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(54) **A SECURITY APPARATUS**

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Description

Technical Field

[0001] The present invention relates to an apparatus for transporting or storing valuable items such as bank notes, to an outer case for such an apparatus and to an inner cassette for such an apparatus.

Background to the Invention

[0002] To deter would-be thieves of bank notes in transit, it has become commonplace for bank notes to be stored and transported in security containers which release an indelible dye or ink onto the bank notes in the event that the security container is stolen or otherwise interfered with, to mark and stain the bank notes, thus rendering them worthless and unusable. It is almost impossible to clean bank notes which have been marked in this way, and thus they cannot easily be used in normal transactions involving a human cashier.

[0003] One of the main reasons for transporting banks notes is to replenish automated teller machines (ATMs). ATMs typically store bank notes in refillable cassettes which can be installed in the ATM and which allow the ATM to access the bank notes stored therein to provide cash to a user of the ATM on request. To avoid the need for time-consuming refilling procedures when an ATM needs to be replenished with bank notes it is typical for ATMs to be replenished by simply removing the or each ATM cassette housed in the ATM and replacing it with a pre-filled ATM cassette.

[0004] ATMs typically include spoiling systems which can be activated automatically in the event that an unauthorised attempt is made to access the bank notes stored in the cash cassettes installed in the ATM. However, the ATM cassettes themselves are not provided with any such spoiling mechanism and thus ATM cassettes can be vulnerable in situations where a thief has an opportunity to steal the ATM cassette whilst it is in transit between one secure location and another. Such a situation may arise, for example, when a lone delivery guard is charged with replenishing an ATM cassette in an outdoor location by transporting a full ATM cassette from a delivery vehicle to the ATM to be replenished.

[0005] Accordingly, there is a need for a system which can protect an ATM cassette in these and other circumstances.

[0006] US 2007/0229258 relates to a security system for storing and transporting valuables, the security system comprising at least one security container for receiving valuables having a protection mechanism for protecting the valuables. Furthermore, the security system comprises a storage container for receiving and storing the security container. An electrical protection circuit is provided in the security container, which comprises an infrared receiver, the protection mechanism of the security container being able to be put into a first protection mode

and a second protection mode.

[0007] US 2007/0251431 relates to a protection method and protection system for valuables. An internal enclosure for enclosing the valuables, an external enclosure for enclosing the internal enclosure, a misuse protection device for the valuables, and a triggering device for triggering the misuse protection device in the event of an unauthorized manipulation of the external enclosure are provided. The external enclosure is closable to form a seal. A pressure chamber, which is impinged by an initial pressure, is produced in the external enclosure. Means are provided to generate a setpoint pressure, which deviates from the ambient pressure, in the pressure chamber when the external enclosure is closed to form a seal. A pressure sensor is used for detecting the pressure in the pressure chamber. The pressure sensor controls initialization means, which initialize the triggering device.; The triggering device triggers the misuse protection device when the pressure deviates by more than a tolerance pressure value from the setpoint pressure.

[0008] US 2008/0264309 relates to a security system having a container, which encloses a strongbox area for receiving valuables. Means for carrying the container, a protection system for protecting the valuables located in the strongbox area, and an access opening are provided. At least one protection module is provided in the strongbox area, the protection module being designed for the purpose of neutralizing the valuables located in the strongbox area. The means for carrying are implemented as a separate module, which comprises a handle area, a mechanical interface for the mechanical connection to the container, a security circuit for securing the security system, and a security interface for establishing a communication link between the security circuit and the protection module.

Summary of Invention

[0009] According to a first aspect of the present invention there is provided apparatus for storing or transporting a valuable item, the apparatus comprising an inner cassette for receiving the valuable item and an outer case in which the inner cassette may be received, the inner cassette comprising means for communicating with the outer case, means for detecting interference with the inner cassette and a spoiling system, the outer case comprising means for communicating with the inner cassette, characterised in that the outer case further comprises means for detecting interference with the outer case, wherein the spoiling system is configured to be activated in the event that the means for detecting interference with the inner cassette detects interference with the inner cassette or in the event that the means for detecting interference with the outer case detects interference with the outer case, and wherein the apparatus further comprises an optical system comprising a photo detector positioned on the inner cassette and a photo transmitter positioned on the outer case, the optical system being configured

to cause the spoiling system to be activated when a control system of the spoiling system detects that an infrared signal between the photo transmitter and the photo detector has been lost for a predetermined period of time.

[0010] The apparatus of the present invention provides a security system which protects cassettes such as ATM cassettes in circumstances in which they may be vulnerable to theft, such as while in transit between a delivery vehicle and a delivery location such as an ATM, by providing an outer case in which the cassette is received which conceals the cassette, thus preventing would-be thieves from identifying the cassette as a potential target for theft. The outer case is provided with means for detecting interference with the outer case, which ensures that in the event of a theft or other unauthorised interference with the outer case spoiling system of the inner cassette is activated, to render the contents of the inner cassette valueless. The inner cassette itself is also provided with means for detecting interference, such that if the cassette is attacked or stolen in the time between being removed from the outer case and being delivered to its final destination the spoiling system is activated to render the contents of the cassette valueless. Thus, the apparatus of the present invention serves both a concealing function and a deterrent function, thereby providing effective protection for the contents of the inner cassette.

[0011] The spoiling system may be mounted in a lid of the inner cassette. In this way, the space available for storing bank notes or other valuable items within the inner cassette is not compromised.

[0012] The inner cassette may comprise an ATM cassette.

[0013] The inner cassette may further comprise a timer which is configured to cause activation of the spoiling system on the expiry of a preset time period.

[0014] The timer may be activated on removal of the inner cassette from the outer case to count down a preset delivery time, such that if the inner cassette is not delivered to its destination or returned to the outer case within the expected delivery time the spoiling system is activated to spoil the contents of the inner cassette.

[0015] The means for communicating with the outer case and the means for communicating with the inner cassette may comprise complementary optical transmitters and receivers.

[0016] For example, the complementary optical transmitters and receivers may be complementary infra-red transmitters and receivers.

[0017] The means for detecting interference with the inner cassette may comprise one or more sensing means selected from the group comprising: a penetration detector; a liquid detector; a lid open detector; a feed door interference detector; a tilt detector, an accelerometer and a metal detector.

[0018] The means for detecting interference with the outer case may comprise one or more sensing means selected from the group comprising: a penetration detec-

tor; a liquid detector; a lid open detector; a temperature sensor; a hinge interference detector and an accelerometer.

[0019] According to a second aspect of the invention there is provided an outer case for an apparatus according to the first aspect.

[0020] According to a third aspect of the invention there is provided an inner cassette for an apparatus according to the first aspect.

Brief Description of the Drawings

[0021] Embodiments of the invention will now be described, strictly by way of example only, with reference to the accompanying drawings, of which:

Figure 1 is a schematic view from above showing an outer case of a security container;

Figure 2 is a schematic side view of the outer case of Figure 1;

Figure 3 is a schematic side view of an inner cassette for use in conjunction with the outer case shown in Figures 1 and 2;

Figure 4 is a schematic view of an exemplary spoiling system suitable for use in the inner cassette shown in Figure 3;

Figure 5 is a schematic representation showing sensors and communication systems used in a security apparatus; and

Figure 6 is a flow diagram illustrating steps taken by an outer case and an inner cassette during a delivery procedure.

