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(54) **Rack for transporting valuables**

(57) The present invention discloses a rack for transporting valuables, a rack which is constructed using armoured material and which is intelligent. The invention also discloses a rack for transporting valuables which is made out of armoured material and which has means to transport the rack. The invention further discloses a rack for transporting valuables which is intelligent and has means to transport the rack.

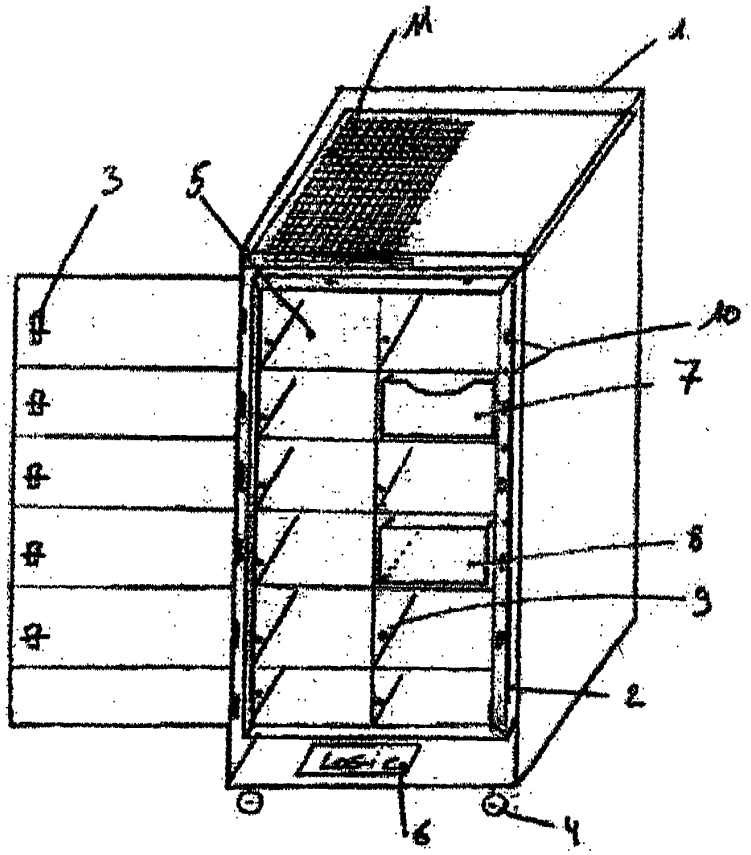

Fig. 1

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Description

Field of the Invention

[0001] The present invention generally relates to transportation of valuables and more particularly to the transportation of valuables in small containers such as Automatic Teller Machine (ATM) cassettes or bulk cash cassettes.

Background of the Invention

[0002] Valuables will always draw attention of persons with malicious intent. Therefore, it is essential to provide optimal security at the locations where valuables are handled or exchanged. Generally buildings provide a descent level of security and can be adapted to offer optimal security for the valuables and the personnel inside. However, transporting valuables between two secure location such as a regional bank office and local offices poses a larger problem for security.

[0003] The safety of these transports depends largely on their exposure time to the public. The sooner they can deliver the valuables, the sooner they become less interesting as a robbery target. However, various influences affect this exposure time, for instance a traffic jam may keep them at a particular place for a longer period of time. Thus, providing sufficient protection for the vehicle and transport personnel is another important factor in the safety of the transport.

[0004] A first form of protection of the vehicle is the use of armoured vehicles. These vehicles are more resistant to firearms or explosives than regular vehicles and form a large barrier between the valuable contents of the vehicle and the general public. An armoured vehicle makes it more difficult or impossible for malicious persons to gain access to the interior of a locked transport vehicle and in addition they provide more safety for the personnel of the vehicle.

[0005] A second form of protection of the transport is provided by using intelligent containers for carrying the valuables from a transport vehicle to a secure location such as a bank. These intelligent containers can contain devaluation means which destroy their contents under particular circumstances. An example of such circumstances is a limited timeframe in which a container can be moved from the vehicle to the secure location. Upon expiry of that timeframe, all valuables inside the container are destroyed. Another example is detection of any attempts to tamper with the container. This could be an attempt to open the container by force, an attempt to breach the structure of the container or any other action which is not opening the container in the appropriate manner. Detection of such an attempt could lead to the destruction or devaluation of the contents in the container. Thus, even if a criminal is able to capture such container, they are unable to retrieve the contents of such container before the timeframe expires or they will find the contents destroyed when opening the container.

[0006] Multiple types of devaluation systems exist today. A first example is for paper money and works by covering the paper money with a special kind of dye. Banknotes covered in such a dye are easily recognised and are thus much harder to trade for goods or clean banknotes. A second example is to use some form of chemicals like pyrotechnics or acids where the entire banknote or a part of it is destroyed using heat. Again, the damage to such banknotes is easily noticed making it harder to retrieve the value of a destroyed or damaged banknote.

