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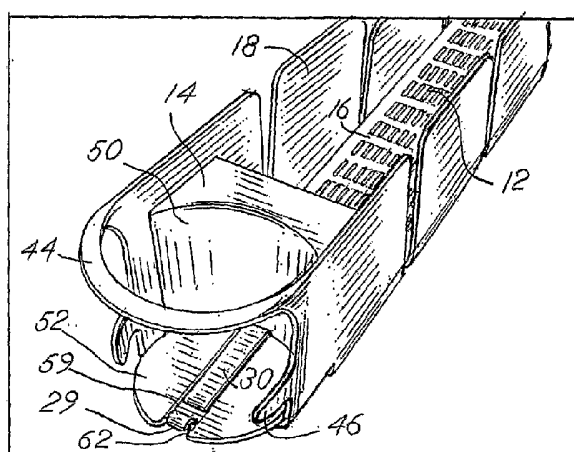
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(54) Title: PRODUCT MANAGEMENT DISPLAY SYSTEM WITH TRACKLESS PUSHER MECHANISM



(57) Abstract: A product management display system for merchandising product on a shelf includes using a trackless pusher mechanism (14) that travels along a surface (16) on which product is placed. The pusher mechanism (14) of the invention also includes a pusher paddle (50) and a floor (52) that extends forward of the pusher paddle (50). A flat coiled spring (30) or other biasing element may be operatively connected behind the pusher paddle (50) and extend across the floor of the pusher mechanism (14) and to the front of the shelf. In use, the product to be merchandised may be placed on the coiled spring (30) and on the floor of the pusher mechanism (14). With this configuration, the pusher paddle (50) is prevented from tipping or bending backwards during operation. The invention may be used with the merchandising of product on horizontal or non-inclined shelves or surfaces, as well as with gravity-fed systems, or systems that use gravity as a mechanism to urge product toward the front of the shelf.

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PRODUCT MANAGEMENT DISPLAY SYSTEM AND PUSHER MECHANISM FOR
SUCH A SYSTEM

[01] The content of all of the following is incorporated herein by reference in its entirety:

- 5 (i) U.S. Provisional Applications Serial Nos. 60/716,362 filed September 12, 2005;
(ii) 60/734,692 filed November 8, 2005; and (iii) U.S. Application Serial No. 11/411,761
filed April 25, 2006.

[02] The present invention relates to a product management display system, and to a
10 pusher mechanism for a product management display system. Preferred embodiments of
the invention relate generally to a shelf assembly for use in merchandising product and
more particularly to a shelf assembly having improved mechanisms for displaying and
pushing product on the shelves.

15 [03] It is known that retail and wholesale stores, such as convenience stores, drug stores,
grocery stores, discount stores, and the like, require a large amount of shelving both to
store product and to display the product to consumers. In displaying product, it is desirable
for the product on the shelves to be situated toward the front of the shelf so that the product
is visible and accessible to consumers. In the case of coolers or refrigerators that are used
20 to store and display such products as soft drinks, energy drinks, bottled water, and other
bottled or canned beverages, it is desirable for these products to also be situated toward the
front of the shelf and visible and accessible to the consumers.

[04] To accomplish this placement of product, known systems may include inclined trays
25 or floors that through gravity will cause the product to move toward the front of the shelf.
Many of these systems include floors or shelves made of a plastic material such as
polypropylene that due its low coefficient of friction permit the product to easily slide
along the inclined floor or surface. However, over time, these surfaces can become
obstructed with debris or sticky substances that inhibit the product from properly sliding,
30 sometimes causing several products to tip over thus blocking additional product from
moving to the front of the shelf.

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[05] Other systems include the use of a pusher system to push the product toward the front of the shelf as the product at the front of the shelf is removed. The known pusher systems are typically mounted to a track and include a pusher paddle and a coiled spring to urge the product forward. Occasionally, as the system is used, and over time, the track becomes
5 obstructed with dirt or sticky materials that hinder the proper operation of the pusher system in the track. In addition, depending on the size, shape and weight of the product to be merchandised, the known pusher paddles may occasionally tip or bend backwards, thereby causing a binding of the pusher mechanism in the track. In those situations, the pusher mechanism may not properly push product toward the front of the shelf.

10 [06] According to a first aspect of the present invention, there is provided a product management display system comprising:

a tray defining a surface defining a plurality of apertures to permit debris or other materials to pass through;

15 a pusher mechanism mountable on the surface of the tray, the pusher mechanism including a pusher surface and a pusher floor extending forwardly from the pusher surface, the pusher floor being configured to permit at least one product to sit upon the pusher floor, the pusher floor being positionable on and movable across at least a portion of the surface of the tray and being substantially parallel to the surface of the tray; and

20 a biasing element attachable to a front portion of the tray, extendable across the pusher floor and having a coiled end operatively connected behind the pusher surface,

wherein the pusher mechanism sits on top of and does not extend below the surface of the tray, and is mounted to and held onto the tray only by the biasing element,

the system further comprising at least one divider mountable to the tray for dividing
25 displayed products into rows.

[07] Preferred embodiments of the present invention are directed to a product management display system for merchandising product on a shelf, the system including a trackless pusher mechanism that travels along a surface on which product is placed. The trackless
30 system overcomes the known problems with the use of tracks to hold and guide the known pusher mechanisms. It should be understood, however, that the invention may be embodied in systems that include tracks for mounting a pusher mechanism or the like.

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[08] According to a second aspect of the present invention, there is provided a pusher mechanism for a product management display system, the pusher mechanism being positionable on a surface of the display system and being mounted to and held onto the display system by a biasing element, the surface of the display system defining a plurality of apertures to permit debris or other materials to pass through, the pusher mechanism comprising:

a pusher surface; and

a pusher floor extending forwardly from the pusher surface, the pusher floor being configured to permit at least one product to sit upon the pusher floor, the pusher floor being positionable on and movable across the surface of the display system,

wherein the pusher mechanism sits on top of and does not extend below the surface of the display system, and is mounted to and held onto the display system only by the biasing element.

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[09] The pusher mechanism according to a preferred embodiment of the invention also includes a pusher paddle, a floor that extends forward of the pusher paddle, and a flat coiled spring operatively connected behind the pusher paddle and extending across the floor of the pusher mechanism and to the front of the shelf. In use, the product to be merchandised is placed on the coiled spring and on the floor of the pusher mechanism. With this configuration, the pusher paddle is prevented from tipping or bending backwards during operation.

[10] Preferred embodiments of the invention provide for the use of a pushing mechanism with the merchandising of product on horizontal or non-inclined shelves or surfaces, as well as with gravity-fed systems, or systems that use gravity as a mechanism to urge product toward the front of the shelf.

[11] In accordance with an illustrative embodiment of the invention, the pusher paddle may define a concave pushing surface for pushing cylindrical products, such as soft drink bottles or cans. Alternatively, the pusher paddle may define a flat pushing surface that may further include at its upper edge a curved rib or similar structure that can be used to

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push cylindrical products.

[12] In accordance with another illustrative embodiment of the invention, the floor of the pusher mechanism includes a notched or cut-out portion to align the pusher mechanism relative to the coiled spring. Also, the floor of the system also includes a notch or cutout portion for receiving and mounting a flat end of the coiled spring to the floor. A spring tip may be placed on the end of the coiled spring to mount the coiled spring to the floor of the system.

[12A] In accordance with a preferred embodiment of the invention, an adaptor for a product management display system may be positioned on a floor surface of the display system, the adaptor including a planar surface with at least two ribs extending outwardly from the planar surface and across the planar surface in a substantially parallel manner. A coiled spring may be positioned between the parallel extending ribs. With this configuration, product to be merchandised may sit on the ribs, and not directly on the coiled spring, to enhance the forward movement of certain types of product, such as cans of a beverage.