Description of the Embodiments

[0022] Referring first to Figure 1, an outer case of a security apparatus is shown generally at 10. The outer case comprises a base 12 and a lid 14, the lid being attached to the base by means of a hinge 16 disposed towards one end of the outer case 10. A handle portion 18 is provided at an opposite end of the outer case 10, to facilitate handling and carrying of the outer case 10. The outer case 10 is lockable by means of a lock, which can be activated to lock the lid 14 in a closed position. The lock may be an electronic lock requiring an electronic key such as an iButton® for example to be presented in order to unlock the outer case 10. Alternatively, the lock may be an RFID tag, a smart card operated lock, a key-operated lock, or may be an electronic lock requiring a security password made up of alphanumeric characters to be entered to unlock the cassette. It will be appreciated that the lock types mentioned above are merely examples of suitable lock and that many different types of lock

are suitable for use in the security apparatus of the present invention. Thus, the invention is not limited to a particular lock.

[0023] An interior of the outer case 10 has a recess or enclosure, shown in dashed outline at 20 in Figures 1 and 2, which is configured to receive and accommodate differently sized inner cassettes in which valuable items such as bank notes may be received for storage or transportation between locations, for example between a delivery vehicle and an ATM.

[0024] An inner cassette is shown generally at 30 in Figure 3. In this example the inner cassette 30 is an ATM cassette of the type described above, that is to say a cassette that can be used for storing bank notes and which can be installed in an ATM, with the ATM being able to retrieve the bank notes stored in the cassette when the cassette is installed in the ATM. It will be appreciated, however, that the inner cassette 30 need not be an ATM cassette, but could be any suitable container in which valuable items such as bank notes and the like can be stored.

[0025] The inner cassette 30 is configured to be received in the recess or enclosure 20 of the outer case 10 such that the inner cassette 30 can be transported securely to a delivery destination such as an ATM which is to be replenished. The outer case 10 and the inner cassette 30 are provided with a number of security features which protect the inner cassette 30 in transit between secure locations, as will be described in more detail below.

[0026] The inner cassette 30 has a base 32 and a lid 34, with the lid 34 being hingedly attached to the base 32 by means of a hinge 36 which is disposed towards one end of the lid 34, such that the inner cassette 30 can be opened allowing the removal of the lid 34 from the base 32. The inner cassette 30 is lockable by means of a lock which can be activated to lock the lid 34 in a closed position. The lock may be, for example, a key-operated lock, or may be an electronic lock requiring a security password made up of alphanumeric characters to be entered to unlock the cassette. Alternatively, the lock may require an electronic key, such as an iButton® or RFID tag, to be presented in order to unlock the inner cassette 30.

[0027] A feed door in the form of a shutter 38 is provided at one end of the base 32 of the inner cassette 30, which shutter 38 can be opened by an ATM when the inner cassette 30 is installed in the ATM, to permit the ATM to retrieve bank notes stored in the inner cassette 30 in response to a legitimate request from a user of the ATM.

[0028] A spoiling system is provided on an underside of the lid 34 of the inner cassette 30, which spoiling system is configured to activate in the event that unauthorised interference with the inner cassette 30, or with the outer case 10 in which the inner cassette 30 is received, is detected, so as to spoil the contents of the inner cassette 30. It is advantageous for the spoiling system to be mounted on the underside of the lid 34 in this way, as

the spoiling system does not reduce the space available in the interior of the inner cassette for storing bank notes or other valuable items. However, it is to be understood that the spoiling system could be located elsewhere in the inner cassette 30 and thus the invention is not limited to a lid-mounted spoiling system. For example, the spoiling system may be provided in the base 32 of the inner cassette 30.

[0029] An exemplary spoiling system is shown schematically at 50 in Figure 4, and comprises two reservoirs or tanks 52 for storing a degrading agent such as ink, adhesive or a corrosive fluid such as acid which, when dispensed onto bank notes or other valuable items stored in the inner cassette 30, will degrade the valuable items to render them valueless. Many suitable degrading agents are known in the art and the invention is not limited to a particular degrading agent.

[0030] A dispensing mechanism 54 is provided to dispense the degrading agent into an interior of the inner cassette 30, and therefore onto the contents of the inner cassette 30 on activation of the spoiling system 50. In the example shown in Figure 4 the dispensing mechanism 54 comprises two conduits 56 which communicate with the tanks 52 and terminate in spray bars 58 which are arranged to extend along the length of the underside of the lid 34 of the inner cassette 30. The spray bars are provided with a plurality of dispensing nozzles 60 which are directed, when the lid 34 of the inner cassette 30 is closed, towards the interior of the inner cassette 30, such that on activation of the spoiling system 50 the degrading agent is dispensed into the interior of the inner cassette 30. The dispensing nozzles 60 are of a very small diameter such that on activation of the spoiling system the degrading agent is dispensed as a fine spray or mist into the interior of the inner cassette 30, to increase the likelihood that the entire contents of the inner cassette 30 will be struck by the degrading agent.

[0031] It will be appreciated that the dispensing mechanism 54 described above is merely one example of a dispensing mechanism suitable for use in the apparatus of the present invention, and that many other dispensing mechanisms are equally suitable. For example, a dispensing mechanism having one or more pressure-actuated injectors for penetrating a bag in which bank notes or other valuable items are stored, as disclosed in the applicant's European patent no. EP1499787, may be used. Thus, it is to be appreciated that the invention is not limited to a particular dispensing mechanism.

[0032] The spoiling system 50 further comprises an activation mechanism 62 to activate the spoiling system 50 in response to an activation command from interference detecting means of the inner cassette 30 or the outer case 10. In this example, the activation mechanism 62 comprises cylinders 64 of compressed gas such as carbon dioxide which are sealed by seals 66 interposed between outlets of the cylinders 64 and the tanks 52. A small electrically actuated pyrotechnic device 68 (known as an explosive protractor) is provided on or in close prox-

imity to each of the seals 66, and is electrically connected to an activation circuit (described in more detail below) of the inner cassette 30. In the event that unauthorised interference with the inner cassette 30 or the outer case 10 is detected the activation circuit transmits an electrical signal to the explosive protractors 68, causing them to actuate, rupturing the seals 66 between the cylinders 64 and the tanks 52. The rapid release of the gas contained in the cylinders 64 compresses the degrading agent in the tanks 52, causing valves 70 interposed between outlets of the tanks 52 and the conduits 52 of the dispensing mechanism 54 to rupture, thereby allowing the compressed degrading agent to escape through the conduits 56 and spray bars 58 to be dispensed, via the dispensing nozzles 60, into the interior of the inner cassette 30.

[0033] The activation mechanism 62 described above is merely one example of an activation mechanism suitable for use in the apparatus of the present invention, and many other known activation mechanisms are suitable for use in the apparatus. For example, an activation mechanism comprising an electrically actuated piston which compresses the degrading agent stored in the tanks 52 to cause it to be dispensed through the dispensing mechanism 54 could be used. Thus, it is to be understood that the invention is not limited to one particular activation mechanism.