[0007] A third aspect for securing valuables transportation is the storage of the valuables inside a vehicle. If malicious persons are able to capture a complete vehicle with multiple valuables containers inside, it should be impossible to retrieve the valuables from the containers. This implies that the valuables have to be stored in intelligent containers as placing them freely in the vehicle offers no protection at all. These intelligent containers, such as those used to carry the valuables from the vehicle to a bank, are large and can become expensive when they have advanced capabilities such as a detection for tampering with the intelligent container or keeping track of a time frame.

[0008] An ideal situation would be where the valuables are safely stored in the vehicle and only a few intelligent containers are required for carrying the valuables from the vehicle to the destination. However, filling an intelligent container with valuables can be time consuming, for instance when the exact amount of banknotes is retrieved from the safe storage in the vehicle and then placed into the intelligent container. This can easily be overcome by storing the valuables in smaller containers inside the vehicle, which can then be placed inside an intelligent container. Such a system has a large impact on the economical aspects for companies providing valuables transport services. There is hardly any additional time at each stop in comparison to a system where the vehicle transports a larger number of intelligent containers. In addition, the capacity of a vehicle is increased as a vehicle of the same volume can hold more smaller containers than intelligent containers. Such increased capacity allows a transportation company to service more locations with a single vehicle or reduces their need for large vehicles. Either of these reduces the investment required to operate a valuables transportation service.

[0009] The international patent application WO00/08287 titled "Method and apparatus for secure carriage", published on 17 February 2000. WO00/08287 discloses a system wherein the valuables are stored in a small container (referred to as childbox or CB) and which uses a rack and a larger container (referred to as motherbox or MB) for the transportation of the childbox. The rack is placed in a vehicle and the motherbox is used to carry a childbox from the vehicle to a destination.

[0010] This system provides transportation of valuables in small containers with less intelligent containers in

the vehicle, which offers the above described advantages. However, the disclosed solutions come with several drawbacks which can be resolved to provide more security and a sound decrease in costs.

[0011] A first set of drawbacks of WO00/08287 is found in their devaluation means. The patent application discloses the use of a wet dye to contaminate the valuables placed in the childbox. The dye itself is contained inside the rack or motherbox and either of these are connected to one or more dye injection openings through conduits. These dye injection openings line up with holes in the outer surface of the childbox, in order to provide a way for the dye to reach the valuables.

[0012] The first drawback of the system for devaluation of the contents is limited to a wet dye system. The use of liquid acids is dangerous in general, e.g. when removing the devaluated childbox from the rack and introduces specific problems to the system, such as requirements for the conduits and reservoirs containing and guiding the liquid acid onto the valuables. Pyrotechnics are no option either as they generally require close contact between the valuables and the pyrotechnic device. Such a pyrotechnic device may be a strong resistor which is heated using an electric current, a fire source or an explosive or any other device which is capable of burning the valuables or a part thereof.

[0013] The second drawback of the devaluation system is found in the location of the wet dye. The prior art shows a dye injector in both the rack and the motherbox. This means that a transportation company needs larger supplies of dye. In addition, the dye injector of the rack is a single point of failure. If for some reason the dye injector is disabled, either a malfunction or human interaction, the rack that is disclosed in the patent application becomes less secure. The lock which keeps a childbox in the rack would be the only means of protection left. However, such a lock can easily be opened by force.

[0014] A third drawback of the devaluation system is that there is a one triggers many system. In case a malfunction triggers the devaluation means of a rack, the contents of all the childboxes in that rack are destroyed. This results in a large loss for the transportation company as they have to pay for replacing the lost valuables. This can for instance be by paying a fee for issuing new banknotes or creating new credit cards. In addition, all the childboxes are contaminated and either need replacing or need a cleanup before they can be used for a new transport. After a discharge, some dye may be left in the conduits connecting the dye injector to the holes in the childboxes, which can form lumbs or obstructions when left in the conduits for too lang.

[0015] A second set of drawbacks of WO00/08287 is found in the rack construction. The rack shows openings wherein the childboxes are held. These openings have the above mentioned connections to the dye injector, electric coupling means for communication with the vehicle computer and a lock to retain the childbox in the rack.

[0016] However, these childboxes are not completely shielded from the outside world. This means that at least one of their exterior surfaces is accessible while the childbox is stored in the rack. Consequentially, it is possible to make an opening in the childbox, e.g. using a drill, and retrieve valuables from the childbox.

[0017] A further requirement is a perfect alignment between the childboxes and the openings of the conduits connected to the dye injector. Such a perfect alignment is important to achieve maximal effect when devaluating the valuables. Any misplacement can lead to leakage of dye into the rack itself and onto the container.

[0018] It is an objective of the present invention to provide a solution to the above drawbacks and in particular provide a secure rack for containing valuables containers. It is a further objective of the present invention to provide a rack which reduces the operational cost of valuables transport. It is another objective of the present invention to reduce the space required for the transport of valuables.

Summary of the Invention

[0019] A rack for storing valuables comprising at least one slot for holding said valuables and means for retaining said valuables characterized in that said rack is made out of armoured material, said rack further comprising intelligence means.

[0020] A rack for storing valuables comprising at least one slot for holding said valuables and means for retaining said valuables characterized in that said rack is made out of armoured material, said rack further comprising transporting means.

