Security devices according to the present invention may be configured to secure an article supported by display packaging. The display packaging may include display cards, blister packs, pouch packaging, thermoform packaging, and other types of packaging. The display packaging may define a display side on which the article is presented for viewing, and a back side that often faces a display rack. The display side of the display packaging may also include consumer messaging (e.g., graphics, text, product information, advertising, etc.) that is intended for viewing by a consumer. The security device may include a device body structured for positioning proximate the display packaging without substantially obscuring the display side of the display packaging and a locking mechanism associated with the device body and positioned proximate the back side of the display packaging. In the locked state, the locking mechanism may receive and secure a securing member that penetrates the display packaging.
SECURITY DEVICE FOR PRODUCTS ON
DISPLAY PACKAGING

CROSS-REFERENCE TO RELATED
APPLICATIONS

This application claims priority to U.S. Provisional Application No. 61/372,724, filed Aug. 11, 2010 and to U.S. Provisional Application No. 61/421,112, filed Dec. 8, 2010. Both of which are hereby incorporated in their entirety by reference.

FIELD OF THE INVENTION

The present invention relates to security devices used to protect merchandise or other objects and, more particularly, to security devices that are used to deter and detect the theft of, or tampering with, articles.

BACKGROUND

Electronic article surveillance (EAS) systems are often used to deter and detect shoplifting. Typically, an EAS security system includes an EAS element, a transmitter, a receiver, and an alarm. The EAS element is attached to an article of merchandise. The transmitter and the receiver are positioned at the exit of a retail establishment and configured to establish a detection zone through which a consumer must pass when exiting the retail establishment. The transmitter is configured to send signals through the detection zone. When an active EAS element enters the detection zone, it becomes detectable by the receiver and an alarm is triggered to notify store personnel that a tagged article is leaving the retail establishment.

Often, security devices are not used for costume jewelry items, cardstock supported articles, or other packaged items that are below a certain value and are displayed on racks or shelves (i.e., not kept in a locked display enclosure). Such items are conventionally deemed too small and cumbersome to effectively support a security device and deemed too inexpensive to warrant protection. Nonetheless, this conventional wisdom, Applicant has discovered that it would be desirable to provide devices and methods for reliably securing an EAS element to small articles of costume jewelry and other relatively inexpensive products (e.g., lipstick, fishing lures, blister-pack items, etc.). As described in greater detail below, a variety of challenges were identified and overcome through Applicant’s efforts to invent and develop such a device.

SUMMARY

Security devices according to the present invention may be configured to secure an article supported by display packaging. The display packaging may include display cards, blister packs, pouch packaging, thermofoil packaging, and other types of packaging. The display packaging may define a display side on which the article is presented for viewing, and a back side that often faces a display rack. The display side of the display packaging may also include consumer messaging (e.g., graphics, text, product information, advertising, etc.) that is intended for viewing by a consumer.

The security device may include a device body structured for positioning proximate the display packaging without substantially obscuring the display side of the display packaging and a locking mechanism associated with the device body and positioned proximate the back side of the display packaging. The locking mechanism may be configurable between a locked state and an unlocked state. In the locked state, the locking mechanism may receive and secure a securing member that penetrates the display packaging.

The device body may include a lid and a base, where the lid is configured to move between an open position, in which the display packaging is removable from the device body, and a closed position, in which at least a portion of the display packaging is captured between the lid and the base. The locking mechanism may be configured to maintain the lid in the closed position when the security device is in the locked state. The securing member may extend from the lid and the locking mechanism may be supported by the base. The securing member may be a portion (e.g., the post, stem, or stud of an earring, etc.) of the article that is to be secured.

In some embodiments, the locking mechanism may be slidably attached to the device body. The locking mechanism may further include a ball-clutch locking mechanism configured to engage the securing member. In some embodiments, the article may include an article that is structured to receive an article backing where the article post is the securing member. The security device may further include a storage area defined by the device body, where the storage area is structured to receive at least one accessory component associated with the article. The storage area may define at least one auxiliary post, where the article includes an article post that is structured to receive an article backing, which is the accessory component, and where the at least one auxiliary post is configured to receive the article backing when removed from the post.

The device body and the locking mechanism may be supported proximate the back side of the display packaging such that the device body and the locking mechanism are not generally visible to a consumer viewing the display side of the display packaging. In various embodiments, at least one of the security device or the display packaging may include a security element.

Another embodiment of the present invention may include a security device configured to secure an article supported by display packaging, the article including an article post adapted to receive an article backing. The security device may include a device body structured for positioning proximate the display packaging and adapted to receive a portion of the article post, and a locking mechanism positioned proximate the device body and structured to receive at least part of the portion of the article post. The locking mechanism may be configurable between a locked state in which the article post is secured by the locking mechanism, and an unlocked state in which the article post is removable from the locking mechanism. The security device may be configured to secure a first article comprising a first article post and a first article backing, and a second article comprising a second article post and a second article backing, where the device body includes an adjustment assembly that is structured to receive at least a portion of the first article post and a portion of the second article post.

