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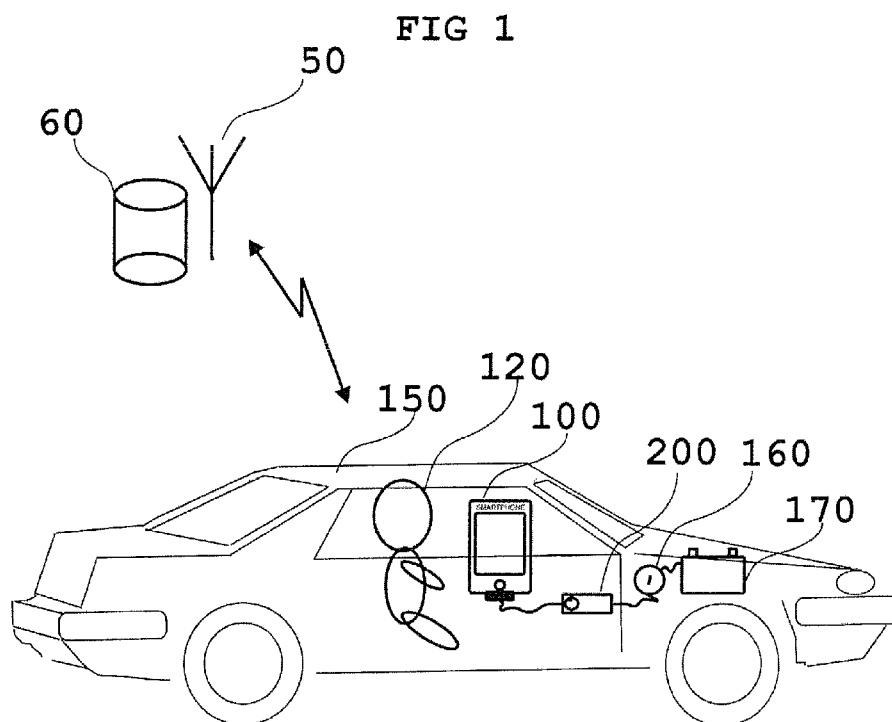
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[Continued on next page]

(54) Title: ALARM DEVICE IN A VEHICLE



(57) Abstract: An alarm method for vehicles comprises detection (S31) of whether a portable electronic apparatus (100) is connected to an alarm device (200) arranged in a vehicle (150), detection (S32) of whether a predetermined functionality is activated in the portable electronic apparatus (100), and activation (S33) of an alarm when the portable electronic apparatus (100) is unconnected or the predetermined functionality is inactivated.



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## ALARM DEVICE IN A VEHICLE

### TECHNICAL FIELD

The present invention generally relates to portable electronic devices for vehicles and more particularly to an alarm method, alarm device and a computer program product for vehicles, as well as an alarm/control device for vehicles.

### BACKGROUND

When using a portable electronic device such as a mobile phone in a vehicle it is often desirable from a traffic point of view that the mobile phone is placed in an intended holding device which is arranged in the vehicle. The holding device may be attached for example to the dashboard in a car. Usually the holding device comprises some kind of locking means to keep the mobile phone in place also during motion, as well as a possibility to charge the battery of the mobile phone through the electrical system of the vehicle in order to guarantee longer operating times. In order to enable attachment of different phone models into different vehicle models, either general type holding devices are used or holding devices consisting of a vehicle specific part and a phone specific part.

In many cases no holding device is used. In these cases charging of the mobile phone may be done through a cable which in one end is connected to the mobile phone and in the other end is connected with a contact piece for example to the cigarette lighter outlet of the vehicle.

Other examples of electronic connection between a vehicle and a mobile phone is connection of the phone to the vehicle through a wireless connection such as Bluetooth for, for example, hands-free functionality for voice telephony, where the built-in speaker and microphone of the vehicle are used to accomplish voice telephony without the driver needing to hold the handset. Another example of electronic connection is playback of music where the compressed digital music files are stored on the mobile phone, transferred wirelessly or through a cable to the music equipment of the vehicle which is used for playback. As an example, Bluetooth may be used for wireless transfer and USB for wired transfer. Further examples of newly available integration between mobile phone and vehicle are the software modules or so-called apps that are available for download and that enable the mobile phone to work as a car key. For example, such a system makes it possible to lock and unlock the car, open the trunk, turn on a panic alarm and, not the least, start the engine with the aid of specific software in the phone, in combination with an associated device in the vehicle.

The introduction of so-called smart phones such as iPhone and Android-based phones such as HTC Desire has increased the integration between vehicle and mobile phone. Other equipment with overlapping functionality comprises for example palm-pilots, tablets such as iPad and Android-based  
5 tablets such as Samsung Galaxy Tab P1000, notebooks, PC laptops or other general computer products where the functionality for the user may be adapted by downloading of computer programs from electronic market places such as App Store or Android Market or computer readable media such as CD, DVD, USB-memory, hard drive, etc. For simplicity, personal electronics as exemplified above will be given the collective name mobile phone in the following description.

10

Modern mobile phones have after downloading of suitable functionality implemented through software modules support for functions such as driver's log, maintenance record of the vehicle, speed monitoring and ISA-system (Intelligent Speed Adaptation), navigation, fleet management, environmentally efficient driving, calculation of congestion tax, but also support for other functionality  
15 important for an individual or organisation, exemplified with sales support for travelling salesmen. Common for these functions is that they are based on methods for positioning of the vehicle, for example where the position is obtained from satellite systems or by positioning in the mobile phone networks, or combinations of the two methods. Several satellite navigation systems exist such as GPS (United States NAVSTAR Global Positioning System), GLONASS (Russian Global Navigation Satellite  
20 System), Galileo (Europe), and COMPASS (China) – which are gathered under the collective name GNSS (Global Navigation Satellite System). An example of GNSS with support from local positioning with the aid of the mobile phone systems is assisted GPS (A-GPS). In particular GPS of the different GNSS-systems has had a major impact and GPS receivers are nowadays found in a majority of mobile phones, and in a great majority they have support for A-GPS. Today's mobile phone contains apart  
25 from a GNSS receiver a large number of sensors that can be used for positioning and monitoring of driving behaviour, for example camera, accelerometer, and gyroscope. From consecutive position fixes the speed of the vehicle may be determined. Speed is also obtained directly from for example a GPS receiver. Signal processing of the speed signal can for example give information on average speeds and variations in speed.

