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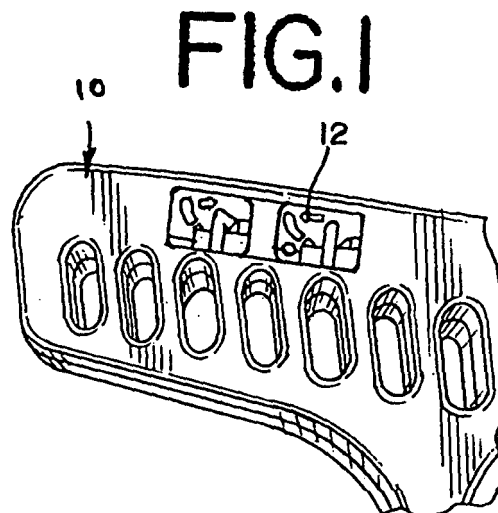
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(54) **Component containing anti-theft device**

(57) An electronic article, such as a power tool, that includes a cavity containing an anti-theft device is provided. The cavity is enclosed by a covering, such as an adhesive label, and may be located on a component of the electronic article remote from the motor in the article

to decrease the likelihood that the anti-theft device will be deactivated by a magnetic or electromagnetic field generated by the motor. In addition, a method is provided for deterring the theft of electronic articles. The method includes inserting an anti-theft device into a cavity located in an electronic article and covering the cavity.



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## Description

### BACKGROUND OF THE INVENTION

**[0001]** The present invention relates to electronic articles containing anti-theft devices and to methods for deterring the theft of electronic articles and for preventing the deactivation of anti-theft devices associated with electronic articles by magnetic or electromagnetic fields generated by the motor in the article.

**[0002]** Anti-theft devices such as security tags or electronic article surveillance systems are used for inventory control and for preventing unauthorized removal of articles from a controlled area. Typically, such systems include a transmitter and a receiver that are used to establish a surveillance zone, which must be traversed by any articles being removed from the controlled area. The transmitting and receiving antennas are typically mounted in floors, walls, and ceilings or may be in the form of freestanding pylons.

**[0003]** The anti-theft device, such as a security tag, may include a sensor adapted to interact with a signal being transmitted by the system transmitter into the surveillance zone, and may be affixed to an article. If the security tag on an article has not been deactivated and the tagged article is transported through the surveillance zone, the security tag acts as a transponder and generates a return signal that can be identified by the receiver. The receiver can then initiate an audible alarm, for example, or trigger other protective measures.

**[0004]** Certain types of security tags are designed to be disposable and are generally not removable to the point of sale. Therefore, the security tag must be deactivated before the article containing the security tag is removed from the security area. Deactivation may be accomplished by equipment that changes an electromagnetic or magnetic characteristic of the security tag so that the security tag is no longer detectable at the surveillance zone. These types of security tags may, however, cover important information printed on the article's packaging and present an appearance that is not aesthetically pleasing. Furthermore, such tags may be subject to tampering by consumers or other individuals not authorized to remove the devices.

**[0005]** One solution to that problem is to provide security tags that are designed to be reusable and, thus, include releasable attachment devices for affixing the tags to the articles. Such attachment devices are further designed to be releasable only by authorized personnel with the use of a special tool or detaching mechanism. Examples of security tags are disclosed in U.S. Patent Nos. 4,221,025; 4,299,870; and 5,426,419.

**[0006]** The effectiveness of security tags and other anti-theft devices, however, can be detrimentally affected by magnetic fields present in the surrounding environment, such as magnetic fields created by the motor of an electronic article. These magnetic fields may decrease the ability of the security tag to be detected by the detec-

tion equipment or may completely deactivate the device, thereby eliminating the device's ability to activate the detection equipment at all.

