>
<tr>
<td>Y</td>
<td>page 1; figures 1-6</td>
<td>4, 9, 17</td>
</tr>
<tr>
<td>A</td>
<td></td>
<td>11, 13-15</td>
</tr>
<tr>
<td>Y</td>
<td>US 2009/212066 AI (BAUER JAMI E [US]) 27 August 2009 (2009-08-27) paragraph [0058]; figures 1, 2, 12a, 12b</td>
<td>4, 9</td>
</tr>
<tr>
<td>Y</td>
<td>FR 2 415 051 AI (MOUROT JACQUES [FR]) 17 August 1979 (1979-08-17) paragraph [0058]; figures 1, 2, 12</td>
<td>17</td>
</tr>
<tr>
<td>A</td>
<td>page 4, line 9 - page 4, line 23; figure 3</td>
<td>11, 13-15</td>
</tr>
<tr>
<td>A</td>
<td>US 5 390 821 A (MARKEL STEPHEN M [US]) 21 February 1995 (1995-02-21) figures 1, 2</td>
<td>1-17</td>
</tr>
</tbody>
</table>

Additional information:

- *X* further documents are listed in the continuation of Box C.
- *Y* see patent family annex.
- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another document or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

Date of the actual completion of the international search: 21 February 2011

Date of mailing of the international search report: 08/03/2011

Name and mailing address of the ISA:

Bevi l acqua, Vicenzo

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

Form PCT/ISA/210 (second sheet) (April 2003)
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>
| A        | AT 6 036 Ul (FELIX AUSTRIA GES M B H [AT])  
25 March 2003 (2003-03-25)  
page 3 - page 4; figures 1,2 | 13-15                |
<table>
<thead>
<tr>
<th>Patent document cited in search report</th>
<th>Publication date</th>
<th>Patent family member(s)</th>
<th>Publication date</th>
</tr>
</thead>
<tbody>
<tr>
<td>US 1753957 A</td>
<td>08-04-1930</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>US 2009212066 A</td>
<td>27-08-2009</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>FR 2415051 A</td>
<td>17-08-1979</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>US 5390821 A</td>
<td>21-02-1995</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>AT 6036 U</td>
<td>25-03-2003</td>
<td>NONE</td>
<td></td>
</tr>
</tbody>
</table>