This invention relates to printed security codes (6, 8, 10) which can be applied to paper/paperboard materials used in the construction of cartons and containers (4). Such structures of this type, generally, provide a simple, low-cost security system which acts as a shipping manifest, warehousing check list, and sales conformation.
Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] This invention relates to printed security codes which can be applied to paper/paperboard materials used in the construction of cartons and containers. Such structures of this type, generally, provide a simple, low-cost security system which acts as a shipping manifest, warehousing check list, and sales conformation.

Description of the Related Art

[0002] Security approaches being used now fall into three categories: (A) visual/video observation or monitoring of the act of theft; (B) prohibiting customer contact with items until paid for; or (C) alarms, if the unpaid-for items are taken out of the front door. The principles and limitations of each security category are discussed below.

[0003] With respect to Category A, surveillance is the traditional method for limiting theft in stores. Initially, surveillance was only by vigilant employees, but today it may involve discrete video cameras and/or paid security personnel. This traditional security approach is losing adherents because of: (1) increasing cost of maintaining constant surveillance; (2) difficulty in keeping the entire store under surveillance because of limited funds or personnel, as well as high, bulky displays; (3) lost service time and the possible leaving of good personnel, when employees are diverted from serving to do spying on customers; (4) limited effect of monitoring, if there is employee theft; and (5) the fact that monitoring may be resisted because of its unpopular "image."

[0004] With respect to Category B, this security concept has been used to minimize having customers physically handle a sale item until they are ready to purchase it. Commonly enforced customer-restraint approaches to do this include: (1) securing items under lock-and-key, sometimes out of view; (2) placing sale items in a locked, visible display behind glass; and (3) using catalog showrooms that display single items, usually chained to a shelf, backed up by a warehouse of packaged goods.

[0005] The use of lock-and-key and glass-displays frustrate honest customers who have to locate a helpful clerk in order to "see" items. After these frustrations, most customers are no longer in the mood for doing impulse buying.

[0006] With respect to the catalog showrooms, these showrooms limit physical contact to a sample that may be chained. This halts sales floor theft and damage to sale items, but may significantly extend and slow shopping. This is because the typical steps involved are: ordering, warehouse retrieving, conveying, notification, and verifying/pick-up. The catalog-showroom approach also results in very "shop-worn" goods that must be heavily discounted, discarded, or donated to charity.

[0007] With respect to Category C, Electronic Article Surveillance (EAS) is a recent approach to overcoming customer theft. EAS employs an embedded, electronic printed circuit in a security tag/label. This tag is activated by retail employees, the manufacturer or the shipper before the item is placed on the shelf. It must be deactivated at sale or else it will set off an auditory alarm as the item leaves through special exit "gates." Alarms are typically set off by radio frequency (RF), electromagnetic (EM), or acousto-magnetic signals.

[0008] Semiconductor-based EAS tags or labels reportedly cost "only a few cents each," but they are not being used on all items. They appear usually on items that are expensive and large (coats, electronics), or less valuable and pocketable (liquor, tools, pharmaceuticals).

[0009] The present EAS approach relies on catching theft at usual customer exits, but it does not address thefts by employees or support personnel. To overcome employee theft, sophisticated monitoring by cameras and/or limiting movement of sale items by employees in areas, such as warehouses, may be required. Also, there is expected difficulty in being "smarter" than dishonest employees or support personnel who essentially have unlimited access to these items, know the values of the goods, and will be able to detect security steps.

[0010] Finally, Electronic EAS circuitry is typically either inserted in tags attached to an item or hidden under applied tags that are conventionally bar coded. However, this plastic-laminated, metal tag resists recycling efforts or can be removed by diligent thieves.

[0011] It is also known to use tamper-evident security envelopes. Exemplary of such prior art is U.S. Patent No. 5,727,686 (‘686) to B. Kistal, entitled "Tamper-Evident Security Envelopes." While the ‘686 reference discloses tamper-evidence, through a visible disruption of a plastic sealant or perforation put between two layers, this detection does not show the step where the breach occurred such as in manufacturing, shipping, or employee/customer theft.

[0012] Several references disclose step-wise monitoring, but none of these discuss overcoming security losses. Exemplary of such prior art is U.S. Patent No. 3,945,494 (‘494) to K. Weber et al., entitled "Carrier for Film Cartridges or the Like," U.S. Patent No. 5,706,948 (‘948) to D. M. Hughes, entitled "Method for Identifying a Characteristic of an Object or Contents of a Container," U.S. Patent No. 5,788,073 (‘073) to K. Suryk, entitled "Shopping Organizer," and U.S. Patent No. 5,238,307 (‘307) to K. E. Mooney et al., entitled "Ore Sample Bag."