30

Haulage contractors, bus companies and taxi companies are examples of organisations where a large number of drivers drive a large number of vehicles. It is naturally desirable for such organisations to equip the vehicle fleet with technical aids for increased security, efficiency improvement and cost

reductions. Other examples are organisations whose customers have large vehicle fleets, for example petrol companies, insurance companies, car sales and spare parts sales companies and car repair shops. It is naturally desirable for such organisations to electronically have a dialogue with the customers for increased customer benefit. In some situations there may be demands from the  
5 authorities aimed at vehicles and their drivers, that may be solved by suitable functionality in a mobile phone based on methods for positioning of the vehicle, for example demands for driver's log or registration of congestion taxes.

From the aspect of an organisation or a single individual there are often different demands of  
10 identification of vehicle, mobile phone and driver when utilizing the above exemplified functionalities. For example:

1. A chain of car repair shops offers its customers an electronic maintenance record for downloading to a mobile phone, and an associated holding device for the mobile phone. The electronic  
15 maintenance record schedules car maintenance based on driving distance, driving period and driving behaviour. Driving distance and driving period are monitored by processing of data from the GPS in the mobile phone. Also, information and guidance to nearby maintenance locations are provided from the GPS-determined position of the vehicle. The mobile phone sends and receives vehicle related wireless information to and from a server, containing the identity of the  
20 vehicle and suitable data such as entered meter reading, calculated meter reading from GPS, driving period, driving behaviour such as average speed, etc. The identity of the vehicle is related to the serial number of the vehicle, registration number, or to identity of the accompanying holding device. For adequate function, it is required that the offered maintenance record is active at a majority of vehicle travels.  
25
2. An environmental organisation offers its members to download an electronic driver monitor to a mobile phone that monitors driving behaviour from an environmental perspective, for example eco-driving where the driving behaviour is calculated from data from the sensors of the mobile phone such as GPS, accelerometer and gyroscope. Since driving behaviour and not vehicle  
30 properties is of interest, the identity of the user is important, which for example may be specified directly through entering of e.g. name or phone number, or connected to the identity of the mobile phone through IMEI or MAC-address. In this example there is also a demand that the identity of the driver can be verified since the result is used in a prize competition where the best driver receives a gratuity. Validation of the identity of the driver may be done through identification of a

portrait picture taken by the mobile phone camera, voice recording by the mobile phone microphone, or other biometric validation system. For adequate function, it is required that the offered driver monitor is active at a majority of vehicle travels.

- 5 3. An insurance company offers vehicle owners a car insurance premium based on both the vehicle properties (such as weight, engine capacity and power), the driving distance of the vehicle and the driving behaviour of different driver provided that the vehicle may be monitored during travel with therefore intended functionality in the driver's mobile phone. For this monitoring the vehicle owner or the different drivers can use their mobile phone where the driving behaviour is obtained  
10 from signal processing of sensor data from GPS, accelerometers and gyroscope. This example is the most rigorous of the listed examples when it comes to identification, verification and transfer of data to a central server, both of the identity and the driving behaviour of the driver but also of information of the vehicle identity. For adequate calculation of current insurance premium it is required that the driver's mobile phone is equipped with the insurance company's application and  
15 that the application is activated at a majority of or all vehicle travels.

As exemplified above it is therefore important that the user of the vehicle activates his/her mobile phone in a proposed manner before or during travel with a vehicle.

20

## SUMMARY

It is an object to provide a method, device and program for activating an alarm indicating that a portable electronic apparatus is incorrectly activated or un-connected in a vehicle.

An aspect relates to an alarm method for vehicles comprising detection of whether a portable  
25 electronic apparatus is connected to an alarm device arranged in a vehicle, detection of whether a predetermined functionality is activated in the portable electronic apparatus and activation of an alarm when the portable electronic apparatus is un-connected or the predetermined functionality is inactivated.

30 Another aspect relates to an alarm device to be arranged in a vehicle comprising means for detection of whether a portable electronic apparatus is connected to the alarm device, means for detection of whether a predetermined functionality is activated in the portable electronic apparatus, and means for

activation of an alarm when the portable electronic apparatus is un-connected or the predetermined functionality is inactivated.

A further aspect relates to a computer program product for generation of alarm in vehicles, comprising  
5 program element for detection of whether a portable electronic apparatus is connected to an alarm device arranged in a vehicle, program element for detection of whether a predetermined functionality is activated in the portable electronic apparatus, and program element for activation of an alarm when the portable electronic apparatus is un-connected or the predetermined functionality is inactivated.

10 Yet another aspect relates to an alarm/control device to be arranged in a vehicle comprising means for detection of whether a portable electronic apparatus is connected to the alarm/control device, and means for activation of a predetermined functionality when the portable electronic apparatus is connected to the alarm/control device, wherein the predetermined functionality comprises utilizing the position of the vehicle given by satellite based and/or mobile phone based positioning systems.

15

#### BRIEF DESCRIPTION OF THE DRAWINGS

The embodiments, together with further objects and advantages thereof, may best be understood by making reference to the following description taken together with the accompanying drawings, in which:

20

Fig. 1 shows an embodiment of a simple installation of a device in a vehicle with a driver, and an external server;

Fig. 2 shows an embodiment of a device and an example of a connection to a mobile phone;

25

Fig. 3 is a component diagram for a device according to an embodiment;

Fig. 4a is a flow chart for a method according to an embodiment;

30 Fig. 4b is a flow chart for a method according to a particular embodiment;

Fig. 5a is a flow chart for a method according to another particular embodiment;

Fig. 5b is a flow chart for a method according to yet another particular embodiment; and

Fig. 6 shows an embodiment of a detailed connection to a mobile phone through USB.

5

## DETAILED DESCRIPTION

The present invention generally relates to portable electronic devices for vehicles and more particularly to an alarm method, alarm device and a computer program product for vehicles, as well as an alarm/control device for vehicles.

10 Throughout the drawings, the same reference numbers are used for similar or corresponding elements.

To obtain adequate function of such functionalities that have been exemplified in the background section above, it is important that the desired functionality is activated in a correct manner in a mobile phone or similar portable electronic device in a vehicle before or during travel with the vehicle. To  
15 ensure that the functionality is activated in a predetermined way there is a need for an alarm device that alerts the driver before or during travel to activate the predetermined functionality, alternatively that the alarm device controls an automatic activation of the functionality.

