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(54) **PORTABLE APPARATUS AND METHOD FOR DETECTING AND NOTIFYING OF VEHICLE ACCIDENTS**

(57) The present invention relates to an apparatus which comprises a first portable apparatus (1), which is fastened to any type of vehicle, and a second portable apparatus (12) which is provided with fastening means for fastening a mobile telephone (23) intended to send emergency signals to a remote centre. The first apparatus (1) communicates with the second apparatus (2) and the latter communicates with the mobile telephone (23) from which the emergency calls are sent. The apparatus detects an accident when there is a communication breakdown between the first and second apparatuses. The apparatus establishes a waiting time during which an emergency call is not sent so that the user can cancel erroneous detection of accidents. In addition, signals indicating the accident detection are generated so that a user can perform the cancellation during the waiting time.

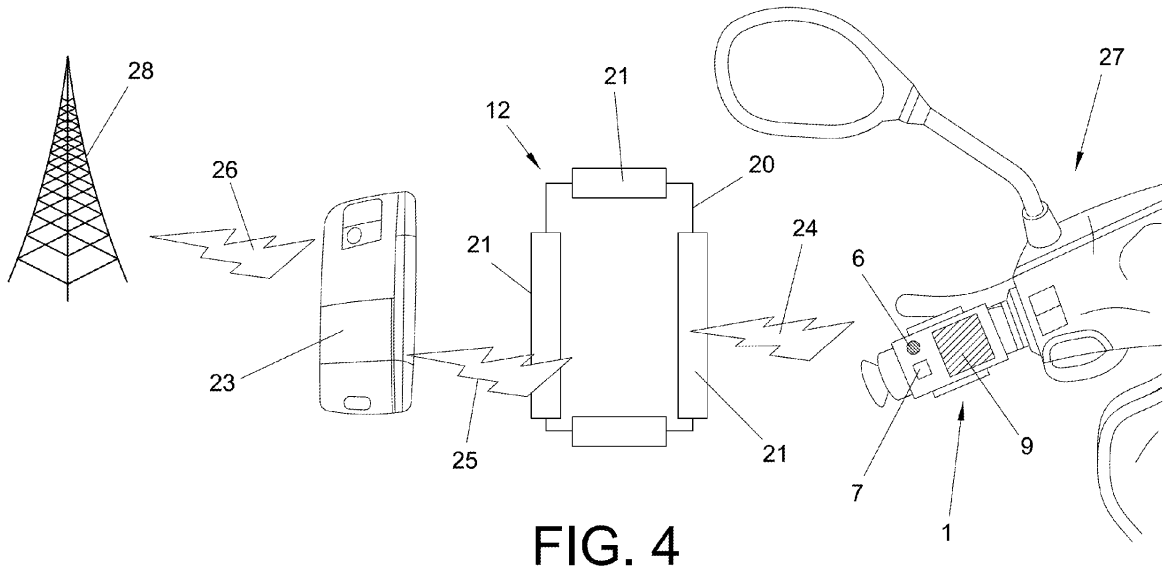

FIG. 4

EP 2 518 710 A1

Description

Object of the Invention

[0001] The invention relates to an apparatus for detecting and reporting vehicle accidents having a modular and portable configuration allowing its installation in any type of vehicle.

[0002] Another object of the invention is to provide greater reliability such that it detects an accident by means of one or more sensors, an emergency call activation/cancellation switch, or by means of the communication breakdown between the modules making up the apparatus.

[0003] Another object of the invention is to allow preventing reports that would be generated by false accident detections.

Background of the Invention

[0004] Patent application US 6141611-A can be mentioned in the sate of the art in which it describes a system which detects a motor vehicle accident, collects data about the accident and sends it to a central entity. To that end it uses one or several sensors which generate a trigger signal in the vehicle which is applied to an information collecting apparatus of the vehicle's on-board equipment, such as for example the recorded images from cameras installed in the vehicle, satellite-based positioning and data records of the vehicle's on-board computer, such that all this data is sent encrypted by means of an on-board communications unit to a central database through a radio and Internet link. The database stores information of the accident which can be accessed by authorised third parties such as insurance companies for the purpose of reconstructing the accident. All the elements involved in this system are on-board the vehicle.

[0005] In this sense the patent document US 7133661-B2 can also be mentioned which describes a system for reporting the state of a moving object and detecting the positioning information of the object and transmitting the data of the state and location of the object through a radio link as long as a collision especially at intersections is detected. The system is provided with several impact sensors, a heat sensor and a manual switch which are used as accident detectors. Image recording and capturing apparatuses and a control and emergency reporting unit are also included to generate the accident data, which is transmitted by means of a mobile telephone to an emergency information centre.