[12B] Preferred embodiments of the present invention are directed at improving upon existing merchandising systems by providing a trackless pusher system that works with gravity-fed merchandise systems (i.e., inclined shelves or trays) and non-gravity-fed merchandise systems.

[12C] The present invention will now be described, by way of non-limiting example only, with reference to the accompanying drawings, which are briefly described as follows.

[13] Figure 1 depicts an isometric exploded view of an exemplary embodiment of a product management display system of the present invention.

[14] Figure 2 depicts an isometric view of an exemplary pusher mechanism mounted to an exemplary tray or product channel in accordance with a preferred embodiment of the present invention.

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[15] Figure 3 depicts another isometric view of the system of Figure 2 with product placed in the system.

- 5 [16] Figure 4 depicts another isometric view of the system of Figure 2 with multiple product placed in the system.

[17] Figure 5 depicts an isometric rear view of the system of Figure 4.

- 10 [18] Figure 6 depicts a tray or product channel in accordance with an alternative embodiment of the present invention.

[19] Figure 7 depicts an exemplary tip for an end of a coiled spring that may be used with the product management display system of the invention.

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[20] Figure 8 depicts the exemplary tip of Figure 7 being mounted to a surface of a tray or product channel.

- 20 [21] Figure 9 depicts the exemplary tip of Figure 7 being mounted to an end of a coiled spring.

[22] Figure 10 depicts the exemplary tip of Figure 7 mounted to an end of a coiled spring.

- 25 [23] Figure 11 depicts an isometric view of a product management display system according to an alternative embodiment of the present invention.

[24] Figure 12 depicts another isometric view of the system of Figure 11.

- 30 [25] Figure 13 depicts a front view of the system of Figure 11.

[26] Figure 14 depicts a top view of the system of Figure 11.

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[27] Figure 15 depicts a back view of the system of Figure 11.

[28] Figure 16 depicts an isometric view of an adaptor that may be used in a preferred embodiment of the invention.

[29] Figure 17 depicts a front view of the adaptor of Figure 16.

[30] Figure 18 depicts an exemplary installation of the adaptor.

[31] Figure 19 depicts an isometric view of an installed adaptor.

[32] Figure 20 depicts a front view of an installed adaptor.

[33] Before the embodiments of the invention are explained in detail, it is to be understood that the invention is not limited in its application to the details of construction and the arrangement of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced or being carried out in various ways. Also, it is to be understood that the phraseology and terminology used herein are for the purpose of description and should not be regarded as limiting. The use of "including" and "comprising" and variations thereof is meant to encompass the items listed thereafter and equivalents thereof as well as additional items and equivalents thereof. Further, the use of the term "mount," "mounted" or "mounting" is meant to broadly include any technique or method of mounting, attaching, joining or coupling one part to another, whether directly or indirectly.

[34] The invention may be embodied in various forms. Referring to the Figures wherein like numerals indicate like elements, there is depicted in Figure 1 an isometric exploded view of an exemplary merchandise system 10 includes a product dispensing tray 12 in which is mounted an exemplary trackless pusher mechanism 14. As described in more detail below, the pusher mechanism 14 will fit in the tray 12 and will slide along the surface of the tray without the use of tracks, rails, or guides typically used to hold a conventional pusher mechanism to the tray or floor of the tray. The pusher mechanism defines a pusher paddle and a pusher floor that extends forward of the pusher paddle. A coiled spring may extend across the

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pusher floor and operatively connect to the tray at a forward position on the tray. In one aspect of the invention, product to be merchandised may be placed in the tray in front of the pusher paddle and may sit on the pusher floor as well as the coiled spring. With this

5 configuration, the weight of the product will prevent the pusher paddle from tipping to ensure proper pushing of the product. In addition, the problems associated with debris or sticky materials hindering the effectiveness of known pusher systems that use tracks, rails or guides have been eliminated.

[35] The exemplary tray 12 may define a surface 16 and one or more dividing panels or dividers 18
10 to separate the tray into numerous rows for placement of product. In an alternative aspect, the tray 12 may be a shelf or any other surface on which products may be placed for merchandising. The surface 16 may be a solid surface or a surface defining a plurality of spaced-apart apertures 20 separated by a plurality of support ribs 22. The apertures 20 and ribs 22 provide a surface that permits the slidable movement of product placed on this surface and also permits liquids and dirt to
15 pass through the apertures 20 so that they do not collect on the surface 16. The surface 16 may be made of any suitable material that permits the slidable movement of product on the surface 16. Other surface or floor configurations are known and may be used with the principles of the invention.

20 [36] The surface 16 may define a rounded end portion 24 that includes a notch or cut-out portion 26. The end portion 24 may be rounded to match the shape of the product that is placed on the tray. For example, the depicted end portion 24 is rounded or defines a semi-circular shape to match the contour of a bottle or can that may be placed in the tray and on the end portion 24. Other shapes of the end portion may be used with the invention depending on the product to be
25 merchandised.

[37] The notch 26 may be used to receive and mount an end 29 of a coiled spring 30 or similar biasing element. The notch 26 may define opposing angled edge surfaces 32 that are joined by edge 34. The edge 34 is preferably centered across the width of the product row formed in the tray
30 12 and extends perpendicular to the length of the tray. This configuration will center the coiled spring 30 relative to the tray 12 and will permit the spring to extend in a substantially parallel manner relative to the length of the tray. In other words, the depicted edge 34 of the notch 26 will permit the spring 30 to extend along the length of the tray 12 at or near the center of the product row formed by the tray

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One skilled in the art will appreciate that the location and configuration of the notch may vary depending on the desired placement of the spring.

- [38] The coiled spring 30 may define an end 29 that is configured to be placed across the notch 26 and onto the edge 34. In one aspect, the end 29 of the coiled spring may be V-shaped and function as a hook such that the end 29 will wrap around the edge 34 with a portion of the end 29 of the coiled spring extending beneath the end portion 24 of the surface 16. This configuration permits an easy installation of the coiled spring onto the tray.
- [39] In another aspect, and referring to Figure 7, a spring tip 60 may be added to the end 29 of the spring 30 to assist with the mounting of the spring to the system. The spring tip 60 may define numerous shapes and configurations depending on the configuration of the tray and the surface on which the spring end needs to attach. The spring tip 60 may be permanently attached to the end 29 of the coiled spring 30 or it may be detachable to permit the interchange or replacement of the spring tip 60. The spring tip 60 may be made of plastic and may define one or more apertures. Aperture 61 may be used to receive the end 29 of the coiled spring 30. A second aperture 63 may be used to receive a mating tongue or mounting member 65 extending from the surface 16 of the tray 12, as discussed below. With this configuration, the end 29 of the coiled spring 30 may be operatively connected to the tray 12.
- [40] In another aspect, the end 29 of the coiled spring may snap-fit into an aperture formed in the surface 16, or may be otherwise inserted and secured to an aperture or opening in the tray, thereby securing the end 29 of the coiled spring 30 in position.
- [41] Referring back to Figure 1, dividers 18 may also be used to separate product into rows. The dividers 18 extend substantially upwardly from the surface 16 and as illustrated in Figure 1, may be positioned on opposing sides of the surface 16. Alternatively, the dividers 18 may be positioned at any desired position on the tray 12 or to the surface 16. The dividers 18 may be formed as a unitary structure with the surface 16, or the dividers 18 may be detachable to provide added flexibility with the system. The dividers may be attached to a front or back rail depending on the system. The dividers 18 may define

numerous configurations and may extend upwardly any desired distance to provide the desired height of the dividers between the rows of product to be merchandised. This height may be adjustable by adding divider extenders or the like.

