Abstract: A security dispenser for the display and dispensing of merchandise items, having an elongate housing for storing a row of merchandise items, a rear end, a front delivery end, and a lid. An incremental feed device is disposed in the security dispenser, comprising a pusher assembly for advancing merchandise items to the front delivery end, and a stop mechanism allowing the pusher assembly to achieve its travel in a plurality of predetermined increments. When the pusher assembly is engaged with the stop mechanism, an actuator operably connected to the stop mechanism and having an engagable component, must be actuated by a user wishing to dispense a merchandise item, causing the pusher assembly to temporarily disengage the stop mechanism, thereby allowing the pusher assembly to travel in one of the predetermined increments.
This invention relates to a dispensing unit for the display and dispensing of merchandise. In particular this invention is directed towards providing security against pilfering of merchandise which is displayed in retail outlets.

It is well known to use dispensing units for the display of merchandise in retail situations. In some instances dispensers and dispensing units have been employed as deterrent to theft of costly merchandise items, such as razor blades, cosmetics and the like. One such dispensing unit utilises an automatic feed display of the type used in US Patent No. 4,300,693 (Spamer) to advance merchandise items stored therein. One of the problems with such units is that they occasionally jam and are not easily cleared or able to be replaced or repaired in a retail environment. Also some of the units do not significantly deter would be thieves/shoplifters from dispensing multiple items.

The present invention seeks to provide a dispensing unit able to ameliorate at least some of the disadvantages of the prior art.

The present invention consists of a security dispenser for the display and dispensing of merchandise items, said security dispenser having an elongate housing with a rear end and a front delivery end, a lid and an incremental feed device disposed therein, said elongate housing for storing a plurality of merchandise items in a row, said incremental feed device comprising a pusher assembly powered for the duration of its travel by a bias means for advancing merchandise items from said rear end to said front delivery end, and a stop mechanism allowing said pusher assembly to achieve its travel in a plurality of predetermined increments, wherein when said pusher assembly is engaged with said stop mechanism, an actuator operably connected to said stop mechanism and having an engagable component,
must be actuated by a user wishing to dispense a merchandise item, and actuation of said actuator causes said pusher assembly to temporarily disengage said stop mechanism, thereby allowing said pusher assembly to travel in one of said predetermined increments.

Preferably, said incremental feed device is advanced at a low uniform speed.

Preferably, said merchandise item is removed from said delivery front end in a downward motion.

Preferably, said delivery front end has a narrow aperture that allows for removal of a merchandise item in said downward motion, and a biased one-way flap is disposed within said housing that is capable of opening when a merchandise item is being dispensed, and closes immediately thereafter thereby preventing access to said merchandise items stored within said housing.

Preferably, said engagable component is a push-button located at or near said narrow aperture of said delivery front end, and access to said push-button is hindered by the downward motion of a merchandise item being dispensed, thereby requiring said user to release said push-button in order to remove said merchandise item.

Preferably, said stop mechanism comprises a flexible elongate member with at least one array of spaced apart projections, said push-button being operably connected to said flexible member, and in use at least one of said projections acts as a stop to prevent travel of said pusher assembly until said push-button is depressed thereby flexing said flexible elongate member to disengage said at least one projection and allow said pusher assembly to travel until it abuts against an adjacent said projection.

Preferably, said dispenser is a modular dispenser removably mounted with other like dispensers in a dispensing unit having a base member. In one preferred embodiment, said modular dispensers are mounted in side by side relationship. In another preferred embodiment, said modular dispensers are mounted in a vertical arrangement.
Preferably, a security member is removably secured to said base member for preventing removal of said modular dispensers from said base member. Preferably, said base member has two opposed side walls, and said security member is removably secured to said side walls.

Preferably, each of said items to be dispensed comprises an RFID tag, and an RFID reader associated with said security device is capable of tracking said items. Preferably, said RFID reader is operably connected to a security surveillance system via an RFID controller, and wherein when said controller detects a number of items being dispensed in less than a predetermined time period said RID controller signals said security surveillance system.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a perspective view of a first embodiment of a dispensing unit for the display and dispensing of merchandise, in accordance with the present invention.

Fig. 2 is a perspective exploded view of a modular dispenser of the dispensing unit shown in Fig. 1.

Fig. 3 is an enlarged cross-sectional view of a modular dispenser of the dispensing unit shown in Fig. 1.