[0006] Patent document EP 0789498-B1 can also be mentioned in which it describes an automated and simplified interface between a vehicle and an emergency response centre using cellular communications. This communications unit is made up of a GPS receiver, a controller, a message centre, a cellular transceiver and a mobile telephone and is connected to the sound system of the vehicle and to an emergency button located in the dashboard of said vehicle. The cellular transceiver can operate in the hands free mode or in telephone mode. For the first mode, a microphone is mounted in the vehicle. For the latter, the telephone of the unit is connected to the cellular transceiver through the controller, and must therefore be mounted in the vehicle. In the case that an accident or an emergency situation occurs, the driver or a passenger of the vehicle presses the button to start the accident reporting process.

[0007] Patent document EP 1197426-A1 describes a system for detecting emergency specifically for two-wheeled vehicles comprising a vehicle speed sensor, an inclination sensor for generating a signal indicating the angle of inclination of the vehicle, an accident detecting module for detecting a vehicle accident, an accident information module sensitive to accident detection in the accident detecting modules, to report the accident to an external party and a driving recorder for recording driving data before and after the accident. It also incorporates a GPS receiver for recording the exact position. An external communication apparatus which is made by means of a cellular device attached to an external cellular device connected by means of a wireless connection (such as Bluetooth) is provided for informing the accident to an external party. It also includes a cancellation button for allowing the user to cancel the alarm and avoid false accident warnings known as false positives.

[0008] In this sense document by C. Pinart, J.C., Calvo, L. Nicholson, J.A. Villaverde, "Ecall-compliant early crash notification service for portable and nomadic devices", in Proc. IEEE 69th Vehicular Technology Conference (VTC2009-Spring) Barcelona (Spain), April 26-29, 2009 can also be mentioned, in which it describes a portable system which can be installed in two- or four-wheeled vehicle in which an accelerometer installed in the vehicle which is wirelessly interconnected with a mobile telephone using Bluetooth is used as an accident detecting element. The telephone consists of a decision making system for determining whether an accident occurs and for communicating with an emergency call service using the GSM network for voice calls and the GPRS network for data calls, as well as Internet to reach the emergency call server. The data is tagged in an MSD message complying with the European ECALL initiative which is subjected to normalisation for providing a solution to the problem of detecting and reporting motor vehicle accidents to the authorities managing the emergency services.

[0009] In the mentioned documents, most of these solutions are not portable but embedded in the vehicle itself, increasing the final cost, and in the case of the portable systems, these cannot be applied in any type of vehicle.

[0010] Furthermore, there are reliability problems in all the mentioned documents since the solutions based on or combined with portable devices, such as mobile telephones, have reliability problems in the interconnection between the on-board equipment of the system and the communications unit whereby the accident data is sent

to a remote centre. This circumstance can occur for example in the case that the mobile telephone is ejected due to a crash, resulting in a sudden interruption in the communication between the equipment providing the accident data and the mobile telephone, which means that the accident can be detected but not reported which represents a serious problem since the system does not perform its intended function.

[0011] Furthermore, the mentioned documents have the drawback of having a high percentage of false positive production, therefore there is a high percentage of emergency calls made to the emergency centres used for motor vehicle accidents, which results in an unnecessary waste of resources in the call server and in the emergency services, which are limited, as well as in an unnecessary overload in the communications network.

Description of the Invention

[0012] To solve the drawbacks and achieve the objectives indicated above, the invention provides a new portable apparatus for detecting and reporting vehicle accidents in which, as in the documents mentioned in the report of the state of the art, uses vehicle positioning detection means, one or more accident detection sensors, an apparatus connection/disconnection switch, a manual emergency call activation/cancellation switch, a detection controller for detecting the signals provided by the sensor and a mobile telephone making emergency voice and data calls for sending the data of an accident to a remote emergency call managing centre, when the sensor detects an accident or when a manual emergency call activation by means of actuating the manual emergency call activation/cancellation switch is detected.

[0013] The main novelty of the apparatus of the invention lies in that it is characterised in that it further comprises a first portable device which is provided with fastening means for fastening to the vehicle, and in that it further includes one or more sensors, a first controller, a first connection/disconnection switch, a first emergency call activation/cancellation switch and first communication means for communicating with second communication means which are provided in a second portable device.

[0014] Said second portable device further comprises fastening means for fastening the mobile telephone, positioning detecting means, a second controller, a second connection/disconnection switch and a second emergency call activation/cancellation switch.

[0015] The second communication means are further configured for communicating the second controller with the mobile telephone. The second controller includes means for generating an emergency call by means of the mobile telephone when a communication breakdown between the first and second communication means is detected. An emergency call is also made in the invention when a manual emergency call activation is detected or an accident is detected by means of the sensor.

