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CONSUMER PRODUCT GROUPING SECURITY SYSTEM

FIELD OF THE INVENTION

[0001] Embodiments of the present invention relate generally to consumer product security systems and methods for monitoring and protecting consumer products from theft in a retail establishment using a grouping or “buddy” system.

BACKGROUND OF THE INVENTION

[0002] Retailers display products for consumers in a manner that allows a consumer to decide whether to purchase the product while at the same time reducing the incidence of theft. In some instances, retailers stock products in a way that allows a consumer to purchase more than one product at a time. However, the removal of a group of products may be indicative of a theft event or more particularly a “sweep” theft event. A “sweep” theft event is typically a theft event wherein multiple individual products are being stolen at the same time during one theft occurrence. In an attempt to deter or prevent “sweep”-type theft events, retailers may use security devices that hinder the ability of a consumer to remove several products at one time. Unfortunately, in many instances, retailers are unaware when multiple products are being stolen at once and/or when a “sweep”-type theft event is occurring. Thus, retailers may benefit from a system for detecting theft of groups of products while at the same time preserving the ability to present products in a way that encourages a consumer to purchase a product.

BRIEF SUMMARY OF THE DRAWINGS

[0003] FIG. 1 illustrates a consumer product and security device according one embodiment of the invention.
[0004] FIG. 2 illustrates a consumer product grouping security system according to FIG. 1.
[0005] FIG. 3 illustrates a consumer considering a purchase according to one embodiment of the invention.
[0006] FIG. 4 illustrates an alarm generated at a remote device according to one embodiment
DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Embodiments of the present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which various embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

Referring now to the accompanying figures wherein identical reference numerals denote the same elements throughout the various views, illustrated embodiments of methods and systems according to the present invention are capable of not only protecting a consumer product from theft or unauthorized removal, but may also provide retailers with a system for monitoring the consumer products in a retail establishment, as explained in further detail below. The consumer product grouping security system 10 is operable for monitoring and securing individual and or groups of consumer products 12 from theft. The consumer products 12 may be any item, including any number of consumer products. For example, the consumer products 12 may be packaged (or boxed) items or non-packaged items. Although described in relation for use in a retail establishment, the consumer product grouping security system 10 shown and described herein is suitable in other settings, such as for example, a residential or commercial environment, and is not intended to be limited to use only in a retail establishment.

In an exemplary embodiment, as shown FIGS. 1 and 2, the consumer product grouping security system 10 generally includes a plurality of consumer products 12, a plurality of security devices 14 and at least one or more zone managers 16. In some embodiments, the consumer product grouping security system 10 may include one or more remote devices 18. The
security devices 14 (e.g. a security tag, label, chip, sticker, wrapper, keeper or other similar device) may be attached to, incorporated with and/or embedded in each individual consumer product 12. The zone managers 16 may be any suitable device that is configured to communicate with the plurality of security devices 14 and/or the remote devices 18, as detailed herein below. The remote devices 18 may be, for example, a hand-held device, cellular phone, smart phone, tablet, laptop computer, headset, or the like.

[0012] In one embodiment, the security devices 14 may include wireless communications circuitry (e.g., a transceiver and/or an antenna) for communicating with one another and/or for communicating with the zone managers 16 using any desired communications protocol (e.g., Bluetooth, Wi-Fi, radiofrequency, etc.). In some embodiments, the security device 14 may also include a motion sensor, alarm mechanism, and/or memory. In one embodiment, a signal(s) generated, for instance, by a transceiver disposed in the security device 14, may be transmitted to other security devices, the zone managers 16 and/or remote devices 18. The transceiver may include a short range antenna configured to facilitate transmission of the signal and detection of a signal generated by adjacent security devices 14 within a predetermined range of communication. A range of communication may allow a security device 14 to detect signals from adjacent security devices located within a predetermined distance, for example, 1 – 2 feet. The transceivers facilitate the ability of a security device 14 to detect and be aware of an adjacent security device 14 located within a predetermined distance of one another. In some embodiments, the transceivers allow individual security devices 14 located within a predetermined distance of one another to communicate with one another, determine when another security device 14 is located in close proximity and/or located within the predetermined distance, and/or detect when a group of security devices 14 are moving together. As such, individual, and/or grouped security devices 14 may be capable of detecting a quantity, motion and/or proximity of other security devices 14.