[42] Located at the front of the tray 12 and extending between the dividers 18 may be one or more product-retaining members 44. The product-retaining members 44 serve as a front retaining wall or bar to hold the product in the tray 12 and to prevent the product from falling out of the tray 12. These members are also configured to permit the easy removal of the forward-most product positioned in the tray 12. The product-retaining member 44 may be one or more curve-shaped retaining ribs as depicted in Figure 1. These illustrated retaining ribs may extend from one divider to another divider thereby joining the dividers. The retaining ribs may also extend part-way between the dividers, as also shown in Figure 1 as rib 46, to also assist in retaining the product in the tray. Alternatively, and as shown in Figure 6 the product-retaining member 44 may be a curve-shaped solid retaining wall 48 that extends between dividers. The retaining wall 48 may be transparent or semi-transparent to permit visualization of the product on the shelf. In another aspect, the retaining wall 48 may also extend part-way between the dividers 18. In yet another embodiment depicted in Figures 11-15, the retaining wall 100 may be attached to the surface of the tray and not connect to the dividers. In this embodiment, the retaining wall 100 may form an opening 102 defined by an upper member 104, opposing, curved side walls 106 that further define an angled edge 108, and a floor member 110. The side walls 106 may also be straight and not curved depending on the system. The end of the coiled spring may also snap-fit into the floor 110 or otherwise attached to the tray using any of the techniques described herein. One of skill in the art will readily appreciate that there are numerous shapes and configurations possible for the product-retaining member 44 and that the depicted configurations are merely exemplary embodiments of these numerous configurations.

[43] Referring back to Figure 1, the exemplary trackless pusher mechanism 14 defines a pusher paddle 50 and a pusher floor 52. The pusher paddle 50 and pusher floor 52 may be formed as a single, unitary structure or may be separate structures that are joined together using known techniques. In addition, the pusher paddle 50 and pusher floor 52

may be made of any known suitable plastic or metal material. The pusher paddle and pusher floor may be reinforced using any known reinforcing techniques.

[44] In one aspect, the pusher paddle 50 forms a curved-shape pusher surface or face 54 that is configured to match the shape of the product to be merchandised, such as plastic bottles or cans containing a beverage, as depicted in Figures 3-5. The curve-shaped pusher surface 54 permits the pusher to remain centrally aligned with the last product in the tray. This configuration reduces friction and drag between the pusher and the divider walls. In an alternative aspect, the pusher surface or face may be a flat surface. In yet another aspect, the flat pusher surface may be accompanied by a curved shaped rib that is positioned near or on the top of the pusher paddle and that may be used to center and align product in the tray, in a manner similar to the curve-shaped pusher surface 54 depicted in Figure 1. The curve shaped rib may define other shapes and configurations that permit cylindrical or similar shaped products to be properly pushed in the tray. Advertisement, product identification or other product information may be placed on the pusher surface 54.

[45] Positioned behind the pusher surface or face 54 may be one or more support members 58, such as ribs, walls, or gussets. The support members 58 are configured to support the pusher surface 54 and further connect the pusher paddle 50 to the pusher floor 52. As can be seen in Figure 5, positioned between the support members 58 is the coiled spring 30, and more specifically the coiled end 57 that is used to urge the pusher paddle 50 forward and along the tray 12, as understood in the art. Any technique used to operatively connect the coiled spring to the pusher paddle 50 may be used.

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[46] As shown in Figure 1, the pusher floor 52 may be positioned below the pusher paddle 50 and may extend forward of the pusher surface 54 of the pusher paddle. The pusher floor 52 may extend any predetermined distance and at any predetermined angle. For example, the pusher floor 52 may extend substantially perpendicular to the pusher surface 54. In the exemplary embodiment, the pusher floor 52 may extend a sufficient distance to permit one product, such as a single bottle or can, to be placed on the pusher floor. In another aspect, the pusher floor 52 may be configured to permit more than one

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product to be placed on the pusher floor. The pusher floor 52 may define any shape, including the depicted round shape and may define any product retaining features on the surface of the pusher floor, such as ribs, walls, or the like, to further hold the product on the pusher floor.

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[47] As can be seen in Figure 2, the pusher floor 52 may define an elongated channel, groove or recessed portion 59 that is sized, shaped and configured to seat the coiled spring 30. In the exemplary embodiment, the channel or groove 59 may extend across the floor 52 and in a substantially perpendicular manner relative to the pusher paddle 50. In an alternative aspect, the groove or channel may extend part-way or across the entire pusher floor 52, as shown in Figure 19. Such configuration permits the proper alignment and positioning of the pusher paddle 50 in the tray. The groove 59 may define a depth that matches or exceeds the thickness of the coiled spring 30. With this configuration, the coiled spring 30 will seat at or below the pusher floor surface such that product will not sit directly on the coiled spring, rather, such product will sit on the pusher floor surface. As shown in Figure 19, the pusher floor may include apertures and openings through which debris or other items may pass. Alternatively, the floor may be a solid surface.

[48] As shown in Figures 16-20, an adaptor 180 may be positioned on the surface 16. Referring to Figures 16 and 17, the adaptor 180 may include one or more raised ribs 182 on which a product may sit. The raised ribs 182 may extend longitudinally along the length of the adaptor 180. The adaptor 180 may be a flat extrusion of plastic material (or any other suitable material) defining a planar surface 184 with the one or more ribs 182 extending outwardly from the planar surface 184. The adaptor 180 may define a rounded end 185 and include a notch or cut-away portion 186 through which or across which the coiled spring may extend. The rounded end 185 may be configured to match the shape of the product that is placed on the tray. Other shapes of the end 185, notch 186 and adaptor 180 may be used depending on the product to be merchandised. The adaptor 180 may be a separate, insertable piece or, alternatively, a piece formed integral with the surface 16.

[49] Referring to Figure 18, the adaptor 180 may be easily insertable onto the surface 16

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and between the dividers 18. Referring to Figure 19, once the adaptor 180 is installed, the pusher mechanism 14 may be positioned on top of the adaptor 180 and may slide freely across the ribs 182 of the adaptor 180. The coiled spring 30 may extend in a parallel manner between the ribs 182 and may seat at or below the top surface of the ribs 182, as more clearly shown in Figure 20. With this configuration, the product to be merchandised may sit on, and slide along, the ribs 182 and not on the coiled spring 30.

[50] In an alternative embodiment, the ribs 182 may be a raised bead or raised beads, or a series of fingers that may be used to facilitate the movement of the product on the surface 16.

In yet another alternative embodiment, the ribs 182 may be product moving members, such as runners or one or more rollers or rolling members that permit the product to roll across the rolling members and toward the front of the product display system. Exemplary roller assemblies include those disclosed and described in United States Application Serial No. 11/257,718 filed October 25, 2005, which application is incorporated herein by reference. As should be appreciated by those skilled in the art, there are many possible techniques that may be used with the described pusher mechanisms for facilitating the movement of the product on the shelf or floor.

[51] The underneath side of the pusher floor 52 may be a smooth planar surface that will slide freely along the surface 16. Alternatively, and similar to above, the pusher floor 52 may include beads, runners, rollers or the like that will permit the pusher floor to slide along the surface yet raise the pusher floor up off of the surface 16. In another alternative embodiment, the underneath side of the pusher floor may be configured with rail mounting members to permit the mounting of the pusher to a track or rail, as understood in the art.

[52] The pusher floor further defines a notch or cut-out portion 62 through which will pass the coiled spring 30. The end 29 of the coiled spring 30 will pass through the notch 62 and through the notch 26 of the surface 16 and will mount to the tray using any of the techniques described above.

[53] In use, as the pusher mechanism 14 is urged rearward in the tray 12, the end 29 of the coiled spring 30 will be held in position as described above and the coiled end 57 of the spring 30 will begin to uncoil behind the pusher paddle 50. If the pusher 14 is allowed to

move forward in the tray 14, such as when product is removed from the front of the tray, the coiled end 57 of the spring 30 will coil and force the pusher paddle 50 forward in the tray 12, thereby urging product toward the front of the tray.

