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| cid:image001.jpg@01CF5B3A.8550F5A0 |
| **Patentability Assessment Study**  **for**  **Wal-Mart**  2229US01 – Shoplifting detection using multiple sensors  AQ#81268315  FETF 140037-USPR |

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1. Executive Summary
   1. Summary of findings

|  |
| --- |
| The analyst performed search on various Patent and Non-Patent databases. During the search, the analyst was able to identify three central patent references and five peripheral patent references.  The central references rank higher in the order of relevance, as compared to the peripheral references.  The invention describes a system to detect shoplifting. There are two or more sensors attached to a product. The sensors are located at a fixed distance relative to each other. The system detects distance change between the sensors beyond a threshold and triggers an alarm. Further, the system triggers a camera(s) to take pictures and alerts security personnel. A scanner gives alert on detecting sensors attached to the product at the retail store exit.  A feature matrix of the central references identified during the search is provided in the section “Feature Map - Central References” (1.2) |

* 1. Feature Map - Central References

|  |  |  |  |
| --- | --- | --- | --- |
| **Key Features** | **Key Element Mapping** | | |
| [**US 8,138,922 B2**](http://docdelivery.thomsoninnovation.com/get-file/00428296006923510042787400102088/US8138922(B2).pdf?userid=3792562&account=2009057772) | [**WO 2004034347 A1**](http://docdelivery.thomsoninnovation.com/get-file/00285779000757580021002600246489/WO2004034347(A1).pdf?userid=6181480&account=2009057772) | [**US 7,081,818 B2**](http://docdelivery.thomsoninnovation.com/get-file/00534022006902500070176100732778/US7081818(B2).pdf?userid=6181480&account=2009057772) |
| **A system to detect shoplifting** | **☑** | **🗸** | **🗸** |
| **There are two or more sensors attached to a product** | **🗸** | **🗸** | **🗸** |
| **The sensors are located at a fixed or known distance relative to each other** | **🗸** | - | **🗸** |
| **The system detects distance change between the sensors beyond a threshold** | **🗸** | **-** | **-** |
| **The system triggers a camera(s) to take pictures** | **-** | **🗸** | **-** |
| **The system alerts security personnel in the store** | **☑** | **🗸** | **🗸** |
| **A scanner alerts on detecting sensors attached to the product at the store exit** | **🗸\*** | **🗸** | **-** |

**🗸 *The reference discloses the feature explicitly***

**☑ *The reference discloses the feature implicitly***

**🗸\* *The reference discloses the feature partially***

1. List of References

This section includes a list of references considered relevant to the subject matter.

* 1. Central References

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Patent/Publication** | **UnitedLex – Summary** | **Title** | **Assignee/Applicant** | **Publication Date  (Mon DD, YYYY)** | **Application Date (Mon DD, YYYY)** | **Priority Date**  **(Mon DD, YYYY)** |
| [**US 8,138,922 B2**](http://docdelivery.thomsoninnovation.com/get-file/00428296006923510042787400102088/US8138922(B2).pdf?userid=3792562&account=2009057772) | The identified reference describes a pair of RFID tags (with antennas) attached to a container. The antenna of the first RFID tag is attached on a closure of the container. A circuit detects an alarm condition when the closure of the container is moved at a predetermined distance from the container. The reference also describes the implementation in theft detection/tamper detection. However, the reference does not explicitly describe the implementation of the system in retail environment. | Deactivating a data tag for user privacy or tamper-evident packaging | Binforma Group Limited Liability Company | Mar 20, 2012 | Mar 3, 2010 | Apr 30, 2004 |
| [**WO 2004034347 A1**](http://docdelivery.thomsoninnovation.com/get-file/00285779000757580021002600246489/WO2004034347(A1).pdf?userid=6181480&account=2009057772) | The identified reference discloses a system to detect theft in a retail store. A product is attached with RFID tags (sensor combination). The system triggers a surveillance camera to take images. Further, the system detects the product with tags near the store exit. However, the reference does not disclose the distance variation between the sensors. | Security system and process for monitoring and controlling the movement of people and goods | Geza Nemes | Apr 22, 2004 | Oct 11, 2002 | Oct 11, 2002 |
| [**US 7,081,818 B2**](http://docdelivery.thomsoninnovation.com/get-file/00534022006902500070176100732778/US7081818(B2).pdf?userid=6181480&account=2009057772) | The identified reference describes a system to detect shoplifting condition in a retail store. A product is attached with multiple sensors. The sensors are positioned in a geometric matrix at a given distance. The system notifies personnel in the retail store. Further, the system detects the product at the store exit if sensors are not removed. However, the reference does not disclose distance between the sensors and a camera system. | Article identification and tracking using electronic shadows created by RFID tags | Checkpoint Systems Inc | Jul 25, 2006 | May 17, 2004 | May 19, 2003 |

* 1. Peripheral References

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Patent/Publication** | **UnitedLex – Summary** | **Title** | **Assignee/Applicant** | **Publication Date  (Mon DD, YYYY)** | **Application Date (Mon DD, YYYY)** | **Priority Date**  **(Mon DD, YYYY)** |
| [**US 9,437,088 B2**](http://docdelivery.thomsoninnovation.com/get-file/00042565002177890003287300146563/US9437088(B2).pdf?userid=3792562&account=2009057772) | The identified reference describes a system for protecting merchandise from theft. The merchandise has a sensor component that communicates with a monitoring component. If the relative distance between the sensor and a monitoring component is not within a predetermined range, then a security signal is generated. However, the reference does not disclose other features of the invention. | Systems and methods for protecting retail display merchandise from theft | Invue Security Products Inc. | Sep 6, 2016 | Sep 24, 2014 | Sep 29, 2013 |
| [**US 9,041,537 B2**](http://docdelivery.thomsoninnovation.com/get-file/00053121005284630000881700026944/US9041537(B2).pdf?userid=3792562&account=2009057772) | The identified reference describes a security system for items on a retail display. The items on display have a sensor that communicates with an alarm module. The system monitors whether the sensor is located within a predetermined distance from the alarm module. If the item is not located within a predetermined distance, then the alarm module generates an alarm signal. However, the reference does not disclose other features of the invention. | Pre-alarm for abnormal merchandise handling | Invue Security Products Inc. | May 26, 2015 | Apr 2, 2013 | Apr 3, 2012 |
| [**US 20140118145 A1**](http://docdelivery.thomsoninnovation.com/get-file/00721110005938770020110200273637/US20140118145(A1).pdf?userid=6181480&account=2009057772) | The identified reference discloses a system to prevent shoplifting of an electronic device. The device is attached to a device holder having multiple sensors. The device holder is further connected to a docking station. The system gives alarm if the distance between docking station and device holder changes by threshold distance. However, the reference does not disclose remaining features of the invention. | Wireless theft detection system, method and computer program | Sony Corporation | May 01, 2014 | Oct 17, 2013 | Oct 26, 2012 |
| [**WO 2013009169 A1**](http://docdelivery.thomsoninnovation.com/get-file/00532434000496700030497400252350/WO2013009169(A1).pdf?userid=6181480&account=2009057772) | The identified reference discloses a shoplifting detection system where tags are attached to a retail article. The system detects the tags present on the article and generates alarm in case of theft. The system also consists of a camera unit to take pictures of detection area. However, the reference does not disclose remaining features of the invention.  However, the reference seems to be silent on remaining features of the invention. | Shoplifting detection system, assembly thereof and method for detecting shoplifting | Cross Point B.V. | Jan 17, 2013 | Jul 16, 2012 | Jul 14, 2011 |
| [**US 20100283850 A1**](http://docdelivery.thomsoninnovation.com/get-file/00083623000538010007913000058265/US20100283850(A1).pdf?userid=6181480&account=2009057772) | The identified reference discloses a video surveillance system. The system triggers alarms when a product is detected between multiple sensors and optical sensitization paper. The system then triggers a camera unit to start video recording. However, the reference does not disclose remaining features of the invention. | Supermarket video surveillance system | Yangde Li | Nov 11, 2010 | May 05, 2009 | May 05, 2009 |