The security device adjustment assembly may include a track defined by the device body and first and second sliders. The first slider may be adapted to receive a portion of the first article post and the second slider may be adapted to receive a portion of the second article post, where the first and second sliders move along the track. The locking mechanism may include a first locking mechanism and a second locking mechanism, where the first locking mecha-
nism is structured to receive and secure at least part of the portion of the first article post received by the first slider, and the second locking mechanism is structured to receive and secure at least part of the portion of the second article post received by the second slider. The adjustment assembly may include a track defined by the device body where the locking mechanism includes a first locking mechanism and a second locking mechanism, where at least one of the first locking mechanism and the second locking mechanism is structure to move along the track.

[0012] In some embodiments, the device body of the security device may define a storage area structured to receive an accessory component associated with the article. The accessory component may be the article backing where the device body defines an auxiliary post proximate the storage area that is configured to receive the article backing. Additionally, the locking mechanism may include a first locking mechanism and a second locking mechanism, each positioned proximate the device body. At least one of the first locking mechanism and the second locking mechanism may be slidably supported by the device body relative to the other of the first locking mechanism and the second locking mechanism. The security device may be configured to receive a first article including a first article post and a first article backing and a second article comprising a second article post and a second article backing, where the first locking mechanism is configured to receive at least a portion of the first article post and the second locking mechanism is configured to receive at least a portion of the second article post. The locking mechanism may include a ball-clutch lock mechanism. The ball-clutch lock mechanism may be biased in a locked state, and the ball-clutch lock mechanism may be moved to an unlocked state in response to an applied magnetic field. The device body and the locking mechanism may be supported proximate the back side of the display packaging such that the device body and the locking mechanism are not generally visible to a consumer viewing the display side of the display packaging. At least one of the security device or the display packaging may include a security element.

[0013] Another embodiment of the present invention may include a security device comprising a device body, where the device body includes a lid and a base. The base may be connected to the lid where at least one of the lid and the base are structured to define a display cavity for at least partially receiving the article and display packaging. The lid may be moveable relative to the base between a closed position, in which the lid is positioned proximate the base, and an open position, in which the lid is at least partially separated from the base. The security device may further include a locking mechanism supported by the device body where the locking mechanism is configurable between a locked state in which the lid is secured in the closed position and an unlocked state in which the lid is free to move to the open position. The device body may be configured to capture at least a portion of the display packaging between the lid and the base when in the closed position.

[0014] At least one of the lid and the base may define a securing member and the other of the lid and the base may be configured to support the locking mechanism, which securely receives the securing member in the locked state. The securing member may be configured to pass through an aperture defined by the display packaging when the lid is disposed in the closed position. The securing member may define a locking pin and the locking mechanism may include a ball-clutch lock mechanism configured to receive the locking pin. The display packaging may define a display side and a back side, where the lid is at least partially transparent to encourage viewing of the article through the lid without substantially obscuring the display side of the display packaging. At least one of the device body and the display packaging may include a security element. The device body may further include a hang tag. The display packaging may define a hang tag and the device body may define a recess for receiving a hang tag. The lid may define the display cavity which is sized such that the lid generally encloses the article when the lid is disposed in the closed position.

[0015] A further example embodiment of the present invention may include a security device configured to secure an article defining a securing member that penetrates display packaging from a display side to a back side thereof. The security device may include a device body, and a locking mechanism structured to receive the securing member of the article. The device body and the locking mechanism may be supported proximate the back side of the display packaging such that the device body and the locking mechanism are not generally visible to a consumer viewing the display side of the packaging. The locking mechanism may be configurable between a locked state in which the securing member is captured by the locking mechanism and an unlocked state in which the securing member may be removed from the locking mechanism. The locking mechanism may receive a securing member that penetrates the display packaging in the locked state. The securing member may be an article post that is structured to receive an article backing. The device body may include at least one auxiliary post configured to receive the article backing when removed from the article post.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

[0016] Reference will now be made to the accompanying drawings, which are not necessarily drawn to scale, and wherein:

[0017] FIG. 1 is a top perspective view of an article that may be secured by an exemplary security device structured according to one embodiment of the present invention;

[0018] FIG. 2 illustrates a perspective view of an article that is secured by a security device structured according to one embodiment of the present invention;

[0019] FIG. 3 illustrates a perspective view of the security device of FIG. 2, wherein the display packaging of the article has been made transparent and indicated by broken lines;

[0020] FIG. 4 is a perspective view of the security device of FIG. 2, wherein the article and its display packaging have been removed;

[0021] FIG. 5 is a cross-section view, taken along section line B-B of FIG. 4, of an example locking mechanism for the security device of FIG. 4, wherein the depicted locking mechanism is disposed in a locked state;

[0022] FIG. 6 is a cross-section view, taken along section line B-B of FIG. 4, of an example locking mechanism for the security device of FIG. 4, wherein the depicted locking mechanism is disposed in an unlocked state;

[0023] FIG. 7 is a top perspective view of a security device structured in accordance with one embodiment of the invention securing a fishing lure type article;

[0024] FIG. 8 is a top perspective view of a security device structured in accordance with one embodiment of the invention securing a fishing lure type article;
FIG. 9 is a top perspective view of a security device structured in accordance with one embodiment of the invention securing a lipstick type article;

FIG. 10 is a top perspective view of a security device structured in accordance with one embodiment of the invention securing a studded earring type article;

FIG. 11 is a side view of the security device of FIG. 10;

FIG. 12 is a side view of a security device according to another example embodiment of the present invention;

FIG. 13 is a back perspective view of security device structured according to an example embodiment of the present invention securing a studded earring type article;

FIG. 14 is a top perspective view of a security device structured in accordance with another embodiment of the invention securing a studded earring type article;

FIG. 15 is a side perspective view of a lid of the security device of FIG. 14;

FIG. 16 is a back perspective view of a base of the security device of FIG. 14;

FIG. 17 is a back perspective view of security device of FIG. 14 securing a studded earring type article;

FIG. 18 is a back perspective view of a security device including security element according to an example embodiment of the present invention; and

FIG. 19 is a back perspective view of a security device including a security element according to another example embodiment of the present invention.