**[0007]** Prior attempts to alleviate this problem include housing a security tag in a one or two piece cylinder that is snapped together to form a permanent mechanical seal around a power cord, rather than attaching the security tag directly to the body of the article containing a motor. This attempted solution, however, results in a conspicuous security tag that is cumbersome in the use of the article. Further, positioning the security tag in this manner increases manufacturing costs without contributing to the functionality or aesthetics of the product.

**[0008]** Therefore, there is a need for an apparatus that deters the theft of electronic articles by inconspicuously incorporating an anti-theft device into a functional part of the article. There is also a need for a method that deters the theft of electronic articles and prevents deactivation of the anti-theft devices associated with these articles, caused by exposure to a magnetic or electromagnetic field generated by the motor in the article.

### SUMMARY

**[0009]** One aspect of the present invention is directed to an electronic article containing a cavity, an anti-theft device placed inside the cavity, and a covering placed over the cavity. Desirably, the cavity is located on a component remote from the motor of the electronic article and is covered with an adhesive label, which may be temporary or permanent. Incorporating the anti-theft device into a portion of an electronic article, such as a power tool, in this manner has the advantages of: (a) decreasing the potential for tampering with the anti-theft device, (b) increasing the aesthetics of the external packaging, (c) minimizing the risk that the anti-theft device will be deactivated by exposure to a magnetic field created by the motor in the article, (d) allowing removal of the anti-theft device without disassembly of the article, and (e) providing a simple and inexpensive technique for bringing any electronic article into compliance with the certification programs required by many retail facilities (e.g., the requirement that the anti-theft device be located within three inches of the UPC bar code), without requiring a hollow area in the design of the article large enough to house an anti-theft device (the cavity may be created just below the surface of the article). The electronic article of the present invention not only deters theft, but also increases the efficiency of the retail facility by allowing the anti-theft device to be placed in close proximity to the UPC bar code, thereby allowing nearly simultaneous deactivation of the anti-theft device and scanning of the bar code at the point of sale.

**[0010]** Another aspect of the present invention is directed to a method for deterring the theft of an electronic article, such as a power tool. The method includes inserting an anti-theft device into a cavity located in the electronic article and placing a covering over the cavity.

The cavity may be placed on a component remote from the motor in the electronic article, thereby reducing the risk that the anti-theft device will be deactivated by the running of the motor. Desirably, the cavity is covered with an adhesive label, such as a label containing safety information, brand information, or bar code information.

**[0011]** Yet another aspect of the present invention is directed to a method for preventing the deactivation of an anti-theft device by a magnetic or electromagnetic field generated by an article containing a motor. The method includes placing an anti-theft device inside a cavity of an electronic article and covering the cavity with, for example, an adhesive label. Desirably, the cavity is located on a component remote from the motor.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0012]** Figure 1 shows one embodiment of the present invention in which an anti-theft device is housed behind a label and within a cavity in a plastic component of a power tool.

**[0013]** Figure 2 shows the embodiment depicted in Figure 1 with the label partially removed to reveal the anti-theft device in the cavity.

**[0014]** Figure 3 shows another embodiment of the present invention in which an anti-theft device is housed in a cavity in a power tool handle and covered with a label.

**[0015]** Figure 4 shows yet another embodiment of the present invention in which an anti-theft device is housed in a cavity in a chain brake for a chainsaw, remote from the motor but in close proximity to a bar code label placed on the packaging.

### DESCRIPTION

**[0016]** One embodiment of the present invention includes an anti-theft device 14 disposed within a cavity 16 in a portion 10, desirably a plastic component, of a power tool. In one embodiment, the anti-theft device 14 is disposed entirely within the cavity 16. The cavity 16 may be covered with a label 12, as shown in Figures 1 and 2. Desirably, the component 10 in which the anti-theft device 14 is housed is located remote from the motor 20 of the power tool 28, as shown in Figures 3 and 4. The anti-theft device 14 may be placed loosely within the cavity 16 or may be secured within the cavity 16 in any suitable and known manner. For example, the anti-theft device 14 may have one surface containing an adhesive that allows the anti-theft device 14 to be securely attached to an inner surface of the cavity 16. Alternatively, the anti-theft device 14 may be secured to an outer surface of a component of the article or secured to or within the packaging of the article.