1. Relevant Excerpts from Central References

Following is the list of references found relevant to the subject matter of interest:

## [US 8,138,922 B2](http://docdelivery.thomsoninnovation.com/get-file/00428296006923510042787400102088/US8138922(B2).pdf?userid=3792562&account=2009057772)

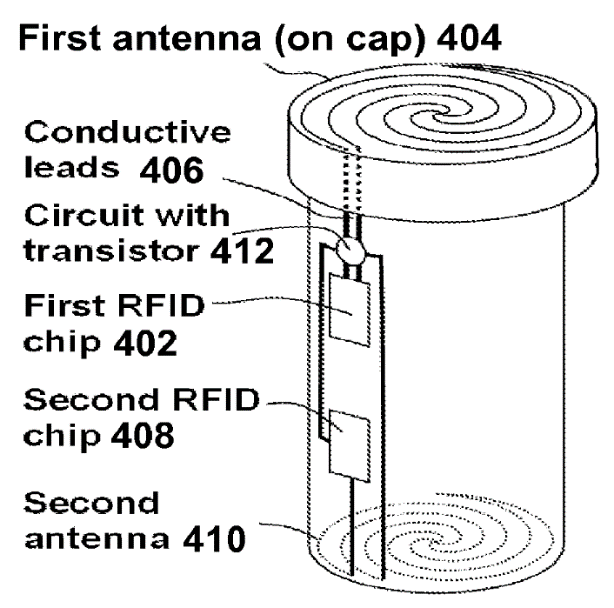
|  |  |
| --- | --- |
| *Title:* Deactivating a data tag for user privacy or tamper-evident packaging | *Publication Date:* Mar 20, 2012 |
| *Assignee:* Binforma Group Limited Liability Company | *Application Date:* Mar 03, 2010 |
| *Inventor:*  Jeffrey D. Lindsay, Herb Flores Velazquez, Fung-Jou Chen, Eric Francis Wagner | *Family Members:* US8138922B2 | CN1950860A | EP1743306A1 | EP1949307A1 | EP2209100A2 | EP2209100A3 | JP2009516262A | KR2007007165A | KR2008070002A | MX2006012409A | US20050242957A1 | US20060087436A1 | US20070013521A1 | US20100156642A1 | US7098794B2 | US7336183B2 | US7701346B2 | WO2005111961A1 | WO2007061478A1 |

***[Abstract]***

Deactivating a data tag attached to packaging for user privacy or **tamper-evident reasons.** Each of a plurality of data tags stores identification information. At least one of the data tags is removable and capable of wireless signal transmission at a first range such that removal of the data tag substantially prevents communication of the identification information via the removed data tag and permits communication of the identification information via another data tag at a second range relatively smaller than the first range.

***[Column 07, Lines 06-22]***

In another embodiment, a MEMS gravity-sensitive switch or a load-sensitive switch toggles between two circuits with two different REID tags, such that when there is a load present or when the proper orientation exists, respectively, an RFID scanner will read a signal from a first RFID tag, which indicates that the container is in a state having a load or the proper orientation, respectively. When the load is not present or the orientation is improper, a second RFID tag is active and the first tag is inactive. In this matter, scanning a package would read a signal from one of two RFID tags that provides information about which of two states the package is in. **Multiple sets of these toggling pairs of REID tags could be used to assess both the load state and orientation state, as well as other states. For example**, **MEMS accelerometers may also be used to trigger theft detection.** Alternatively, both tags may be active or inactive as a function of conditions experienced by the container.



***[Column 10, Lines 15-29]***

One embodiment of the present invention includes **a system** **comprising a container and a closure and** **at least two RFID chips** having distinct codes, each RFID chip being associated with its own circuit, wherein only one of the at least two REID chips is active at a time (e.g., to be easily read by a suitable scanner). First and second circuits for a first and second RFID chip, respectively, may include some common elements, such as a shared transistor, capacitor, resistor, conductive leads, etc., but at least one component of each circuit is not shared and is associated with either the container or closure, such that opening the closure, removing the closure, or changing the position of the closure relative to the container (e.g., moving the container a predetermined effective distance) toggles the circuits so that an active RFID circuit becomes inactive and an inactive circuit becomes active.

***[Column 10, Lines 15-29]***

One embodiment of the present invention includes a system comprising a container and a closure and at least two RFID chips having distinct codes, each RFID chip being associated with its own circuit, wherein only one of the at least two REID chips is active at a time (e.g., to be easily read by a suitable scanner). First and second circuits for a first and second RFID chip, respectively, may include some common elements, such as a shared transistor, capacitor, resistor, conductive leads, etc., but at least one component of each circuit is not shared and is associated with either the container or closure, such that opening the closure, removing the closure, or **changing the position of the closure relative to the container (e.g., moving the container a predetermined effective distance)** **toggles the circuits** so that an active RFID circuit becomes inactive and an inactive circuit becomes active.