DETAILED DESCRIPTION

Embodiments of the present invention now will be described more fully hereininafter with reference to the accompanying drawings, in which some, but not all embodiments of the invention are shown. Indeed, the invention may 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 satisfy applicable legal requirements. Like numbers refer to like elements throughout. The terms top, bottom, side, up, down, upwards, downwards, vertical, horizontal, and the like as used below do not imply a required limitation in all embodiments of the present invention but rather are used herein to help describe relative direction or orientation in exemplary embodiments illustrated in the figures.

Embodiments of the present invention provide a security device that is configured to secure an article that is supported by display packaging. The term “article” refers to costume or other jewelry (e.g., earrings, necklaces, bracelets, watches, etc.), cosmetic goods (lipsticks, mascaras, nail polishes, etc.), or any other retail products (e.g., fishing lures, spark plugs, etc.) that are supported by display packaging. The term “display packaging” refers to display cards made of card stock, plastic, metal, or other materials, blister packaging, thermoform packaging, or other types of packaging that is configured to support and display an article to a retail customer. As such, the illustrated embodiments should not be limiting with regard to the type of display packaging which may be used in conjunction with example embodiments of the present invention.

Security devices as described herein may be attached to, or positioned proximate to, any type of display packaging that is compatible with the embodiments described herein. The display packaging may define a display side on which the article is presented for viewing, and a back side that often faces a display rack, which supports several packaged articles. The display side of the display packaging typically includes consumer messaging (e.g., graphics, text, product information, advertising, etc.) that is intended for viewing by a consumer.

In many retail settings, it is desirable for customers to handle articles and clearly view any consumer messaging provided on the display side of the display packaging. This allows customers to better understand the features and benefits of the article as they evaluate their purchase decision. Despite this desirability of providing unobstructed article access to customers, retailers must still protect their merchandise and deter shoplifting. Accordingly, various embodiments of the present invention are structured to provide purchase encouraging customer access to secured articles and consumer messaging while also deterring and discouraging theft and tampering.

FIG. 1 illustrates example merchandise 100 that may be secured by security devices according to example embodiments of the present invention. The merchandise 100 includes an article 110 and its display packaging 120. In the illustrated embodiment, the article 110 includes stud-type earrings and the display packaging 120 comprises a display card that supports and displays the article 110. The earrings are depicted on a display side 105 of the display packaging 120. The display side 105 of the display packaging 220 conventionally includes consumer messaging 102 such as a brand name, a price, “a 10% off” discount notation, or other information intended for consumer viewing.

The merchandise 100 may be configured to be displayed on a display rack (not shown) with the hang tab 130 holding the merchandise 100 on the rack. For small items such as the depicted earrings, display racks may be located on display counters of retail stores so that customers may view the displayed article closely. Ideally, the merchandise 100 is readily accessible (i.e., not behind glass, etc.) to customers to encourage a purchase decision. Of course, the downside of such accessibility is that it makes the merchandise more accessible to thieves.

As will be discussed in greater detail below, various embodiments of the present invention provide security devices that are structured to secure a displayed article (i.e., hinder unauthorized removal from its display packaging), optionally detect retail theft by attaching a security element (e.g., an EAS element, RFID transponder, etc.) to the displayed article, and encourage purchasing of the article by providing customer inspection access while minimizing the display side structural footprint of the device such that any consumer messaging associated with the display side of the display packaging is readily viewable (i.e., not substantially obscured).

FIG. 2 illustrates a security device 200 structured in accordance with one embodiment of the present invention. The security device 200 is structured to secure two articles 210 (e.g., stud-type earrings) that are supported and displayed by display packaging 220 (e.g., a display card). The display packaging 220 defines a display side 202 and a back side 204. The display side 202 includes consumer messaging 205 that is intended for viewing by would-be customers.

The depicted security device 200 is structured to engage and secure the articles without substantially obscuring the display side 202 of the display packaging 220. For purposes of the foregoing specification and appended claims, the term “without substantially obscuring the display side of
the display packaging” refers to reducing the non-transparent or non-translucent structural footprint of the security device proximate the display side of the display packaging such that any consumer messaging is readily viewable by a would-be customer. The term “transparent” as used herein may broadly encompass substantially transparent materials such as a polycarbonate plastic or Lexan®. While such materials may not be entirely transparent, the transparency of these materials is sufficient for purposes of the present invention. In the depicted embodiment, the security device 200 is supported entirely proximate the back side 204 of the display packaging 220; however, in some embodiments, the security device may extend over or proximate to at least part of the display side 202 of the display packaging 220 as discussed in greater detail below.

FIG. 3 depicts the security device 200 of FIG. 2 with the display packaging 220 made transparent and shown in broken lines. The security device 220 includes a device body 230 having a storage area 232 for storing accessory components 215 associated with the secured articles 210. Here, the storage area 232 includes two auxiliary posts 233 each configured to receive an earring backing; however, other embodiments may be configured to receive other accessory components such as, for example, batteries, instruction booklets, replacement components, and the like.