[0021] A rack for storing valuables comprising at least one slot for holding said valuables and means for retaining said valuables, characterized in that said rack comprises intelligence and transporting means.

Detailed description of the Invention

[0022] The rack is capable of holding at least one piece of valuables such as an ATM cassette, or bulk cash and is preferably capable of retaining the valuables in place.

[0023] The valuables retention can occur using a simple lock or piece of metal blocking the valuables. An alternative solution is to use a tray, which is adapted to the rack and is adapted to fit exactly into the slot. The tray is further adapted to contain various types of valuables. It is possible to use a specific tray for each type of valuables or container, In case of containers, the containers can be filled at a secure location, placed in a tray and then moved into a rack in a transport vehicle. The use of a tray is advantageous over a simple lock or piece of metal when it concerns the devaluation of the contents or the valuables. The tray forms a receptacle for any dye that may leak from the valuables or the container when the devaluation means, based on a dyeing method, are activated.

[0024] The armoured material of the rack adds security to the rack and to the overall security of the transport. Because the rack is stronger and better protected, the requirements on transport vehicles decrease. For instance, the vehicles need less armouring which reduces their weight and price. Consequentially, lighter vehicles use less fuel during transport which results in a lower operating cost as well.

[0025] The rack has forms of intelligence for additional protection. Such intelligence uses sensors to detect the current situation in and outside the rack. These sensors can then be connected to a central processing unit to determine possible actions, for instance locking the entire rack permanently or releasing particular valuables.

[0026] In addition, the rack may be connected to a computer located in the vehicle. The computer can be used to select the current destination or location of the vehicle in order to retrieve the correct valuables containers for that location. The vehicle can also provide other control devices such as an emergency button that can be connected to the rack. Such a button can for instance trigger the devaluation systems of the valuables in the rack.

[0027] A rack for storing valuables characterized in that the rack is made out of armoured material, the rack further having a system for transporting the rack.

[0028] This type of rack has the advantages of armouring as described above, and in addition is designed for transportation. A typical use of a rack is at a secure location where valuables are stored for a short or longer period of time in a secure rack. However, by providing means for transporting a rack, the valuables can be moved safety from one safe location to another safe location.

[0029] A rack for storing valuables characterized in that the rack has intelligence and that the rack further contains a system for transporting the rack.

[0030] Thus, adding an armoured rack to an armoured vehicle would increase the total weight and investment cost of the vehicle in a noticeable way. These heavier vehicles increase the operation cost significantly and should therefore be avoided. A company providing transport of valuables can use racks with intelligence and mobility but without the additional armouring to avoid the additional weight and investment cost. These racks do provide the additional security that is created by the intelligence and when mounted in the armoured vehicle these racks are secured. As a result, a transporting company can introduce the racks according to the present invention into their vehicles, without the need of replacing all their current vehicles.

[0031] The rack of the present invention can be adapted to provide locking means.

[0032] A lock on the rack means that the rack can only be opened by following the correct procedure. This procedure could involve the use of a key, selecting a location on a computer in the vehicle or the rack or entering a code. Such a lock could be used to provide additional protection to the valuables inside by adding an additional layer of security: Optionally, the rack can trigger the lock and keep the rack locked for the remainder of the journey if the rack is compromised in any way. This way, no one can gain access to the contents of a rack except by applying a special procedure to unlock a rack which was locked in an emergency procedure.

[0033] A rack made out of armoured material and providing intelligence can further be adapted to offer transportation means.

[0034] Such a rack combines the advantages of the above described racks. It incorporated mobility, intelligence and armouring, resuming in a preferred protection for the valuables.

[0035] The present invention is further characterized in that the intelligence is able to detect tampering with the rack.

[0036] Additional security can be added to any intelligent rack by providing a detection system for tampering, Such a system can allow the rack, armoured or not, to detect any abnormal situation. For instance, armouring should protect the contents by shielding the contents from the outside world, however, a person can try to force the lock on the rack or drill holes through the armouring. The additional tamper detect can create response to such event, for instance destroying the valuables in the rack or permanently locking the rack using an additional locking mechanism. The same is true when removing the rack from the vehicle in case it is mounted with bolts in the vehicle.

[0037] The rack can also be adapted to detect a geographical location.

[0038] Verification of a location can add significant security to the transport of valuables. If the rack is aware of the current location, and the destinations for each of the valuables, it is able to determine which valuables can be removed from the rack. This way, all other containers can be kept locked in place avoiding an operator to take wrong valuables for instance inside the bank or to an ATM machine. It also means that the rack can trigger devaluation means in case an attempt is made to remove the wrong valuables from the rack. Alternatively, a locked rack can remain locked when it does not contain any valuables for the specific location.

[0039] Detection of a location can be realized in several ways. One option is to provide a transmitter at each location and a receiver inside the vehicle. The transmitter informs the vehicle about which location it is and the vehicle can then inform the racks. Another option is to use a special wired connector which is plugged into the vehicle or satellite detection of the current location.