[0034] The outer case 10 and the inner cassette 30 are provided with a number of sensing systems to detect different types of attack which are commonly used by thieves in attempting to gain access to the contents of a case 10 or cassette 30. The outer case 10 and the inner cassette 30 are also provided with communication systems which enable two-way communication between the outer case 10 and the inner case 30. The spoiling system 50 includes a control system which receives inputs from the sensing systems and communications systems of the inner cassette 30 and controls the operation of the activation circuit of the spoiling system according to the inputs received. These sensing systems and communication systems will be described below, with reference to the schematic representation shown in Figure 5.

[0035] The sensing systems of the outer case 10 are shown generally at 80 in Figure 5, and may be referred to generally as a detection system of the outer case 10. The outer case 10 is also provided with an optical communication system, which in this example is an infrared communication system 82 comprising an infra-red transmitter and receiver which permits two-way communication between the outer case 10 and the inner cassette 30. The infra-red communication system 82 may be, for example, an infra-red photo transmitter and infra-red photo detector in the 900nm frequency, IRDA®, or may be any other suitable infra-red communication system.

[0036] It will be appreciated that alternative or additional communication systems may be provided to permit two-way communication between the outer case 10 and the inner cassette 30. For example, the outer case 10 and the inner cassette 30 may be provided with comple-

mentary short-range radio communications transceivers for short-range radio communications using Bluetooth®, Wi-Fi® or any other suitable radio communication system.

[0037] The outer case 10 also has an optical beacon system 84, which may be, for example, an infra-red system comprising an infra-red source such as an infra-red LED, and a photo detector such as a photodiode housed in the inner case 30. The optical beacon system 84 will trigger the spoiling system 50 of the inner case 30 if the control system 118 detects the loss of the infra-red signal for a predetermined period of time.

[0038] The detection system 80 of the outer case 10 includes a number of sensors, including a penetration sensor 86 which is configured to detect attempts to breach the outer case 10 by penetrating its outer walls using, for example, a drill or similar tool. Suitable penetration detectors are well known and thus will not be described in detail here.

[0039] A liquid sensor 88 is also provided in the outer case 10, and is configured to detect the ingress of conductive or non-conductive liquids into the outer case 10. Such liquids are typically used by thieves to reduce the effectiveness of inks used in spoiling systems.

[0040] The detection system 80 of the outer case 10 also has a lid open sensor 90, which may be, for example, a micro switch or optical sensor to determine when the lid 14 of the outer case 10 is open.

[0041] A temperature sensor 92 is also provided, to detect attacks on the outer case 10 which involve exposing it to extremes of heat or cold.

[0042] A sensor 94 is provided to determine if an attempt to open the outer case 10 is being made by attacking the hinge 16, whilst an accelerometer 96 or the like is configured to detect movement indicative of the outer case 10 being dropped from a height in an attempt to force it open.

[0043] The sensors 86, 88, 90, 92, 94, 96 of the detection system 80 of the outer case 10 are connected to the infra-red communication system 82 such that on detection of an attack or other unauthorised interference with the outer case 10 a signal can be transmitted to the inner cassette 30 to cause the inner cassette 30 to activate the spoiling system 50, as is described in detail below.

[0044] The sensing systems of the inner cassette 30 are shown generally at 100 in Figure 5, and may be referred to generally as a detection system of the inner cassette 30. The inner cassette 30 is also provided with an optical communication system, which in this example is an infra-red communication system 102, comprising an infra-red transmitter and receiver, which is complementary to the infra-red communication system 82 of the outer case, and thus may be, for example, an infra-red photo transmitter and infra-red photo detector in the 900nm frequency, IRDA®, or may be any other suitable infra-red communication system which permits two-way communication between the inner cassette 30 and the outer case 10.

[0045] The inner cassette 30 also includes an optical system 104 which is complementary to the optical system 84 of the outer case 10. The optical system 84 of the outer case 10 is used in conjunction with the complementary optical system 104 of the inner cassette 30 to permit the inner cassette 30 to determine when it has been removed from the outer case 10. To this end the photo detector of the optical system 104 of the inner cassette may be positioned on an outer surface of the base 32 of the inner cassette 30 such that it faces into the interior of the recess or enclosure 20 of the outer case 10 when the inner cassette 30 is installed in the outer case 10. The LED of the optical system 84 of the outer case 10 may be positioned on an outer surface of the enclosure 20 such that when the inner cassette 30 is received in the enclosure 20 the photo detector overlies the LED, thereby creating an optical link between the optical system 84 of the outer case and the complementary optical system 104 of the inner cassette 30. When the inner cassette 30 is removed from the outer case 10 this optical link is broken, which may cause the optical system 104 of the inner cassette 30 to signal the control system 118 to spoil the contents of the inner case 30 using the spoiling system 50, if the optical link is not restored within a predetermined time period.

[0046] The detection system 100 of the inner cassette 30 includes a penetration sensor 106 which is configured to detect attempts to breach the inner cassette 30 by penetrating its outer walls using, for example, a drill or similar tool. Suitable penetration detectors are well known and thus will not be described in detail here.

[0047] A liquid sensor 108 is also provided in the detection system 100 of the inner cassette 30, and is configured to detect the ingress of conductive or non-conductive liquids into the inner cassette 30. As is described above, such liquids are typically used by thieves to reduce the effectiveness of inks used in spoiling systems.

[0048] The detection system 100 of the inner cassette 30 also has a lid open sensor 110, which may be, for example, a micro switch or optical sensor to determine when the lid 34 of the inner cassette 30 is open.

[0049] One or more sensors 112, which may be, for example, mechanical sensors such as micro switches or optical sensors, are associated with the feed door 38 of the inner cassette 30 to detect attempts to gain access to bank notes or the like stored in the inner cassette 30 through the feed door 38. A tilt sensor 114 is also provided to detect tilting of an ATM in which the inner cassette 30 is installed, whilst one or more metal detectors 116 are provided to assist the inner cassette 30 in recognising when it is installed in an ATM. An accelerometer 117 or the like is provided to detect movement indicative of the inner cassette 30 being dropped from a height in an attempt to force it open.

[0050] The infra-red communication system 102, the optical communication system 104 and the sensors 106, 108, 110, 112, 114 and 117 are connected to a control system 118 of the spoiling system 50, which control sys-

tem 118 receives signals from the sensors 106, 108, 110, 112, 114, 117 and determines whether the activation mechanism 62 of the spoiling system 50 should be triggered in response to signals received from the sensors 106, 108, 110, 112, 114, 116, 117 or the infra-red communication system 102 or the optical communication system 104.

[0051] The inner cassette 30 also includes a count down timer 120 which can be activated on removal of the inner cassette 30 from the outer case 10 or from an ATM in which it is installed. The count down timer 120 is connected to the control system 118 of the spoiling system 50 such that on removal of the inner cassette 30 from the outer case 10 or from an ATM it begins to count down. If the count down reaches zero before the inner cassette 30 is installed in an ATM or outer case 10 the spoiling system 50 is activated to spoil the contents of the inner cassette 30.