The depicted security device 200 defines an adjustment assembly 250 that allows the security device 200 to engage and secure articles 210 supported on their respective display packaging at varying relative positions (e.g., earrings with a narrow or wide spacing on a display card, for example about one-half inch to about 3 inches between the earring posts). The depicted adjustment assembly 250 is comprised of track 252 defined by the device body 230 and two sliders 254 that are locked into the track 252 so as to slidably move along the track 252 without being removable from the track 252. The depicted sliders 254 define apertures 255 that are structured to receive at least a portion of the articles 210 and are further configured to slide along the track 252 in the direction of arrow 260.

The security device 200 further includes locking mechanisms 240. The locking mechanisms 240 are attachable to the sliders 254 (perhaps via the article as shown) such that they too are slidably or adjustably positionable along arrow 260. In the depicted embodiment, the locking mechanisms 240 receive and secure the portion of the articles 210 that passes through the sliders 254 as will be discussed in greater detail below. However, in alternative embodiments, the sliders 254 may be formed integral with the locking mechanisms 240 (i.e., the locking mechanisms 240 may be structured to directly receive the articles 210 and to lock into and slide themselves along track 252).

FIG. 4 illustrates the security device 200 of FIGS. 2 and 3 with the articles 210 removed. The sliding members 254 of the security device 200 and the locking mechanisms 240 include apertures 245 through which the securing member of the article is received. In the instant embodiment, the apertures 245 are configured to receive securing members such as posts from stud earrings. Auxiliary posts 233 disposed in the storage area 232 secured to the device body 230 may be configured to receive earring backings that would fit on the posts or securing members that engage apertures 245 such that the posts 233 and the apertures 245 are appropriately sized with respect to each other. The storage area 232 may be configured for storage of various other accessory components such as instruction manuals, batteries, a travel pouch, etc.

FIGS. 5 and 6 depict example locking mechanisms 240 structured in accordance with one embodiment of the invention. The locking mechanism of FIGS. 5 and 6 is shown generally as viewed along section line B-B of FIG. 4 with the device body 230 omitted for ease of illustration. The locking mechanism 240 of FIG. 5 is shown in a locked state while the locking mechanism 240 of FIG. 6 is shown in an unlocked state. The locking mechanism illustrated and described in connection with FIGS. 5 and 6 may generally be referred to as a ball-clutch lock mechanism and may generally have a cylindrical shape. The section line B-B being taken along an axis of the generally cylindrical shape.

Turning to FIG. 5, the depicted locking mechanism 240 includes a fixed portion 310 and a sliding member 320. The depicted sliding member 320 is generally a conically shaped element received within a channel of the fixed portion 310, at least part of which may include a complementary conical shape 312. The sliding member 320 may define channels 370 that are configured to receive balls 340. In the illustrated embodiment, the sliding member 320 is configured with three channels 370, of which only portions of two are visible. The channels 370 may be radially spaced around the circumference of the conically shaped sliding member 320. A spring 330 may bias the sliding member 320 in the direction of arrow 332, into engagement with the conically shaped portion 312 of the channel of the fixed portion 310. As the spring 330 biases the sliding member 320 along arrow 332, the balls 340 are bias radially inwardly toward a center channel 325 defined by the sliding member 320. When the balls 340 are sufficiently forced radially inwardly, the locking mechanism may be disposed in a locked state.

The housing 352 of the locking mechanism may be of any number of shapes and configurations; however, in accordance with the embodiments of FIGS. 2-4, the housing 352 includes channels 354. The channels 354 may be configured to engage the tracks 252 of the adjustment assembly 250 such that the locking members 240 slide within the adjustment assembly 250 along the direction of arrow 260.

FIG. 6 illustrates the locking member in the unlocked state wherein the sliding member 320 is disengaged from the conically shaped portion 312 of the channel of the fixed portion 310. When the sliding member 320 is in the unlocked state, the balls 340 are no longer biased radially inwardly toward the center channel 325 of the sliding member 320. Conversely, the balls 340 are no longer biased in any direction and are free to move within each of their respective channels 370.

The sliding member 320 may be made of a magnetically attractive material or the sliding member may include a portion that is magnetically attractive, such that application of a magnetic field proximate surface 365 (e.g., using magnet 360) may be used to draw the sliding member 320 in a downward (i.e., unlocking) direction opposite to direction arrow 332 and against the bias force of spring 330.

Referring back to FIG. 5, locking mechanisms structured according to various embodiments of the invention are adapted to receive and secure a securing member 150. The securing member 150, which, in some embodiments may include an earring post or locking pin, may be received within the center channel 325 of the sliding member 320. In the depicted embodiment, an earring post from an article 210 of FIG. 3 is shown in dashed lines as securing member 150.
When the balls 340 are biased toward the center channel 325, they engage the securing member 150. When the balls 340 are engaged with the securing member 150, the securing member 150 may not be removed from the locking mechanism 240. When the locking mechanism 240 is moved to the unlocked position as illustrated in FIG. 6, the balls 340 are no longer biased into engagement with the securing member 150 and thus the securing member 150 may be removed from the locking member 240. In example embodiments wherein the securing member 150 is the post of an earring, such as with articles 210 of FIG. 3, the frictional force generated by the balls 340 against the post may be sufficient to maintain the post in the engaged, locked position within the locking mechanism 240. The securing member 150 may be received in the center channel 325 when the locking member 240 is in the locked position or in the unlocked position. When the locking member 240 is in the locked position, as the securing member 150 is pressed into the center channel 325 of the sliding member 320, the tip of the securing member 150 engages the balls 340. Pressing the locking pin 150 further into the center channel 325 presses the sliding member 320 against the spring 330 in a direction opposite arrow 332. The movement of the sliding member 320 in the direction opposite arrow 332 releases the bias of circumferential channel 360 on the balls 340 and allows the tip of the securing member 150 to pass through the center channel. Once the tip is through, the force on the sliding member 320 opposite arrow 332 is released and the sliding member 320 returns to the locked position, thereby retaining the securing member 150 within the locking mechanism 240.