Fig. 4 is an enlarged cross-sectional view of a modular dispenser of the dispensing unit shown in Fig. 1 with merchandise items stored therein.

Fig. 5 is a sectional perspective exploded view of a modular dispenser of the dispensing unit shown in Fig. 1.

Fig. 6 is a detail view of the modular dispenser shown in Fig. 5.

Fig. 7 is a schematic arrangement of an RFID system to further enhance the security of the dispensing unit shown in Fig. 1.
Fig. 8 is a perspective view of a second embodiment of a dispensing unit for the display and dispensing of merchandise, in accordance with the present invention.

Fig. 9 is a perspective view of a third embodiment of a dispensing unit for the display and dispensing of merchandise, in accordance with the present invention.

**BEST MODE OF CARRYING OUT THE INVENTION**

Fig. 1 depicts a dispensing unit 1 for the display and dispensing of merchandise items in accordance with a first embodiment of the present invention. Dispensing unit 1 is adapted to be supported or integral with a retail shelving system (not shown). Dispensing unit 1 comprises a base member 2, supporting a plurality of removable modular security dispensers 3 mounted in a side by side relationship. In this embodiment, the base member 2 may support up to eight modular dispensers 3.

Referring to Figs. 2 to 6, each modular security dispenser 3 comprises an elongate housing 4 defining a track, a pivotal lid 5 and a removable automatic feed device 6. Elongate housing 4, which has a rear end 7 and a front delivery end 8, is for storing a plurality of merchandise items 9 in a row along the track. Automatic feed device 6 is used to forward feed merchandise items 9 towards front delivery end 8. A lower opening 10, being a narrow aperture in the delivery front end 8 of housing 4, allows for the foremost merchandise item 9a to drop in a downward direction on to a ledge 26 to await removal from modular dispenser 3, as shown in Fig. 4. In this way, items 9 are removed from dispenser 3 in a downward direction. When merchandise item 9a is removed from modular dispenser 3, automatic feed device 6 brings the next succeeding merchandise item 9 to the delivery front end 8.

In use, when a merchandise item 9 is removed from modular dispenser 3, and automatic feed device 6 brings the next succeeding merchandise item 9 to the delivery front end 8, it advances at a low uniform speed. "Low uniform speed" preferably means a speed that would take fifteen seconds or more to advance the next succeeding merchandise item to the delivery front end 8. By advancing at a low uniform speed, the automatic feed device 6 allows dispenser 3 to store and dispense merchandise items, whilst at the same time it eliminates the risk of a thief/shoplifter grabbing a plurality of many merchandise items in a single grab.
The automatic feed device 6 preferably comprises a spring loaded pusher assembly 15 similar to known automatic feed devices, one of which is shown in US Patent No. 4,300,693 (Spamer). Pusher assembly 15 is powered for the duration of its travel by a spring (bias) means (not shown) for advancing merchandise items 9 from the rear end 7 to the front delivery end 8. However, in this preferred embodiment a stop mechanism 20 engages with pusher assembly 15 to allow pusher assembly 15 to achieve its travel in a plurality of predetermined increments. Thus the automatic feed device 6 in combination with stop mechanism 20 form an "incremental feed device" which allows pusher assembly 15 to travel and push merchandise items 9 forward in a plurality of predetermined increments.

Stop mechanism 20 comprises a flexible elongate member 21 with two arrays (rows) of ramped projections (or teeth) 22 projecting therefrom. Only one of the arrays of ramped projections 22 is utilised at a time. In use, flexible elongate member 21 is disposed underneath the pusher assembly 15 and the advance of travel of pusher assembly 15 by spring means is prevented by engagement of a ramped lug 28, on the underside of and movable with pusher assembly 15, with one of the projections 22. An actuator having an engagable component, namely push-button 23, is operably connected to flexible elongate member 21. When push-button 23 is depressed, elongate member 21 is actuated by flexing, thereby disengaging a projection 22 from lug 28, which temporarily disengages stop mechanism 20 from pusher assembly 15. This allows pusher assembly 15 to travel in a predetermined increment until it abuts against an adjacent projection 22 next along in the array.

As a user must depress push-button 23 and await dispensing of an item 9 occurring by travel of pusher assembly 15 at a "low uniform speed" in a predetermined increment, and then remove the item 9 before again depressing the push-button 23 to dispense a further item 9, this will substantially act as a deterrent to a thief/shoplifter wishing to grab a plurality of items 9.