**[0017]** One type of anti-theft device 14 is in the form of a security tag that contains a magnetic sensor assembly that includes a magneto-mechanical active element that mechanically vibrates to generate a detectable signal at the frequency of an applied interrogation signal.

Another type of security tag contains a magnetic sensor assembly that includes a soft magnetic active element that generates a detectable signal at a harmonic of the frequency of the applied interrogation signal. In both types of tags, the magnetic sensor element also includes a hard or semi-hard magnetic biasing element. By changing the magnetic state of this biasing element, the active element of the tag is enabled or disabled from generating the detectable signal, thereby activating or deactivating the tag.

**[0018]** In a magneto-mechanical tag, the biasing element is magnetized along its longer length dimension by a permanent magnet to activate the tag. By either degaussing the biasing element along its length or by magnetizing it along its shorter width dimension, the tag is deactivated. In a harmonic tag, when the biasing element is demagnetized, the tag is activated. By magnetizing the biasing element along its longer length dimension, the tag is then deactivated. Degaussing the biasing element along its length then activates the tag again. Suitable anti-theft devices in the form of a security tag are available from SENSORMATIC ELECTRONICS CORPORATION, Boca Raton, FL.

**[0019]** In the embodiment shown in Figures 1 and 2, the anti-theft device 14 is located in a cavity 16 behind a label 12 on a plastic component 10 of a power tool. More particularly, in the embodiments shown in Figures 3 and 4, the anti-theft device is located in a cavity behind a label 12 on the handle 18 of a power tool 28 and on a chain brake 22 for a chainsaw, respectively. Locating the anti-theft device 14 in this manner maximizes the distance between the anti-theft device 14 and the motor 20 of the power tool 28, thereby decreasing the likelihood that the anti-theft device 14 will be deactivated by a magnetic or electromagnetic field generated by the motor 20 of the power tool 28.

**[0020]** Although in the embodiments illustrated in Figures 1 through 4 the cavity 16 is covered with an adhesive label, any suitable and known material may be used as a covering. For example, the covering may be made from a hook-and-loop fastener material (as disclosed in U.S. Patent No. 5,802,676 and sold under the trademark VELCRO) that may be secured around the edges of the cavity. Such material may also be used to secure the anti-theft device within the cavity so that, if desired, the user of the article may remove the anti-theft device after purchase and use the cavity to store small components, for example. For this purpose, it may be desirable for the covering to be secured to the cavity in a readily releasable manner, such as by use of a rigid material configured to slide back and forth over the cavity or a flexible material secured to the cavity with snaps, buttons, buckles, ties, clasps, hooks, or the like.

**[0021]** As shown in Figure 4, the power tool 28 containing the anti-theft device 14 and label 12 may be placed in a package 26 for distribution to retailers, distributors, and/or consumers. The power tool 28 is shown as a chainsaw, but it may be any power tool or other

electronic article. In the embodiment shown in Figure 4, a bar code label 24 is attached to the package 26 in close proximity to the anti-theft device in the cavity covered by the label 12. This arrangement increases the efficiency of the retail facility by allowing nearly simultaneous deactivation of the anti-theft device and scanning of the bar code at the point of sale.

**[0022]** After assembly of an electronic article such as a power tool is complete, the article is often subjected to quality assurance tests. During these tests, the article may be placed into operation, thereby generating a magnetic or electromagnetic field. These fields may decrease the effectiveness of any anti-theft device contained within the article or may entirely deactivate the anti-theft device. Once the anti-theft device becomes deactivated, it will no longer be sensed by the detection equipment and, therefore, will no longer serve its function of preventing theft of the article.