***[Column 09, Lines 19-38]***

FIG. 4 illustrates a bottle having a first RFID chip 402 attached to a first antenna 404 via conductive leads 406. Breaking the first circuit (e.g., breaking conductive leads 406) **closes a separate alert circuit via a circuit with a transistor** 412 that activates a second RFID chip 408 and antenna 410 to provide a positive indication of tampering that is readily detected by scanning. The second RFID chip 408 and antenna 410 may be embedded in or attached to the bottle to facilitate automatic detection of tampering. The code in the second RFID 408 chip is detectable whenever the bottle is scanned. In one embodiment, if the bottle has not been tampered with, the two RFID chips 402, 408 are scanned, yielding a first code and a second code which are known to belong together. If only one code is found instead of two, the bottle is rejected. Rapid scanning of many bottles at once allows a computer to compare the list of first RFID chips 402 from each bottle with the list of second RFID chips 408 from each bottle, to determine if some bottles do not have the second RFID chip 408 that is paired with the first chip 402, allowing automatic detection of the presence of a tampered bottle in the scanned group.

***[Column 10, Lines 09-14]***

In related embodiments, a circuit may be disrupted by opening a box, removing a label, penetrating the wall of a container, slicing a film, etc. In some cases the packaging may be designed such that opening or cutting a package brings two conductive materials into contact to close a circuit and enable **an RFID scanner to read an alert signal.**

## [WO 2004034347 A1](http://docdelivery.thomsoninnovation.com/get-file/00285779000757580021002600246489/WO2004034347(A1).pdf?userid=6181480&account=2009057772)

|  |  |
| --- | --- |
| *Title:* Security system and process for monitoring and controlling the movement of people and goods | *Publication Date:* Apr 22, 2004 |
| *Assignee:* Geza Nemes | *Application Date:* Oct 11, 2002 |
| *Inventor:* Geza Nemes | *Family Members:* AU2002341273A1 |

***[Page 01, Lines 32-33; Page 02, Lines 01-09]***

Video Surveillance is another widely used security tool. The combination of access control systems with continuous or time lapse video imaging of the security gates can also help solving some of the above problems. However, there are still some open questions in case proof has to be provided. Like e.g. that a particular video image was taken at a particular occurrence and shows indeed a particular person carrying a particular i.d. and a particular article. **Electronic Article Surveillance (EAS)** **for detecting and preventing theft or unauthorised removal of articles or goods** from controlled spaces is also well known in the art. Although today they are nearly exclusively used **in retail establishments** and libraries, theft is a real problem in all walks of life. Namely, office buildings, factories and other similar establishments also contain valuable items that are targeted in various sophisticated methods of theft. However, traditional EAS cannot be used for such establishments as many of the target goods are allowed to be taken away from the premises by authorised personnel (like laptops, confidential documents, certain tools or other portable office equipment, etc.). Also the EAS systems need personnel to prosecute unlawful acts at the very time when persons pass a detection gate. These persons (customers) normally do not wear electronic i.d.'s.

***[Page 12, Lines 30-35]***

Tag attributes and the applicable access rights for the collective event are extracted from the database (12). The software core (3) then processes ail article and personnel combinations (4) to determine the necessary actions. **If the person passing through the gates is authorised to carry the detected articles**, the system can open locks or gates (5), notify security personnel (11) to let the person through doors. **If the combination of the tags is in any way prohibited by their attributes and the corresponding security settings, the system can stop the entry (or exit) of the controlled space** (5), activate the necessary alarm level (6), notify security personnel either through the local terminal (11) or through remote access (9), etc. (7).

***[Claim 7]***

The system of any of the preceding claims wherein s) said control device or said computer or **said EAS detector or said gate lock** is linked to a tactical screen, whereby said gate lock is preferably - and especially remote - operable by security personnel.

***[Page 04, Lines 08-21]***

In a retail shop environment, where there are naturally more people without identification tags (not employees of the shop) **all the goods could be equipped with RFID tags either hidden or exposed**. The inventory should contain the traditional barcode numbers and the unique RFID tag identifier numbers linked to the articles. (This also makes inventory handling easier as RFID technology doesn't require line of sight, i.e. multiple tags can be read even through all types of non-metallic packaging) The cashier would enter the goods by barcode or RFID reader to the cash register connected to the same database. After payment the system 'would clear' these goods for exit. Every time an RFID tag that wasn't cleared in the database by the above method passes any of the gate readers (at customer or personnel entrances/exits) the system would make a record of the event together with the appropriate images in the database, and would optionally activate a visible and/or audible alarm signal.

***[Page 14, Lines 31-34; Page 15, Lines 01-04]***

Fig. 5 shows a typical report of a security event extracted from the reporting subsystem. This is the main functionality of the tactical screen as well in a slightly different layout (landscape monitor layout). It contains all the necessary data to analyse an access or security event **with all available images from both the surveillance cameras** and the images stored in the database for reference. The current analysis shows that the person currently in the sensing volume of the **RFID gate** cannot take the cat outside the premises as it is designated as 'on site only'.

***[Page 12, Lines 15-17]***

**If the RFID gates are always active, the above sensors are still able to trigger** **imaging and/or alarms to notify personnel** about breaches of security where someone tries to pass through the gates without valid RFID tags or cards.

## [US 7,081,818 B2](http://docdelivery.thomsoninnovation.com/get-file/00534022006902500070176100732778/US7081818(B2).pdf?userid=6181480&account=2009057772)

|  |  |
| --- | --- |
| *Title:* Article identification and tracking using electronic shadows created by RFID tags | *Publication Date:* Jul 25, 2006 |
| *Assignee:* Checkpoint Systems Inc | *Application Date:* May 17, 2004 |
| *Inventor:*  Eric Eckstein Gary T. Mazoki William S. Richie, Jr. | *Family Members:* US2005012613A1 | AR044404A1 | AU2004241592A1 | CA2526412A1| CN1816831A and  [more](https://worldwide.espacenet.com/publicationDetails/inpadocPatentFamily?CC=US&NR=7081818B2&KC=B2&FT=D&ND=&date=20060725&DB=&locale=) |

***[Column 12, Lines 08-43]***

Electronic mapping and electronic shadows may be used to determine the vector motion/direction (e.g. towards the exit of the store or towards the point of sale—cash register) and velocity (speed) of a customer in a retail store. By combining this information with the knowledge of a product in the possession of the customer (e.g., exact type, quantity, value), it may be determined if the product is likely being stolen. In particular, motion of a shadow with non-purchased goods towards an exit may indicate an attempted theft, especially if the shadow/tag does not go past a point-of-sale. **This sequence of information and events** **could signal** **a store employee to approach the customer before exiting the store and thereby prevent a likely shoplifting event.** The preferred tracking system of the invention can also detect theft upon a sudden loss of a tagged product (e.g., foil-lined bag, baby carriage, shopping bag, removed tag) in association with a shadow. In this situation, the tag disappears in relationship to a shadow, but the preferred tracking system can track the shadow associated with the loss tag. These examples of loss prevention are useful in dressing room areas, where tags are disabled and an associated customer leaves. The preferred tracking system of the invention is alerted by the sudden loss of the tag and can track the shadow caused by the associated customer. Detection zones in accordance with the preferred embodiments can also be placed, for example, at point-of-sale locations (e.g., cash or check-out registers) to detect swipe control and/or monitor traffic. One example of swipe control is where an employee at a point-of-sale does not scan all of the products into the register for sale. Even if the tags on the unscanned products are disabled, the tracking system can still track the shadow associated with the products. That is, when a tag disappears, the tracking system 10 can still track the shadow associated with the lost tag.