FIG. 7 illustrates another example embodiment of a security device according to the present invention that is configured to be secured to merchandise 400 while providing a clear view of the article 410, and any consumer messaging 405 secured therein, to a customer. Embodiments of the present invention may engage merchandise 400 without substantially obscuring the display side 415 of the display packaging 420 which presents the article 410 to a customer. In the depicted embodiment, the security device includes a display body 440 that includes a lid 442 and a base 446 hingedly attached to the lid 442 along hinge 430. The lid 442 may be made from a substantially transparent material, such as a transparent plastic, such that the article 410 secured within the security device body 440 may be seen but not directly handled. Thus, the article 410 and the display side of the display packaging 420 are not substantially obscured (i.e., the display side of the card and the articles 410 on display are readily visible to a customer). The lid 442 material may be a durable plastic that is resistant to breakage. The base 446 may be made from the same material as the lid 442 or it may be made from an alternative material as the base 446 does not necessarily need to be transparent. The base 446 may be made of a translucent material or an opaque material which disguises an EAS element (or lack thereof) as will be discussed below, or the base 446 may be transparent such that any information, such as a price, contained on the back of the display packaging 420 may be visible to a customer.

While the illustrated embodiment of FIG. 7 depicts a hinge connection 430 between the lid 442 and the base 446, the lid and the base may be configured to be joined through sliding engagement, interlocking tabs, a clip mechanism, or even an additional locking mechanism among other methods of fastening the lid to the base. FIGS. 8 and 9 depict an example embodiment of the present invention wherein the hinge 430 of FIG. 7 is replaced by interlocking tabs 431. For example, tabs 431 of the lid 442 may pass through apertures (not shown) in the base 446 to interlock the lid 442 and the base 446 opposite the locking mechanisms 450. As further illustrated in FIGS. 8 and 9, the article 410 may include objects other than earrings. FIG. 8 depicts a fishing lure, and in particular, a fly as the article. Flies used for fly-fishing can often be expensive and typically the flies are relatively small, such that an unsecured fly may be an easy target for a thief. Similarly, FIG. 9 depicts the article 410 as a tube of lipstick secured by the security device.

FIG. 7 depicts the security device body 440 with the lid 442 closed relative to the base 446. FIG. 10 depicts the security device body 440 of FIG. 7 with the lid 442 open relative to the base 446. As illustrated, the lid 442 rotates about the hinge 430 to the open position. Example embodiments including interlocking tabs as depicted in FIGS. 8 and 9 may pivot relative to one another in a similar manner. When the security device is in the open position, the merchandise 400 may be inserted or removed from the security device body 440. When merchandise 400 is inserted into the security device body 440, the lid 442 may be closed to secure the merchandise therein. The lid 442 may be locked in the closed position by a locking mechanism 450. Although two locking mechanisms 450 are illustrated, a single locking mechanism may also be used or possibly more than two locking mechanisms. The depicted locking mechanisms 450 may secure the lid 442 to the base 446 such that the merchandise 400 cannot be removed from the security device body 440 without first transitioning the locking mechanisms 450 to an unlocked state and then opening the lid 442. The depicted lock mechanisms 450 are each engaged by a securing member 452 that passes through the display packaging 420. The securing member 452 of the instant embodiment is a locking pin.

The display packaging 420 may include openings 425 that permit the securing members 452 to pass through the display packaging 420 and engage the locking mechanisms 450. Optionally, the securing members 452 may penetrate the display packaging 420 precluding the need for pre-formed openings 425. In example embodiments, the securing member 452 may pass through apertures formed in the display packaging 420 whether the apertures are pre-formed in the packaging or created by penetration of the securing member through the packaging. A collar 454 surrounding the securing members 452 may provide additional strength to the location on the lid 442 from which the securing members 452 extend; however, the collars 454 may also be opaque or translucent to provide an aesthetically pleasing appearance when a securing members 452 penetrates the display packaging 420 by disguising the tear through the display packaging 420.

The display packaging 420 as depicted in the illustrated embodiment is substantially the same overall width as the security device body 440; however, embodiments of the present invention may be configured to secure a display packaging 420 that is either larger or smaller than the security device. Referring back to FIG. 7, the display packaging may extend beyond the sides 415 of the lid and below a flange 417 of the lid 446. In such embodiments, the sides 415 of the lid 442 may not extend below the surface of the display packaging 420. The display packaging 420 may extend beyond the plane of the surface of the
display packaging 420 to provide additional protection by further hindering the display packaging 420 or article 410 from being slid out from a closed security device.