The present invention provides such an alarm device for use in a vehicle. The alarm device comprises  
20 means for detection whether a portable electronic apparatus is connected to the alarm device, means for detection of whether a predetermined functionality is activated in the portable electronic apparatus, and means for activation of an alarm when the portable electronic apparatus is un-connected or the predetermined functionality is inactivated.

25 Fig. 1 shows an embodiment of a device 200 according to the invention, connected to a portable electronic apparatus 100, such as a mobile phone, and to the battery 170 of the vehicle 150 through the ignition switch 160. In this embodiment the driver 120 connects the mobile phone 100 to the vehicle 150 through device 200. If the driver 120 starts the car without having connected the mobile phone 100 to the device 200, in this embodiment an alarm from a buzzer sounds to remind the driver  
30 to connect his/her mobile phone to the device 200 and activate it in a stipulated manner, for example activate driver's log, maintenance record, etc. After connection of mobile phone 100 to device 200 the alarm will in this embodiment continue to sound until the mobile phone is activated in a stipulated manner. After the driver has installed and activated the mobile phone in a stipulated manner the alarm

will in this embodiment become silent and the driver may commence the travel. The alarm may in one embodiment be replaced with a warning lamp or LED for visual alarms, or in another embodiment control vehicle specific equipment for example immobiliser, horn, hazard lights or such. The alarm may in an embodiment be notified and stored by an external server 60 through wireless transfer 50 for example 2G, 3G, 4G, or WLAN from mobile phone 100. The alarm may also in an embodiment be time controlled to enable alarm-free travel with the vehicle also at the occasions when the mobile phone is not present during travel, for example complemented with logging of the event in an event log stored in device 200. The alarm may in an embodiment be manually by-passable at the occasions when the invention is connected to travel-preventing arrangements such as immobiliser, for example  
10 complemented with logging of the event in an event log stored in device 200.

Fig. 2 shows an embodiment of a simple configuration with device 200 connected to the vehicle through the power supply cable 220. The device 200 may in one embodiment be fixedly mounted in the vehicle, or in another embodiment detachably connected to the vehicle. Device 200 is in this  
15 embodiment furthermore connected to the mobile phone 100 through a power supply and signal cable 210. The device 200 in this embodiment detects that the ignition of the vehicle is turned on through the power supply cable 220 and that the mobile phone 100 is connected and correctly activated through the power supply and signal cable 210. The buzzer 240 in this embodiment alerts the driver that the phone is un-connected and/or incorrectly activated. The buzzer may in an embodiment sound  
20 differently for the above described two cases.

Signal cable in power supply and signal cable 210 may in an embodiment be replaced by a wireless connection through a suitable protocol such as IR-technique (infrared), Bluetooth, Wireless USB, Cypress WirelessUSB, ZigBee, WLAN, or other available radio standard. Also, the power supply part in  
25 power supply and signal cable 210 may in an embodiment be replaced by a wireless connection for energy transfer, for example induction-based energy transfer. Embodiments without power supply of the mobile phone from the electrical system of the vehicle are also possible.

Fig. 3 shows a detailed embodiment of the device 200 in Fig. 2 where cabling 220 is a two-wire  
30 conductor connected to the 12-volt system of the vehicle. In this embodiment a voltage regulator 230 transforms 12 volt to 5 volt which through a connection feeds cabling 210 with power supply to the mobile phone 100. 5 volt is in this embodiment also used for powering the buzzer 240, which in this embodiment is controlled through the relay 250, which in this embodiment is controlled from the micro-

controller 260, which in this embodiment communicates with the mobile phone through power supply and signal cable 210. The supply voltage of the vehicle in cabling 220 is in this embodiment monitored by the micro-controller 260 through connection to the output of the voltage regulator. Micro-controller 260 is in this embodiment powered through the electrical system of the vehicle through the voltage  
5 regulator 230.

Instead of alerting the driver to activate the predetermined functionality, an alternative way to ensure that the functionality is activated could be that the device 200 controls an automatic activation of the functionality. Thus, in an alternative embodiment and with reference to Fig. 2 and Fig. 3 the micro-  
10 controller 260 could instead of activating the buzzer 240 control an automatic activation of the predetermined functionality. In one embodiment the device 200 could activate the predetermined functionality as soon as the device 200 detects that the portable electronic apparatus 100, such as a mobile phone, is connected to the device 200. Possibly the device 200 could in an embodiment activate the alarm if the device 200 detects that the portable electronic apparatus 100 is un-connected.

15

As illustrated in Fig. 4a, a method in accordance with the present invention generally comprises a step S31 of detection of whether a portable electronic apparatus, such as a mobile phone, is connected to an alarm device arranged in a vehicle, a step S32 of detection of whether a predetermined functionality is activated in the portable electronic apparatus, and a step S33 of activation of an alarm when the  
20 portable electronic apparatus is un-connected or the predetermined functionality is inactivated.

Fig. 4b is a flow chart illustrating an example of a method in accordance with an embodiment of the present invention. The method sets the alarm signal (ALARM\_SIGNAL) to false (FALSE) provided that predetermined conditions are fulfilled. Step S1 indicates the starting position for the method and may in  
25 an example embodiment be initiated when the car key is inserted and turned in the ignition switch 160 of the vehicle. Step S2 initiates the alarm signal to true (TRUE) and the identity of device 200 is read (DEVICE ID). DEVICE ID may in an example embodiment be stored in a permanent memory circuit or other memory device in device 200, or comprise a reading of the vehicle identity through connection to the CAN bus of the vehicle.

30

Step S3 tests that a mobile phone 100 is connected to device 200. Detection in step S3 may in an example embodiment be done by the micro-controller 260 measuring charging current from vehicle to mobile phone 100 that flows through power supply and signal cable 210, activity such as signalling on

the USB protocol in signal cable in power supply and signal cable 210, and/or measurable load of the voltage regulator 230. In the case that a wireless connection is used, connection and detection is done through wireless interfaces such as Bluetooth, and/or WiFi.