***[Column 05, Lines 16-41]***

The electronic shadow tracking system of the present invention (hereinafter also referred to as tracking system) allows a computer program to map an area (e.g., a floor of a retail store, transportation center, convention center, warehouse, distribution center) by using RFID tags placed in a geometric pattern on the floor (fixed RFID sensors) and read by antennas placed in the ceiling, and/or on the walls or even in or on pedestals. Fixed RFID sensors may also be attached to store fixtures, racks or point of sale counters to identify and/or locate such objects. **In addition to fixed RFID sensors, there may also be mobile RFID sensors attached to movable items** within the environment that allow the tracking system to also identify articles, objects or persons attached to the mobile sensors. For example, the mobile RFID sensors may be attached to products being sold in a retail store or may be in the form of an employee badge to identify personnel working in the store. According to the preferred embodiments, a computer program can use RFID sensors and antennas to map an area, also referred to as a sensor net, detection zone or security zone at various locations, where it is desirable to track goods and/or people, such as, for example, a warehouse, airport, train station, subway station, bus station, stadium, convention center, and anywhere along a product distribution line.

***[Column 06, Lines 64-66; Column 07, Lines 01-22]***

As a preferred approach for implementing the present invention, antennas are installed in a retail store such that either the entire contents, or merely the content that needs to be monitored, is within a substantially contiguous field of detection, herewith referred to as a sensor net. In order to construct a sensor net, RFID Tags are placed on/in enough surfaces (floors and/or walls) such that the antennas in the sensor net can see (e.g., read response signals from) the sensors. **Within the sensor net, the tags and antennas may be positioned in a geometric matrix having a distance between the antennas (and between the sensors)** in accordance with the amount of resolution desired; the greater the geometric density of the tags and antennas, the finer the resolution of the shadows. The position of the tags and antennas is known so the system has an initial map of the environment defined by the sensor net. It is understood that while the preferred embodiment of the invention is generally described in conjunction with a retail store, that the embodiments of the invention are not limited to a retail store environment, but are applicable to various environments where it is desirable to track goods and/or people, such as, for example, a warehouse, airport, train station, subway station, bus station, stadium, convention center, transportation center, museum, or anywhere along a product distribution line.

***[Column 10, Lines 40-54]***

Since the tracking system 10 is constructed to periodically communicate between the antennas and sensors, the tracking system can track movement of the shadow causing object 36 over time. In other words, the tracking system 10 can track people, vehicles, inventory, products, etc. as desired depending on the application. Likewise, the tracking system 10 can track tagged (e.g., having a mobile active or disabled sensor) merchandise and associate the merchandise with the shadow causing object 36 if appropriate. Based on the movement of the shadow causing object 36, and the shadow's association with unpurchased merchandise, **the tracking system 10 can be used to send alarms or otherwise notify personnel of floor activity as desired.**

1. Appendix
   1. Scope and Methodology

Following is the scope and methodology adopted during the search:

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| --- |
| **Scope of the Search** |
| **Time Period:** The search was targeted to the patent and non-patent publications, published worldwide on or before the search date, which is December 02, 2016.  **Jurisdiction and database:**  Part 1: English Language Global Patent Literature Search (Use of the following listed databases ensure a comprehensive global patent search)  o Search using US, CPC, IPC and DWPI classification codes, strategic full-text query progression, citation searching, and bibliographic information searching  o Search is performed across the following resources:  § Family search in Questel Orbit, 20 full-text authorities, 90+ bibliographic authorities  § Derwent World Patents Index (DWPI) search in Thomson Innovation, 40+ human-abstracted authorities  § Google Patent Database  Part 2: English Language Electronic Technical Literature Search  o Search using index codes, controlled vocabulary, abstract text, full text where available, and bibliographic information  o Search is performed across the following resources:  § Full text search of Science Direct technical disclosure database  § Topical search engines likes ACM |
| **Methodology** |
| The analysis was performed in five stages. A brief description of various stages is as follows:  **Stage I -** An initial understanding of the disclosure was developed.  **Stage II –** Analysis of disclosure was performed to identify the key features.  **Stage III –** A progressively evolving search strategy was designed. The researchers started with focused search strings corresponding to the novelty aspect of the technology outlined in the subject patents and then progressively broaden the search strings to capture the most relevant results.  **Stage IV –** Thesearch was supplemented by performing a search on key CPC, DWPI, USC and IPC classes.  S**tage V –** Thesearch was supplemented by performing a search on key Assignees and Inventors. |

* 1. Database information

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| --- |
| **Questel Orbit Coverage** |
| **Full text in Original Language:**  United Kingdom, United States, Canada |
| **Machine Translated English Data:**  India, Austria, Belgium, Brazil, Canada, China, Denmark, European patent office, Finland, France, Germany, Japan, Korea, WIPO(PCT), Russia, Spain, Sweden, Switzerland, Taiwan, USSR |
| **Google Patents** |
| **Authorities:**  US, European Patent Office |
| **Google Scholar** |
| Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research.  **ACM (Association for Computing Machinery)**  ACM is a large educational and scientific computing society, which provides resources for advance computing. ACM's Digital Library contains a full text searchable collection of ACM journals, magazines, transactions, newsletter articles and conference proceedings. (<http://portal.acm.org/dl.cfm>) |

* 1. Search Strategy



### US Classes

Following are certain important US classes that were used during the search:

|  |  |
| --- | --- |
| **US CLASS** | **DEFINITION** |
| 340572100 | ([0]) 340000000 COMMUNICATIONS: ELECTRICAL;  ([1]) 340500000 CONDITION RESPONSIVE INDICATING SYSTEM;  ([2]) 340540000 SPECIFIC CONDITION;  ([3]) 340568100 ARTICLE PLACEMENT OR REMOVAL (E.G., ANTI-THEFT);  ([4]) 340572100 DETECTABLE DEVICE ON PROTECTED ARTICLE (E.G., "TAG"). |
| 340539130 | (0]) 340000000 COMMUNICATIONS: ELECTRICAL;  ([1]) 340500000 CONDITION RESPONSIVE INDICATING SYSTEM;  ([2]) 340531000 WITH PARTICULAR COUPLING LINK;  ([3]) 340539100 RADIO;  ([4]) 340539110 INCLUDING PERSONAL PORTABLE DEVICE;  ([5]) 340539130 TRACKING LOCATION (E.G., GPS, ETC.). |
| 340571000 | ([0]) 340000000 COMMUNICATIONS: ELECTRICAL;  ([1]) 340500000 CONDITION RESPONSIVE INDICATING SYSTEM;  ([2]) 340540000 SPECIFIC CONDITION;  ([3]) 340568100 ARTICLE PLACEMENT OR REMOVAL (E.G., ANTI-THEFT);  ([4]) 340571000 ALARM ON PROTECTED ARTICLE. |