[0060] FIG. 11 illustrates a side view of the embodiment of the security device depicted in FIGS. 7-10 in the closed position. As illustrated, the locking mechanism 450 is engaged by the securing member 452. The lid 442 is closed over the article 410 such that the article is not accessible to a customer; however, the customer may clearly view the article. The display packaging 420 is enclosed within the security device body 440 with a portion of the display packaging 420 secured between the flange 417 of the lid 442 and the base 446. The illustrated embodiment further includes a hang tab 435 attached to the base member 446 of the security device body 440 such that the merchandise 400 may be displayed on existing display racks as the original unsecured merchandise would be. Such a hang tab 435 may improve the seamless transparency with which a retailer may implement security devices according to the present invention without altering merchandise displays. Further, such a hang tab 435 may allow secured and unsecured merchandise to be displayed on the same rack.

[0061] FIG. 12, illustrates a side view of the embodiment of the security device depicted in FIGS. 7-10 however, the base 446 further includes a retaining ridge 462. The retaining ridge 462 may be configured to provide a channel 439 into which the hang tab 437 of the display packaging 420 is received. The retaining ridge 462 may further secure and locate the display packaging 420 within the security device body 440. Further illustrated in the embodiment of FIG. 12 are the display side 421 of the display packaging 420 and the back side 422 of the display packaging 420.

[0062] As illustrated in FIGS. 11 and 12, the article 410 includes a pair of stud-type earrings which may include a stem 464 that extends beyond the base 446 of the security device body 440. As shown in FIG. 13, the base 446 may include an aperture 427 through which the stems of earrings may pass. As earrings may include different sizes of stems and different styles (e.g., French hook earrings or clip-on earrings, etc.), an aperture 427 through the base 446 of the security device 440 may accommodate such different configurations. The aperture may be sized such that it would be difficult to attempt to remove the article 410 through the aperture 427. The aperture 427, for example, may be two separate apertures arranged such that one earring back passes through each. As the display packaging 420 is retained between the lid 442 and the base 446 by the locking mechanism 450, removal of the article 410 through the aperture 427 would be difficult without destroying the display packaging 420, the security device body 440, and possibly the article 410 itself.

[0063] The locking mechanisms 450 of FIGS. 7-19 may include a ball-clutch-lock mechanism similar to that described with respect to FIGS. 5 and 6 above; however, the housing 352 may be of a shape depicted in FIGS. 7-19. In the illustrated embodiment of FIGS. 7-19, the securing member may not be an earring post as described with respect to FIGS. 2 and 3, but rather a locking pin arranged on the device body as shown in FIGS. 10-12. Example embodiments of a locking pin may be configured with a recess or channel disposed along the securing member for reception of the balls 340 of the ball-clutch lock mechanism. The channel may further enhance the locking capabilities of such a lock by reducing the spring strength required to maintain the securing member in the locked position, and/or to better resist withdrawal of the securing member from the locking member when in the locked position.

[0064] An advantage to using the two locking mechanisms 450 of the embodiment of FIGS. 7-13 is that each of the locking mechanisms must be unlocked simultaneously for the security device body 440 to be opened. As each of the locking mechanisms 450 requires a relatively strong magnet to be applied to the bottom surface of the locking mechanism (see 365 of FIG. 6), and given the instability of relatively strong magnets when they are loose and in proximity to one another, the unlocking process is made substantially more difficult.

[0065] Another example embodiment of the present invention is illustrated in FIG. 14 which depicts a security device 600 secured to merchandise 605 which includes article 610 attached to display packaging 620. As shown with respect to the embodiment of FIGS. 7-13, the article 610 depicted includes two stud-type earrings attached through the display packaging 620 which includes a hang tab 637 for hanging the display packaging 620 on a display rack.

[0066] FIG. 15 illustrates the lid 640 of the example embodiment of the security device 600 of FIG. 14. The lid 640, as in the embodiment of FIGS. 7-13, may be of any durable, substantially transparent material such that the article 610 and the display packaging 620 are not generally obscured. The lid 640 includes a shell 645 and a stem 650, where the shell 645 creates a cavity in which the article 610 may be displayed. The stem 650 is configured to include a securing member of a locking mechanism, and in this case the securing member 660 is a locking pin for use in a locking mechanism similar to that described with respect to FIGS. 5 and 6. The stem 650 and the shell 645 may combine to form a lid 640 that is durable and resilient to breakage to protect the merchandise protected therein.

[0067] FIG. 16 illustrates the base 670 of the example embodiment of the security device 600 of FIG. 14. The base 670 is configured with a flange 675 which includes apertures 677. The flange 675 is configured to be received against the back of the display packaging 620 when the base 670 is secured to the lid 640. The base 670 further includes a locking mechanism 685 with a central channel 680 into which is received the securing member 660. When the securing member 660 is inserted through the display packaging 620 and received by the locking mechanism 685 of the base 670, the display packaging 620 is secured between the base 670 and the lid 640. The display packaging 620 may be configured with an aperture through which the securing member 660 is inserted, or optionally, the securing member 660 may penetrate the display packaging 620 before being received in the locking mechanism 685 of the base 670. Either the base 670 or the lid 640, or both may include a feature that prevents or minimizes potential rotation between the lid 640 and the base 670. The feature may include a tab, a pin, or other protrusion that may minimize the potential rotation between the base 670 and the lid 640. Another rotation minimizing element may include a relatively high-friction surface of the lid 640 or the base 670 where the lid and base contact the display packaging. Such a relatively high friction surface may not prevent rotation between the top portion 640 and bases 670 entirely, but it may hold the security device in position when the display packaging is on display.