[0013] In some embodiments, when a first security device 14 receives and processes a signal from an adjacent security device 14, the predetermined short range widths of the first security device 14 and the adjacent security device 14 thereby overlap, establishing that the two security devices 14 are close to one another. Moreover, multiple consumer products 12 may be “paired”,
“buddied” or “grouped” with one another. For example, as noted earlier, each individual consumer product 12 may have a security device 14 attached thereto, incorporated within and/or embedded therein. In some cases, a “group” may include two or more security devices 14. As a retailer places the consumer products 12 on display for sale (e.g. via a shelf, hook, drawer, cabinet, etc.), individual security devices 14 attached to the individual consumer products 12 may be capable of communicating with one another to determine that the security devices 14 are in proximity to one another and/or that a group has been formed. A group of security devices 14 may be formed in response to being positioned on or removed from a retail display. For example, individual security devices 14 may be automatically grouped in response to being positioned on a retail display (see, e.g., FIG. 2). Formation of groups may be based on a combination of detecting motion with a motion sensor and a predetermined number of security devices 14 being in close proximity to one another. In some embodiments, the security devices 14 may include an antenna that is more sensitive in one direction to distinguish between other security devices 14 that are nearby but in different groups.

According to one embodiment, and as mentioned above, each individual security device 14 and/or zone manager 16 may include an alarm mechanism (e.g. piezoelectric, electromechanical, buzzer, beeper, or other similar audio alarming device) and/or a motion sensor (e.g. an accelerometer, a jiggle switch, or other motion sensing devices). The alarm mechanism may be contained within each security device 14 and/or zone manager 16. Each security device 14 may be configured to generate an alarm (e.g., an audible signal, a visual signal, and/or transmission of a signal or message) separately from other security devices 14 and/or may be configured to communicate with a zone manager 16 and/or remote device 18. In some embodiments, each security device 14 may include a visual alarm such as an LED indicator. In one example, a group of security devices 14 may be configured to generate an alarm and/or the group may communicate a signal to one or more zone managers 16 to generate an alarm. In other embodiments, adjacent groups of security devices 14 may generate an alarm in response to another group of security devices 14 undergoing a theft event.

In some embodiments, zone managers 16 may include wireless communications circuitry for communicating with one another using any desired communications protocol (e.g.,
Bluetooth, Wi-Fi, radiofrequency, etc.). Additionally, zone managers 16 may be strategically located throughout a retail establishment. Zone managers 16 may be secured to, or positioned at, any desired location to establish a detection zone for the consumer products 12 (see, e.g., FIG. 2). Zone managers 16 may be secured in, or positioned at, locations that may not otherwise be visible to a consumer 20 and could be placed, for instance, on the ceiling, walls, and/or behind or below a counter, panel, or cabinet of a retail establishment. In one embodiment, each of the plurality of security devices 14 are configured to communicate with one another and/or with one or more of the zone managers 16 (e.g., via a transceiver contained in the security device 14), and the zone managers are configured to communicate with the remote devices 18. While wireless communication is detailed herein, it may be understood that in some embodiments, the security devices 14 and/or zone managers 16 may communicate via hard-wired means if desired. In some embodiments, the zone managers 16 may be located remotely from one another. In some embodiments, the remote devices 14 may be located remotely from the security devices 14 and/or the zone managers 16. For example, the zone managers 16 may be located at some fixed location in proximity to one or more other zone managers 16, while the remote devices 14 may be in the possession of an employee 22 of the retail establishment and/or in a non-fixed location that is remote from the security devices 14 and/or zone managers 16 within the retail establishment.

[0016] According to one embodiment, and as mentioned earlier, the security devices 14 may be configured to communicate with one or more zone managers 16. These signals may be received and processed by the remote devices 18 for determining whether a theft event is occurring, or whether a consumer 20 may simply be considering a product for purchase. For instance, in one embodiment as shown in FIG. 3, a consumer 20 is in the process of considering a consumer product 12 for purchase wherein a group of security devices 14 has been defined via communication with one another. Although the consumer product 12 has been removed, the security device 14 affixed thereto is still within a predetermined short range distance (e.g., 1-2 feet) from adjacent security devices 14 and is therefore still grouped therewith. Hence, the security devices 14 of adjacent consumer products 12 may be capable of communicating with one another and/or with the zone manager 16. In this instance, and eventhough the adjacent
security devices 14 are still within a predetermined distance of one another, a signal may be transmitted to the zone manager 16 indicating that a consumer product 12 has been removed and/or displaced from the retail display. The zone manager 16, in turn, facilitate communication with a remote device 18 thereby alerting the retail employee 22 of a low threat alarm and/or notifying the retail employee 22 that customer service is required at a particular retail display (see, e.g., FIG. 4). The retail employee 22 may acknowledge a consumer 20 and potentially offer assistance and/or visually monitor the behavior of the consumer 20.