### CPC Classes

Following are certain important CPC classes that were used during the search:

|  |  |
| --- | --- |
| **CPC CLASS** | **DEFINITION** |
| G08B-021/00 | PHYSICS  …INSTRUMENTS  …SIGNALLING  …SIGNALLING OR CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS  …ALARMS RESPONSIVE TO A SINGLE SPECIFIED UNDESIRED OR ABNORMAL OPERATING CONDITION AND NOT ELSEWHERE PROVIDED FOR |
| G08B-013/24/02 | PHYSICS  …INSTRUMENTS  …SIGNALLING  …SIGNALLING OR CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS  …BURGLAR, THEFT OR INTRUDER ALARMS  …ELECTRONIC ARTICLE SURVEILLANCE [EAS], I.E. SYSTEMS USING TAGS FOR DETECTING REMOVAL OF A TAGGED ITEM FROM A SECURE AREA, E.G. TAGS FOR DETECTING SHOPLIFTING |
| G06K-2017/0045 | PHYSICS  …INSTRUMENTS  …COMPUTING; CALCULATING; COUNTING  …RECOGNITION OF DATA; PRESENTATION OF DATA; RECORD CARRIERS; HANDLING RECORD CARRIERS  …METHODS OR ARRANGEMENTS FOR EFFECTING CO-OPERATIVE WORKING BETWEEN EQUIPMENTS COVERED BY TWO OR MORE OF THE PRECEDING MAIN GROUPS, E.G. AUTOMATIC …CARD FILES INCORPORATING CONVEYING AND READING OPERATIONS  …TRACKING OBJECTS OR PERSONS |

### IPC Classes

Following are certain important IPC classes that were used during the search:

|  |  |
| --- | --- |
| **IPC CLASS** | **DEFINITION** |
| G08B-021/24 | PHYSICS  …SIGNALLING  …SIGNALLING OR CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS  …ALARMS RESPONSIVE TO A SINGLE SPECIFIED UNDESIRED OR ABNORMAL CONDITION AND NOT OTHERWISE PROVIDED FOR  …REMINDER ALARMS, E.G. ANTI-LOSS ALARMS |
| G08B-015/00 | PHYSICS  …SIGNALLING  …SIGNALLING OR CALLING SYSTEMS; ORDER TELEGRAPHS; ALARM SYSTEMS  …IDENTIFYING, SCARING OR INCAPACITATING BURGLARS, THIEVES OR INTRUDERS, E.G. BY EXPLOSIVES |
| G06Q-020/20 | PHYSICS  …COMPUTING; CALCULATING; COUNTING  …DATA PROCESSING SYSTEMS OR METHODS, SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES; …SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES, NOT OTHERWISE PROVIDED FOR  …PAYMENT ARCHITECTURES, SCHEMES OR PROTOCOLS  …POINT-OF-SALE [POS] NETWORK SYSTEMS |

### DWPI Codes

Following are certain important DWPI Manual Codes that were used during the search:

|  |  |
| --- | --- |
| **DWPI CODES** | **DEFINITION** |
| W05-B01C5A | ALARMS, SIGNALLING, TELEMETRY AND TELECONTROL  …ALARMS  …BURGLAR/INTRUDER ALARMS; SCARING THIEVES  …OPTICAL, ULTRASONIC ACTUATION  …IMAGE SCANNING AND COMPARING SYSTEM SCANNER OR MOTION DETECTION; CCTV  …IMAGE SCANNING AND COMPARING SYSTEM SCANNER OR MOTION DETECTION |
| W05-B01A5C | ALARMS, SIGNALLING, TELEMETRY AND TELECONTROL  …ALARMS  …BURGLAR/INTRUDER ALARMS; SCARING THIEVES  …ELECTRICAL/MAGNETIC FIELD DISTURBANCE  …THEFT DETECTION BASED ON SIGNAL LEVEL  …PROTECTED OBJECT THEFT DETECTION AND SEPARATION ALARMS |

### Assignees

Following are certain important assignees that were used during the search:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ASSIGNEES** | | | |  |
| WAL-MART | WALGREENS | AMAZON | IBM | ZEBRA ENTERPRISE SOLUTIONS |
| 3M INNOVATION | KOREA ELECTRONICS TELECOMM | AMERASIA INTERNATIONAL TECHNOLOGY | GLOBALFOUNDRIES | QUADLINK TECHNOLOGY |

### Inventors

Following are certain important inventors that were used during the search:

|  |  |  |  |
| --- | --- | --- | --- |
| **INVENTORS** | | | |
| GHAZARIAN OHANES | ERIC ECKSTEIN | LAURENT WAWRZYNIAK | JULIA IRMSCHER |
| RANIER BRENNER | GARY T. MAZOKI | WILLIAM S. RICHIE, JR. | CELINE BAFFREY |
| PHILIPPE | HEINRICH | JEROME VERNET | MICHAEL RAPP |