The ‘494 reference identifies each part of a process by "detentes" to follow film-processing steps. The ‘073 reference mentions tracking the processing of ore through to assay, but ignores theft. The ‘948 reference defines maintenance done or needed using crude mnemonic coding. The ‘073 reference attempts to ensure a grocery list is followed and the coupons are used. However, as
mentioned earlier, none of the ‘494, ‘307, ‘948, or ‘073 references disclose a means for overcoming security losses.

[0013] It is also known to employ security tagging for doing more than point-of-sales purchases. Exemplary of such art is U.S. Patent No. 5,777,884 (‘884) to A. M. Belka et al., entitled "Article Inventory Tracking and Control System." While the ’884 reference discloses an article inventory tracking and control system for library book withdrawals and video rentals, it does not employ a paper/paperboard security code.

[0014] It is also known to employ various security tags for use in inventory, pricing, reordering, and shipping to justify its cost for security use. Exemplary of such art is U.S. Patent No. 5,151,684 (‘684) to E. L. Johnsen, entitled "Electronic Inventory Label and Security Apparatus," U.S. Patent No. 5,671,362 (‘362) to A. B. Cowe et al., entitled "Materials Monitoring Systems, Materials Management Systems and Related Methods," and U.S. Patent No. 5,774,876 (’876) to W. A. Woolley et al., entitled "Managing Assets with Active Electronic Tags." Again, while these references employ security tags that are used for inventory and other measures, none of the references utilize a paper/paperboard code for security papers.

[0015] Finally, it is known to employ an informational stripe on airline tickets. Exemplary of such art is U.S. Patent No. 5,879,784 (‘784) to T. J. Breen et al., entitled "Tickets With Extruded Security Stripe and Method of Making Same." While the ’784 reference teaches the use of a stripe on airline tickets, this reference does not consider adding an internal stripe or other type of printed security code into a paper/paperboard container or carton.

[0016] It is apparent from the above that there exists a need in the art for a security code which is light weight through simplicity of parts and uniqueness of structure which adds monitoring at each step from production through sale, and which at least equals the security characteristics of the known security measures, but which at the same time is capable of being printed on paper/paperboard cartons and containers. It is a purpose of this invention to fulfill this and other needs in the art in a manner more apparent to the skilled artisan once given the following disclosure.

SUMMARY OF THE INVENTION

[0017] Generally speaking, this invention fulfills these needs by providing a printed security code assembly for paper/paperboard cartons or containers, wherein the method is comprised of the steps of: attaching a paper/paperboard substrate to a security code, wherein the code contains information related to the manufacturing of the product located within the carton or container, the warehousing of the product located within the carton or container, the shipping of the product located within the carton or container, the stacking of the product located within the carton or container, and the retailing of the product located within the carton or container; and discreetly locating the substrate and the code within the carton or container such that the various information contained within the code can only be observed by a code reader.

[0018] In certain preferred embodiments, the printed security code can be a two-dimensional code or a stripe code.

[0019] In another further preferred embodiment, the use of the printed security code drastically reduces the price of security of the carton or container. This would make security tagging available for every carton, container and item being sold.

[0020] The preferred printed security code, according to this invention, offers the following advantages: lightness in weight; ease of assembly; good durability; excellent economy; excellent theft protection; and excellent inventory control. In fact, in many of the preferred embodiments, these factors of economy, theft protection, and inventory control are optimized to the extent that is considerably higher than heretofore achieved in prior, known printed security codes.

BRIEF DESCRIPTION OF THE DRAWING

[0021] The above and other features of the present invention, which will become more apparent as the description proceeds, are best understood by considering the following detailed description in conjunction with the accompanying drawings, wherein like characters represent like parts throughout the several views and in which:

Figure 1 is a schematic illustration of a printed security code for paper/paperboard cartons or containers, according to the present invention; and Figure 2 is a schematic illustration of a concentrated printed security code in the form of a stripe for paper/paperboard cartons or containers, according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0022] With reference first to Figure 1, there is illustrated an advantageous environment for use of the concepts of this invention. In particular, a printed security code assembly 2 for paper/paperboard cartons or containers is illustrated. Assembly 2 includes in part, container 4, shipping manifest information 6, warehousing check list 8, and sales confirmation information 10. It must be pointed out that while container 4 is illustrated, the concepts of this invention can also be applied to any type of paper/paperboard carton or container including, but not limited to, envelopes, boxes, sheets or the like.