[0017] In another embodiment, multiple consumer products 12 are removed and/or displaced from a retail display, for instance, individually one behind the other within a short time frame (e.g., less than about 10 seconds). Again, the individual security devices 14 may communicate with one another and/or with the zone manager 16. However, in this instance, and due to the large number of consumer products 12 being removed or displaced from the retail display at once in a short period of time, the security devices 14 and/or zone manager 16 may communicate with the remote device 18 alerting/notifying the retail employee 22 that, for example, “suspicious activity” is occurring at which time the retail employee 22 may approach a consumer 20 and offer assistance, inconspicuously interrupting a potential theft event.

[0018] In another embodiment, as shown in FIG. 5, multiple consumer products 12 or “groups” of multiple consumer products 12 are removed and/or displaced from a retail display, for example, being removed and/or displaced at one time or within a predetermined period of time (e.g., less than 10 seconds). The individual security devices 14 may communicate with one another and/or with the zone manager 16 and/or may communicate with the remote device that a higher security event such as a “sweep” may be occurring (see, e.g., FIG. 6).

[0019] In one embodiment, the individual security devices 14 and/or the zone managers 16 may be configured to generate an alarm. Alarm notifications may be preset by the retailer. In some embodiments, for example, in low level incidents, a retailer may elect to use a silent alarm wherein only the retail employee 22 is notified via the remote device 18 of a potential theft event. In some embodiments, a retailer may elect to use a silent alarm and/or a visual alarm such as an LED to alert the retail employee 22 via the remote device 18 and/or via the security device 14 or zone manager 16 of a potential theft event. In other embodiments, for example, in higher
security incidents such as a “sweep”, a retailer may elect to use a silent alarm, a visual alarm such as an LED, an audible, and/or any combinations thereof to alert the retail employee 22 via the remote device 18, security device 14 and/or the zone managers 16 that a theft event is occurring. In one embodiment, the zone managers 16 are configured to communicate with the security devices 14 by listening for signals transmitted from the individual or group of security devices. In this instance, for example, each security device 14 may alarm individually and/or as a group.

[0020] In one embodiment, the security devices 14 and/or zone managers 16 may be configured to detect the concealment of the security devices 14. In some embodiments, a theft event may involve consumer products 12 being removed from a retail display by a dishonest consumer 20 and placed into a bag such as a foil bag or other metallic-lined container that is configured to conceal the security devices 14 and thereby prevent communication between other security devices 14 and/or zone managers 16 and ultimately inhibiting an alarm from being generated. In this instance, the security devices 14, either individually or as a group, may be configured to communicate with one another; however, the security devices 14 are unable to communicate with the zone managers 16. Instead, the zone managers 16 may be configured to detect, for example, a loss of signals and/or ambient noise being transmitted from the security devices 14. As such, and after a predetermined absence of communication between the security devices 14 and the zone managers 16, the zone manager 16 may be configured to determine that a “foil bag” condition may exist. Alternatively, the security devices 14 may determine that they have been concealed, such as by detecting its own signal that has been reflected and/or by detecting signals from other security devices with no ambient noise present. For example, detecting a strong self-signal may indicate that the security device 14 has been concealed.

[0021] A retailer may predefine a period of time for determining a reasonable absence of communication between the security devices 14 and/or the zone managers 16. For instance, the predefined period of time may be, for example, 5-10 seconds or 10-15 seconds. In one embodiment, when a zone manager 16 loses communication with the security devices 14 for a predefined period of time, the zone manager may then facilitate communication with the remote device(s) 18 and/or may generate an alarm. It is understood that any desired predefined time
periods for determining an absence of communication between the security devices 14 and the zone managers 16 may be prescribed. It may also be understood that time periods for determining an absence of communication between the security devices 14 and the zone managers 16 may be prescribed and/or adjusted according to criteria, such as for example, the size of the retail establishment, placement of the consumer products 12 and/or zone managers within the retail establishment, and/or any criteria as deemed important to an individual retailer. Additionally, in some instances, the zone managers 16 may be configured to detect a loss of a reflection generated from light encountering the packaging of a consumer product 12. In this instance, the zone manager 16 may include a light sensor for detecting such reflection or lack thereof.