- [54] In an alternative embodiment, the coiled spring 30 may extend below and underneath the pusher floor 52 as opposed to above and across the pusher floor, as depicted in the figures. With this configuration, the groove 59 and notch 62 may not be necessary.
- [55] The coiled spring 30 may be any biasing element including, without limitation, a flat coil spring commonly used with pusher systems. The present invention may use one or more coiled springs to urge the pusher mechanism 14 forward depending on the desired application. The coil tension of the spring 30 may also vary depending on the particular application.
- [56] Referring to Figure 2, the trackless pusher mechanism 14 is shown mounted to the tray 12. As illustrated, the pusher mechanism 14 fits in the tray 12 between the dividers 18. End 29 of the coiled spring 30 extends through the notch in the pusher floor and mounts to the tray as described above. In use, the pusher mechanism 14 will slide along the surface 16 of the tray 12 without the use of tracks, rails, or guides. As depicted in Figure 2, the pusher mechanism 14 is shown in a forward position.
- [57] Referring to Figure 3, the pusher mechanism 14 is shown merchandising one product 70 in the merchandise system 10. The product is prevented from tipping out of the tray by the product-retaining member 44. The product 70 may be any product to be merchandised including the depicted soft drink bottle. As shown in this Figure, the product 70 sits on the pusher floor 52 and the coiled spring 30 that extends below the product. The weight of the product on the floor 52 and the positioning of the product across the spring 30 prevent the paddle 50 from tipping in the tray 12.
- [58] Referring to Figure 4, the pusher mechanism 14 is shown merchandising multiple products 70 in the merchandise system 10. As shown in this Figure, the product next to the pusher paddle 50 sits on the pusher floor 52 and the coiled spring 30 that extends below the product. The other products will sit on the coiled spring 30 that will extend below these products. Alternatively, the adaptor 180 may be positioned in the system in

which case the product may sit on the ribs 182 of the adaptor as opposed to the coiled spring. Again, the weight of the product on the pusher floor 52 and the positioning of the products across the spring 30 prevent the paddle 50 from tipping in the tray. In use, as one product is removed from the front of the tray near the product-retaining member 44, the pusher mechanism 14 (through the urging of the coiled spring 30) will push the remaining product forward in the tray 12 until the forward-most product contacts the product-retaining member 44. As additional products are removed, the pusher mechanism 14 will continue to push the remaining product toward the product-retaining member 44.

- [59] Referring to Figure 5, a rear view of the pusher mechanism 14 shows the pusher mechanism 14 merchandising multiple products 70 in the merchandise system 10. Again, the product next to the pusher paddle 50 sits on the pusher floor 52 and the coiled spring 30 that extends below the product. The other products will sit on the coiled spring that will extend below these products. Alternatively, the adaptor 180 may be positioned in the system in which case the product may sit on the ribs 182 of the adaptor as opposed to the coiled spring. As one product is removed from the front of the tray near the product-retaining member 44, the coiled end 57 of the spring 30 will urge the pusher paddle 50 of the pusher mechanism 14 forward in the tray 12 until the forward-most product contacts the product-retaining member 44. As can be seen in this Figure, the coiled end 57 may be positioned between two support members 58. The support members will retain the coiled spring between these members. As can be seen in this Figure, the pusher floor 52 may also extend below the support members 58.
- [60] Referring to Figure 6, an alternative embodiment of the pusher tray is depicted. With this embodiment, multiple trays 12 may be formed into a single multi-tray assembly 80. The multi-trays may have a common floor with dividers 18 extending upwardly from the floor to create the multiple trays or rows. In this embodiment, the product-retaining member 44 may be a solid member that extends between two dividers, as discussed above. One or more of the multi-tray assemblies 80 may be coupled or joined together in a side-by-side manner using any known technique, including clips, dovetailing, fasteners, or the like. With this configuration, numerous rows of product can be provided for the merchandising of numerous products.

- [61] As stated above, the trackless pusher mechanism 14 may be used with gravity-fed systems, that is, systems having trays or product channels that are mounted on an incline to permit gravity to assist with the merchandising of the product. Alternatively, the trackless pusher mechanism 14 may be used with systems that are mounted in a non-inclined or in a horizontal manner where gravity will provide little or no assistance with the merchandising of the product. The trackless pusher mechanism 14 may also be used to push various shaped products.
- [62] Figure 7 depicts an exemplary tip 60 for the end 29 of a coiled spring 30 that may be used with the merchandise system 10. As illustrated, the tip 60 defines an aperture 61 for receiving the end 29 of the coiled spring and an aperture 63 for mounting to the surface 16 of the tray. As can be seen in Figure 7, in one aspect of an alternative embodiment, extending beneath the surface 16 may be a tongue or mounting member 65 that may be configured to mate with the aperture 63 and to snap-fit the tip 60 onto the tongue 65 and thus to the surface 16.
- [63] Referring to Figure 8, the exemplary tip 60 of Figure 7 is shown being mounted to the tongue or mounting member 65. The tongue 65 may include an elongated outwardly extending rib 67 that is used to snap-fit the tip 60 onto the tongue 65. One skilled in the art will appreciate that other techniques may be used to mount the tip 60 to the surface 16 and that the depicted technique is merely an exemplary embodiment of one such technique.
- [64] Referring to Figure 9, the exemplary tip 60 is shown fully mounted in a snap-fit manner to the surface 16, and more specifically to the end portion 24 of the surface 16 of the tray 12. Also depicted is the mounting of the end 29 of the coiled spring 30 to the aperture 61 of the tip 60. As shown in Figure 9, the end 29 of the coiled spring may be inserted into the aperture 61. The aperture 61 is configured to receive the end 29 of the coiled spring and hold the end 29 in position, and to also permit the removal of the end 29 of the coiled spring from the aperture 61 in those circumstances where it is desirable to disconnect the coiled spring from the tip to permit the removal of the pusher mechanism 14 from the system.

[65] Referring to Figure 10 there is shown the end 29 of the coiled spring fully mounted to the exemplary tip 60. As illustrated in this figure, the coiled spring 30 is now operatively connected to the surface 16 of the tray 12. As a result, the pusher mechanism 14 is now mounted to the tray 12.

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[66] Variations and modifications of the foregoing are within the scope of the present invention. For example, one of skill in the art will understand that multiples of the described components may be used in stores and in various configurations. The present invention is therefore not to be limited to the single system 10, nor the upright pusher configuration, depicted in the Figures, as the system 10 is simply illustrative of the features, teachings and principles of the invention. It should further be understood that the invention disclosed and defined herein extends to all alternative combinations of individual features mentioned or evident from the text and/or drawings and falling within the scope of the claims. The embodiments described herein explain the best modes known for practicing the invention and will enable others skilled in the art to utilize the invention.

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[67] Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

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[68] The reference in this specification to any prior publication (or information derived from it), or to any matter which is known, is not, and should not be taken as an acknowledgment or admission or any form of suggestion that that prior publication (or information derived from it) or known matter forms part of the common general knowledge in the field of endeavour to which this specification relates.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A product management display system comprising:
- 5 a tray defining a surface defining a plurality of apertures to permit debris or other materials to pass through;
- a pusher mechanism mountable on the surface of the tray, the pusher mechanism including a pusher surface and a pusher floor extending forwardly from the pusher surface, the pusher floor being configured to permit at least one product to sit upon the pusher
- 10 floor, the pusher floor being positionable on and movable across at least a portion of the surface of the tray and being substantially parallel to the surface of the tray; and
- a biasing element attachable to a front portion of the tray, extendable across the pusher floor and having a coiled end operatively connected behind the pusher surface,
- wherein the pusher mechanism sits on top of and does not extend below the surface
- 15 of the tray, and is mounted to and held onto the tray only by the biasing element,
- the system further comprising at least one divider mountable to the tray for dividing displayed products into rows.
2. The product management display system of Claim 1, further comprising a spring
- 20 tip attachable to an end of the biasing element.
3. The product management display system of Claim 1, further comprising a front retaining wall attachable to the tray.
- 25 4. The product management display system of Claim 1, further comprising an adaptor positionable on the surface of the tray.
5. The product management display system of Claim 4, wherein the adaptor includes one or more ribs extending across the adaptor.
- 30 6. The product management display system of Claim 5, wherein the adaptor includes at least two said ribs extending across the adaptor, the ribs being parallel, and wherein the

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biasing element is extendable between the at least two parallel extending ribs.