[0040] The rack is further characterized that the geographical location detection can be achieved using at least one out of the following: the Global Positioning System (GPS), the Galileo system or GLONASS.

[0041] A preferred method for geographical location detection is the use of the GPS system. This is available world wide and allows for good detection of the present location. The system should be designed to be somewhat

flexible as GPS generally is not an exact location detection method, e.g. there may be a small offset between the detected location and the real location. However, this can easily be overcome by determining a small radius or perimeter around the location in which the vehicle is considered at the location.

[0042] GPS technology evolves, and counterparts such as the European Galileo system or the Russian GLONASS are under development. As all these systems use satellites to determine the position of an object on the planet, their use is very similar, if not compatible. It is therefore possible to equip a vehicle with the technology to use a different location detection system by satellite than GPS, or use more then one of such technologies.

[0043] The present invention is further characterized in that the intelligence is adapted for communication between the rack and the valuables.

[0044] Communication between the rack and the valuables is essential for added security. One reason for communication is to allow the rack to detect which valuables are present and what the destinations are for those valuables. The rack is then able to autonomously select and release the appropriate valuables for a specific location. Another reason for communication is to allow the rack to trigger the devaluation means of one or more valuables in the rack, which can be a response to tampering with the rack itself if such devaluation means are present for the valuables..

[0045] The rack is further characterized in that the communication between the rack and the valuables uses a form of wireless communication

[0046] Wired communication is a good alternative for communication means. However, a wired connection is less flexible and imposes additional requirements on both the rack and the containers. A wired connection made with a wire and connector requires additional effort to connect the and the rack. A connector on the rack and the container requires a perfect alignment of the connectors. In addition, connectors or bare metal contact points are prone to damage when the containers are placed in or removed from the rack and frequent adding or removing of containers may cause wear on the contacts. Flexibility is reduced because a wired communication fails as soon as the container is disconnected from the rack.

[0047] A wireless form of communication between the rack and the containers resolves some of the disadvantages of wired communication. Using optical communication, e.g. infrared, makes the system less prone to damage. Although a good alignment of rack and container is required, there is no physical contact between the rack and the container for communication. This reduces the chances of damaging the communication system and avoids any wear at all.

[0048] A wireless technology can be used when a good alignment between rack and container is difficult to obtain or when it is important to maintain communication when the container is removed from the rack, e.g, for the rack to know that the container was placed in another safe location, rack or container. Wireless technologies using radio frequencies are independent of physical contact between the rack and the container and are thus able to allow communication when the container is removed from the rack. Such a radio frequency based communication system can be more cost effective as well. The rack would need a single or redundant transmitter-receiver pair which is capable of communicating with all the different containers, instead of using a transmitter-receiver pair for each container.

[0049] The present invention can further be adapted to be mobile by using wheels.

[0050] Due to the enhanced security of the rack itself, it can safely be removed from the vehicle. This can be useful at locations where large amounts of valuables have to be delivered. To avoid several trips between the vehicle and the location, personnel can move the rack from the vehicle to the destination of the valuables. Providing the rack with wheels underneath makes it more convenient to relocate the rack, either inside a building, between a building and a vehicle or inside a vehicle.

[0051] The present invention can further also be adapted to be mobile by using mounting the rack in a vehicle,

[0052] A transporter may decide that there is no need to move a rack itself, but rather to install racks in a vehicle and use a small intelligent container to carry valuables from the vehicle to a secure location. The rack, then has to be mounted securely into the vehicle. Therefore, the rack can be provided with fixtures to firmly attach the rack to the vehicle. One example is using a set of rubber silent blocks and bolts to screw the rack onto the floor and side walls of a vehicle. Another example is to weld the rack to the vehicle. Alternatively, the rack can be attached to the floor of the vehicle using a set of hooks which match respective openings in the floor and which can be released using a special key to create a rack that can be removed from the vehicle at a secure location and which can be attached firmly during transport.

[0053] The rack of the present invention can further be characterized in that the rack can be transported between secure locations.

[0054] The rack is mainly designed for the transport of valuables between secure locations. Therefore, it features the additional and improved security features such as intelligence and armouring. Secure locations generally require less features on a rack. These racks do not move outside of the location so there is no need for location detection or heavy armouring. Intelligence can be useful to some extent, for instance detection of the valuables contained in the rack may help personnel in fast retrieval of a particular set of valuables.

[0055] The present invention can further be adapted for wireless communication using RFID tags.

[0056] The RFID technology works independently of physical contact between rack and container. It rather operates by placing a transmitter near a receiver. The transmitter can then emit radio frequency signals which

can be interpreted by the receiver. RFID technology is relatively simple and can easily be integrated in devices such as valuables containers.

[0057] The present invention can also be adapted to hold valuables in a container.

[0058] Placing valuables directly in the rack can be disadvantageous. Although it is possible to provide RFID tags on a bundle of bank notes, for instance on the band of paper keeping them together, loose bundles of bank notes are harder to retain in place. Therefore it can be more convenient and efficient to store the valuables in a container, such as an ATM cassette or a bulk cash cassette.

[0059] The rack of the present invention can further be characterized in that the containers provide devaluation means.