5 In step S4 the identity of the mobile phone 100 is read. In an embodiment this is done by reading of phone number, IMEI, MAC-address or other identity connected to the mobile phone. The reading of the identity of the mobile phone may in an embodiment be done by a request from the device 200 to the mobile phone 100 through power supply and signal cable 210, where the mobile phone is configured to enable this. The reading of the identity of the mobile phone may in an embodiment also be done by  
10 way of device 200 sending a control command to the mobile phone 100 through power supply and signal cable 210 wherein the mobile phone sends the identity wirelessly to a central server through data connection for example via 2G, 3G, 4G or WLAN.

Step S5 tests if the system should validate the driver and user 120 of the mobile phone 100. If  
15 validation is not required the method proceeds to step S8. If test S5 is true, validation of the identity of the driver is done in step S6. The identity of the driver may in an embodiment be connected to the identity of the mobile phone or connected to entering of name, pin code, voice sequence, or image. Validation of the driver may in an embodiment be done by voice signature, photograph, or biometric reading such as fingerprint. Verification and identification may in an embodiment also be done with  
20 external equipment connected to the mobile phone 100, device 200, or to a centrally located server. This validation may in an embodiment be done with available technique; for example face recognition is a well-known technique used for automatic sorting of digital photographs, or fingerprint reader e.g. for entry access. Test of the validation is done in step S7.

25 Step S8 tests if the identity is approved by comparing with approved identities on a list, where identity relates to the identity of the mobile phone 100 (MOBILE PHONE ID), the identity of the driver 120 (USER ID) and the identity of device 200 (DEVICE ID). In other words, the identity of at least one of the vehicle (i.e. the device 200), the vehicle driver and the portable electronic apparatus is determined and the identity is compared with a list of predetermined identities. This also comprises the case that  
30 all identities are accepted and all identities within one of the groups DEVICE ID, MOBILE PHONE ID and USER ID are accepted.

The tests in step S7 and step S8 may in an embodiment be done in device 200, in mobile phone 100 or by transfer of information (DEVICE ID, MOBILE PHONE ID and USER ID) to an external server, for example via 2G, 3G, 4G or WLAN or other standard for wireless communication.

5 If the result of the test in step S8 is positive, ongoing activity of mobile phone 100 is identified in step S9. An activity may in an embodiment be described by functionality of the mobile phone 100 that utilizes the ability of the mobile phone to position itself in the mobile network or through the built-in GPS receiver, i.e. utilizing the position of the vehicle given by satellite based and/or mobile phone based positioning systems. Examples of such activities may be a driver's log, maintenance record,  
10 monitoring of driving behaviour, or registration of passage of congestion tax stations. Identification of activity in mobile phone 100 may in one embodiment be done by aid of the mobile phone 100 signalling an ACTIVITY ID to micro-controller 260 through power supply and signal cable 210 through a predetermined communication protocol, or in another embodiment by the mobile phone 100 transferring ACTIVITY ID to server 60 via mobile network 50, or in yet another embodiment by storing  
15 ACTIVITY ID locally on mobile phone 100. Identification or detection of activity may thus be done wirelessly through radio and/or wire-bound through cabling.

Step S10 tests that the mobile phone is correctly activated by comparing ACTIVITY ID with a list of at least one approved activity. This test of activity (ACTIVITY ID) may in one embodiment be done with a  
20 method implemented in device 200, in another embodiment on mobile phone 100, and in yet another embodiment on external server 60.

In another embodiment device 200, or server 60 via the communication network 50, signals to mobile phone 100 to activate an activity. In this embodiment ACTIVITY ID is set to the correct value.

25

Step S11 resets ALARM\_SIGNAL to false. Step S12 finishes the method.

Fig. 5a is a flow chart for a method in accordance with an embodiment of the present invention. The method in Fig. 5a performs actions depending of the status of the alarm signal (ALARM\_SIGNAL). The  
30 method consists of the steps S20-S23. Step S20 indicates the starting position of the method. The step S21 tests if the alarm signal is active. Active alarm signal (TRUE) causes a buzzer to be activated in step S22 and inactive alarm signal (FALSE) causes a buzzer to be de-activated in step S23. Activation of the buzzer may in one embodiment be replaced with activation of a warning lamp or LED for visual

alarms, or in another embodiment activation or deactivation of vehicle specific equipment for example immobiliser, horn, hazard lights or such.

Fig. 5b is a flow chart for a method according to an alternative embodiment of the present invention.

5 The method in Fig. 5b consists of the steps S20-S23, which are the same as the method in Fig. 5a, and the additional step S24. The additional step S24 is used for actively activating predetermined activity in the mobile phone 100, if the alarm signal is active (TRUE).

Fig. 6 shows a detailed embodiment for connection of the mobile phone 100. In this embodiment  
10 mobile phone 100 is equipped with Micro USB contact 110 which is suggested by several leading manufacturers of mobile phones to become a common standard for charging of future mobile phones. Micro USB is furthermore used for transfer of data to mobile phones, which means that a mobile phone is charged simultaneously with synchronisation and data transfer. Different standards and contact pieces also exist, for instance manufacturers such as Motorola and Apple use other alternatives. The  
15 contact 110 comprises the signals for USB, i.e.:

Pin	Name	Cable colour	Explanation
1	VCC	Red	5 Volt +
2	D-	White	Data -
20 3	D+	Green	Data +
4	GND	Black	Shield/ground
5	not connected		

The present invention may be implemented as a microprocessor, a digital signal processor (DSP), or a  
25 combination with corresponding software. In an embodiment a laptop is installed with adaptation apparatus in the vehicle. The method may then be implemented as a computer program which is installed in the computer through computer readable media such as CD, DVD, USB memory, hard drive etc. The steps of the method are in this embodiment then performed by program elements in the installed program. Thus, such a computer program product comprises program element for detection of  
30 whether a portable electronic apparatus is connected to an alarm device arranged in a vehicle, program element for detection of whether a predetermined functionality is activated in the portable electronic apparatus, and program element for activation of an alarm when the portable electronic apparatus is un-connected or the predetermined functionality is inactivated. Another possible implementation is to use programmable logic in FPGA (Field Programmable Gate Arrays) or ASIC  
35 (Application Specific Integrated Circuit).