[0016] This configuration has the great advantage of having a greater reliability in detecting accidents, since in the case where the second portable device become detached in an accident, and the communication between the first communication means with the second communication means is interrupted, this is detected and the emergency call is generated, a circumstance which does not exist in the state of the art since making the call is not allowed when the mobile telephone detaches from the vehicle when an accident occurs since the mobile telephone is not fastened in a device with which it maintains communication. This function is especially useful for the case where the invention is applied in two-wheeled vehicles because in these vehicles the circumstance where the rider becomes separated from the motorcycle is very common and given that the rider carries the second device in which the mobile telephone is fastened, in the case where said rider falls off the vehicle the communication with the first controller is interrupted, the emergency call being generated in this case.

[0017] The invention further has the novelty that the first and second device are provided with acoustic signal generating or visual signal generating means for emitting alarms when an accident situation is detected, the first and second controller module being provided with means for generating a different alarm for a detection of an interruption in the communication between the first and second communication means, for a detection of a manual emergency call activation and for a detection of an accident by the sensor. This configuration has the great advantage of allowing the user to recognise the cause which has lead to the accident detection and act accordingly, being able to cancel the emergency call if the user verifies that it has been produced by an erroneous detection of the accident by means of actuating the corresponding switch.

[0018] The first and/or the second controller comprise means for establishing a waiting time for sending the alarm signal which is produced when an accident is detected, which allows the user to verify that the alarm has not been produced by an erroneous accident detection, in which case, i.e., when the accident detection is an erroneous detection, the user can cancel the emergency call by acting on the first and/or second activation/cancellation switch, the accident detection errors causing the problems pointed out above being minimised.

[0019] The first and second devices are further provided with visual indicators signalling the operating state of the apparatus for allowing the user to verify its correct operation.

[0020] The fastening means for fastening the first device to the vehicle have an interchangeable configuration for allowing the portability and fastening thereof to any type of vehicle, which is not possible in the state of the art.

[0021] With respect to the fastening means for fastening the mobile telephone to the second device, it is worth highlighting that these comprise a high impact resistant casing which is provided with adjustable fastening means

for fastening said mobile telephone, to allow fastening any type of mobile telephone, which determines a greater system versatility. This configuration provides great protection to the mobile telephone of the driver.

[0022] With respect to the first and second communication means, it is worth highlighting that these have a configuration suitable for allowing wired communication or a wireless communication, which in the case of the invention will preferably be a wireless communication since it facilitates the functionality and portability of the system.

[0023] The sensor or sensors used in the invention can be any of those described in the state of the art, such as for example inertia sensors, an image capturing, recording and processing means, a degree of inclination measuring sensor, an acoustic signal sensor, or a combination thereof, depending on the needs required for detecting an accident.

[0024] The invention further relates to a method for detecting and reporting vehicle accidents which is based on the apparatus described above such that it reports the accidents to an emergency call service in an automated manner.

[0025] To that end, the method of the invention, as in the state of the art comprises a phase in which an accident is detected when a sensor or an emergency call activation/cancellation switch is activated, such that after the accident is detected a signal indicating that an accident has occurred is generated and the data relating to the accident which is selected from at least the signal provided by the sensor, the vehicle position or both pieces of data, among other data as is provided in the state of the art, is obtained. Then, the signal indicating that an accident has occurred together with the data relating to the accident is sent to a mobile telephone, from which the signal indicating that an accident has occurred together with the data relating to the accident is sent to a remote emergency centre for processing.

[0026] The main novelty of the invention resides in that the method further comprises establishing communication between a first controller and a second controller, such that the first controller is installed in the vehicle and the second controller is installed in a portable device in which the mobile telephone is further fastened. Then, communication between the second controller and the mobile telephone is established such that when the first controller detects an accident it communicates it to the second controller whereby it is sent to the mobile telephone. The phase of detecting an accident further comprises the detection of a breakdown in communication established with the first controller by a second controller, for sending the signal indicating that an accident has occurred together with the data relating to the accident by means of the mobile telephone to the remote emergency centre when the breakdown of said communication between the first and second controller is detected, which has the aforementioned advantage.

[0027] The communication between the second controller and the mobile telephone as well as the communication between the first and second controller can be a wired or wireless communication, depending on requirements, but the invention envisages that these communications are preferably wireless communications for facilitating the portability and installation of the apparatus while at the same time providing a greater freedom of movement to the user.