[0060] As stated above, valuables placed in a container can be more convenient to handle. It is possible to provide devaluation means on loose bank notes, for instance on the band of paper keeping them together, or using a separate device which is placed alongside the valuables. The means for retaining the valuables in the rack add to this possibility by confining any devaluation to a specific set of valuables. However, a container can be more convenient to this purpose. A single container can be adapted to carry several bundles of bank notes. In addition, such container may provide direct and more efficient devaluation of the valuables inside. The container reduces the space wherein devaluation means can operate, thus, a single charge of dye is used to fill a smaller space when compared to loose valuables in the tray.

[0061] The rack of the present invention can be able to activate the devaluation system of the valuables containers.

[0062] A valuables container is able to trigger its own devaluation system when anyone tampers with the container. However, this does not reduce the risk to the personnel of the transport vehicle because malicious persons may still want to try to obtain containers and retrieve their contents. Thus, a heavily armoured vehicle is important to prevent criminals from retrieving the individual containers.

[0063] In an armoured rack which shields all the containers from the outside world, it becomes more difficult to gain access to each individual container. In addition, if the rack is able to trigger the devaluation means in every valuables container, it can render them worthless to a criminal before they even gain access to the interior of the rack. Thus, this form of additional protection can reduce the amount of required armour for safe transport. Additionally; the method for activating the devaluation means in the containers can be designed in such a way that any malfunction triggers the system. It is possible to use a method in which the rack and the container communicate frequently, for instance the rack generates a signal every second and the containers respond to that signal. In case someone is able to interrupt the normal operation of the rack, e.g. by tampering with the electronic system which generates the frequent signal, the container will notice that due to the absence of the signal. The container can be built in such a way that it triggers the devaluation system after a few missed signals. An alternative is that the rack can transmit a specific signal to a container or all containers which triggers the devaluation of the container or containers.

[0064] The rack can be adapted for communication between the rack and a vehicle using a Controller Area Network (CAN) bus.

[0065] The rack may benefit from various systems present in a transport vehicle. For instance, information from the vehicle about movement or speed can be used to lock or unlock a rack. In addition, an existing vehicle may already contain an emergency button for locking the entire vehicle in case of an emergency. The vehicle may also have an integrated GPS system or radio communication system allowing communication between the vehicle and a central location. Connection between a rack and any of those systems, or even other systems present in the vehicle such as pressure sensors in the wheels, indicators of open or closed doors or remaining fuel in the tank, can improve the security and avoid the need to install a particular system, for instance GPS, more then once in a vehicle with multiple racks.

[0066] Modem vehicles use the CANbus for communication between their different electronics systems. The CAN specification was released by the International Organization for Standardization (ISO) as ISO 11898-1. ISO also released two physical layer standardizations, 11898-2 for CAN high-speed transmission and 11898-3 for CAN fauft-tolerant transmission. Currently there are already several other physical layer standards for CAN such as SAE J1939-11 or SAE J1939-15 which use twisted pair wiring. Like any other communication technology, CAN is evolving and the present invention can be adapted to use any currently existing form of CAN and can easily be altered to support new evolutions in CAN technology. As a result, in the context of the present invention, CAN should be considered as any of the existing standards or implementations or any of the evolutions thereof.

[0067] It can be used to indicate the state of the doors on the vehicle computer, the state of the tires or the action radius with the current fuel level. Thus, by adapting a rack in such a way that it can access the CANbus, allows the rack to read information from the vehicle, and send information to the vehicle. For instance, the screen indicating open or closed doors could then be adapted to indicate open racks or even removed valuables or containers.

Brief Description of the Drawings

[0068]

Fig. 1 illustrates an armoured, intelligent and mobile embodiment of a rack for transporting valuables; and
Fig. 2 illustrates a logical overview of intelligence in

a rack for transporting valuables;

Detailed Description of Embodiment(s)

[0069] Fig. 1 illustrates a rack 1 for transporting valuables, constructed out of armoured material such as steel plates, Kevlar clad panels or fibre reinforced materials. The rack 1 has an internal structure which is made out of one or more columns, two columns are shown for this embodiment as an example, wherein various supports 5 are mounted to form individual slots for valuables. Supports 5 can be adjustable in height to accommodate valuables of different sizes or can be fixed, for instance when a particular rack is always used for the same purpose such as servicing ATM machines. Fig. 1 further shows two types of valuables retaining systems placed inside the rack 1. A first retaining system is cash cassette 8, which can be any type of cassette adapted to fit inside rack 1. A second retaining system is a cash drawer 7 which is able to contain valuables, either placed loose in the drawer or inside a particular container such as an ATM cassette with built-in devaluation means.

[0070] The rack 1 has a door to seal the contents from the outside world. The door may close off the entire rack, as one large door, or it may close a part of rack, such as a single slot or two or four slots with one door. The door features a locking and arming mechanism 3, which in combination with sensors 10 enable easy detection of the door status. For instance, sensor 10 may be a small button, which is activated by a closed door. This button then gives a signal to the control logic 6 (which will be explained in detail below with reference to Fig. 2) to indicate the closed door. Locking mechanism 3 can then offer a physical lock to keep the door in a closed position, and arm the security devices inside the rack 1, such as devaluation means.