[0052] The sensors 86, 88, 90, 92, 94, 96 of the detection system 80 of the outer case 10 are located in appropriate positions in or on the outer case 10. For example, one or more penetration sensors 86 may be positioned in or on outer walls of the outer case 10, whilst one or more liquid sensors 88 may be positioned on inner surfaces of the outer walls of the outer case 10. It will be appreciated that the sensors and communications systems 80 of the outer case 10 may be located in a variety of positions, which positions will be evident to those skilled in the art.

[0053] Similarly, the sensors 106, 108, 110, 112, 114, 116, 117 of the detection system 100 of the inner cassette are located in appropriate positions in or on the inner cassette 30. Again, one or more penetration sensors 106 may be positioned on or in outer walls of the inner cassette 30, whilst one or more liquid sensors 108 may be positioned on an inner surface of the lid 34 of the cassette, or on inner surfaces of the outer walls of the inner cassette 30. It will be appreciated that the sensors and communications systems 100 of the inner cassette 30 may be located in a variety of positions, which positions will be evident to those skilled in the art.

[0054] The security apparatus described above is typically used in delivery situations, where a cassette such as an ATM cassette might be vulnerable to attack or theft in transit between a delivery vehicle and its final destination, for example where a full ATM cassette is being delivered by a delivery guard to an ATM to replenish the ATM. A delivery method using the apparatus will now be described, with reference to the flow chart of Figure 6.

[0055] As a first step 120 in the delivery process the delivery guard, who will typically be stationed inside a delivery vehicle, opens the outer case 10 using an electronic key or the like, to permit access to the interior thereof. The delivery guard then removes an inner cassette 30, which may be, for example, a full ATM cassette, from a rack in the delivery vehicle and places it in the recess or enclosure 20 of the outer case 10 (step 122). The delivery guard closes and locks the outer case 10 (step

124), at which point (step 126) the outer case 10 communicates to the inner cassette 30 a command to enter a transportation mode. This command may be issued by the outer case 10 using the infra-red transmitter of its infra-red communication system 82 and received by the inner cassette 30 using the infra-red receiver of its infra-red communications system 102. In the transportation mode of the inner cassette 30, sensing systems which are redundant because they are duplicated in the outer case 10 may be deactivated. Such redundant sensors may include, for example, the penetration sensor 106 and the liquid sensor 108.

[0056] The outer case 10 is also set to a transportation mode at step 126, in which all of its sensing systems are enabled, and the delivery guard leaves the delivery vehicle to transport the inner cassette 30 to its destination (step 128). It will be appreciated that when installed in the outer case 10, the inner cassette is hidden from view and thus observers are not able to identify what is being transported in the outer case 10.

[0057] During transportation of the inner cassette 30 within the outer case 10 the sensors 84, 86, 88, 90, 92, 94, 96 of the outer case 10 are active, constantly checking for unauthorised interference with the outer case 10 (step 130). If one or more of the sensors 84, 86, 88, 90, 92, 94, 96 detects interference with the outer case 10 a signal is transmitted to the spoiling system 50 by means of the infra-red communications systems 82, 102 to cause the spoiling system to be activated at step 132, as is described above.

[0058] On arrival at the destination, the delivery guard issues an unlock command to the outer case 10, using an electronic key or the like at step 134. This causes the outer case 10 to issue a command to the inner cassette 30 to enter a delivery mode (step 136) in which the inner cassette 30 can be delivered to and installed in an ATM or the like. In the delivery mode all of the sensing systems of the inner cassette 30 are activated. The inner cassette 30 then sends an acknowledgement message to the outer case 10 to indicate that it has entered the delivery mode (step 138) and the outer case 10 unlocks, allowing the lid 14 to be opened by the delivery guard and the inner cassette 30 to be removed (step 140). When the inner cassette 30 detects that it has been removed from the outer case 10, for example by detecting the loss of an optical signal emitted by the optical emitter 84 of the outer case 10, it starts the countdown timer 120 (step 142) which counts down an expected delivery time. During delivery of the inner cassette 30 the sensors 106, 108, 110, 112, 114 of the inner cassette 30 are active to detect any unauthorised interference with the inner cassette (step 144), and the timer 120 counts down the preset delivery time. If interference is detected by one or more of the sensors 106, 108, 110, 112 or if the inner cassette 30 has not been delivered to its destination (for example by being installed in an ATM) or returned to the outer case 10 within this time, the spoiling system 50 is activated at step 132 to render the contents of the inner

cassette 30 valueless. The countdown timer 120 can only be deactivated or reset (step 146) by either returning the inner cassette 30 to the outer case 10 or by successfully delivering the inner cassette 30 to its destination.

[0059] It will be appreciated that the security apparatus described above may be used in a wide variety of situations in which the inner cassette 30 may be vulnerable to attack. For example, the security apparatus may be used for transporting an inner cassette 30 containing cash or other valuable items to or from a storage rack in a delivery vehicle, cash centre or the like, or to a machine such as an automated till, ATM or racking system in retail premises.

Claims

1. Apparatus for storing or transporting a valuable item, the apparatus comprising an inner cassette (30) for receiving the valuable item and an outer case (10) in which the inner cassette (30) may be received, the inner cassette (30) comprising means for communicating with the outer case (10), means (100) for detecting interference with the inner cassette (30) and a spoiling system (50), the outer case (10) comprising means (82) for communicating with the inner cassette (30), **characterised in that** the outer case (10) further comprises means (80) for detecting interference with the outer case (10), wherein the spoiling system (50) is configured to be activated in the event that the means (100) for detecting interference with the inner cassette (30) detects interference with the inner cassette (30) or in the event that the means (80) for detecting interference with the outer case (10) detects interference with the outer case (10), and wherein the apparatus further comprises an optical system comprising a photo detector (104) positioned on the inner cassette (30) and a photo transmitter (84) positioned on the outer case (10), the optical system being configured to cause the spoiling system (50) to be activated when a control system (118) of the spoiling system (50) detects that an infra-red signal between the photo transmitter (84) and the photo detector (104) has been lost for a predetermined period of time.
2. Apparatus according to claim 1 wherein the spoiling system is mounted in a lid of the inner cassette.
3. Apparatus according to claim 2 wherein the inner cassette comprises an ATM cassette.
4. Apparatus according to any one of the preceding claims wherein the inner cassette further comprises a timer which is configured to cause activation of the spoiling system on the expiry of a preset time period.
5. Apparatus according to any one of the preceding

claims wherein the means for communicating with the outer case and the means for communicating with the inner cassette comprise complementary optical transmitters and receivers.