[0028] It is also worth highlighting that, after generating a signal indicating that an accident has been detected the method of the invention comprises a phase of establishing a waiting time during which the sending of the signal indicating that an accident has occurred together with the data relating to the accident from the second controller to the mobile telephone to allow cancelling an erroneous accident detection during the established waiting time is withheld. The waiting time is different for each of the detection times for the detections performed by means of the invention, i.e., the waiting time varies for the case where the detection is performed by means of activating at least one sensor, by means of activating an emergency call activation/cancellation switch or by means of detecting the communication breakdown between the first and second controller.

[0029] The invention further envisages that the signalling generated after detecting an accident is determined by an acoustic alarm which is also different for each type of mentioned detection, allowing the user to recognise which type of accident detection has been performed and thus allowing the user to verify if the detection is correct or not, in which case the user knows that he/she has a different waiting time according to the detection performed for being able to cancel the sending of an erroneous accident detection. Therefore, a warning period with option for cancelling erroneous accident detection is incorporated by means of the invention.

[0030] The method of the invention further comprises a phase in which signals indicating the operating state of the user's apparatus are generated to allow the user to verify its correct operation.

[0031] The sending of an erroneous accident detection can be cancelled by means of the first and second emergency call activation/cancellation switch provided in the first and second device. It can also be performed from the first connection/disconnection switch of the first device since its switching off entails the communication breakdown between the first and second communication means.

[0032] For the purpose of aiding to better understand the specification, a set of drawings is attached below as an integral part of said description in which the object of the invention has been depicted with an illustrative and non-limiting character.

Brief Description of the Drawing

[0033]

Figure 1 shows a schematic depiction of a possible embodiment of the first and second portable device and of the electronic elements contained therein.

Figure 2 shows a schematic front view of the second device in which the mobile telephone is fastened by means of a casing adjustable to the dimensions of the mobile telephone to allow fastening any type of mobile telephone in said casing.

Figure 3 shows a perspective schematic view of the rear part of the first device depicted in the preceding figure.

Figure 4 shows a possible example of applying the apparatus of the invention to a motorcycle.

Description of the Preferred Embodiment

[0034] A description of the invention based on the drawings mentioned above is made below.

[0035] The apparatus of the invention comprises a first portable device 1 which is installed in a vehicle 27 for which purpose it comprises a fastening element 2 whereby it is assured that the first device 1 remains fastened in the case of an accident. For facilitating portability, the fastening element 2 is interchangeable such that it is selected depending on the features of the vehicle in which it will be installed in, which allows installing the first portable device 1 in any vehicle.

[0036] The first portable device 1 is further provided with a sensor 3 such as an inclinometer, gyroscope or any inertial sensor which is connected to a first controller 4 which is in turn connected to a first communications module 5 which is a Bluetooth communications module. The first controller is further connected to a first connection/disconnection switch 6, to a first emergency call activation/cancellation switch 7, to a state indicator 8, to a first speaker 9 and to a battery 10 such as a smart charging lithium battery with a micro USB connector for charging. The first controller 4 is of 8 bits and of low consumption and controls the rest of the mentioned elements, the entire assembly being protected in a casing 11.

[0037] The invention further comprises a second portable device 12 which is provided with a protective casing 20 including adjustable elements 21 which are movable by means of a mechanism 22 for fastening a mobile telephone 23 (Figures 2 and 4).

[0038] Inside the casing 20 it comprises a second controller 13 which is connected to a positioning detecting device, such as for example a GPS 14, to a second communications module 15 communicating with the first communications module 5, to a second emergency call actuation/cancellation switch 16, to a second connection/disconnection switch 17 and a supply battery 18, for example having the features of the battery 10 included in the first portable device 1.

[0039] The second portable device 12 can be located in a vehicle in any in any place desired or otherwise be carried by its user.

[0040] Once the first and second devices 1 and 12 are switched on by means of the first switch 6 and the second switch 17, the driver must place his/her mobile telephone 23 in the casing 20 by means of the movable elements 21 by acting on the mechanism 22, such that the mobile telephone 23 is perfectly fastened in the casing 20 which has an impact resistant configuration for providing the suitable protection to the mobile telephone 23. It is thus assured that the mobile telephone 23 is perfectly retained in the casing 20 without it being able to be removed from same and communication 24 between the first communication module 5 and the second communication module 15 is established.

[0041] The driver then places the second device 12 in a convenient location such as in the vehicle cabin or in his/her pocket. The mobile telephone 23 must obviously be switched on such that a wireless connection 25 is established between the second communication module 15 with the mobile telephone 23 all this controlled by means of the second controller 13. If the connection is successful, the state indicator 8 changes from idle state to a state signalling that the device is working correctly.

