THEFT DETERRENT SYSTEM

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Application No.: 12/035,567
Filed: Feb. 22, 2008

Related U.S. Application Data
Continuation of application No. 11/415,524, filed on May 2, 2006.
Provisional application No. 60/677,252, filed on May 2, 2005.

Publication Classification
Int. Cl.
B65H 29/00 (2006.01)

U.S. Cl. 221/154

ABSTRACT
An apparatus for dispensing products including a mechanism for limiting the movement of multiple products within a housing to one direction, at least one product retaining structure for preventing access to multiple products in a given period of time, and at least one theft deterring mechanism.
THEFT DETERRENT SYSTEM

RELATED APPLICATION DATA

This application is a continuation of U.S. application Ser. No. 11/415,524 filed May 2, 2006, which claims the benefit of U.S. Provisional Application No. 60/677,252, filed May 2, 2005, which is incorporated in its entirety herein by reference.

FIELD OF THE INVENTION

The invention relates generally to devices for dispensing products. More specifically, the invention relates to dispensing devices that incorporate theft deterrent measures, such as locks, time delays and sound.

GENERAL BACKGROUND

Theft in retail stores is an all too common problem. Items that are in high demand by thieves include over-the-counter (OTC) products such as analgesics and cough and cold medications, razor blades, camera film, batteries, videos, DVDs, smoking cessation products and infant formula. Theft of infant formula in particular raises unique concerns. In many cases, the infant formula is stolen by retail theft rings for resale. The infant formula may not be stored under proper conditions, which threatens the integrity of the product. The retail theft ring may create counterfeit labels for the infant formula that after the expiration date or indicate that it is a more expensive or specialized formula. As a result, when these products make their way back into the legitimate distribution chain, parents may be feeding their babies unsafe or adulterated products.

Typical store displays, such as placing items on a shelf, may lead to certain shoplifting techniques. For example, shelf sweeping, when individuals or groups remove all the shelf stock and exit the store, is a particularly effective and troublesome technique.

Retailers are constantly challenged to balance the needs of legitimate consumers' access to high theft items with measures to minimize the incidence of theft. Because theft has become so rampant in certain product categories, such as razors and infant formula, many retail stores are taking the products off the shelves and placing them behind the counter or under lock and key. Customers must request the products in order to make a purchase. This requires additional labor costs to provide individual service to customers who would normally not require it. It also makes it difficult for customers to compare products. Furthermore, it may be impossible where the space behind the counter is limited and is needed for prescription medications.

It has long been known to place items such as cigarettes, sodas and newspapers in vending machines. Such machines require complete self-service by the customer. The customer places money into the vending machine and the machine dispenses the desired item. Typical vending machines, however, do not allow for variation in product size and can only vend the particular item that they were designed for. Additionally, typical vending machines may be inconsistent with the way that people currently purchase items; many people prefer to use credit or debit cards instead of cash. Vending machines also occupy a great deal of space. Finally, typical vending machines do not employ any mechanism to prevent a purchaser from quickly dispensing all the items in the vending machine.

Thus, a device or dispensing apparatus that minimizes the likelihood of sweeping or unusually high numbers of multiple purchases is needed. Such a device or dispensing apparatus should be able to fit within common grocery, drug store or other retail environment shelves. It is also desirable that the device or dispensing apparatus effectively display the products so consumers can easily identify the products. It is also preferable that the dispensing apparatus be easy to use.

BRIEF SUMMARY OF THE INVENTION

Embodiments of the invention provide an apparatus for dispensing products including a mechanism for limiting the movement of multiple products within a housing to one direction, at least one product retaining structure for preventing access to multiple products in a given period of time, and at least one theft deterring mechanism.

In some embodiments, the mechanism for limiting the movement of the products to one direction includes an indexer wheel and pawl.

In other embodiments, the at least one product retaining structure includes a pair of doors that open simultaneously, but close sequentially, thus blocking access to the products for a period of time. In specific embodiments, the doors may be rotating doors that are controlled by an electromechanical mechanism.

In still other embodiments, the theft deterring mechanism is a time delay between the dispensing of products.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front perspective view of an assembled dispenser according to certain embodiments of the invention.

FIG. 2 is an exploded view of the assembled dispenser of FIG. 1.

FIG. 3 is a front perspective view of an assembled dispenser according to certain embodiments of the invention.

FIG. 4 is a side plan view of a dispensing module of a dispenser according to certain embodiments of the invention.