[0068] FIG. 17 depicts the security device 600 as secured to the article 610 as viewed from the back side 622 of the display packaging 620. As illustrated, the article 610 comprises stud-
type earrings with stems 615 that penetrate through the display packaging 620. The apertures 677 of the security device 600 are configured to receive the stems 615 therethrough. The base 670 of the security device 600 may further include flanges 688 that enhance the rigidity and strength of the security device 600 thereby further protecting the article 610.

Example embodiments of security devices according to the present invention may further include EAS elements 700. The EAS elements may be incorporated in any number of positions and locations within or on security devices according to the present invention and the examples depicted in Figs. 18 and 19 are for illustration of possible locations and positions for such an EAS element. In this regard, the security device may include an EAS element 700 that is configured to be detectable when the EAS element is present in a predetermined detection zone, such as a zone set up at or near the door or other entrance point of the retail establishment. The EAS element 700 may be configured to work within an EAS security system. For example, the EAS element 700 may include a magnetic tag, such as in an electromagnetic (EM) system or in an acousto-magnetic (AM) system, or the EAS element may include an electronic circuit and antenna, such as in a radio frequency (RF) system. As another example, the EAS element 700 may be configured work within a microwave system.

In addition to or instead of the EAS element 700, the security device may include other wireless devices. For example, the security device may include an active or passive RFID tag. The RFID tag may be used to store and/or communicate information about the object for security or inventory control purposes. Optionally, the display packaging itself may include a security element (e.g., and EAS element) embedded in the display packaging, such as laminated between layers of the material that makes up the display packaging. Such an embodiment may be used in place of, or in conjunction with, a security element within the security device.

Although the depicted embodiment shows a security device that may be configured for one-alarm functionality (i.e., an alarm is triggered when the security device approaches or passes by a security gate), in other embodiments not shown further components may be included for providing two- or three-alarm functionality. Such components may include a printed circuit board that includes electrical circuitry for supporting various functions of the security device. For example, the electrical circuitry may be connected to a sensor that detects any discontinuity (such as opening of the security device without a key) is recognized as a fault condition, which triggers alarm functionality, such as the sounding of a piezoelectric speaker or the lighting of an LED. Therefore, in some embodiments, the security device may have three alarm features: (1) the gates themselves alarming when the EAS element 700 is detected; (2) the audible alarm (e.g., a piezoelectric speaker) of the security device itself triggering when the security device is forced open or otherwise tampered with; and (3) the audible alarm (e.g., a piezoelectric speaker) of the security device triggering when the EAS element is at, near, or beyond the security gates.

One skilled in the art would appreciate the other improvements and enhancements that the security device, according to embodiments of the present invention, provides over some of the conventional security devices. Many modifications and other embodiments of the inventions set forth herein will come to mind to one skilled in the art to which these inventions pertain having the benefit of the teachings presented in the foregoing descriptions and the associated drawings.

Therefore, it is to be understood that the invention is not to be limited to the specific embodiments disclosed and that modifications and other embodiments are intended to be included within the scope of the appended claims. Although specific terms are employed herein, they are used in a generic and descriptive sense only and not for purposes of limitation.

That which is claimed:

1. A security device configured to secure an article supported by display packaging having a display side and a back side, the security device comprising:
   a device body structured for positioning proximate the display packaging without substantially obscuring the display side of the display packaging; and
   a locking mechanism associated with the device body and positioned proximate the back side of the display packaging,
   wherein the locking mechanism is configurable between a locked state and an unlocked state, and
   wherein the locking mechanism, in the locked state, receives and secures a securing member that penetrates the display packaging.

2. The security device of claim 1, wherein the device body comprises a lid and a base, wherein the lid is configured to move between an open position, in which the display packaging is removable from the device body, and a closed position, in which at least a portion of the display packaging is captured between the lid and the base, and wherein the locking mechanism is configurable to maintain the lid in the closed position when the security device is in the locked state.

3. The security device of claim 2, wherein the securing member extends from the lid and the locking mechanism is supported by the base.

4. The security device of claim 1, wherein the securing member is a portion of the article.

5. The security device of claim 1, wherein the locking mechanism is slidable attached to the device body.

6. The security device of claim 1, wherein the locking mechanism comprises a ball-clutch locking mechanism configured to engage the securing member.

7. The security device of claim 1, wherein the article comprises an article post that is structured to receive an article backing, and wherein the article post is the securing member.

8. The security device of claim 1 further comprising a storage area defined by the device body, wherein the storage area is structured to receive at least one accessory component associated with the article.

9. The security device of claim 8, wherein the storage area defines at least one auxiliary post, wherein the article comprises an article post that is structured to receive an article backing, which is the accessory component, and wherein the at least one auxiliary post is configured to receive the article backing when removed from article post.

10. The security device of claim 1, wherein the device body and the locking mechanism are supported proximate the back side of the display packaging such that the device body and the locking mechanism are not generally visible to a consumer viewing the display side of the display packaging.
11. The security device of claim 1, wherein at least one of the security device or the display packaging comprises a security element.