* 1. Search History

|  |  |  |  |
| --- | --- | --- | --- |
| **QUESTEL ORBIT** | | | **HITS** |
| SEARCH 1 | ((DETECT+ OR IDENTIF+ OR DETERMIN+ OR RECOGNI+ OR TRACK+ OR NOTIC+ OR DETER+ OR PREVENT+ OR ANTI+ OR APPREHEND+ OR ARREST+ OR DETAIN+) 4D (SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 1W LARCENC+) OR (SHOP 1W BURGLAR+) OR (SHOP 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES | | 3677 |
| **SEARCH 2** | **1 AND ((MULTI+ OR PLURAL OR TWO OR MORE) 2D (SENSOR? OR DETECTOR? OR TAG? OR(RFID 1W READER?) OR CHIP?)) AND ((ATTACH+ OR AFFIX+ OR FASTEN+ OR JOIN+ OR CONNECT+ OR STRAP+ OR CLIP+ OR PIN+ OR PEG+) 6D (ITEM? OR PRODUCT? OR MERCHANDISE? OR ACCESSOR+ OR ARTICLE? OR COMMODIT+))/BI/TX** | | **65** |
| SEARCH 3 | 1 AND (ITEM? OR PRODUCT? OR MERCHANDISE? OR ACCESSORIE? OR ARTICLE? OR COMMODIT+) AND (((DISTANCE 2D CHANGE?) OR (DISTANCE 2D VARIATION?) OR (RANGE 2D VARIATION?) OR (RANGE 2D CHANGE?) OR (GAP 2D VARIATION?) OR (SPAN 2D CHANGE?)) 4D (SENSOR? OR DETECTOR? OR TAG? OR (RFID 1W READER?) OR CHIP?))/TX/TI/AB/BI/CLMS | | 10 |
| **SEARCH 4** | **3 NOT 2** | | **10** |
| SEARCH 5 | (((SENSORS OR DETECTORS OR TAGS OR (RFID 1W READERS) OR CHIPS) 6D (ATTACH+ OR AFFIX+ OR FASTEN+ OR JOIN+ OR CONNECT+ OR STRAP+ OR CLIP+ OR PIN+ OR PEG+) 6D (ITEM OR PRODUCT OR MERCHANDISE OR ACCESSORY OR ARTICLE OR COMMODITY))/TI/AB/IW/CLMS/DESC/ODES AND ((SENSORS OR DETECTORS OR TAGS OR (RFID 1W READERS) OR CHIPS) 4D (DISTANCE OR SPACE OR GAP OR SEPRATION OR SPAN OR INTERVAL) 6D (ITEM OR PRODUCT OR MERCHANDISE OR ACCESSORY OR ARTICLE OR COMMODITY))/TI/AB/IW/CLMS/DESC/ODES) | | 55 |
| SEARCH 6 | 5 NOT (2 OR 4) | | 55 |
| SEARCH 7 | (US7081818) /PN | | 1 |
| SEARCH 8 | ..CITBF NOSOURCE SS 7 1 RANKED | | 113 |
| SEARCH 9 | 8 AND (SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+))/TI/TX/AB/CLMS/DESC | | 6 |
| **SEARCH 10** | **9 NOT (2 OR 4 OR 6)** | | **6** |
| SEARCH 11 | (((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND ((SENSORS OR DETECTORS OR TAGS OR (RFID 1W READERS) OR CHIPS) 4D (DISTANCE OR SPACE OR GAP OR SEPRATION OR SPAN OR INTERVAL) 6D (ITEM OR PRODUCT OR MERCHANDISE OR ACCESSORY OR ARTICLE OR COMMODITY))/TI/AB/IW/CLMS/DESC/ODES/TX) | | 5 |
| **SEARCH 12** | **11 NOT (2 OR 4 OR 6 OR 10)** | | **4** |
| SEARCH 13 | ((US7081818 OR WO200434347))/PN/XPN | | 2 |
| SEARCH 14 | ..SIMILARITY SS 13 RANKED | | 111287 |
| SEARCH 15 | 14 AND 2 | | 54 |
| SEARCH 16 | 15 NOT (2 OR 4 OR 6 OR 10 OR 12) | | 0 |
| SEARCH 17 | (G08B-021/00)/CPC | | 826 |
| SEARCH 18 | 17 AND ((SCAN+ OR IDENTIF+ OR ALERT+ OR DETECT+ OR DETERMIN+ OR RECONI+) 6D (SENSOR+ OR DETECTOR+ OR TAG+ OR (RFID 1D READER+) OR CHIP+) 7D (EXIT? OR DOOR+ OR CHECKOUT? OR GATEWAY?))/TX/TI/AB/BI/DESC | | 9 |
| **SEARCH 19** | **18 NOT (2 OR 4 OR 6 OR 10 OR 12)** | | **9** |
| SEARCH 20 | (G08B-013/24/02)/CPC | | 296 |
| SEARCH 21 | ((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND (G08B-013/24/02)/CPC | | 48 |
| **SEARCH 22** | **21 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19)** | | **45** |
| SEARCH 23 | (G06K-2017/0045)/CPC | | 835 |
| SEARCH 24 | ((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND (G06K-2017/0045)/CPC | | 22 |
| **SEARCH 25** | **24 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22)** | | **19** |
| SEARCH 26 | (340572100)/PCLM | | 2080 |
| SEARCH 27 | ((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND (340572100)/PCLM | | 141 |
| **SEARCH 28** | **27 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25)** | | **114** |
| SEARCH 29 | (340539130)/PCLM | | 847 |
| SEARCH 30 | ((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND (340539130)/PCLM | | 4 |
| **SEARCH 31** | **30 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25 OR 28)** | | **3** |
| SEARCH 32 | (340571000)/PCLM | | 278 |
| SEARCH 33 | ((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND (340571000)/PCLM | | 21 |
| **SEARCH 34** | **33 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25 OR 28 OR 31)** | | **16** |
| SEARCH 35 | (G08B-021/24)/IPC | | 7529 |
| SEARCH 36 | ((MULTI+ OR PLURAL OR TWO OR MORE) 2D (SENSOR? OR DETECTOR? OR TAG? OR (RFID 1W READER?) OR CHIP?) 6D (ATTACH+ OR AFFIX+ OR FASTEN+ OR JOIN+ OR CONNECT+ OR STRAP+ OR CLIP+ OR PIN+ OR PEG+) 6D (ITEM? OR PRODUCT? OR MERCHANDISE? OR ACCESSOR+ OR ARTICLE? OR COMMODIT+))/TI/AB/IW/CLMS/DESC/ODES/TX AND (G08B-021/24)/IPC | | 11 |
| **SEARCH 37** | **36 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25 OR 28 OR 31 OR 34)** | | **10** |
| SEARCH 38 | (G08B-015/00)/IPC | | 5138 |
| SEARCH 39 | 38 AND 1 | | 67 |
| **SEARCH 40** | **39 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25 OR 28 OR 31 OR 34 OR 37)** | | **63** |
| SEARCH 41 | (G06Q-020/20)/IPC | | 5403 |
| SEARCH 42 | 41 AND ((SCAN+ OR IDENTIF+ OR ALERT+ OR DETECT+ OR DETERMIN+ OR RECONI+) 6D (SENSOR+ OR DETECTOR+ OR TAG+ OR (RFID 1D READER+) OR CHIP+) 7D (EXIT? OR DOOR+ OR CHECKOUT? OR GATEWAY?))/TX/TI/AB/DESC | | 72 |
| **SEARCH 43** | **42 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25 OR 28 OR 31 OR 34 OR 37 OR 40)** | | **68** |
| SEARCH 44 | (("WAL\_MART")/NPAN OR ("WAL\_GREENS")/NPAN OR ("AMAZON")/NPAN OR ("IBM")/NPAN OR ("ZEBRA 1D ENTERPRISE 1D SOLUTIONS")/NPAN OR ("3M 1D INNOVATION")/NPAN OR ("KOREA 1D ELECTRONICS")/NPAN OR ("TELECOMM")/NPAN OR ("AMERASIA 1D INTERNATIONAL 1D TECHNOLOGY")/NPAN OR ("GLOBALFOUNDRIES")/NPAN OR ("QUADLINK 1D TECHNOLOGY")/NPAN) | | 132132 |
| SEARCH 45 | ((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND (("WAL\_MART")/NPAN OR ("WAL\_GREENS")/NPAN OR ("AMAZON")/NPAN OR ("IBM")/NPAN OR ("ZEBRA 1D ENTERPRISE 1D SOLUTIONS")/NPAN OR ("3M 1D INNOVATION")/NPAN OR ("KOREA 1D ELECTRONICS")/NPAN OR ("TELECOMM")/NPAN OR ("AMERASIA 1D INTERNATIONAL 1D TECHNOLOGY")/NPAN OR ("GLOBALFOUNDRIES")/NPAN OR ("QUADLINK 1D TECHNOLOGY")/NPAN) | | 47 |