FIG. 5 is a rear plan view of a dispensing module of a dispenser according to certain embodiments of the invention.

FIG. 6 is a perspective view of an assembled dispenser according to an alternative embodiment of the invention.

FIG. 7 is an exploded view of the assembled dispenser of FIG. 6.

FIG. 8 is an enlarged, partial perspective view of the dispenser of FIG. 6.

DETAILED DESCRIPTION

Embodiments of the invention will now be described more fully with reference to the drawings.

In one embodiment of the invention, shown in FIGS. 1-5, the dispenser 10 includes an outer housing 11. The outer housing may be formed of any material suitable for holding the intended products, such as metal or molded plastic. The outer housing 11 may be a single part or may be formed from multiple parts. As shown in FIG. 1, in certain embodiments, the outer housing 11 may include a left case side 12, a right case side 14 and a front case cover 38. The left case side 12 and the right case side 14 sides may be formed of molded plastic.
The dispenser 10 can be used to store and dispense a plurality of products 54 (Figs. 3 and 4). Generally, the products 54 to be dispensed are located inside the outer housing 11 between the right case side 14 and the left case side 12. An inner shelf 28 (Fig. 2) may be used to divide the area inside the housing 11 into an upper area (not visible in the drawings and located behind front case door 40) and a lower area 26 (Fig. 1) to allow additional products 54 to be stored within the dispenser 10. In certain embodiments, the left case side 12 and the right case side 14 include slots or keyholes 52 in which the inner shelf 28 fits.

The interior of the outer housing 11 includes an angled surface 56 in the lower area 26. The angled surface 56 is shaped such that at least the ends of some of the products 54 rest on the angled surface 56. Because the surface 56 is angled towards the dispensing opening 44 in the front case cover 38, the products 54 move forward by gravity. The angled surface 56 may extend across the full width of the product 54 or may be two separate angled surfaces 56 located below each end of the product 54, as shown in Fig. 2.

In certain embodiments, the products 54 or at least the packaging of the products 54 in the dispenser 10 are round so that the products 54 easily move forward by gravity on the angled surface 56. In other embodiments, at least the ends of the product 54 or its packaging may be round to facilitate the movement of the products 54 forward.

Multiple products may be located in the dispenser 10, as shown in Fig. 4. However, only one product 54 is in the dispensing position and accessible to customers at any one time.

To dispense products 54, a consumer lifts an outer door 18 of the dispenser 10. An inner door 16 may be connected to the outer door 18 so that when the outer door 18 is opened, the inner door 16 is also opened. In certain embodiments, a gear 20 facilitates this coordinated movement of the two doors 16, 18. The gear 20 may include structure, such as an extension, arm or post, to engage the outer and inner doors 18, 16. As shown in Fig. 2, a post 58 fits into an opening 62 in the outer door 18. On the opposite side of the gear 20, additional structures, such as arms 60 fit into the openings 64 in the inner door 16. When the outer door 18 is manually opened by a consumer, teeth 66 located on outer door 18 engage gear 20. As the outer door 18 rotates, the gear 20 rotates. The gear 20 is directly connected to the inner door 16 by arms 60. Thus, inner door 16 also rotates and opens with the outer door 18. In other embodiments, inner door 16 and outer door 18 are not connected and the customer must lift the inner door 16 after lifting the outer door 18.

When both the inner and outer doors 16, 18 are open, they rotate, pivot, slide or otherwise move so that a single product 54 to be dispensed is accessible to the customer, as shown in Figs. 1 and 3. When the inner and outer doors 16, 18 are open, the inner and outer doors 16, 18 are located between the product 54 to be dispensed and the next available product 55, as shown in Fig. 4.

As shown in Figs. 2 and 4, springs 50 may be connected to the outer door 18. As the outer door 18 rotates to open, the spring 50 extends and exerts pressure on the outer door 18 to close. Thus, the outer door 18 closes after the customer has removed the product 54 to be dispensed. To prevent the outer door 18 from closing too quickly or too forcefully, a damper 34 may be connected to the outer door 18.

The inner door 16 remains open for a period of time. While the inner door 16 is open, it physically blocks the next available product 55 from moving into the dispensing position. After the desired period of time has passed, the inner door 16 rotates closed. When the inner door 16 closes, the next available product 55 moves forward into the dispensing position.