[0071] In Fig. 1, each of the slots provides communication means 9 between the valuables and the rack 1, These communication means 9 are designed in such a way that no physical contact is required between the valuables and the rack 1. Thus, the communication is wireless and in this embodiment used optical technologies such as infrared communication. An alternative could be to add a single transmitter and receiver in the rack 1, which uses radiofrequencies, for instance for RFID, to communicate with all the valuables located in the rack. Another possibility is to add a small transmitter and receiver for RFID technology in each slot. The communication means on the valuables can be built-in when a particular type of container is used, such as ATM cassettes, or be an external type of communication means such as an RFID tag strapped onto the valuables or attached to a paper band used for holding a set of bank notes together.

[0072] The external frame of rack 1 is a double walled frame. Between these two walls, there is an explosive free air gap 2. The gap creates an additional barrier between the valuables and the outside world, e.g. if a person attempts to drill a hole through the outer wall, they will enter the air gap and thus have to make another hole through the second wall. In addition, any devaluation means inside the rack 1 cannot affect the outside of the rack 1. For instance, if some form of explosives are used to devaluate the contents of the rack 1, there is no risk of damaging the outside structure of the rack 1. If such an explosion does after the shape of the inner wall, e.g. by pressing parts of the metal outwards, the air gap ensures that the shape of the outer wall is left intact. The air gap further allows for placing perimeter or skin protection 11 inside the rack 1. As a result, there is no need to embed this protection in either of the walls or panels of the inner or outer wall which makes construction significantly easier.

[0073] The perimeter protection 11 offers a grid which can detect intrusion or tampering with the rack. If someone attempts to drill a hole in the inner wall, they will breach the grid. This breach can then cause a signal to be sent to the control logic 6 which can act appropriately to the breach. The grid can be a set of thin wires conducting a small current, connected to some electronic system which is capable of detecting such a small current. In case one or more thin wires are destroyed, e.g. due to a drill tearing them apart, the detector can sense the lack of current and activate any security mechanism on the rack. An alternative method would be to use small optical fibres guiding light from on point to another around the frame, and any breach of such fibres would result in the loss of light which can be detected to trigger security systems such as explosives, devaluation means or a permanent locking of the rack. The grid may also consist of a mechanical system using cables which are under tension. The cables can be connected at both sides, one side to a weight creating the tension and the other side a tension detector. When the cable breaks, the detector notices the loss of tension and can then inform the control logic 6 of this event and a possible breach.

[0074] The wheels 4 allow for the rack 1 to be moved inside a building, a vehicle or a street between a vehicle and a building. Alternatively, these wheels 4 can be replaced by mounting points which can be used to firmly attack the rack to the vehicle or floor of a building using bolts.

[0075] Fig. 2 illustrates a logical overview of an embodiment of the control logic 6 shown in Fig. 1.

[0076] The control logic consists of a set of separate functional blocks, such as Location Control and Canbus signalling control which are interconnected. It should be noted that not all these blocks are mandatory for the correct operation of the rack. It is possible for a transportation company to use racks with reduced functionality, for instance if a vehicle is equipped with location detection, there is no need for a redundant location detection system in the rack. However, redundancy of systems in vehicle and rack is possible when a company desires the additional security of having a redundant system, to retain optimal protection when a system fails.

[0077] The canbus signalling control allows communication between the control logic of the rack and the electronics of the vehicle. This way, the rack may be able to detect movement of the vehicle, open or closed door or even the route set in the vehicle GPS system. Alternatively, the vehicle-doors interlocking control can be used to detect the state of a door or even all the doors of the vehicle. For instance, the rack may depend on the state of the door into the area with the racks before unlocking. The vehicle-doors interlocking control may also be used to lock the doors of the vehicle when the rack senses an abnormal situation such as an attempt to breach the frame or a deviation from the route.

[0078] The location control system determines the appropriate state of the rack for a specific location. It may leam the current location through the vehicle GPS system using the canbus control, or it may have a built-in GPS transmitter and receiver. Alternatively, the location control uses other location technologies such as GLONASS or Galileo. Another possibility is to connect the location control to a base station present at a given location using a wired connector or wireless communication technology such as IEEE 802.11b. The location control is able to communicate with the various other functional blocks, and can inform them of the current location, whether the vehicle is at a destination, whether the vehicle is too far away from the preset route or any other information that can be used by other blocks to function and provide optimal security. The automatic destination control can work closely with the location control in order to determine what the next location of the vehicle should be. This can be done by finding the location closest to the current location, based on the information read from the containers or valuables. The automatic destination control may also be adapted to inform the vehicle GPS system of the destinations for each of the containers, and add waypoints to the route if the vehicle GPS system allows such information exchange.