7. The product management display system of Claim 1, wherein the surface of the tray is either a solid surface or a surface defining a plurality of spaced-apart apertures separated by a plurality of support ribs.

8. The product management display system of Claim 1, wherein the pusher floor defines a notch.

9. The product management display system of Claim 1, wherein the pusher surface is curve shaped.

10. The product management display system of Claim 1, further comprising a retaining wall attachable to the surface of the tray and not attachable to the at least one divider.

11. The product management display system of Claim 10, wherein the retaining wall defines an opening further defined by an upper member, opposing, curved side walls that further define angled edges, and a floor member.

12. The product management display system of Claim 10, wherein the pusher floor defines a channel.

13. A pusher mechanism for a product management display system, the pusher mechanism being positionable on a surface of the display system and being mounted to and held onto the display system by a biasing element, the surface of the display system defining a plurality of apertures to permit debris or other materials to pass through, the pusher mechanism comprising:

a pusher surface; and

a pusher floor extending forwardly from the pusher surface, the pusher floor being configured to permit at least one product to sit upon the pusher floor, the pusher floor being positionable on and movable across the surface of the display system,

wherein the pusher mechanism sits on top of and does not extend below the surface

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of the display system, and is mounted to and held onto the display system only by the biasing element.

14. The pusher mechanism of Claim 13, wherein the pusher surface is concave shaped.

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15. The pusher mechanism of Claim 13, wherein the pusher floor defines a channel for receiving the biasing element.

16. The pusher mechanism of Claim 13, wherein the pusher floor defines a notch and the
10 pusher surface defines a back surface for contact with the biasing element.

17. The pusher mechanism of Claim 13, wherein the pusher floor defines a curve-shaped periphery floor portion.

15 18. The pusher mechanism of Claim 13, wherein the pusher floor defines a periphery that further defines first and second curve-shaped periphery portions and a notch located between the first and second curve-shaped periphery portions.

19. The pusher mechanism of Claim 13, wherein the biasing element includes a coiled end,
20 and wherein an end of the biasing element opposite of the coiled end is configured to attach to the surface of the display system.

20. The pusher mechanism of Claim 13, wherein the pusher surface defines a back surface which includes a plurality of support members.

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21. The pusher mechanism of Claim 20, wherein the biasing element includes a coiled end, and wherein the coiled end of the biasing element is positioned between two of the support members.

30 22. A system according to any one of claims 1 to 12 or mechanism according to any one of claims 13 to 21, wherein the biasing element comprises a coiled spring.

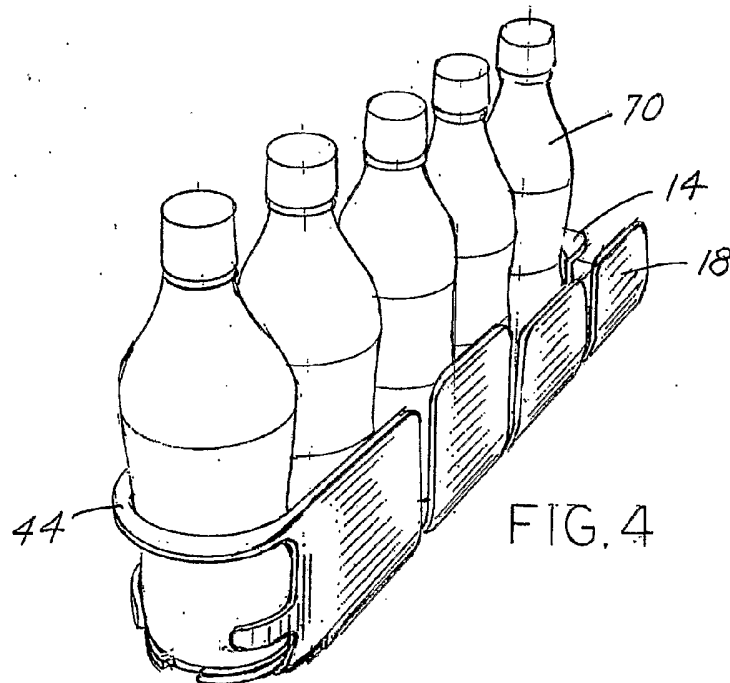
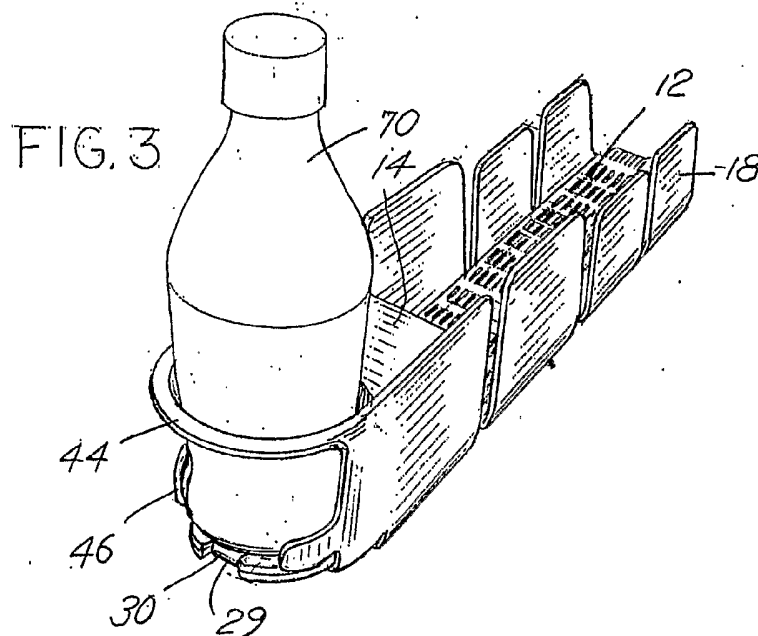
23. A product management display system substantially as hereinbefore described with reference to the drawings and/or Examples.

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24. A pusher mechanism for a product management display system, substantially as hereinbefore described with reference to the drawings and/or Examples.

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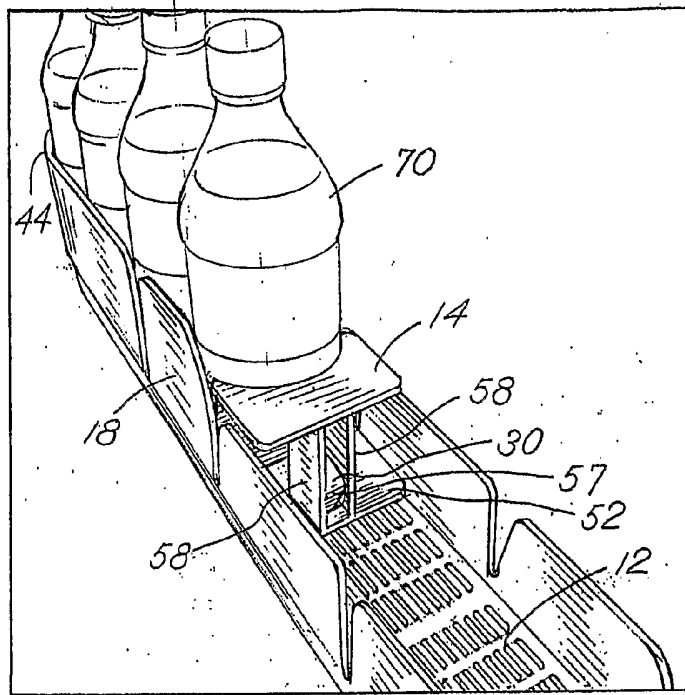