In some embodiments, the closing of the inner door 16 is controlled by a mechanical mechanism. For example, the gear 20 may have an extension 68. This extension 68 can be connected to a motor 36. When the desired period of time has passed, the motor 36 is activated and turns the gear 20, closing inner door 16. In some embodiments, the closing of the outer door 18 trips a switch that allows the inner door 16 to start closing. Springs 50 puts tension on inner door 16 to close; however, if the outer door 18 is left open or is reopened, the inner door 16 will not close and the next product will not move forward.

The dispenser 10 according to the invention is also simple to stock and restock. According to some embodiments, products 54 are placed in the dispenser 10 by opening the case front door 40 and simply placing the products 54 one by one in the opening 42 onto the inner shelf 28. The inner shelf 28 may be angled to facilitate the movement of products 54 toward the back of the dispenser 10 and into the lower area 26.

In certain embodiments of the invention, the dispenser 10 includes an additional theft deterrent mechanism that prevents would-be thieves from removing products 54 from the stock area behind the front case door 40. In certain embodiments, the additional theft deterrent mechanism is a lock on the case front door 40. In these embodiments, a key is necessary to open the case front door 40 and stock the dispenser 10. In other embodiments, as shown in Fig. 2, a pair of indexer wheels 32 is the additional theft deterrent mechanism. The indexer wheels 32 are joined by a hex shaft 30. When the product 54 is placed in the stock area 24, the product 54 moves toward the back of the dispenser 10 because of the angled inner shelf 28. As it moves backwards, the product 54 moves over the hex shaft 30 and the weight of the product 54 causes the indexer wheel 32 to rotate towards the back of the dispenser 10. A pawl 46 may be used to ensure that the indexer wheel 32 is unidirectional and thus, any thieves are prevented from the desire a product 54 out of the stock opening 42 in the front case cover 38.

In some embodiments, the dispenser 10 may be placed on a shelf or a counter. In other embodiments, the dispenser 10 may be attached to a standard store display. The dispenses may be attached directly to a shelf or may be attached with a secondary mounting bracket.

In an alternative embodiment of this invention, shown in Figs. 6-8, dispenser 100 includes left case side 102 and right case side 104, which are joined at one end by top support 106 and at the rear end of the device by back cross supports 107. Top support 106 provides support for an additional dispenser when the dispensers are stacked upon one another. In addition, locking ridge 108 accepts a locking element, such as locking element 110, from another dispenser so that the units are secured together. Locking element 110 also elevates the dispenser unit 100 so that it rests at an angle and allows gravity to move product toward the front of the dispenser.

Front door 112 is attached to control arms 114 and opens outward to expose a single product (not shown) resting
on sloped surfaces 115 of feeding panels 116. Control arms 114 attach to feeding panels 116 and lock when the door 112 is open, so that panels 116 are not able to accept another product from storage area 118. Feeding shaft 121 connects feeding panels 116.

Spring 120 may be connected to the door 112. As the front door 112 opens, spring 120 extends and exerts pressure on the door 112 to close. Thus, the front door 112 closes after the customer has removed a product to be dispensed. Both damper 122 and second spring 124 attach to the feeding panel 116, so that spring 124 and damper 122 slow the return of the feeding panels 116 and create a time delay between dispensing products.

The foregoing description is provided for describing various embodiments and structures relating to the invention. Various modifications, additions and deletions may be made to these embodiments and/or structures without departing from the scope and spirit of the invention.

1. A device for controlled dispensing of product comprising:
   (a) a front door;
   (b) at least one display panel comprising a product receiving surface;
   (c) at least one control arm having two ends, wherein a first end of the control arm is attached to the front door and wherein a second end of the control arm is attached to the display panel; and
   (d) a spring urging the front door to a closed position;
   wherein the control arm prevents movement of the display panel when the front door is opened, blocking access to additional product.

2. The device of claim 1, wherein the device is downwardly sloped so that gravity moves product toward the at least one display panel.

3. The device of claim 2, wherein the device further comprises a foot for elevating a rear portion of the device.

4. The device of claim 1, wherein the product receiving surface further comprises a concave surface.

5. The device of claim 1, further comprising a time delay mechanism, wherein a time delay is provided after a product is dispensed before the device will dispense a second product.

6. The device of claim 5, wherein the time delay mechanism comprises a second spring attached to the display panel.

7. The device of claim 1, wherein the device is configured to stack upon other devices.

8. The device of claim 1, wherein the device further comprises a locking mechanism that enables multiple devices to be secured together.

9. The device of claim 1, wherein the display panel pivots between a product receiving position and a product dispensing position, and wherein a product may be positioned on the product receiving surface when the display panel is in either position.

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