[0042] In this situation if the sensor 3 detects a real impact, for example through sudden deceleration of the vehicle or a pronounced inclination, it is detected by the first controller 4, which generates a signal indicating that an accident has occurred sending it through the first communications module by means of communication 24 and through the second communications module 15 to the second controller 13. The first controller 4 simultaneously generates an acoustic signal for the first speaker 9 and the second controller 13 generates an acoustic signal for the second speaker 19 such that a signal indicating that an accident has occurred is emitted. In this situation the second controller 13 comprises means for establishing a waiting time during which it withholds the sending of the signal indicating that an accident has occurred to the mobile telephone 23 and collects the data relating to the accident, such as for example the position through the GPS 14, vehicle identification data which can either be stored in the first controller 4 or in the second controller 13 so that the first controller 4 would send this data together with the signal which it generated corresponding to the accident detection. Furthermore in this case the first controller 4 can also send other data relating to the vehicle or to its driving, as is provided in the state of the art.

[0043] If during the waiting time the user acts on the first activation/cancellation switch 7 or the second activation/cancellation switch 16 the sending of the emergency signal by means of the mobile telephone 23 indicating that an accident has been detected is stopped. Therefore, when the user detects the generation of the acoustic signal, the user knows that he/she has a time for verifying if the accident detection has been an erroneous detection, and if so cancels the sending to a remote emergency call processing centre from the mobile telephone 23. This sending is performed by means of conventional communication 26 through a conventional

communication system depicted by means of reference 28. This communication can be for example a cellular and Internet communication, for example the global system for mobile communications (GSM) for voice call, general packet radio service (GPRS) for sending data, high speed xlink packet access (HSxPA) or a universal mobile telecommunications system (UMTS).

[0044] There is also the possibility that accident detection is performed by means of activating the first activation/cancellation switch 7 or by means of activating the second activation/cancellation switch 16, in which case the acoustic signal generated is different from the previous one, such that the user can detect the cause which has lead to the accident detection. In this case the waiting time is also different from the previous one such that the user knows that he/she has a different time for being able to cancel the emergency call.

[0045] Furthermore, in the case of an accident and as a result of it, a communication breakdown between the first controller 4 and the second controller 13 occurs, for example because the first device 1 become detached away from the second device 12 which determines the occurrence of said communication breakdown, this circumstance is detected by the second controller 13 which also generates an accident detection signal through the second speaker 19. This circumstance can also be detected by the first controller which also generates an acoustic signal in the first speaker 9. In this case the acoustic signal is also different from those mentioned above such that the user can recognise that the detection of the cause of the accident has been due to the interruption in communication between the first and second controller. In this case a different waiting time is also established during which time the user can cancel an emergency call when it has been produced by an erroneous detection, for example by the running out of one of the batteries of the first device 1 or of the second device 12.

Claims

1. A portable apparatus for detecting and reporting vehicle accidents comprising at least:

   - vehicle positioning detecting means (14),
   - at least one accident detecting sensor (3),
   - one apparatus connection/disconnection switch,
   - one manual emergency call activation/cancellation switch,
   - one detection controller for detecting the signals provided by the sensor (3) and
   - one mobile telephone (23) making emergency voice and data calls for sending the data of an accident to a remote emergency call managing centre when an accident selected from an accident detected by the sensor (3) and an accident detected by a manual emergency call activation is detected;

   characterised in that it further comprises:

   - a first portable device (1) which is provided with fastening means (2) for fastening to the vehicle and in which it includes at least one sensor (3), a first controller (4), a first connection/disconnection switch (6), a first emergency call activation/cancellation switch (7) and first communication means (5) for communicating with second communication means (15),
   - a second portable device (12) comprising a casing (20), fastening means (21) for fastening the mobile telephone (23), positioning detecting means (14), a second controller (13), a second connection/disconnection switch (17), a second emergency call activation/cancellation switch (16), second communication means (15) for communicating with the first communication means (5) provided in the first portable device (1); and the second communication means (15) further being configured for communicating the second controller (13) with the mobile telephone (23), and the second controller (13) comprising means for generating an emergency call by means of the mobile telephone (23) when it detects a situation selected from a communication breakdown between the first (5) and second communication means (15), the detection of a manual emergency call activation and the detection of an accident by means of the sensor (3).

2. The portable apparatus for detecting and reporting vehicle accidents according to claim 1, **characterised in that** the first (1) and second portable device (12) comprise means selected from acoustic signal generating means (9, 19) and visual signal generating means for emitting alarms when an accident situation is detected, and the first (4) and second controller (13) comprising generating means for generating a different alarm for a detection of an interruption in the communication between the second controller (13) and the first controller (5) for a detection of a manual emergency call activation and for a detection of an accident by the sensor (3).