6. Apparatus according to claim 5 wherein the complementary optical transmitters and receivers comprise complementary infra-red transmitters and receivers. 5
7. Apparatus according to any one of the preceding claims wherein the means for detecting interference with the inner cassette comprises one or more sensing means selected from the group comprising: a penetration detector; a liquid detector; a lid open detector; a feed door interference detector; a tilt detector, an accelerometer and a metal detector. 10
8. Apparatus according to any one of the preceding claims wherein the means for detecting interference with the outer case comprises one or more sensing means selected from the group comprising: a penetration detector; a liquid detector; a lid open detector; a temperature sensor; a hinge interference detector and an accelerometer. 15
9. An outer case for an apparatus according to any one of claims 1 to 8. 20
10. An inner cassette for an apparatus according to any one of claims 1 to 8. 25

Patentansprüche

1. Vorrichtung zum Aufbewahren oder Transportieren von Wertgegenständen, umfassend eine Innenkassette (30) für die Aufnahme des Wertgegenstands und ein Außengehäuse (10), in welchem die Innenkassette (30) aufgenommen werden kann, wobei die Innenkassette (30) Mittel zum Kommunizieren mit dem Außengehäuse (10), Mittel (100) zum Detektieren eines Eingriffs an der Innenkassette (30) und ein Unbrauchbarmachungssystem (50) aufweist, wobei das Außengehäuse (10) Mittel (82) zum Kommunizieren mit der Innenkassette (30) aufweist, **dadurch gekennzeichnet, dass** das Außengehäuse (10) ferner Mittel (80) zum Detektieren eines Eingriffs an dem Außengehäuse (10) umfasst, wobei das Unbrauchbarmachungssystem (50) konfiguriert ist für eine Aktivierung, falls das Mittel (100) zum Detektieren eines Eingriffs an der Innenkassette (30) einen Eingriff an der Innenkassette (30) detektiert oder falls das Mittel (80) zum Detektieren eines Eingriffs an dem Außengehäuse (10) einen Eingriff an dem Außengehäuse (10) detektiert, und wobei die Vorrichtung ferner ein optisches System mit einem an der Innenkassette (30) positionierten Lichtdetektor (104) und einem an dem Außengehäuse (10) posi-

tionierten Lichtsender (84) umfasst, wobei das optische System derart konfiguriert ist, dass dieses eine Aktivierung des Unbrauchbarmachungssystems (50) bewirkt, wenn ein Steuersystem (118) des Unbrauchbarmachungssystems (50) detektiert, dass ein Infrarotsignal zwischen dem Lichtsender (84) und dem Lichtdetektor (104) für eine vorgegebene Zeitspanne verloren wurde.

2. Vorrichtung nach Anspruch 1, wobei das Unbrauchbarmachungssystem in einem Deckel der Innenkassette montiert ist. 10
3. Vorrichtung nach Anspruch 2, wobei die Innenkassette eine ATM-Kassette umfasst. 15
4. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die Innenkassette ferner einen Timer aufweist, der derart konfiguriert ist, dass dieser bei Ablauf einer vorgegebenen Zeitspanne die Aktivierung des Unbrauchbarmachungssystems bewirkt. 20
5. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei das Mittel zum Kommunizieren mit dem Außengehäuse und das Mittel zum Kommunizieren mit der Innenkassette komplementäre Lichtsender und Lichtempfänger aufweisen. 25
6. Vorrichtung nach Anspruch 5, wobei die komplementären Lichtsender und Lichtempfänger komplementäre Infrarotsender und Infrarotempfänger umfassen. 30
7. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei das Mittel zum Detektieren eines Eingriffs an der Innenkassette ein oder mehrere Fühlmittel umfasst, die ausgewählt sind aus der Gruppe, die einen Durchbruchmelder; einen Flüssigkeitsmelder; einen Deckel-offen-Melder; einen Melder eines Eingriffs an der Beschickungstür; einen Neigungsdetektor, einen Beschleunigungsmesser und einen Metalldetektor umfasst. 35
8. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei das Mittel zum Detektieren eines Eingriffs an dem Außengehäuse ein oder mehrere Fühlmittel umfasst, die ausgewählt sind aus der Gruppe, die einen Durchbruchmelder; einen Flüssigkeitsmelder; einen Deckel-offen-Melder; einen Temperatursensor; einen Melder eines Eingriffs an einem Scharnier und einen Beschleunigungsdetektor umfasst. 40
9. Außengehäuse für eine Vorrichtung nach einem der Ansprüche 1 bis 8. 45
10. Innenkassette für eine Vorrichtung nach einem der Ansprüche 1 bis 8. 50

Revendications

1. Appareil de stockage ou de transport d'un élément de valeur, cet appareil comprenant une cassette interne (30) destinée à recevoir l'élément de valeur et un caisson externe (10) dans lequel la cassette interne (30) peut être logée, la cassette interne (30) comprenant des moyens de communication avec le caisson externe (10), des moyens (100) permettant de détecter une interférence avec la cassette interne (30), ainsi qu'un système d'annulation (50), le caisson externe (10) comprenant des moyens (82) de communication avec la cassette interne (30),
caractérisé en ce que
le caisson externe (10) comprend en outre des moyens (80) permettant de détecter une interférence avec ce caisson externe (10), le système d'annulation (50) est conformé pour être activé lorsque les moyens (100) permettant de détecter d'une interférence avec la cassette interne (30) détectent une interférence avec la cassette interne (30), ou lorsque les moyens (80) permettant de détecter une interférence avec le caisson externe (10) détectent une interférence avec le caisson externe (10), et l'appareil comporte en outre un système optique comprenant un photodétecteur (104) situé sur la cassette interne (30) et un phototransmetteur (84) situé sur le caisson externe, ce système optique étant conformé pour permettre l'activation du système d'annulation (50) lorsqu'un système de commande (118) de ce système d'annulation (50) détecte qu'un signal infrarouge entre le phototransmetteur (84) et le photodétecteur (104) a été perdu pendant une durée prédéfinie.
2. Appareil conforme à la revendication 1, dans lequel le système d'annulation est monté dans un couvercle de la cassette interne.
3. Appareil conforme à la revendication 2, dans lequel la cassette interne comprend une cassette ATM.
4. Appareil conforme à l'une quelconque des revendications précédentes, dans lequel la cassette interne comprend en outre une horloge qui est conformée pour provoquer l'activation du système d'annulation après expiration d'une durée prédéfinie.
5. Appareil conforme à l'une quelconque des revendications précédentes, dans lequel les moyens de communication avec le caisson externe et les moyens de communication avec la cassette interne comprennent des transmetteurs et des récepteurs optiques complémentaires.
6. Appareil conforme à la revendication 5, dans lequel les transmetteurs et les récepteurs optiques complémentaires comportent des transmetteurs et des récepteurs infrarouges complémentaires.
7. Appareil conforme à l'une quelconque des revendications précédentes, dans lequel les moyens de détection d'une interférence avec la cassette interne comprennent au moins un moyen de détection choisi dans le groupe formé par un détecteur de pénétration, un détecteur de liquide, un détecteur d'ouverture de couvercle, un détecteur d'interférence de porte d'alimentation, un détecteur d'inclinaison, un accéléromètre et un détecteur de métaux.
8. Appareil conforme à l'une quelconque des revendications précédentes, dans lequel les moyens de détection d'une interférence avec le caisson externe comprennent au moins un moyen de détection choisi dans le groupe formé par : un détecteur de pénétration, un détecteur de liquide, un détecteur d'ouverture de couvercle, un détecteur de température, un détecteur d'interférences de charnière et un accéléromètre.
9. Caisson externe destiné à un appareil conforme à l'une quelconque des revendications 1 à 8.
10. Cassette interne destinée à un appareil conforme à l'une quelconque des revendications 1 à 8.