**[0023]** Accordingly, the present invention contemplates a method for preventing such deactivation, including packaging the electronic article with the anti-theft device positioned to maximize the distance between the anti-theft device and the motor inside the article. This method minimizes the exposure of the anti-theft device to any magnetic field generated by a permanent magnet inside the motor or any electromagnetic field generated by a wound field motor.

**[0024]** In another aspect of the present invention, a method for deterring the theft of an electronic article, such as a power tool, is provided. The method includes inserting an anti-theft device into a cavity located in the electronic article and covering the cavity. The covering may be made of any suitable and known material and may be secured over the cavity in any suitable and known manner. For example, the covering may be a label adhesively secured over the cavity or a flexible material secured over the cavity with snaps, buttons, buckles, stitches, ties, adhesive, screws, bolts, staples, clasps, hooks, or the like.

**[0025]** In one embodiment, the method includes locating the cavity on a component of the electronic article remote from the motor in the article. This configuration decreases the probability of deactivation of the anti-theft device by the running of the motor during quality assurance testing, for example.

**[0026]** In another embodiment, the method is performed in reverse order to detach the covering from the article and remove the anti-theft device from the cavity. The cavity may then be used as a storage compartment. Desirably, the covering is fastened over the cavity in such a way that the user may easily detach and re-attach the covering to access the items stored within the cavity.

**[0027]** In yet another embodiment, the method includes packaging the electronic article for distribution to consumers, distributors, and/or retailers. A bar code label may then be placed on the package. The method of the present invention allows the bar code label to be placed within about three inches of the anti-theft device, as re-

quired by many retailers, to facilitate simultaneous deactivation of the anti-theft device and scanning of the bar code label.

**[0028]** Upon the purchase of the article containing the anti-theft device, an authorized individual may deactivate the anti-theft device. Deactivation devices typically use coils that are energized to generate a magnetic field of sufficient magnitude to render the anti-theft device inactive. The deactivated devices are no longer responsive to the incident energy of the electronic article surveillance system, and therefore, an alarm is not triggered. Examples of deactivation devices are set forth in U.S. Patent No. 6,084,514.

**[0029]** Of course, it should be understood that a wide range of changes and modifications could be made to the embodiments described above. It is therefore intended that the foregoing detailed description be regarded as illustrative rather than limiting, and that it be understood that it is the following claims, including all equivalents, that are intended to define the spirit and scope of this invention.

#### Claims

1. An electronic article comprising a cavity, an anti-theft device disposed entirely within the cavity, and a covering placed over the cavity.
2. The electronic article of claim 1 wherein the covering comprises an adhesive label.
3. The electronic article of claim 2 wherein the cavity is located on a component remote from a motor in the electronic article.
4. The electronic article of claim 3 wherein the anti-theft device responds to a magnetic field.
5. The electronic article of claim 4 wherein the electronic article is a power tool.
6. The electronic article of claim 2 wherein the adhesive label comprises a safety label, brand label, or bar code label.
7. The electronic article of claim 1 further comprising a bar code label placed within about three inches of the anti-theft device.
8. A method for deterring the theft of an electronic article comprising: inserting an anti-theft device into a cavity located in the electronic article and subsequently covering the cavity.
9. The method of claim 8 wherein the article comprises a power tool.

10. The method of claim 9 wherein the anti-theft device responds to a magnetic field.
11. The method of claim 10 wherein the covering comprises an adhesive label. 5
12. The method of claim 11 wherein the cavity is located on a component remote from a motor in the electronic article. 10
13. The method of claim 8 further comprising uncovering the cavity, removing the anti-theft device, and using the cavity as a storage space.
14. The method of claim 12 further comprising placing the electronic article in a package. 15
15. The method of claim 14 further comprising placing a bar code label on the package. 20
16. The method of claim 15 wherein the bar code label is within about three inches of the adhesive label.
17. A method for preventing the deactivation of an anti-theft device by a magnetic or electromagnetic field generated by an article containing a motor, the method comprising placing an anti-theft device inside a cavity in an electronic article and covering the cavity. 25
18. The method of claim 17 wherein the cavity is covered with an adhesive label. 30
19. The method of claim 18 wherein the cavity is located on a component remote from the motor. 35