The embodiments described above are to be understood as a few illustrative examples of the present invention. It will be understood by those skilled in the art that various modifications, combinations and changes may be made to the embodiments without departing from the scope of the present invention.

5 In particular, different part solutions in the different embodiments can be combined in other configurations, where technically possible. The scope of the present invention is, however, defined by the appended claims.

## CLAIMS

1. Alarm method for vehicles, **characterized by**
  - detection (S31) of whether a portable electronic apparatus (100) is connected to an alarm device (200) arranged in a vehicle (150);
  - 5 detection (S32) of whether a predetermined functionality is activated in the portable electronic apparatus (100); and
  - activation (S33) of an alarm when the portable electronic apparatus (100) is unconnected or the predetermined functionality is inactivated.
- 10 2. Method according to claim 1, **characterized by**
  - determination (S2; S4; S6) of the identity of at least one of said vehicle (150), a vehicle driver (120) and the portable electronic apparatus (100);
  - comparison (S8) of the identity with a list of predetermined identities; and
  - activation (S33) of an alarm if the identity is not found in the list.
- 15 3. Method according to claim 1 or 2, **characterized in** that both detections are done wirelessly through radio and/or wire-bound through cabling.
4. Method according to any of the preceding claims, **characterized in** that the predetermined  
20 functionality comprises utilizing the position of the vehicle (150) given by satellite based and/or mobile phone based positioning systems.
5. Method according to any of the preceding claims, **characterized in** that the alarm activation is based on at least one of the following actions:
  - 25 activation of a buzzer;
  - activation of a lamp or LED;
  - activation of vehicle specific equipment; and
  - deactivation of vehicle specific equipment.
- 30 6. Alarm device (200) to be arranged in a vehicle (150), **characterized by**
  - means (260) for detection of whether a portable electronic apparatus (100) is connected to the alarm device (200);

means (260) for detection of whether a predetermined functionality is activated in the portable electronic apparatus (100); and

means (240, 250, 260) for activation of an alarm when the portable electronic apparatus (100) is un-connected or the predetermined functionality is inactivated.

5

7. Alarm device (200) according to claim 6, **characterized in** that the portable electronic apparatus (100) is a mobile phone.

8. Alarm device (200) according to claim 6 or 7, **characterized in** that the predetermined  
10 functionality comprises utilizing the position of the vehicle (150) given by satellite based and/or mobile phone based positioning systems.

9. Computer program product for generation of alarm in vehicles, **characterized by**  
program element for detection of whether a portable electronic apparatus (100) is  
15 connected to an alarm device (200) arranged in a vehicle (150);  
program element for detection of whether a predetermined functionality is activated in the portable electronic apparatus (100); and  
program element for activation of an alarm when the portable electronic apparatus (100) is un-connected or the predetermined functionality is inactivated.

20

10. Alarm/control device (200) to be arranged in a vehicle (150), **characterized by**  
means (260) for detection of whether a portable electronic apparatus (100) is connected to the alarm/control device (200); and  
means (260) for activation of a predetermined functionality in the portable electronic  
25 apparatus (100) when the portable electronic apparatus (100) is connected to the alarm/control device (200), wherein the predetermined functionality comprises utilizing the position of the vehicle given by satellite based and/or mobile phone based positioning systems.

11. Alarm/control device (200) according to claim 10, **characterized by**  
30 means (240, 250, 260) for activation of an alarm when the portable electronic apparatus (100) is un-connected.