3. The portable apparatus for detecting and reporting vehicle accidents according to claim 2, **characterised in that** a controller selected from the first controller, second controller and combination thereof, comprises means for establishing a waiting time during which time the sending of the alarm signal which is produced when an accident has been detected is withheld.

4. The portable apparatus for detecting and reporting vehicle accidents according to claim 1, **character-**

ised in that the first communication means (5) and the second communication means (15) are configured for performing a communication selected from wired and wireless communication.

5. The portable apparatus for detecting and reporting vehicle accidents according to claim 1, **characterised in that** the first device (1) and the second device (12) comprise visual indicators signalling the operating state of the apparatus.

6. The portable apparatus for detecting and reporting vehicle accidents according to claim 1, **characterised in that** the fastening means (2) for fastening the first device (1) to the vehicle have an interchangeable configuration for allowing the portability and fastening thereof to any type of vehicle.

7. The portable apparatus for detecting and reporting vehicle accidents according to claim 1, **characterised in that** the fastening means (21) fastening the mobile telephone (23) to the second device (12) comprise a high impact resistant casing (20) which is provided with adjustable means (21) to allow fastening any type of mobile telephone (23).

8. The portable apparatus for detecting and reporting vehicle accidents according to claim 1, **characterised in that** the sensor (3) is selected from an inertial sensor, an image capturing, recording and processing means, a degree of inclination measuring sensor, an acoustic signal sensor and combination thereof.

9. A method for detecting and reporting vehicle accidents comprising at least the following stages:

- detecting an accident when an element selected from at least one sensor, and an emergency call activation/cancellation switch is activated,
- generating a signal indicating that an accident has occurred,
- obtaining data relating to the accident, the data at least being selected from the signal provided by the sensor, the vehicle position and combination thereof,
- sending said signal indicating that an accident has occurred together with the data relating to the accident to a mobile telephone (23),
- sending, by means of the mobile telephone (23), the signal indicating that an accident has occurred together with the data relating to the accident to a remote emergency centre for processing;

characterised in that it further comprises:

- establishing communication between a first controller (4), which is included in a first device installed in the vehicle for detecting an accident, with a second controller (13) included in a second portable device (12) in which the mobile telephone (23) is fastened,
- establishing communication between the second controller (13) and the mobile telephone (23) and,
- the phase of detecting an accident further comprises the detection of a breakdown in communication established with the first controller by the second controller (13) (4), for sending the signal indicating that an accident has occurred together with the data relating to the accident by means of mobile telephone (23) to the remote emergency centre, when the breakdown of said communication between the first and second controller is detected.

10. The method for detecting and reporting vehicle accidents according to claim 9, **characterised in that** the communication between the first and second controller and between the second controller (13) and the mobile telephone (23) is a communication selected from wired and wireless communication.

11. The method for detecting and reporting vehicle accidents according to claim 9, **characterised in that** after generating a signal indicating that an accident has been detected it comprises a phase of establishing a waiting time during which sending the signal indicating that an accident has occurred together with the data relating to the accident from the second controller (13) to the mobile telephone (23) is withheld to allow cancelling erroneous accident detection during the established waiting time.

12. The method for detecting and reporting vehicle accidents according to claim 9, **characterised in that** the signalling indicating that an accident has been detected is an acoustic alarm which is different for a detection by means of activating at least one sensor, a detection an activation of an emergency call activation/cancellation switch, and detection of a communication breakdown between the first and second controller.

13. The method for detecting and reporting vehicle accidents according to claim 11, **characterised in that** the waiting time is different for a detection by means of activating at least one sensor, a detection of the activation of an emergency call activation/ cancellation switch, and a detection of a communication breakdown between the first and second controller.

14. The method for detecting and reporting vehicle accidents according to claim 9, **characterised in that** it comprises generating signals indicating the operating state of the first and second device for their

verification by the user.

15. The method for detecting and reporting vehicle accidents according to claim 9, **characterised in that** the phase of detecting an accident by means of an emergency call activation/cancellation switch is performed from a controller selected from the first and second controller.