[0079] In case the valuables are transported in a container, the rack can provide a delivery-container control. This function allows to read the information contained in a particular container, for instance the amount of valuables in the container, the destination of the container and programming codes for the destination of the container. The delivery-container control can also add information to a container. For instance if additional protection is added by limiting the amount of time wherein a container can be carried between a location and a vehicle, the delivery-container control can inform the container of that timeframe. Alternatively, if the valuables are cash which is transported in individual bundles of bank notes, the intelligence can use a Cash packages control for similar purposes as the delivery-container control such as detecting the amount of money in a bundle.

[0080] Package delivery and package return control can be used to handle the release of packages of a particular destination and to detect the return of containers after the delivery. Package delivery control can offer functionality such as keeping track of which valuables are still present in the vehicle and which have been delivered. Package return control reads the contents of a container after delivery. If the container is empty, the control knows that the valuables were delivered at the location. If the container is not empty, the control can determine whether the original valuables are still present, e.g. the package was rejected, or if other valuables are present and thus the container was filled, for instance in a cash recycling process at an ATM machine.

[0081] Package neutralisation control is another possible function of the control logic. It is able to activate the devaluation means of the containers and additional security functions of the rack such as permanently locking the door. This neutralisation control can take input from various other control functions, such as the location control, vehicle-doors interlocking control or an emergency button in the vehicle coupled to the canbus and accessed through the canbus signaling control. Depending on the desired security, the neutralisation control can work in several stages or activate everything at once. It can be sufficient to permanently lock the rack when the emergency button is pressed and wait for other evens before triggering the devaluation means on the containers. Such events can be a large deviation from the preset route or an attempt to tamper with the rack.

[0082] The security control can be used to manage the security related functionalities such as neutralisation and delivery control. It can set the neutralisation means to its various modes of operation, e.g. all at once or in different stages, determine if containers require configuration and set the conditions for a door to open or close. The operations control is able to instruct the functionalities which relate to the operation of the intelligence such as location control and the CANbus signalling control. It is also able to do a complete system analysis in order to check on the correct operation of all the present functions.

[0083] The rack environment control tracks the condition of the rack and the vicinity of the rack. For instance it can be able to detect significant changes in temperature on the surface of the rack or in certain parts of rack, which can indicate the use of a torch to cut a hole in the rack. It may also be able to detect temperature on the inside of the rack, where a significant increase may indicate an explosion of devaluation means. Such information can be used to indicate an uncommon condition to which a response is required.

Claims

1. A rack for storing valuables comprising at least one slot for holding said valuables and means for retaining said valuables **characterized in that** said rack is made out of armoured material, said rack further comprising intelligence means.

2. A rack for storing valuables comprising at least one

slot for holding said valuables and means for retaining said valuables **characterized in that** said rack is made out of armoured material, said rack further comprising transporting means.

3. A rack for storing valuables comprising at least one slot for holding said valuables and means for retaining said valuables, **characterized in that** said rack comprises intelligence and transporting means.

4. A rack for storing valuables according to claim 1, 2 or 3, **characterized in that** said rack further comprises locking means.

5. A rack for storing valuables according to claim 1, **characterized in that** said rack further comprises transporting means.

6. A rack for storing valuables according to claim 1 or 3, **characterized in that** said intelligence comprises means for detecting tampering with said rack.

7. A rack for storing valuables according to claim 1 or 3, **characterized in that** said intelligence comprises means for geographical location detection.

8. A rack for storing valuables according to claim 1 or 3, **characterized in that** said intelligence comprises means for communication between said rack and said valuables.

9. A rack for storing valuables according to claim 2 or 3, **characterized in that** said means for transporting comprise wheels.

10. A rack for storing valuables according to claim 2 or 3, **characterized in that** said means for transporting comprise means for mounting said rack in a vehicle.

11. A rack for storing valuables according to claim 2 or 3, **characterized in that** said means for transporting are for transporting said rack between secure locations.

12. A rack for storing valuables according to claim 7, **characterized in that** said means for geographical location detection are adapted for using at least one out of the following: the Global Positioning System (GPS), the Galileo system or Gt_QNASS.

13. A rack for storing valuables according to claim 8, **characterized in that** said means for communication comprise wireless communication.

14. A rack for storing valuables according to claim 13, **characterized in that** said wireless communication comprises RFID tags.

15. A rack for storing valuables according to claim 1, 2 or 3, **characterized in that** said valuables are held in a container such as an ATM cassette.

16. A rack for storing valuables according to claim 15, **characterized in that** said container comprises devaluation means.

17. A rack for storing valuables according to claim 1, 2 or 3, **characterized in that** said rack is able to activate devaluation means of said valuables containers.

18. A rack for storing valuables according to claim 1 or 3; **characterized in that** said intelligence comprises means for communication between said rack and a vehicle using a Controller Area Network (CAN) bus.