FIG. 5

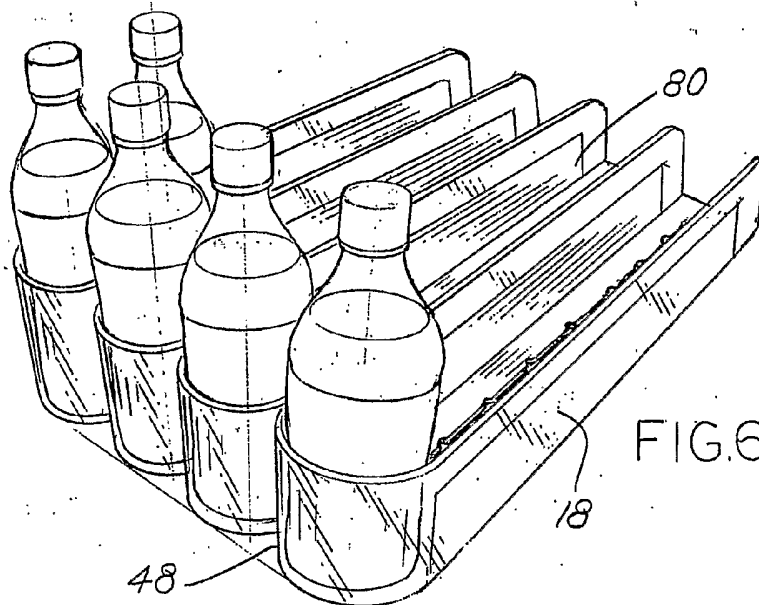


FIG. 6

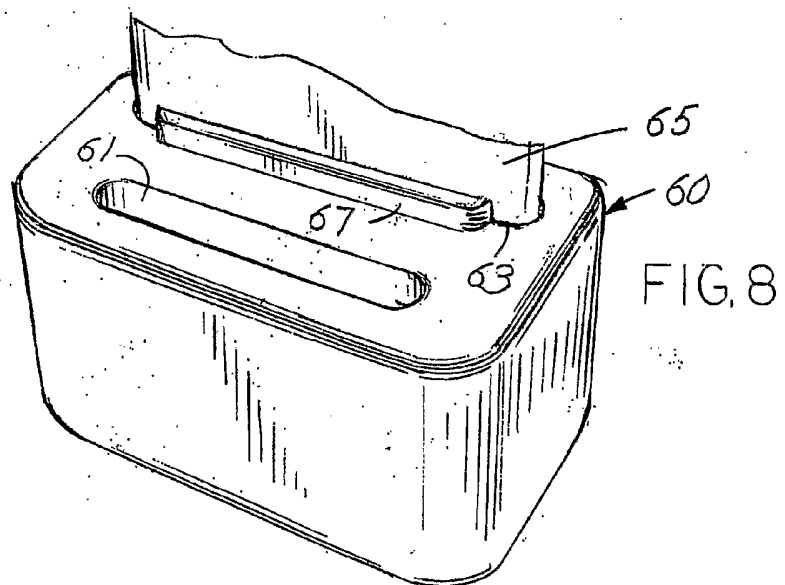
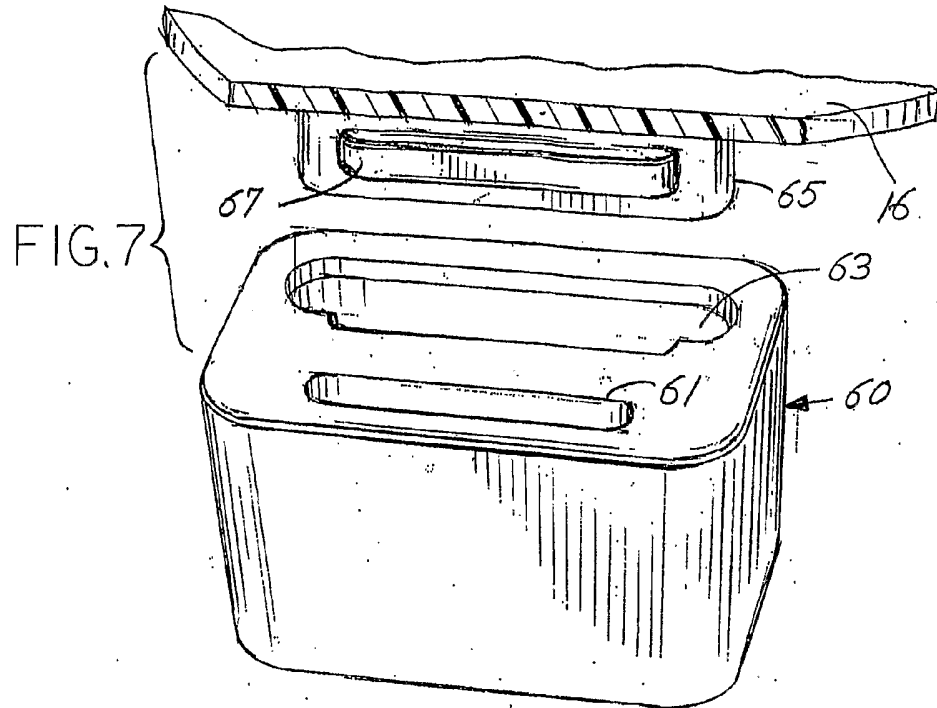


FIG.9

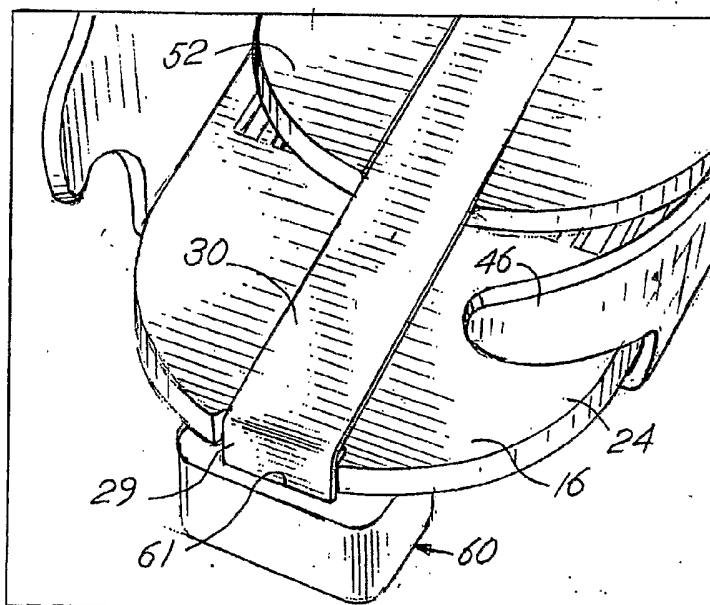
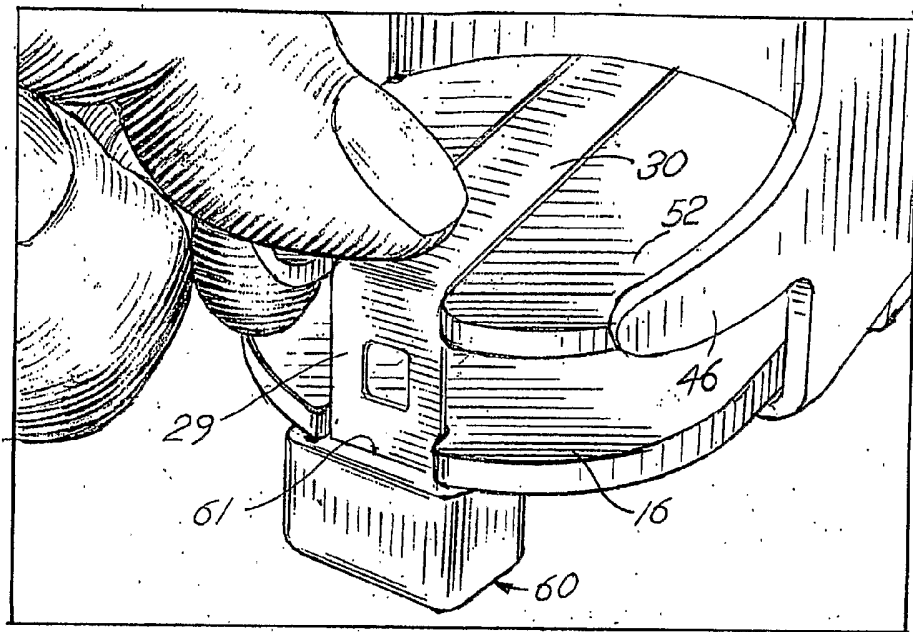