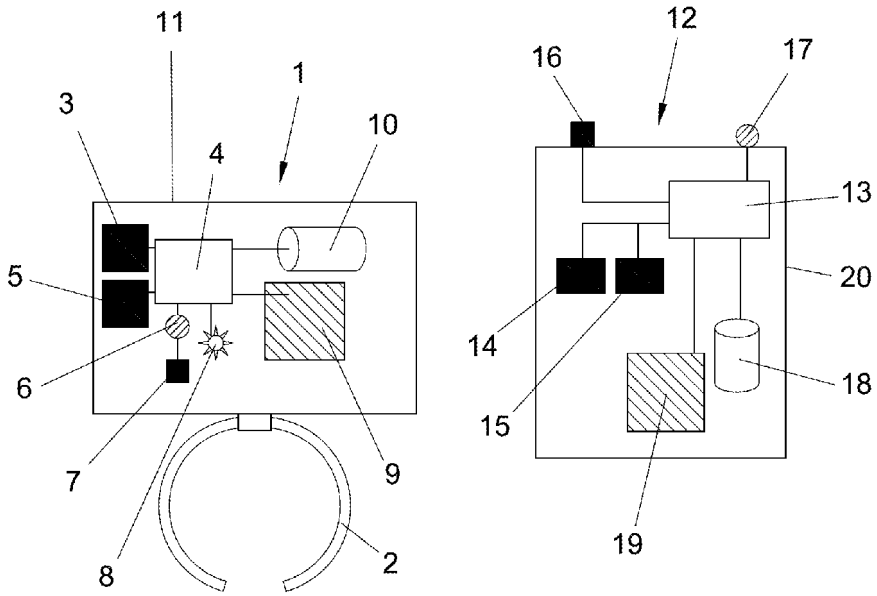

FIG. 1

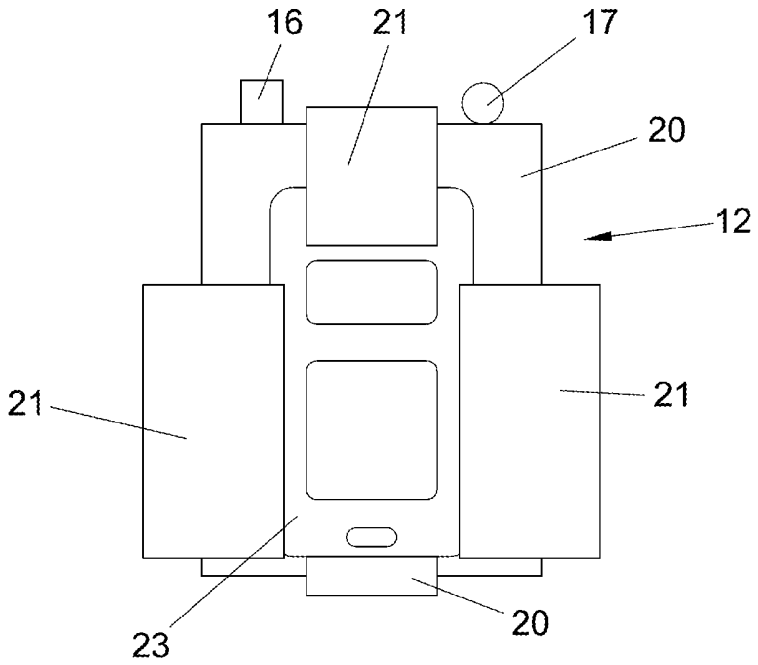

FIG. 2

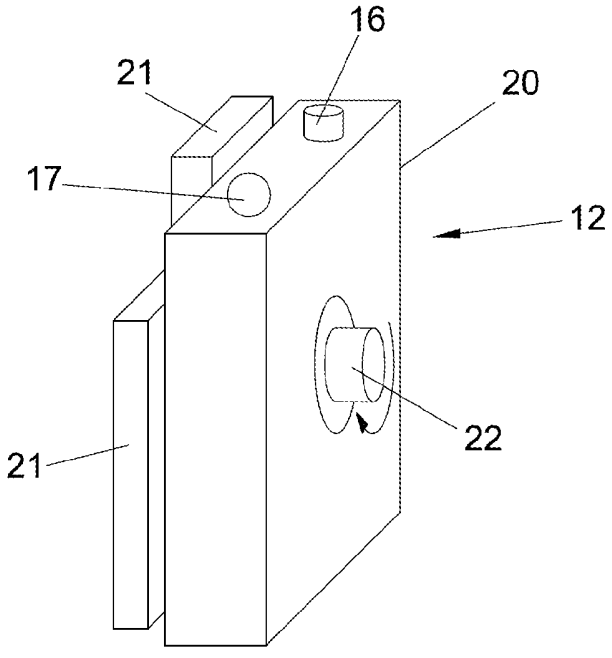

FIG. 3

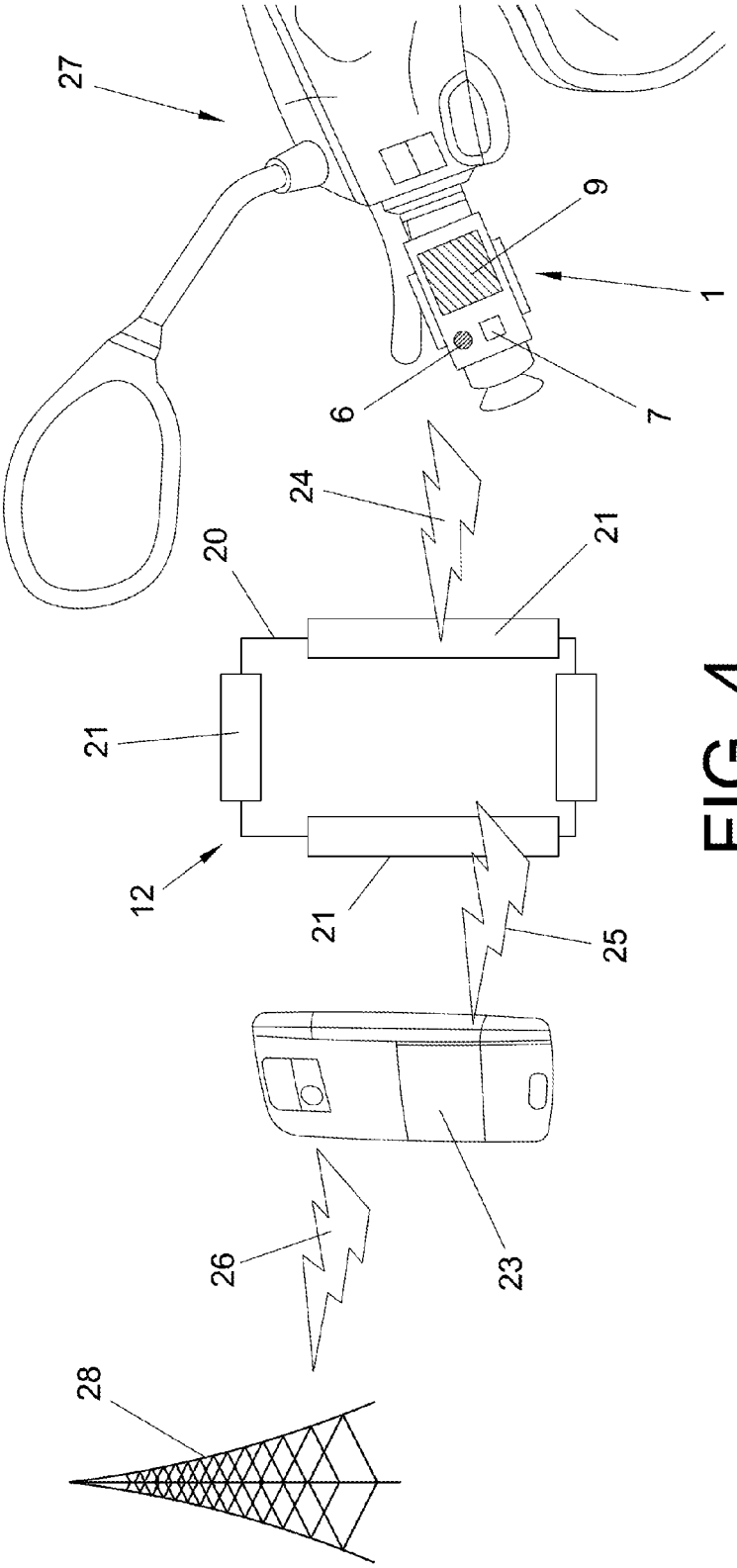

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2009/070611

A. CLASSIFICATION OF SUBJECT MATTER

G08B 25/00 (2006.01)
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)
G08, G07C

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)

INVENES,EPODOC,WPI, INTERNET

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	C. Pinart, J. C. Calvo, L. Nicholson, J. A. Villaverde, "ECall-compliant early crash notification service for portable and nomadic devices", in Proc. IEEE VTC2009-Spring. Barcelona (Spain), April 26-29, 2009. the whole document.	1-15
A	GB 2308520 A (LEAD ELECTRONIC CO LTD) 25.06.1997, figures 2	1-9

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance.
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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Date of the actual completion of the international search	Date of mailing of the international search report
23 July 2010 (23.07.2010)	**(27/07/2010)**
Name and mailing address of the ISA/ O.E.P.M. Paseo de la Castellana, 75 28071 Madrid, España. Facsimile No. 34 91 3495304	Authorized officer J. Santaella Vallejo Telephone No. +34 91 349 32 81

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
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Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
GB 2308520 AB	25.06.1997	US 5664012 A	02.09.1997 02.09.1997 02.09.1997

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REFERENCES CITED IN THE DESCRIPTION

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