| **SEARCH 46** | **45 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25 OR 28 OR 31 OR 34 OR 37 OR 40 OR 43)** | | **39** |
| SEARCH 47 | (((GHAZARIAN 1D OHANES) OR (ERIC 1D ECKSTEIN) OR (LAURENT 1D WAWRZYNIAK) OR (JULIA 1D IRMSCHER) OR (RANIER 1D BRENNER) OR (GARY 2D MAZOKI) OR (WILLIAM 2D RICHIE JR.) OR (CELINE 1D BAFFREY) OR (PHILIPPE 1D HEINRICH) OR (JEROME 1D VERNET) OR (MICHAEL 1D RAPP))/IN/OIN/INH/INV) | | 148 |
| SEARCH 48 | ((SHOP?LIFT+ OR (SHOP 2D THEFT?) OR (SHOP 2D LARCENC+) OR (RETAIL 2D THEFT?) OR (SHOP 2D STEAL+) OR (RETAIL 2D STEAL+)))/TI/AB/IW/CLMS/DESC/ODES/TX AND (((GHAZARIAN 1D OHANES) OR (ERIC 1D ECKSTEIN) OR (LAURENT 1D WAWRZYNIAK) OR (JULIA 1D IRMSCHER) OR (RANIER 1D BRENNER) OR (GARY 2D MAZOKI) OR (WILLIAM 2D RICHIE JR.) OR (CELINE 1D BAFFREY) OR (PHILIPPE 1D HEINRICH) OR (JEROME 1D VERNET) OR (MICHAEL 1D RAPP))/IN/OIN/INH/INV) | | 14 |
| **SEARCH 49** | **48 NOT (2 OR 4 OR 6 OR 10 OR 12 OR 19 OR 22 OR 25 OR 28 OR 31 OR 34 OR 37 OR 40 OR 43 OR 46)** | | **9** |
|  | **Note: Search queries not highlighted in bold letters are partially analyzed** | |  |
| **THOMSON INNOVATION** | | | **HITS** |
| **SEARCH 1** | **ALL=((SHOP?LIFT\* OR (SHOP NEAR2 THEFT?) OR (SHOP NEAR2 LARCENC\*) OR (RETAIL NEAR2 THEFT?) OR (SHOP NEAR2 STEAL\*) OR (RETAIL NEAR2 STEAL\*)));** | | **44** |
| SEARCH 2 | MC=(W05-B01A5C); | | 619 |
| SEARCH 3 | MC=(W05-B01A5C) AND ALL=((SENSOR? OR DETECTOR? OR TAG? OR (RFID ADJ1 READER?) OR CHIP?) NEAR8 (ATTACH\* OR AFFIX\* OR FASTEN\* OR JOIN\* OR CONNECT\* OR STRAP\* OR CLIP\* OR PIN\* OR PEG\*) NEAR7 (ITEM? OR PRODUCT? OR MERCHANDISE? OR ACCESSOR\* OR ARTICLE? OR COMMODIT\*)); | | 52 |
| **SEARCH 4** | **3 NOT 1** | | **52** |
| SEARCH 5 | MC=(W05-B01C5A) AND ALL=((SENSOR? OR DETECTOR? OR TAG? OR (RFID ADJ1 READER?) OR CHIP?) NEAR8 (ATTACH\* OR AFFIX\* OR FASTEN\* OR JOIN\* OR CONNECT\* OR STRAP\* OR CLIP\* OR PIN\* OR PEG\*) NEAR7 (ITEM? OR PRODUCT? OR MERCHANDISE? OR ACCESSOR\* OR ARTICLE? OR COMMODIT\*)); | | 8 |
| **SEARCH 6** | **5 NOT (1 OR 4)** | | **8** |
|  | **Note: Search queries not highlighted in bold letters are partially analyzed** | |  |
| **TOTAL PATENTS**  **Authorities: JP, KR, DE, FR, GB, CA, AT, AU, BE, BR, CH, DD, DK, EA, ES, FI, IE, IN, IT, LU, MC, MX, NL, PT, RU, SE, SU, TW, AP, AR, BA, BG, BN, BO, BY, CL, CO, CR, CS, CU, CY, CZ, DO, DZ, EC, EE, EG, GC, GR, GT, HK, HN, HR, HU, ID, IL, IS, KE, KZ, LB, LT, LV, MA, MD, MN, MT, MW, MY, NI, NO, NZ, OA, PA, PE, PH, PL, PY, RO, SG, SI, SK, SM, SV, TH, TJ, TR, TT, UA, UY, UZ, VE, VN, YU, ZA, ZM, ZW** | | | **HITS** |
| SEARCH 1 | (SHOP\*LIFT! OR (SHOP W/2 THEFT\*) OR (SHOP W/2 LARCENC!) OR (RETAIL W/2 THEFT\*) OR (SHOP W/2 STEAL!) OR (RETAIL W/2 STEAL!)) | | 148 |
| **SEARCH 2** | **(SHOP\*LIFT! OR (SHOP W/2 THEFT\*) OR (SHOP W/2 LARCENC!) OR (RETAIL W/2 THEFT\*) OR (SHOP W/2 STEAL!) OR (RETAIL W/2 STEAL!)) AND ((ALARM! OR ALERT! OR NOTIF!) W/8 (EMPLOYEE\* OR WORKER\* OR ASSOCIATE\* OR STAFF\* OR SECURITY!))** | | **14** |
| **SEARCH 3** | **(SHOP\*LIFT! OR (SHOP W/2 THEFT\*) OR (SHOP W/2 LARCENC!) OR (RETAIL W/2 THEFT\*) OR (SHOP W/2 STEAL!) OR (RETAIL W/2 STEAL!)) AND ((SCAN! OR IDENTIF! OR ALERT! OR DETECT! OR DETERMIN! OR RECONI!) W/6 (SENSOR\* OR DETECTOR\* OR TAG\* OR (RFID W/1 READER\*) OR CHIP\*)) AND (EXIT\* OR DOOR! OR CHECKOUT\* OR GATEWAY\*)** | | **8** |
| **SEARCH 4** | **(SHOP\*LIFT! OR (SHOP W/2 THEFT\*) OR (SHOP W/2 LARCENC!) OR (RETAIL W/2 THEFT\*) OR (SHOP W/2 STEAL!) OR (RETAIL W/2 STEAL!)) AND (SENSOR\* OR DETECTOR\* OR TAG\* OR (RFID W/1 READER\*) OR CHIP\*) AND ((ATTACH! OR AFFIX! OR FASTEN! OR JOIN! OR CONNECT! OR STRAP! OR CLIP! OR PIN! OR PEG!) W/7 (ITEM\* OR PRODUCT\* OR MERCHANDISE\* OR ACCESSOR! OR ARTICLE\* OR COMMODIT!))** | | **10** |
| **SEARCH 5** | **(SHOP\*LIFT! OR (SHOP W/2 THEFT\*) OR (SHOP W/2 LARCENC!) OR (RETAIL W/2 THEFT\*) OR (SHOP W/2 STEAL!) OR (RETAIL W/2 STEAL!)) AND (CAMERA\* OR (IMAGE! W/1 DEVICE\*) OR (IMAGE! W/2 SENSOR\*) OR (IMAGE W/1 DETECTOR\*))** | | **8** |
|  | **Note: Search queries not highlighted in bold letters are partially analyzed** | |  |
| **GOOGLE PATENT** | | | **HITS** |
| SEARCH 1 | SENSORS TO DETECT SHOPLIFTING | | ANALYZED FIRST 20 |
| SEARCH 2 | SENSORS ATTACHED TO PRODUCT AT FIXED DISTANCE TO DETECT SHOPLIFTING | | ANALYZED FIRST 20 |
| SEARCH 3 | MULTIPLE SENSORS ATTACHED TO PRODUCT SHOPLIFTING | | ANALYZED FIRST 20 |
| SEARCH 4 | PRODUCT WITH RFID TAG AT FIXED DISTANCE SHOPLIFTING | | ANALYZED FIRST 20 |
| SEARCH 5 | ALARM ON VARIATION IN THRESHOLD DISTANCE BETWEEN SENSORS SHOPLIFTING | | ANALYZED FIRST 20 |
| **SEARCH 6** | **MULTIPLE SENSOR ON PRODUCT "FIXED DISTANCE" SHOPLIFTING** | | **7** |
| SEARCH 7 | PRODUCT WITH MULTIPLE SENSORS AT FIXED DISTANCE SHOPLIFTING | | ANALYZED FIRST 20 |
|  | **Note: Search queries not highlighted in bold letters are partially analyzed** | |  |
|  |  | |  |
| **GOOGLE SCHOLAR/GOOGLE** | | | **HITS** |
| SEARCH 1 | PRODUCT WITH MULTIPLE SENSORS SHOPLIFT | | ANALYZED FIRST 20 |
| SEARCH 2 | SENSORS ATTACHED TO PRODUCT AT FIXED DISTANCE | | ANALYZED FIRST 20 |
| SEARCH 3 | SHOP THEFT DETECTION AND ALARM SYSTEM | | ANALYZED FIRST 20 |
| SEARCH 4 | CAMERA TO DETECT SHOPLIFTING | | ANALYZED FIRST 20 |
| SEARCH 5 | SHOPLIFTING AND ALARM AND CAMERA SYSTEM | | ANALYZED FIRST 20 |
|  | **Note: Search queries not highlighted in bold letters are partially analyzed** | |  |
| **ACM** | | | **HITS** |
| SEARCH 1 | | PRODUCT STEALING IN RETAIL STORE | ANALYZED FIRST 20 |
| SEARCH 2 | | SHOPLIFTING CONDITION AND ALARM SYSTEM | ANALYZED FIRST 20 |
| SEARCH 3 | | CAMERA TO DETECT RETAIL THEFT | ANALYZED FIRST 20 |
| SEARCH 4 | | SCANNER DETECTS PRODUCT TAG AT EXIT | ANALYZED FIRST 20 |
| SEARCH 5 | | CAMERA TO DETECT RETAIL THEFT AND ALARM SYSTEM | ANALYZED FIRST 20 |