FIG 1

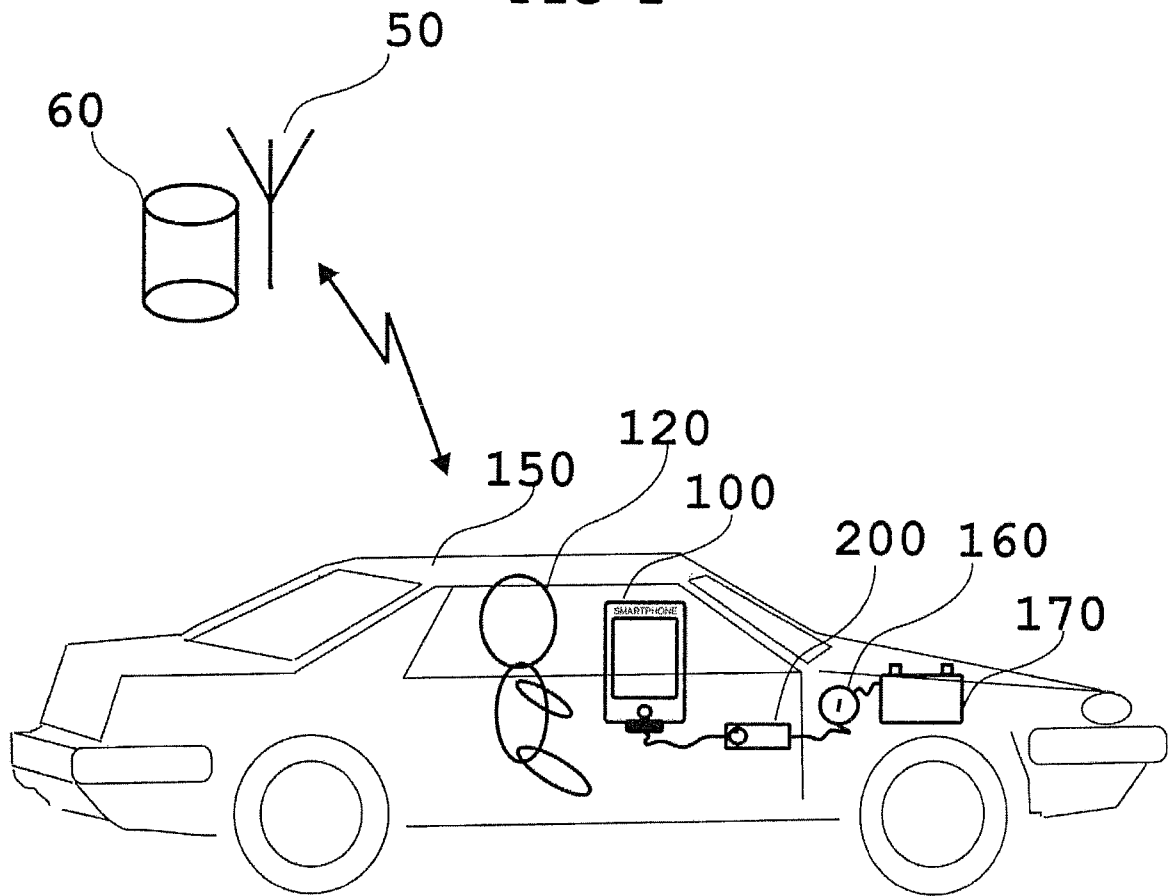


FIG 2

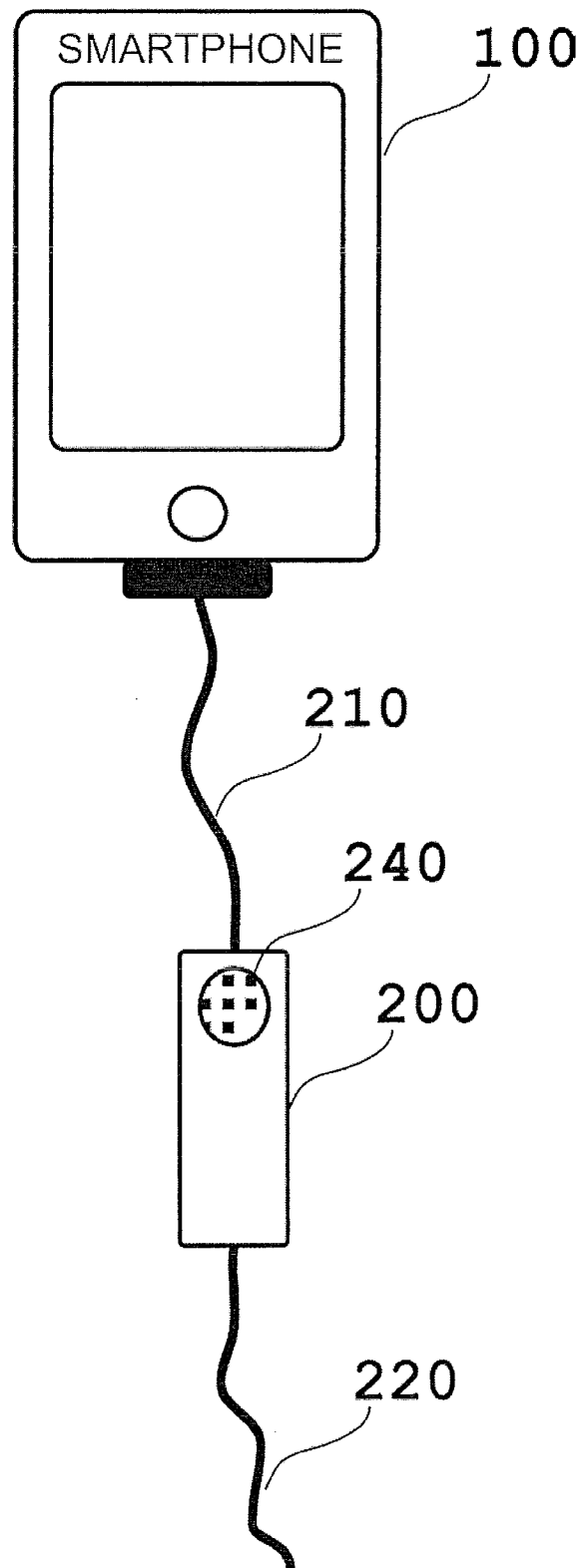
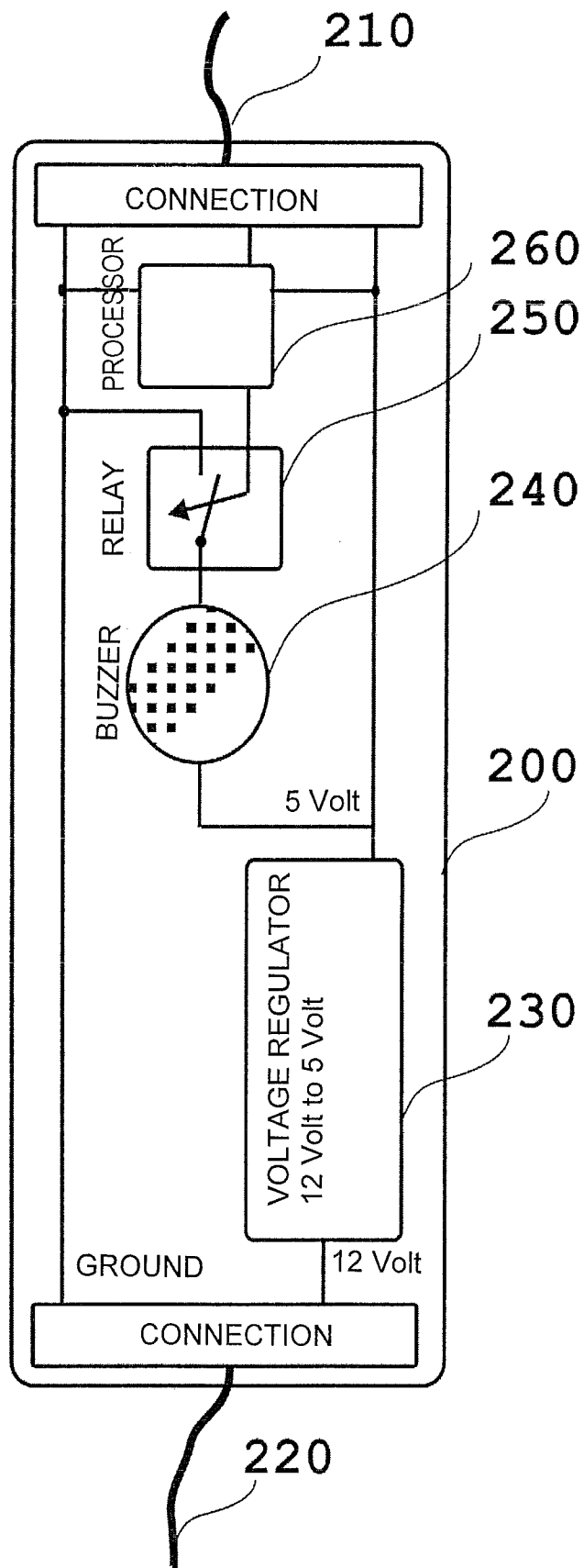