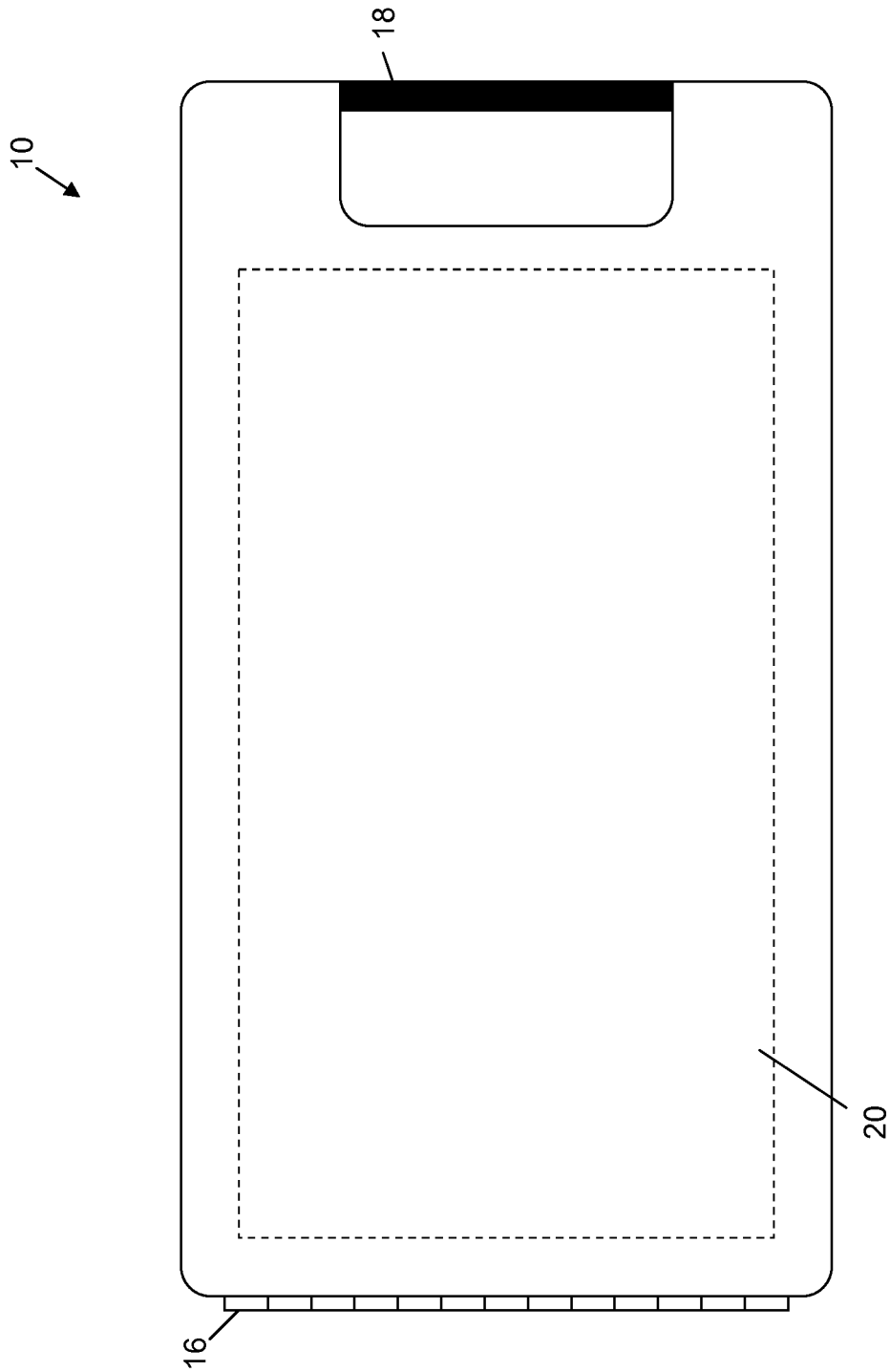


Figure 1

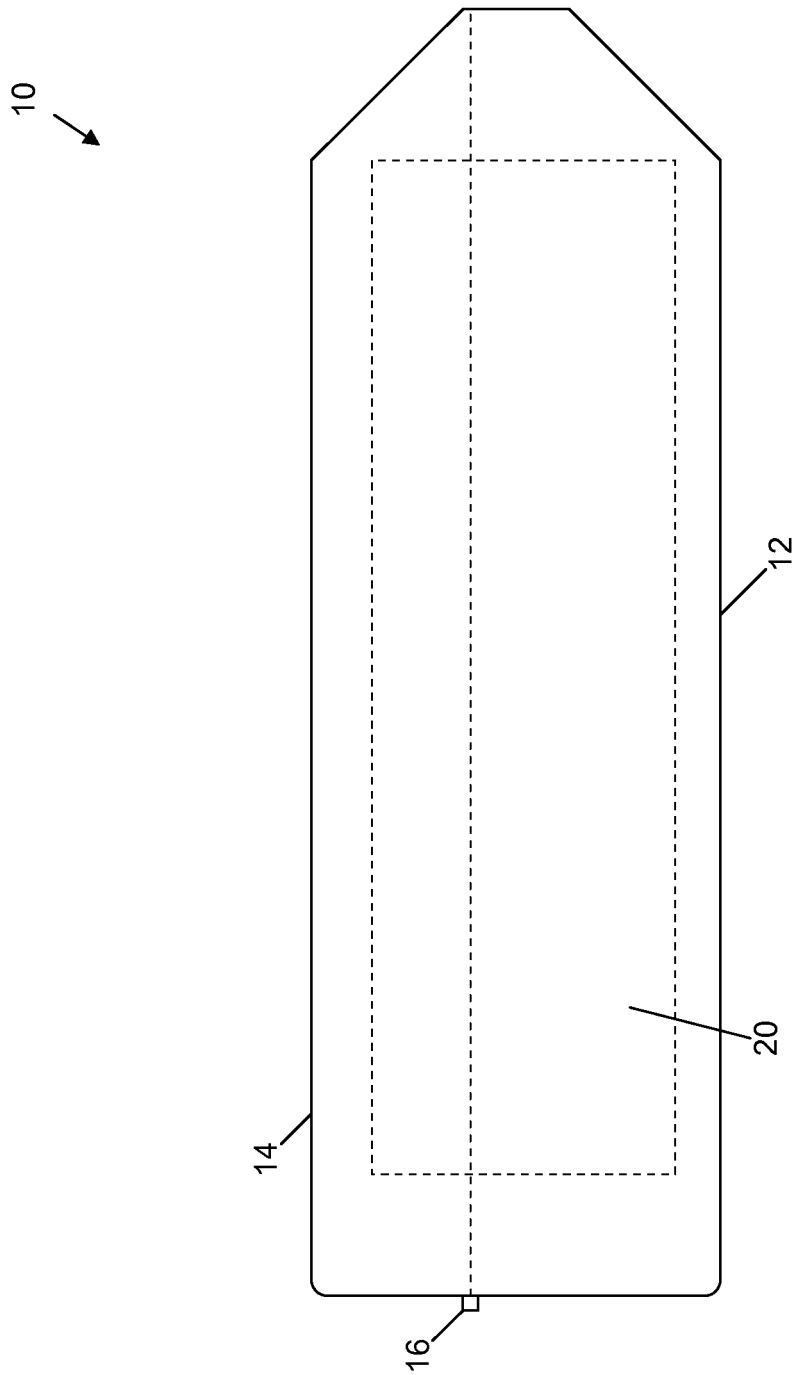


Figure 2

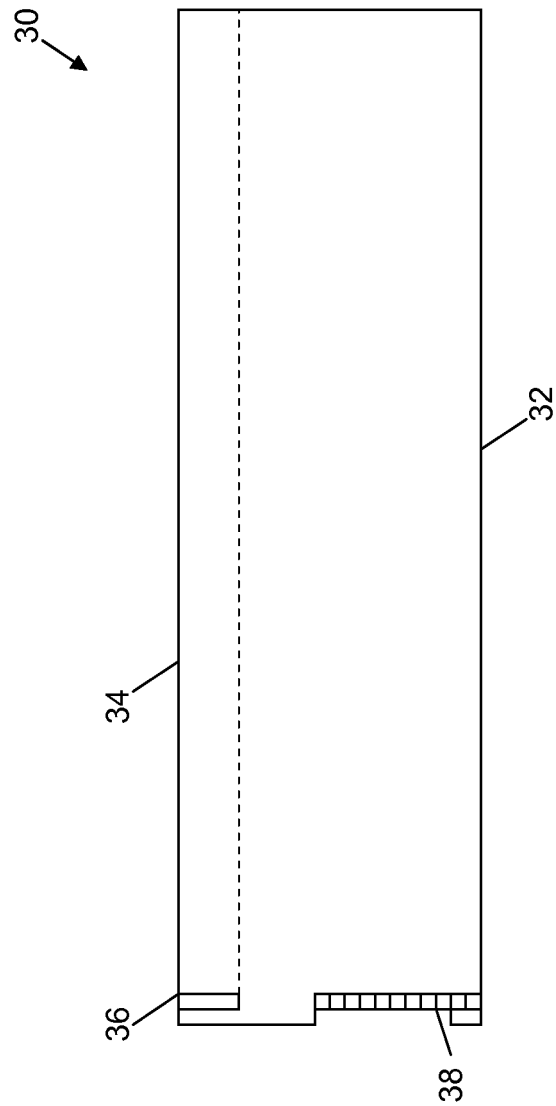