**Note: Search queries not highlighted in bold letters are partially analyzed**

|  |  |  |
| --- | --- | --- |
| **SCIENCE DIRECT** | | **HITS** |
| SEARCH 1 | SHOP THEFT ALARM SYSTEM | ANALYZED FIRST 20 |
| SEARCH 2 | SENSORS TO DETECT SHOPLIFTING | ANALYZED FIRST 20 |
| SEARCH 3 | SHOP THEFT DETECTION AND ALARM SYSTEM | ANALYZED FIRST 20 |
| SEARCH 4 | DETECT ITEM THEFT IN RETAIL | ANALYZED FIRST 20 |
| SEARCH 5 | SENSORS TO DETECT ITEM THEFT IN RETAIL AND ALARM | ANALYZED FIRST 20 |
|  | **Note: Search queries not highlighted in bold letters are partially analyzed** |  |
| **CITESEER** | | **HITS** |
| SEARCH 1 | SHOPLIFTING DETECTION SYSTEM | ANALYZED FIRST 15 |
| SEARCH 2 | MULTIPLE SENOR ATTACHED ON PRODUCT | ANALYZED FIRST 15 |
| SEARCH 3 | DETECT DISTANCE CHANGE BETWEEN SENSORS AFFIXED ON PRODUCT | ANALYZED FIRST 15 |
| SEARCH 4 | ALARM SYSTEM FOR SHOPLIFTING CONDITION | ANALYZED FIRST 15 |
| SEARCH 5 | SYSTEM TO DETECT RETAIL THEFT AND CAMERA | ANALYZED FIRST 15 |
|  | **Note: Search queries not highlighted in bold letters are partially analyzed** |  |

1. Disclaimer

This search was conducted through December 02, 2016. This report is based on information that was retrievable from those databases as of the date(s) the search was conducted. While performing the search, UnitedLex may have used third party databases, including but not limited to, patent and non-patent databases/search engines and platforms, and does not warranty accuracy of information provided by them. Under no circumstances shall UnitedLex, its subsidiary and parent companies, or affiliates be liable for any direct, indirect, incidental, special or consequential damages that result from the use of, or the inability to use UnitedLex reports. Further, the contents of this report are technical in nature and do not construe any legal opinion.