A user wishing to dispense a plurality of items 9 cannot continually keep push-button 23 depressed to rapidly dispense items 9. This is because of the location of push-button 23 on face 24 of dispenser 3, near opening 10 where item 9 is dispensed to ledge 26. Ledge 26 projects forwardly away from the bottom of face 24 such that face 24 is above ledge 26 and below feed device 6. When an item 9a has dropped down on to ledge 26, push-button 23 on
face 24 is behind item 9a. In order for foremost item 9a to be dispensed from opening 10, in a
downward motion towards ledge 26, a user must take their hand away from push-button 23,
after first depressing it to start the dispensing action, in order to not obstruct or hinder the
dispensing action. As push-button 23 is depressed and released to dispense an item 9, this
ensures that travel of pusher assembly 15 occurs in the earlier mentioned "predetermined
increment". Furthermore, the next dispensing action cannot be started until a dispensed item
9a is removed from modular dispenser 3 because when the dispensed item 9a is resting on
ledge 26 it covers and blocks access to push-button 23.

A further security feature is that an item 9 being dispensed must pass through a one way
opening hinged flap 27 located at the front delivery end 8, a short distance back from and
above opening 10. Whilst an item 9 can push and move past flap 27 in a downward direction,
it cannot be pushed open in an upward direction. As the opening 10 is narrow and flap 27 is
disposed internally a short distance therefrom, a thief or shoplifter is prevented from easily
accessing the items 9 within housing 4 via opening 10. Flap 27 is biased upwards by a spring
(not shown) such that it is normally horizontal as shown in Fig. 3.

Referring to Fig. 1, a security member 11 is fixed to side walls 12 of base member 2, thereby
preventing the easy removal of modular dispensers 3 from dispensing unit 1, and preventing
lids 5 of dispensers 3 from being opened. However, security member 11 can be removed by a
retail employee for filling dispensers 3 or for their removal and/or exchange. Whilst in this
embodiment security member 11 is shown spanning across the top of dispensing units 3, it
could in other embodiments be a lockable lower member spanning across the front of
dispensing units 3.

From time to time, should merchandise items 9 get stuck in elongate housing 4 or automatic
feed device 6 become stuck, the modular nature of each modular dispenser 3, its pivotal lid 5
and removable automatic feed device 6 means that faulty or jammed modular dispensers 3 can
be readily removed from the dispensing unit 1 to be cleared, replaced and/or repaired.

Therefore, the arrangement of dispensing unit 1 both acts as a deterrent to theft of retail items
and allows for ease of maintenance.
As previously mentioned, whilst flexible elongate member 21 has two arrays (rows) of ramped projections (or teeth) 22 projecting therefrom, only one array of projections 22 is used at a time. The two arrays each have different spacing for projections 22, thereby allowing a flexible member 21 of stop mechanism 20 to be set up in a choice of travel increments, to suit different merchandise items to be dispensed, by moving ramped lug 28 sideways to engage the other array.

In a further enhanced security arrangement, RFID technology may be used in conjunction with dispensing unit 1 and dispensers 3 as shown in Fig. 7. Each merchandise item 9 would be provided with a passive RFID tag 30. An RFID reader 31 associated with a dispensing unit 1 or dispenser 3 would be located in close proximity thereto. The RFID reader 31 may operably be connected to an in-store security surveillance system 50 via a controller 32. The controller 32 may be separate or integral with the RFID reader 31. Should controller 32 detect that a plurality of items 9, which for example may be three or four items 9, are dispensed in a under a predetermined time interval the RFID controller may signal the in-store security surveillance system. This may include alerting in-store security staff to an incident of potential theft, and/or ensure that camera surveillance data is stored for the relevant time of the incident occurring.

Fig. 8 depicts a second embodiment of a dispensing unit 1a for the display and dispensing of merchandise, in accordance with the present invention. Dispensing unit 1a is similar to dispensing unit 1 shown in Fig. 1, except that its modular security dispensers 3 are mounted in a vertical arrangement in its base member 2a. The dispensers 3 of dispensing unit 1a are similar to those of dispensing unit 1. In this example, there a four vertically arranged dispensers 3.