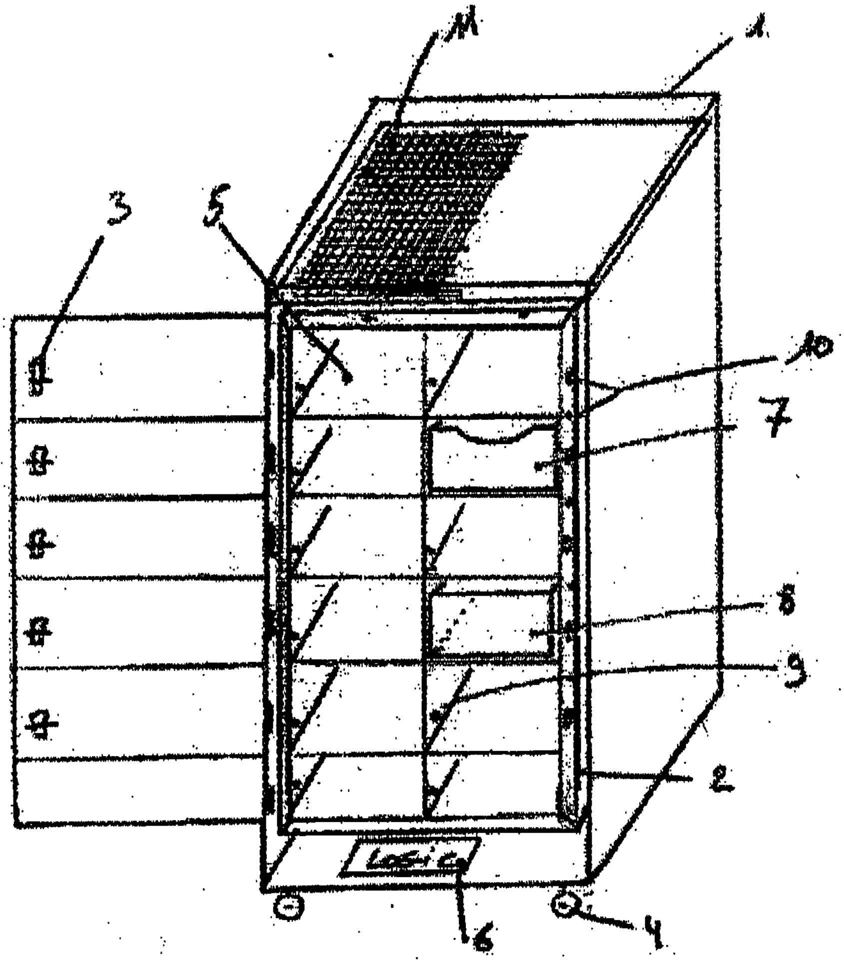
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Fig. 1

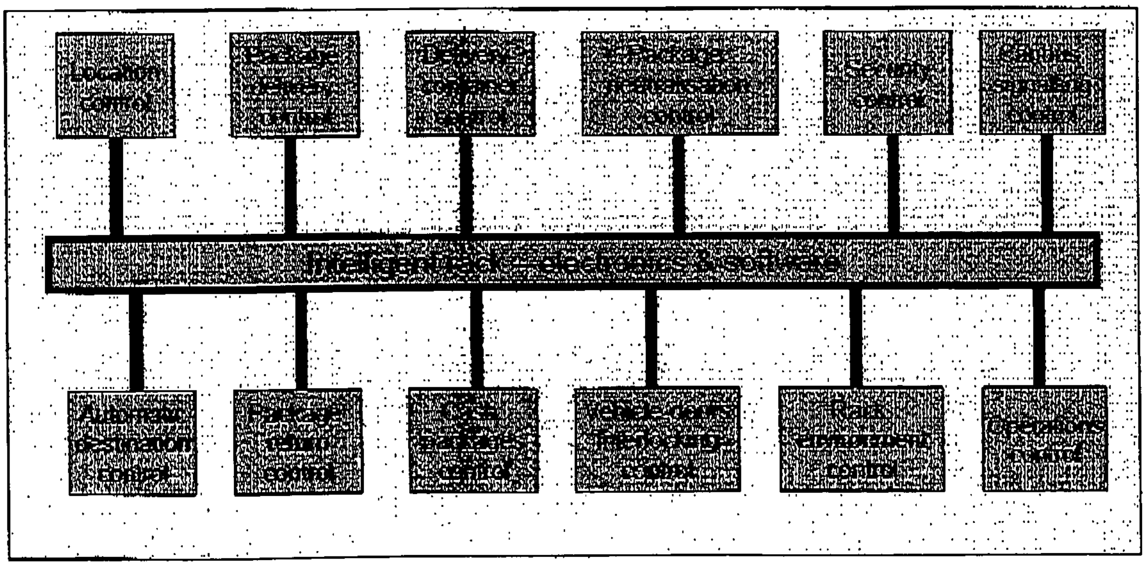
Location control
Security control
Intelligent rack – electronics & software
Automatic destination control
Package return control
Rack environment control

Fig. 2

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 00 3929

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	WO 01/06464 A (SPINNAKER INT LTD [GB]; SEARLE ANDREW [GB]) 25 January 2001 (2001-01-25) * page 5, line 14 - page 6, line 4 * * page 7, paragraph 2 - page 8, paragraph 3; figures 1-4 * -----	1-8, 10-18 9	INV. E05G7/00 G07D11/00 E05G1/14
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TECHNICAL FIELDS SEARCHED (IPC)
E05G G07D B60P

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 August 2007	Guillaume, Geert

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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