FIG.10

FIG. 11

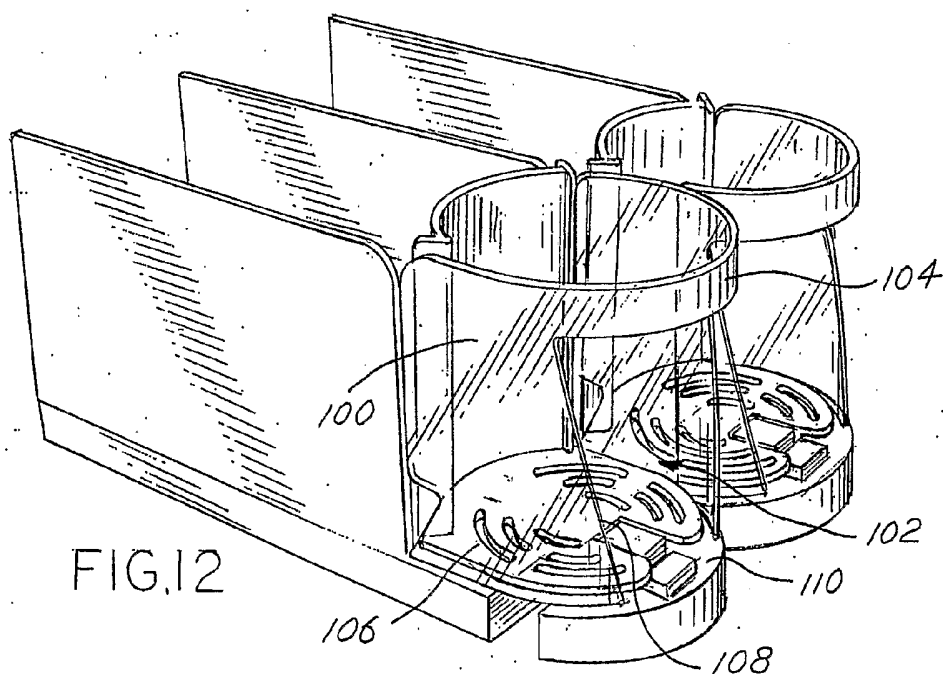
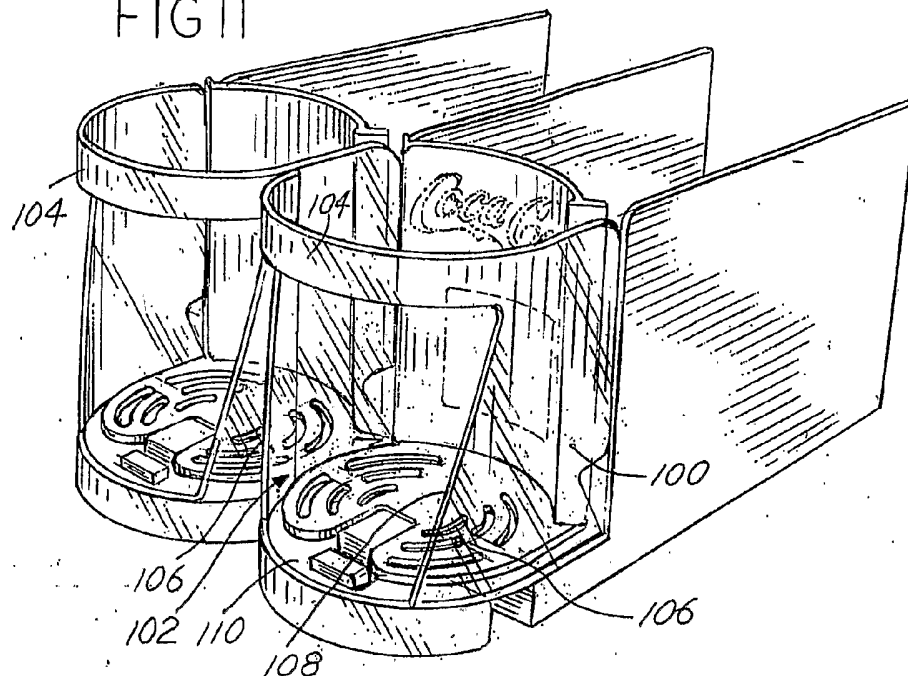