[0022] The foregoing has described one or more exemplary embodiments of a consumer product grouping security system. Embodiments of a consumer product grouping security system have been shown and described herein for purposes of illustrating and enabling one of ordinary skill in the art to make, use and practice the invention. Those of ordinary skill in the art, however, will readily understand and appreciate that numerous variations and modifications of the invention may be made without departing from the spirit and scope thereof. Accordingly, all such variations and modifications are intended to be encompassed by the appended claims.
That which is claimed is:

1. A consumer product grouping security system for a retail establishment comprising:
   a plurality of security devices configured to be attached to a plurality of consumer products located on a retail display; and
   one or more zone managers configured to communicate with the plurality of security devices;
   wherein the plurality of security devices is configured to communicate with one another when removed from the retail display to determine that a group of security devices has been formed and is being concealed, and
   wherein at least one of the plurality of security devices is configured to communicate with the one or more zone managers to generate an alarm in response to the group of the security devices being concealed.

2. The consumer product grouping security system according to claim 1, wherein the plurality of security devices and one or more zone managers are configured to wirelessly communicate with one another.

3. The consumer product grouping security system according to claim 1, wherein each of the plurality of security devices comprises at least one transceiver for communicating with other security devices and the one or more zone managers.

4. The consumer product grouping security system according to claim 1, wherein the plurality of security devices is configured to self-alarm.

5. The consumer product grouping security system according to claim 3, wherein the at least one transceiver comprises an antenna for transmitting a signal.

6. The consumer product grouping security system according to claim 1, wherein the one or more zone managers are configured to detect loss of communication between the plurality of
security devices.

7. The consumer product grouping security system according to claim 6, wherein the one or more zone managers are configured to generate an alarm in response to the loss of communication between the plurality of security devices after a predetermined period of time.

8. The consumer product grouping security system according to claim 1, wherein the plurality of security devices is configured to detect a strength of a signal transmitted between the plurality of security devices.

9. The consumer product grouping security system according to claim 8, wherein the plurality of security devices is configured to communicate with one another and/or the one or more zone managers to generate an alarm upon the detection of the strength of the signal transmitted between the plurality of security devices exceeding a predetermined threshold.

10. The consumer product grouping security system according to claim 1, further comprising one or more remote devices configured to communicate with the plurality of security devices and/or the one or more zone managers, wherein the one or more remote devices are configured to receive a signal from the plurality of security devices and/or the one or more zone managers in response to the group of the security devices being concealed.

10. A method for determining a theft of a group and/or multiple consumer products at one time in a retail establishment, the method comprising:

   providing a plurality of security devices attached to a plurality of consumer products, wherein the consumer products are located on a retail display; and

   providing one or more zone managers configured to communicate with the plurality of security devices;

   facilitating communication of the plurality of security devices with one another when removed from the retail display to determine that a group of security devices has been
formed and is being concealed; and

facilitating communication between at least one of the plurality of security devices and the one or more zone managers to generate an alarm in response to the group of security devices being concealed.

12. The method of claim 11, further comprising initiating communication between the plurality of security devices and the one or more zone managers via a transceiver.

13. The method of claim 11, wherein the plurality of security devices is configured to self-alarm.

14. The method of claim 12, further comprising transmitting a signal from the transceiver via an antenna.

15. The method of claim 11, further comprising detecting a loss of communication between the plurality of security devices and the one or more zone managers.

16. The method of claim 15, further comprising generating an alarm in response to the loss of communication between the plurality of security devices and the one or more zone managers.

17. The method of claim 1, further comprising detecting a strength of a signal transmitted between the plurality of security devices.

18. The method of claim 17, further comprising facilitating communication between the plurality of security devices with one another and the one or more zone managers and generating an alarm upon the detection of the strength of the signal transmitted between the plurality of security devices exceeding a predetermined threshold.
ABSTRACT

A consumer product grouping security system for monitoring and protecting consumer products from theft in a retail establishment using a grouping or “buddy” system. The consumer product grouping security system includes consumer products and security devices configured to communicate with one another to determine that a group of consumer products have been removed from a retail display and to initiate an alarm in the event that a theft is occurring.
Security Device Attached to Consumer Product

FIG. 1
Consumer Considering a Purchase

FIG. 3
Multiple Products Removed at Once - Potential Sweep

FIG. 5
"Sweep in progress" alert is sent to headset or mobile device

FIG. 6