12. A security device configured to secure an article supported by display packaging, the article comprising an article post adapted to receive an article backing, the security device comprising:

   a device body structured for positioning proximate the display packaging and adapted to receive a portion of the article post; and

   a locking mechanism positioned proximate the device body and structured to receive at least part of the portion of the article post,

   wherein the locking mechanism is configurable between a locked state, in which the article post is secured by the locking mechanism, and an unlocked state, in which the article post is removable from the locking mechanism.

13. The security device of claim 12, wherein the security device is configured to secure a first article comprising a first article post and a first article backing, and a second article comprising a second article post and a second article backing, and wherein the device body comprises an adjustment assembly that is structured to receive a portion of the first article post and a portion of the second article post.

14. The security device of claim 13, wherein the adjustment assembly is comprised of a track defined by the device body and first and second sliders, wherein the first slider is adapted to receive the portion of the first article post and the second slider is adapted to receive the portion of the second article post, and wherein the first and second sliders move along the track.

15. The security device of claim 14, wherein the locking mechanism comprises a first locking mechanism and a second locking mechanism, wherein the first locking mechanism is structured to receive and secure at least part of the portion of the first article post received by the first slider, and the second locking mechanism is structured to receive and secure at least part of the portion of the second article post received by the second slider.

16. The security device of claim 13, wherein the adjustment assembly comprises a track defined by the device body, wherein the locking mechanism comprises a first locking mechanism and a second locking mechanism, and wherein at least one of the first locking mechanism and the second locking mechanism is structured to move along the track.

17. The security device of claim 12, wherein the device body defines a storage area structured to receive an accessory component associated with the article.

18. The security device of claim 17, wherein the accessory component is the article backing, and wherein the device body defines an auxiliary post proximate the storage area that is configured to receive the article backing.

19. The security device of claim 12, wherein the locking mechanism comprises a first locking mechanism and a second locking mechanism, each positioned proximate the device body.

20. The security device of claim 19, wherein at least one of the first locking mechanism and the second locking mechanism is slidably supported by the device body relative to the other of the first locking mechanism and the second locking mechanism.

21. The security device of claim 20, wherein the security device is configured to receive a first article comprising a first article post and a first article backing, and a second article comprising a second article post and a second article backing, wherein the first locking mechanism is configured to receive at least a portion of the first article post and the second locking mechanism is configured to receive at least a portion of the second article post.

22. The security device of claim 12, wherein the locking mechanism comprises a ball-clutch lock mechanism.

23. The security device of claim 22, wherein the ball-clutch lock mechanism of the locking mechanism is biased in the locked state, and wherein the ball-clutch lock mechanism is moved to an unlocked state in response to an applied magnetic field.

24. The security device of claim 12, wherein the device body and the locking mechanism are supported proximate a back side of the display packaging such that the device body and the locking mechanism are not generally visible to a consumer viewing the display side of the display packaging.

25. The security device of claim 12, wherein at least one of the security device or the display packaging comprises a security element.

26. A security device configured to secure an article supported by display packaging, the security device comprising:

   a device body comprising:

   a lid, and

   a base connected to the lid, wherein at least one of the lid and the base are structured to define a display cavity for at least partially receiving the article and the display packaging, and wherein the lid is movable relative to the base between a closed position, in which the lid is positioned proximate the base, and an open position, in which the lid is at least partly separated from the base; and

   a locking mechanism supported by the device body that is configurable between a locked state, wherein the lid is secured in the closed position, and an unlocked state, wherein the lid is free to move to the open position, and wherein the device body is configured to capture at least a portion of the display packaging between the lid and the base when in the closed position.

27. The security device of claim 26, wherein at least one of the lid and the base define a securing member, and wherein the other of the lid and the base is configured to support the locking mechanism, which securely receives the securing member in the locked state.

28. The security device of claim 27, wherein the securing member is configured to pass through an aperture defined by the display packaging when the lid is disposed in the closed position.

29. The security device of claim 28, wherein the securing member defines a locking pin, and wherein the locking mechanism comprises a ball-clutch lock mechanism configured to receive the locking pin.

30. The security device of claim 26, wherein the display packaging defines a display side and a back side, and wherein the lid is at least partly transparent to encourage viewing of the article through the lid without substantially obscuring the display side of the display packaging.

31. The security device of claim 26, wherein at least one of the device body and the display packaging comprises a security element.

32. The security device of claim 26, wherein the device body comprises a hang tab.
33. The security device of claim 26, wherein the display packaging defines a hang tab, and the device body defines a recess for receiving the hang tab.

34. The security device of claim 26, wherein the lid defines the display cavity, which is sized such that the lid generally encloses the article when the lid is disposed in the closed position.

35. A security device configured to secure an article defining a securing member that penetrates display packaging from a display side to a back side thereof, the security device comprising:
   a device body; and
   a locking mechanism structured to receive the securing member of the article,
   wherein the device body and the locking mechanism are supported proximate the back side of the display packaging such that the device body and the locking mechanism are not generally visible to a consumer viewing the display side of the display packaging, and
   wherein the locking mechanism is configurable between a locked state in which the securing member is captured by the locking mechanism and an unlocked state in which the securing member may be removed from the locking mechanism.

36. The security device of claim 35, wherein the securing member is an article post that is structured to receive an article backing.

37. The security device of claim 36, wherein the device body comprises at least one auxiliary post configured to receive the article backing when removed from the article post.

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