FIG. 12

FIG. 13

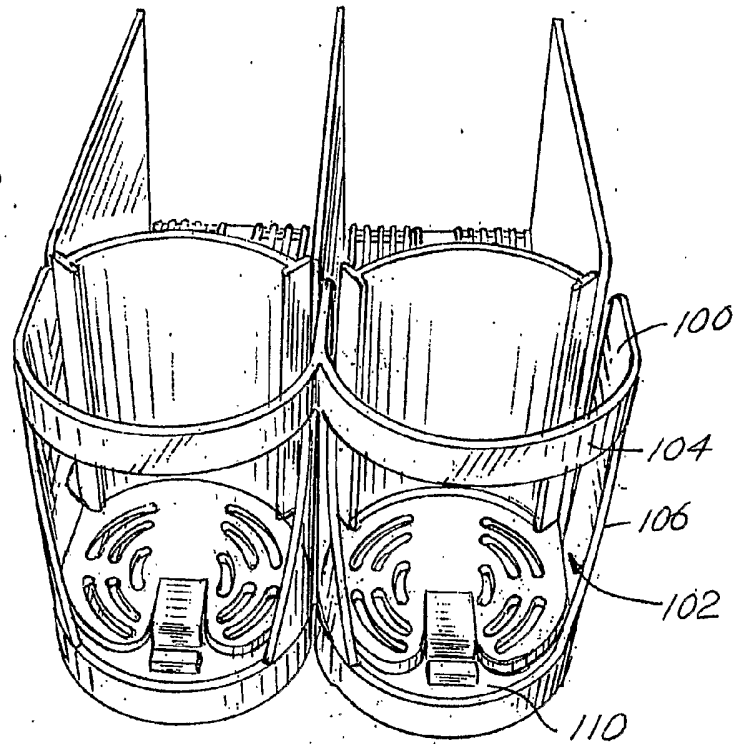


FIG. 14

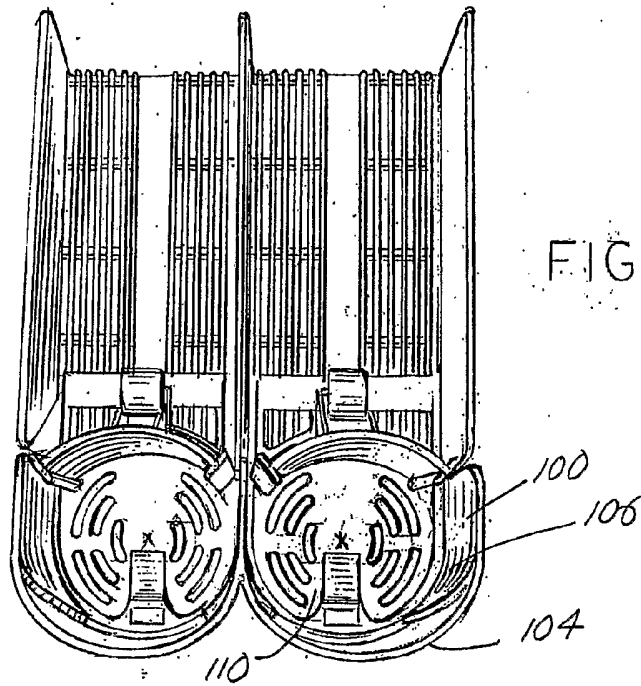


FIG.15

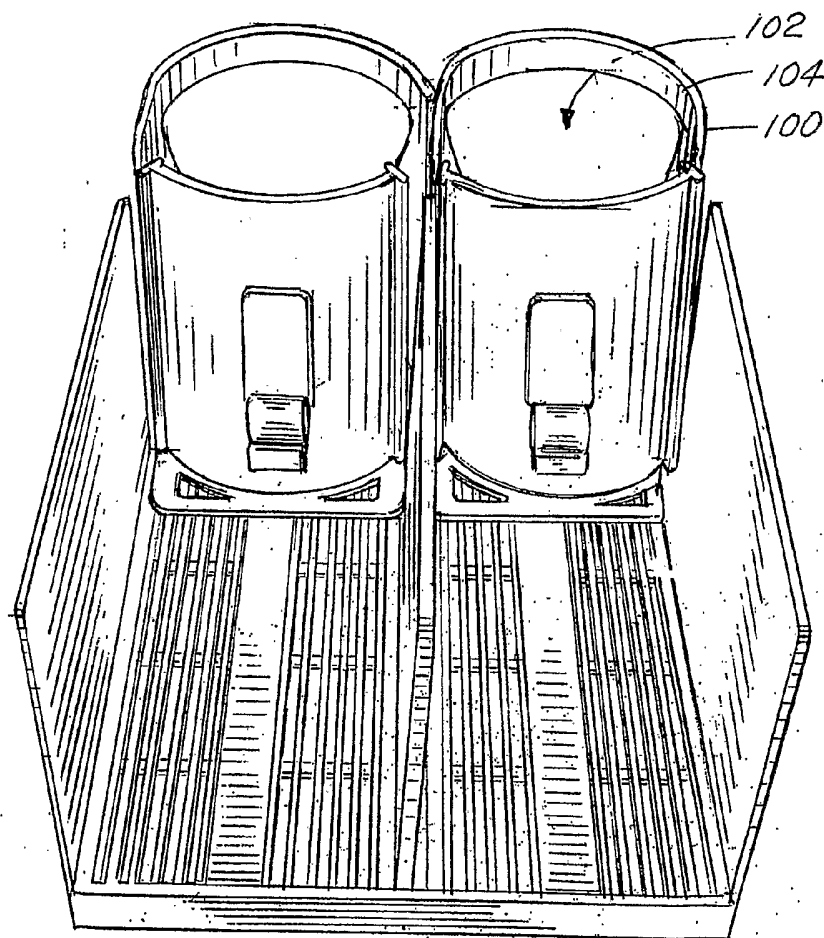


FIG. 16

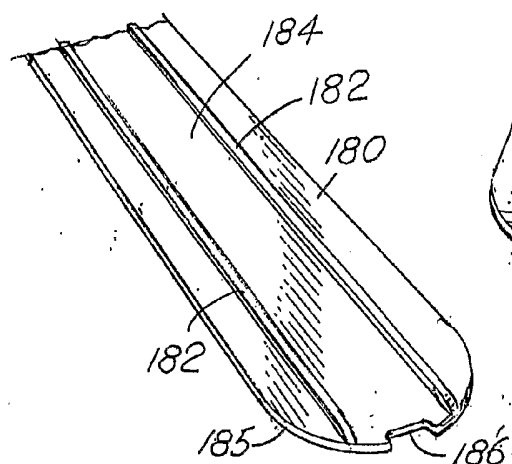


FIG. 17

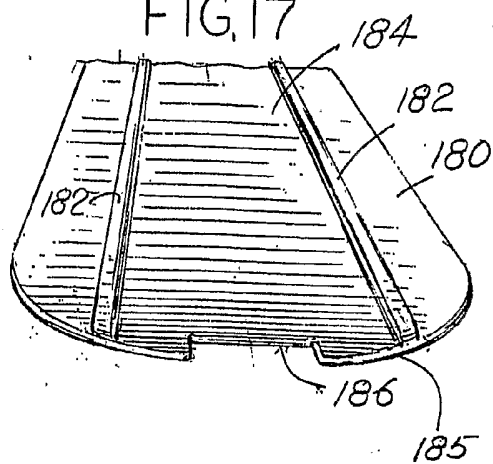


FIG. 18

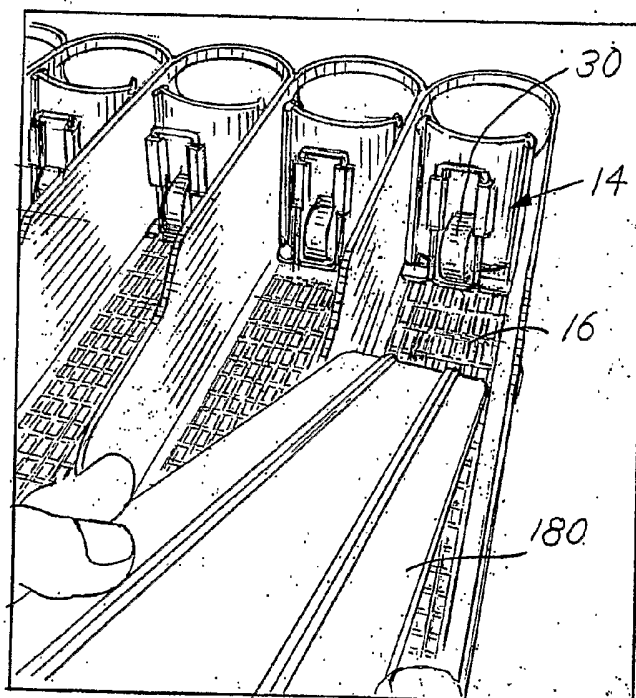


FIG.19

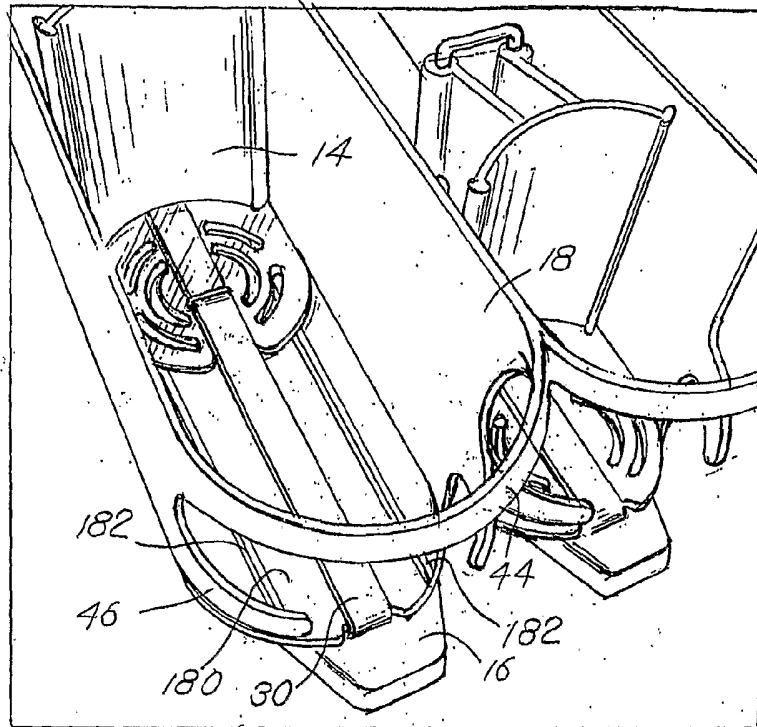


FIG 20