[0023] As shown in Figure 1, printed security code information 6, 8, and 10 are, preferably, located discretely on container 4 and consist of a two-dimensional print
area 12. In particular, print area 12 is discretely located, for example, on the inside of container 4. Print area 12 which contains the information on manifest 6, warehousing check list 8, and sales conformation 10 is printed by conventional techniques. Preferably, print area 12 consists of magnetic inks which can be activated or switched "on" and "off" to indicate the stage the product is in. In this manner, with the print area 12 being located inside of or within container 4, the worker or customer is unaware that the container 4 includes such a theft deterrent and will be unlikely to attempt to by-pass it. For example, print area 12 can be conventionally electrically charged to activate or to turn "on" print area 12 and then subsequently conventionally deactivated or turned "off" by reversing the electrical charge. To get into this even further, if container 4 has been transferred from the warehouse to the showroom, the area sales clerk merely has to scan container 4 and print area 12 in order to switch "off" the portion of the print area 12 which relates to warehousing and switch "on" the portion of print area 12 related to retailing of container 4. In this manner, the security of container 4 is not comprised. Consequently, container 4 is monitored at each step from manufacturing to retailing. Also, a conventional code reader (not shown) is the only device that can scan or observe the information in print area 12.

As shown in Figure 2, print area 12 can also be formed onto a stripe 18. In this manner, stripe 18 can also be placed in a discrete location in or on the inside of container 4.

For example, print area 12 can be located adjacent to the corrugated medium of a corrugated container, within the liner of a corrugated container or other types of paper/paperboard containers, or the like.

In order to further describe the various aspects of the printed security code, the following potential benefits are outlined below.

1. Manufacturing and Shipping

   Security labeling in manufacturing and shipping could help track items of each type made, packaged and shipped daily. The secondary value would be in preventing packaging fraud. Packaging fraud, typically, occurs by removal of a manufacturers' items for sale or insurance payment or unauthorized substitution for the removed goods by either goods stolen in the past or lower value goods that come from a competitor.

   The use of the printed security code assembly 2 will allow the manufacturer and shipper to match codes on carton 4 with those of the manufacturing and shipping list. If the code and number sales items match on the carton 4, then no fraud or theft should have occurred.

2. Warehousing and Stocking

   As each item is warehoused and stocked, the item is read by a conventional code reader to help count the number of items warehoused and stocked. Again, if the code and number of sales items do not match on the carton 4, then a theft has occurred.

3. Restocking and Monitoring for Theft in the Store

   Security codes could be used by a retailer or wholesaler to monitor items being removed from display. A conventional reading of the number of items stocked could initiate restocking or alert for theft.

Finally, substitution of printed security designations on a paper/paperboard cartons or containers in place of the embedded EAS security devices, previously discussed, will significantly improve overall recyclability of the package.

Once given the above disclosure, many other features, modifications or improvements will become apparent to the skilled artisan. Such features, modifications or improvements are, therefore, considered to be a part of this invention, the scope of which is to be determined by the following claims.

Claims

1. A printed security code assembly for paper/paperboard cartons or containers, wherein said assembly is comprised of:
   a paper/paperboard carton or container (4) and a security code (6, 8, 10) rigidly attached to said carton or container (4) such that said code (6, 8, 10) contains switchable information related to a manufacturing of said product located within said carton or container, a warehousing of said product located within said carton or container, a shipping of said product located within said carton or container, a stocking of said product located within said carton or container; and a retailing of said product located within said carton or container, wherein said code is discreetly located within said carton or container (4) such that said various information contained within said code can only be observed by a code reader and can be switched on and off.

2. The assembly, as in claim 1, wherein said security code (6, 8, 10; 12) is printed on said carton or container (4).

3. The assembly, as in claim 2, wherein said security code is further comprised of:
   a magnetic code.

4. The assembly, as in claim 1, wherein said security code is further comprised of:
   a magnetic stripe.

5. A method for constructing a printed security code assembly for paper/paperboard cartons or contain-
ers, wherein said method is comprised of the steps of:

attaching to a paper/paperboard carton or container (4) a security code (6, 8, 10), wherein said code contains switchable information related to a manufacturing of said product located within said carton or container, a warehousing of said product located within said carton or container, a shipping of said product located within said carton or container, a stocking of said product located within said carton or container, a retailing of said product located within said carton or container (4);
discreetly locating said substrate and code within said carton or container such that said various information contained within said code can only be observed by a code reader, and switching said information on or off as said carton of container is manufactured, warehoused, shipped, stocked or retailed.

6. The method, as in claim 5, wherein said security code (6, 8, 10; 12) is printed on said carton or container (4).

7. The method, as in claim 6, wherein said security code is further comprised of:
   magnetic code.

8. The method, as in claim 5, wherein said security code is further comprised of:
   a magnetic stripe.
### DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>Balz, O</td>
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