Figure 3

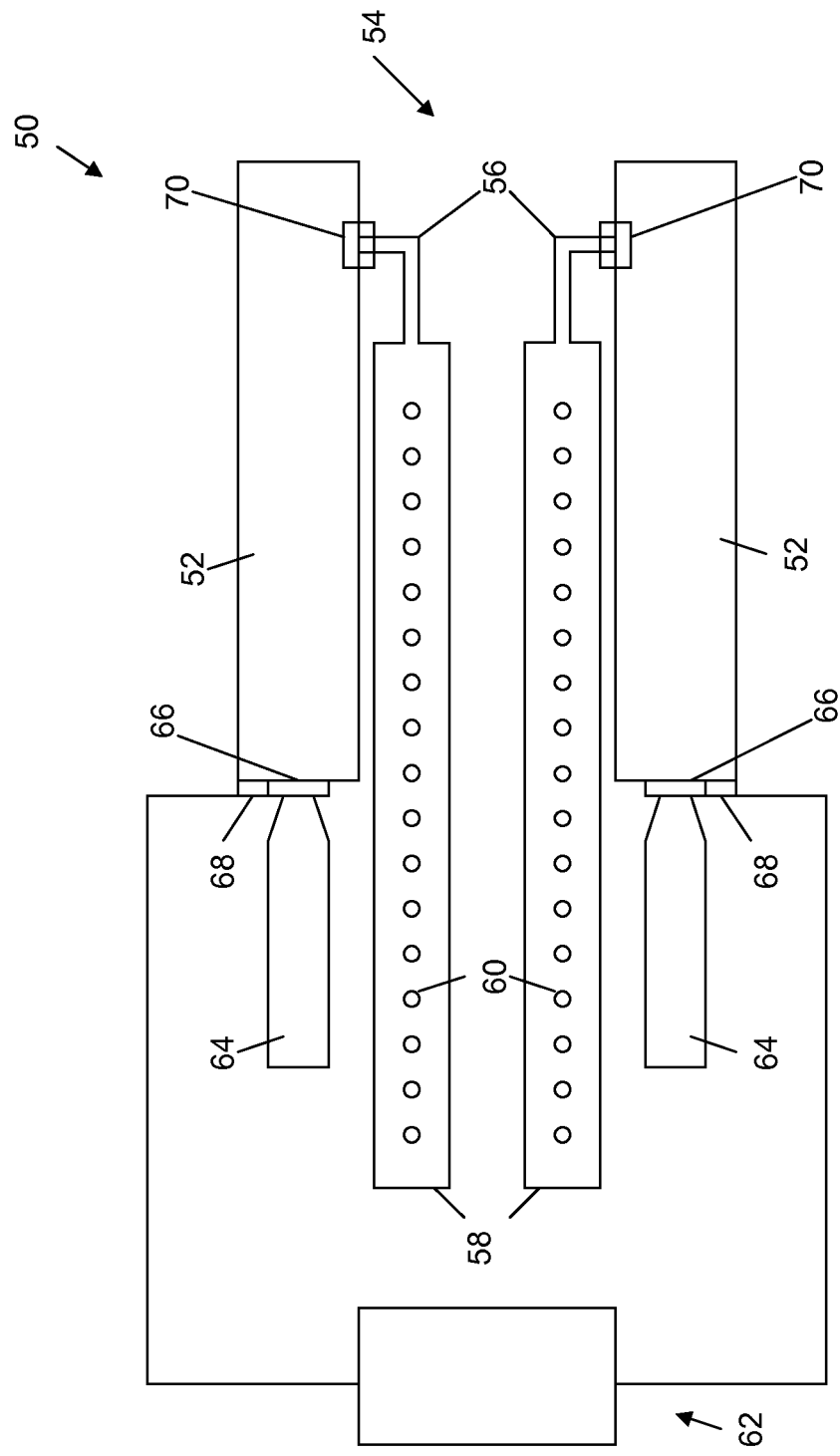


Figure 4

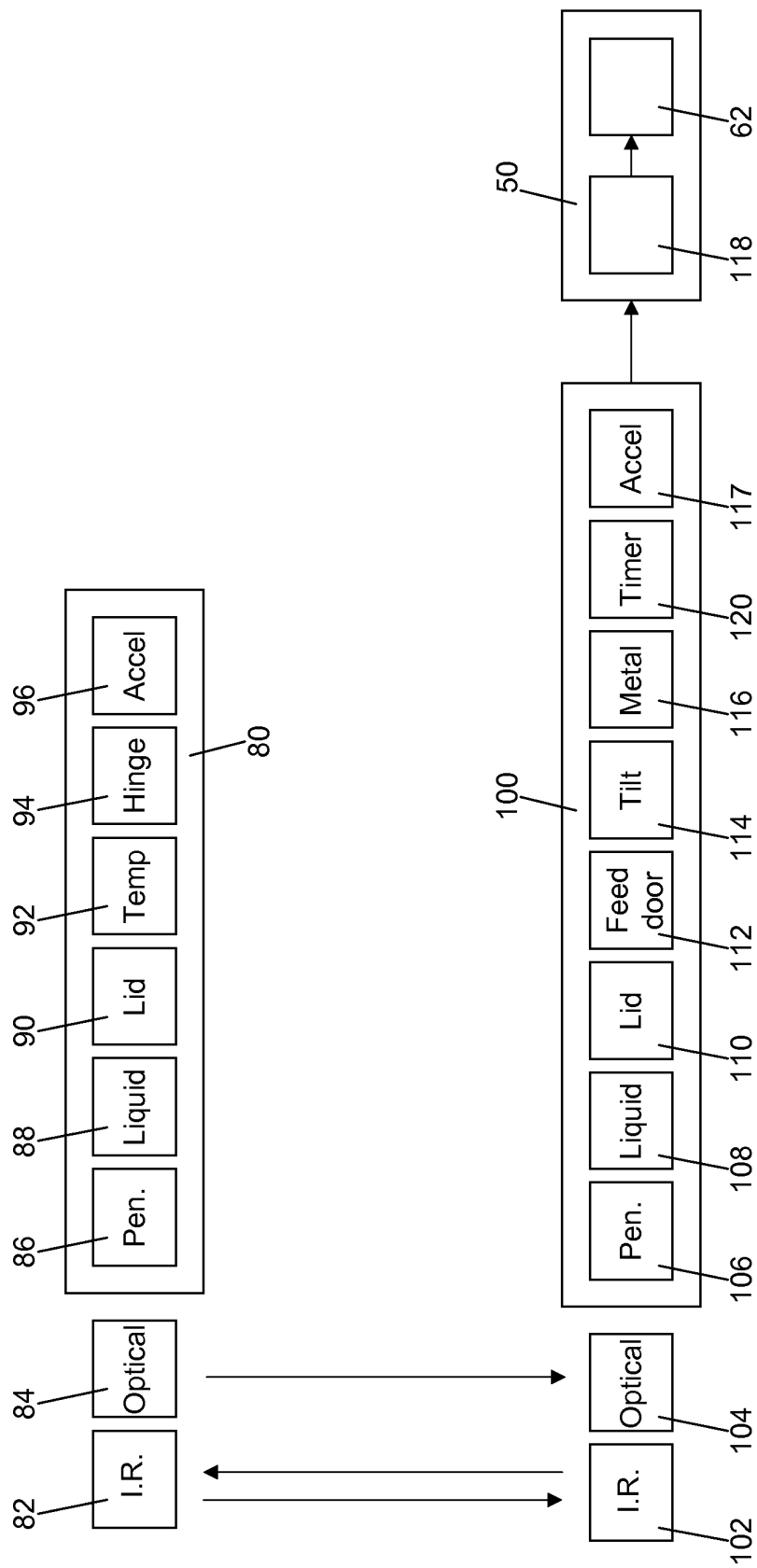


Figure 5