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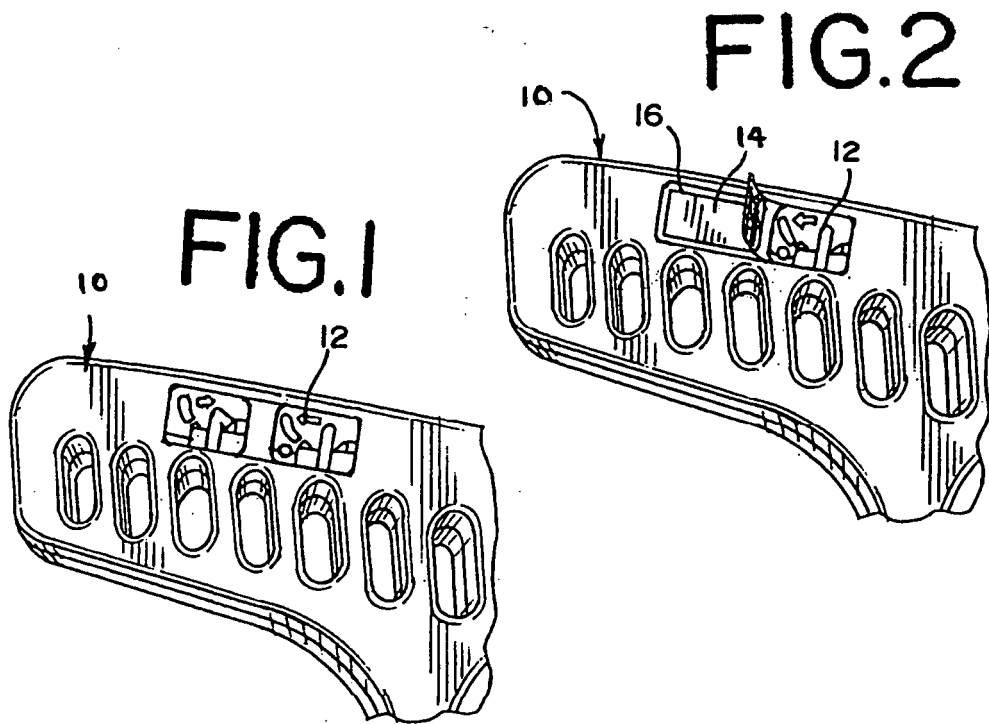


FIG.3

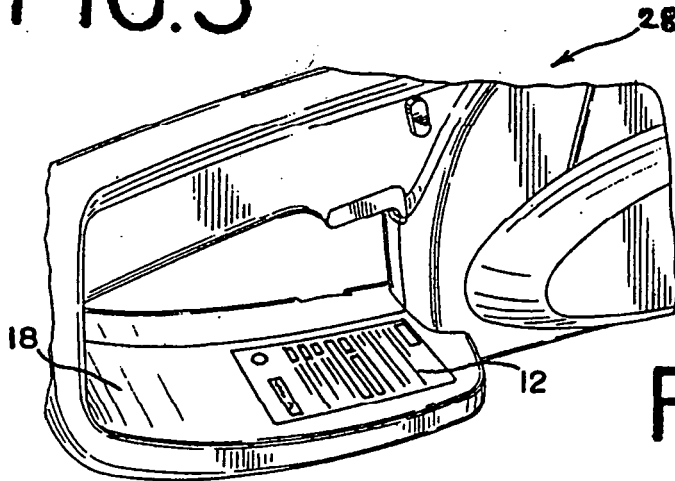


FIG.4