FIG 3



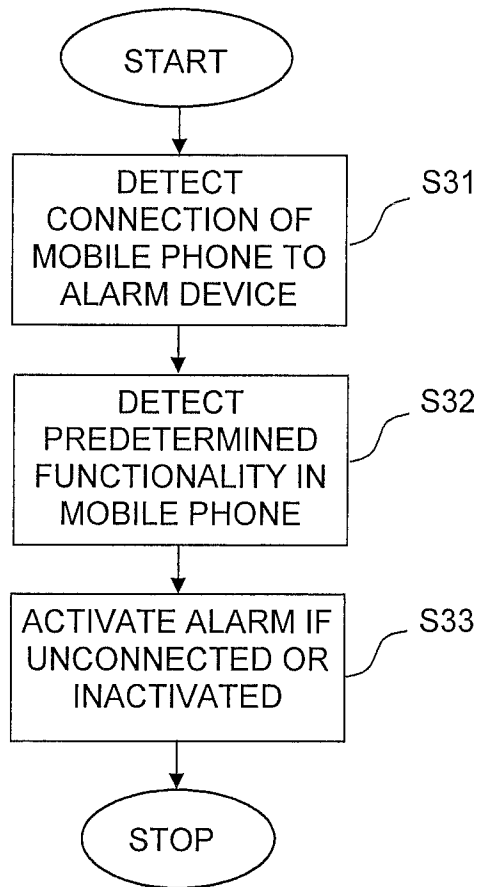
**FIG 4a**

FIG. 4b

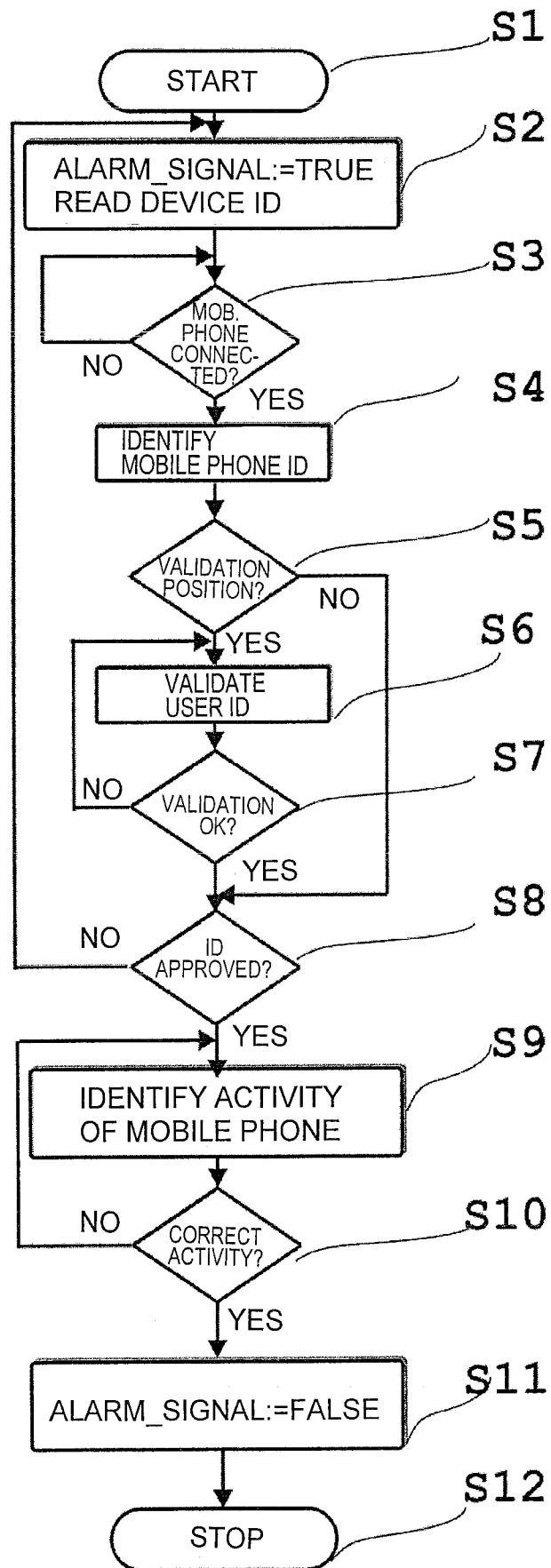


FIG. 5a

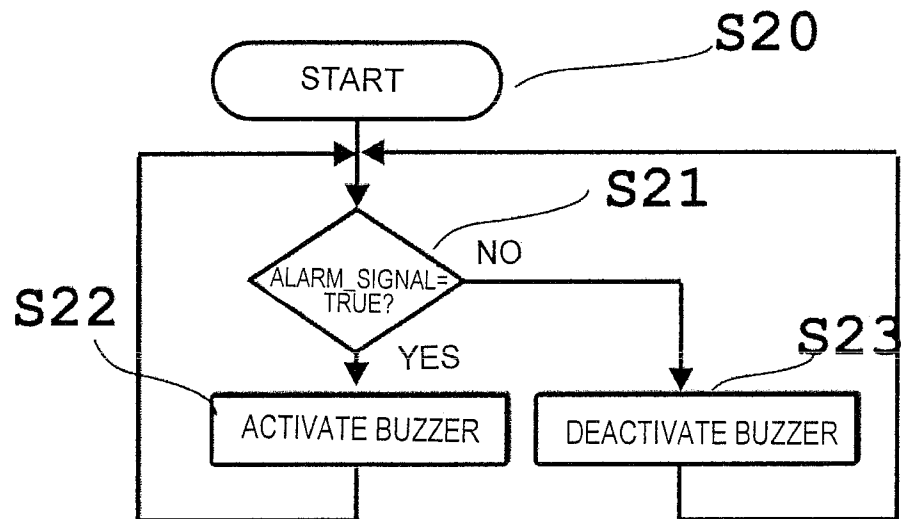


FIG. 5b

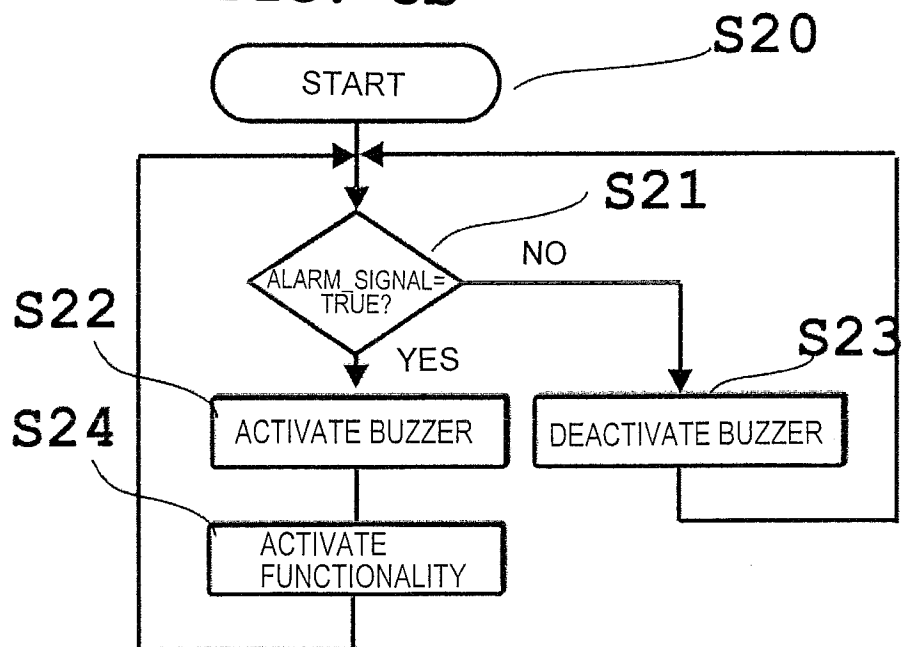
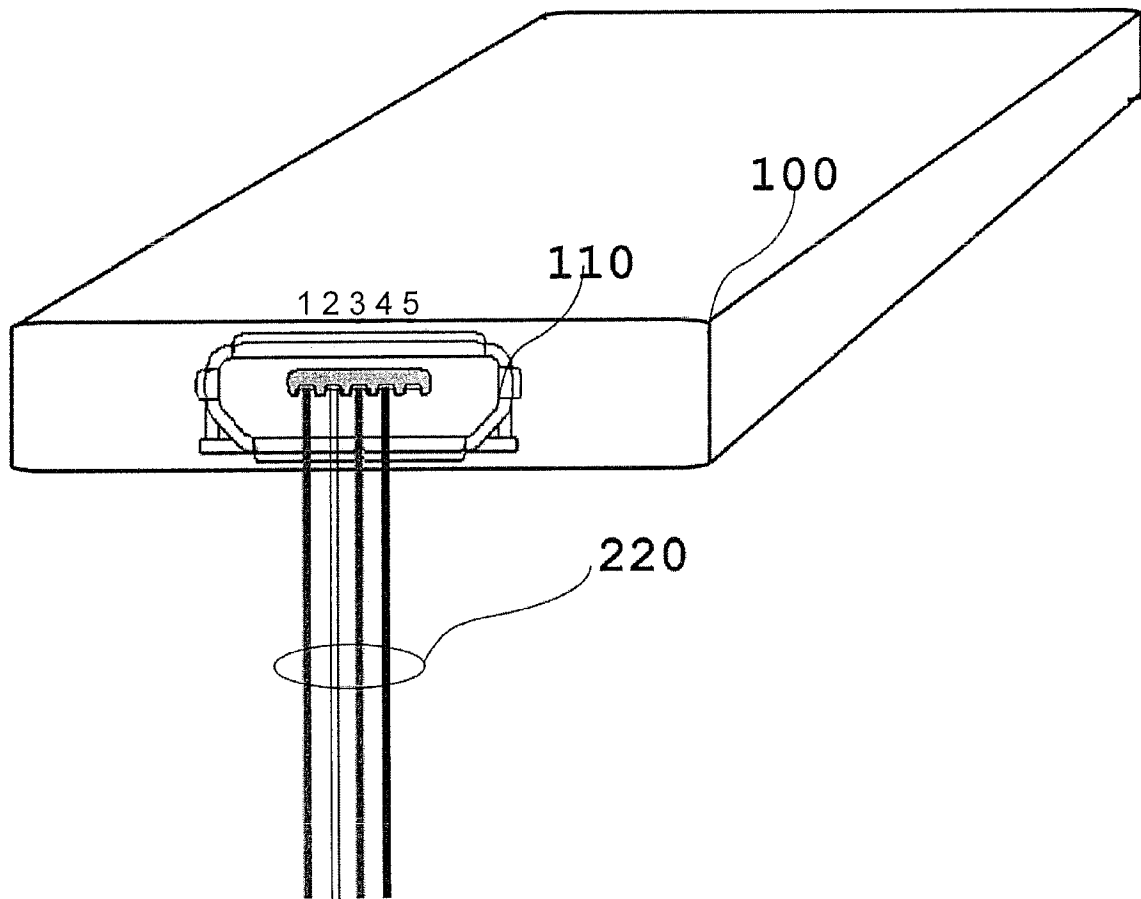


FIG. 6



## INTERNATIONAL SEARCH REPORT

International application No

PCT/SE2012/050942

## A. CLASSIFICATION OF SUBJECT MATTER

INV. G07C5/08 G06Q40/08  
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G07C G06Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/52136 A1 (CAR POINT KOREA CO LTD [KR]) 19 July 2001 (2001-07-19)	1-9
Y	page 5, line 24 - page 6, line 10 page 9, lines 11-16 page 10, lines 3-9 page 11, line 21 - page 12, line 22; figures 1,2,4	10,11
X	WO 94/25936 A1 (LAPREVOTTE JIM [FR]; PARIENTI RAOUL [FR]) 10 November 1994 (1994-11-10)	1-9
A	page 4, lines 10-33 page 9, lines 1-9; figures 1,2	10,11
Y	WO 2008/144576 A1 (GNI INTERNATIONAL INC [US]; DE CARCER GIADHA AGUIRRE [US]; DE CARCER L) 27 November 2008 (2008-11-27)	10,11
A	paragraph [0050]; figures 1a,6b	1,6,9
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Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

2 January 2013

Date of mailing of the international search report

14/01/2013

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International application No  
PCT/SE2012/050942

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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