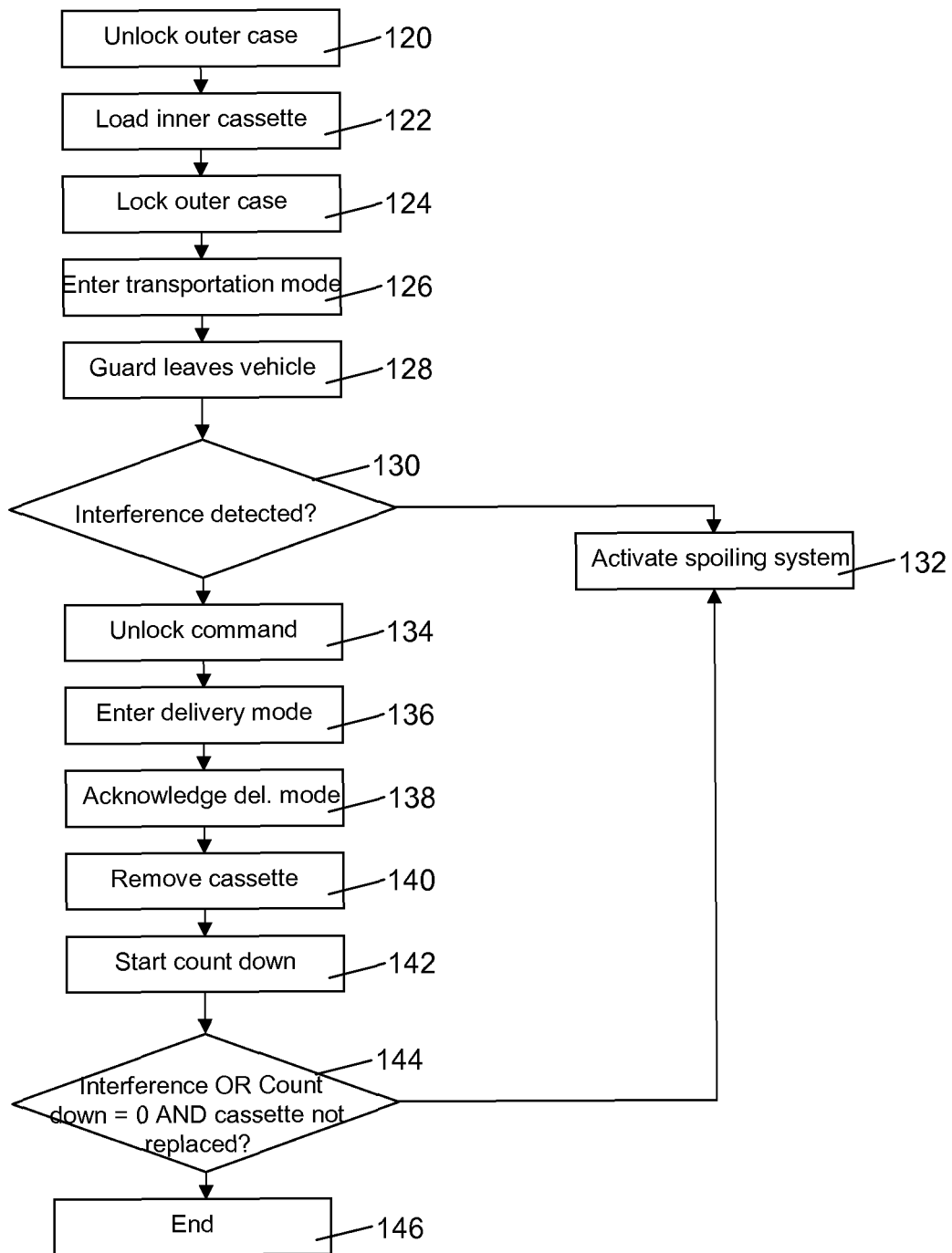


Figure 6

REFERENCES CITED IN THE DESCRIPTION

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