Fig. 9 depicts a third embodiment of a dispensing unit 1b for the display and dispensing of merchandise, in accordance with the present invention. Dispensing unit 1b is similar to dispensing units 1 and 1a, except that dispensing unit 1b has its modular security dispensers 3 mounted both side by side and vertically in its base member 2b. In this example, there are twelve dispensers 3 arranged in an array three wide by four high.

The terms "comprising" and "including" (and their grammatical variations) as used herein are used in an inclusive sense and not in the exclusive sense of "consisting only of."
CLAIMS

1. A security dispenser for the display and dispensing of merchandise items, said security dispenser having an elongate housing with a rear end and a front delivery end, a lid and an incremental feed device disposed therein, said elongate housing for storing a plurality of merchandise items in a row, said incremental feed device comprising a pusher assembly powered for the duration of its travel by a bias means for advancing merchandise items from said rear end to said front delivery end, and a stop mechanism allowing said pusher assembly to achieve its travel in a plurality of predetermined increments, wherein when said pusher assembly is engaged with said stop mechanism, an actuator operably connected to said stop mechanism and having an engagable component, must be actuated by a user wishing to dispense a merchandise item, and actuation of said actuator causes said pusher assembly to temporarily disengage said stop mechanism, thereby allowing said pusher assembly to travel in one of said predetermined increments.

2. A security dispenser as claimed in claim 1 wherein said incremental feed device is advanced at a low uniform speed.

3. A security dispenser as claimed in claim 1, wherein said merchandise item is removed from said delivery front end in a downward motion.

4. A security dispenser as claimed in claim 3, wherein said delivery front end has a narrow aperture that allows for removal of a merchandise item in said downward motion, and a biased one-way flap is disposed within said housing that is capable of opening when a merchandise item is being dispensed, and closes immediately thereafter thereby preventing access to said merchandise items stored within said housing.

5. A security dispenser as claimed in claim 4, wherein said engagable component is a push-button located at or near said narrow aperture of said delivery front end, and access to said push-button is hindered by the downward motion of a merchandise item being dispensed, thereby requiring said user to release said push-button in order to remove said merchandise item.
6. A security dispenser as claimed in claim 5, wherein said stop mechanism comprises a flexible elongate member with at least one array of spaced apart projections, said push-button being operably connected to said flexible member, and in use at least one of said projections acts as a stop to prevent travel of said pusher assembly until said push-button is depressed thereby flexing said flexible elongate member to disengage said at least one projection and allow said pusher assembly to travel until it abuts against an adjacent said projection.

7. A security dispenser as claimed in claim 1, wherein said dispenser is a modular dispenser removably mounted with other like dispensers in a dispensing unit having a base member.

8. A security dispenser as claimed in claim 7, wherein said modular dispensers are mounted in side by side relationship.

9. A security dispenser as claimed in claim 7, wherein said modular dispensers are mounted in a vertical arrangement.

10. A security dispenser as claimed in claim 7, wherein a security member is removably secured to said base member for preventing removal of said modular dispensers from said base member.

11. A security dispenser as claimed in claim 10, wherein said base member has two opposed side walls, and said security member is removably secured to said side walls.

12. A security dispenser as claimed in claim 1, wherein each of said items to be dispensed comprises an RFID tag, and an RFID reader associated with said security device is capable of tracking said items.

13. A security dispenser as claimed in claim 12, wherein said RFID reader is operably connected to a security surveillance system via an RFID controller, and wherein when said controller detects a number of items being dispensed in less than a predetermined time period said RID controller signals said security surveillance system.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. A47F 1/00 (2006.0) A47F 7/024 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPODOC & WPI: IPC, EC A47F 1/00/-, 3/00/-, 7/00/-, 10/00/- and Keywords (Dispense, Display, Merchandise, Theft, Pilfer, Steal, Security, Count, Increment, Step, Predetermined, Stop, Arrest, Actuate, Button) and like terms
ESP@CENET Keywords: Dispense, Count, Step, Security, Theft
Google Patents Keywords: Security, Increment, Step, Count, Theft, Steal, Dispense, Merchandise

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Relevant to claim No.</th>
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<td>A</td>
<td>US 764 1072 B1 (VLASTAKIS ET AL) 05 January 2010 See especially columns 7 &amp; 8 and figures 16-24</td>
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Further documents are listed in the continuation of Box C X See patent family annex

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Date of the actual completion of the international search 04 March 2011

Date of mailing of the international search rep 21 MAR 2011

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<td>WO 2010 141 552</td>
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Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX