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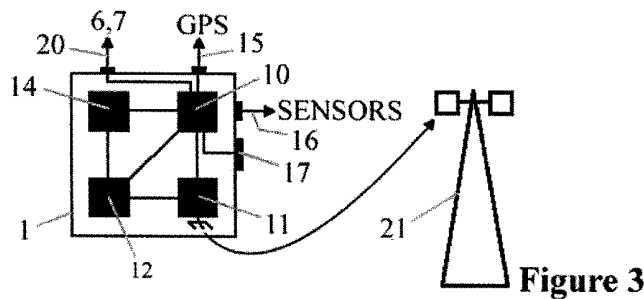
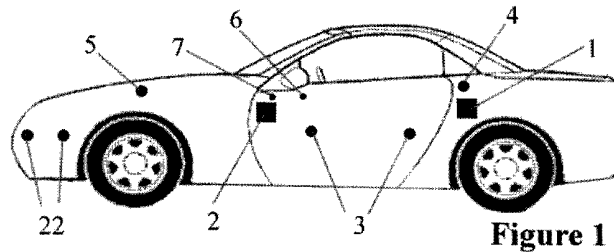
(52) UK CL (Edition W ):  
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(56) Documents Cited:  
**GB 2292497 A** **EP 0809117 A2**  
**EP 0523897 A1** **WO 2000/037960 A2**  
**WO 1999/031575 A1** **US 5548822 A**  
**US 5515043 A** **US 5389934 A**  
**US 5311197 A**

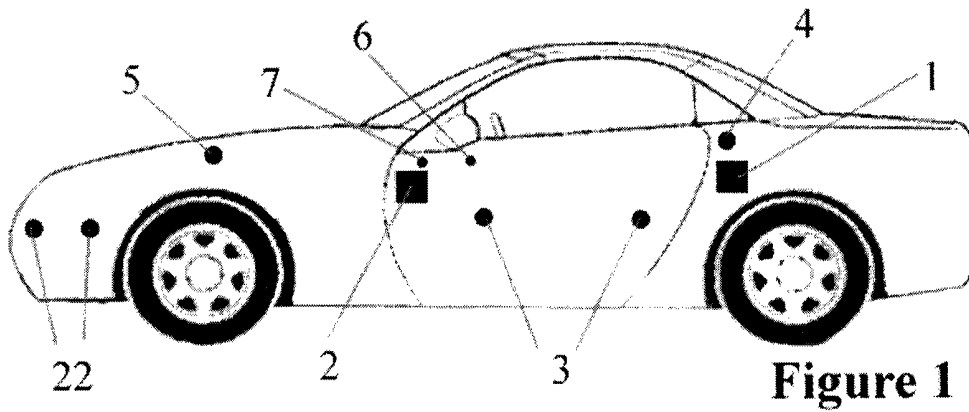
(58) Field of Search:  
UK CL (Edition V ) **G4N, H4D**  
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Other: **ONLINE: EPODOC, WPI, PAJ**

(54) Abstract Title: **Vehicle emergency transmitter**

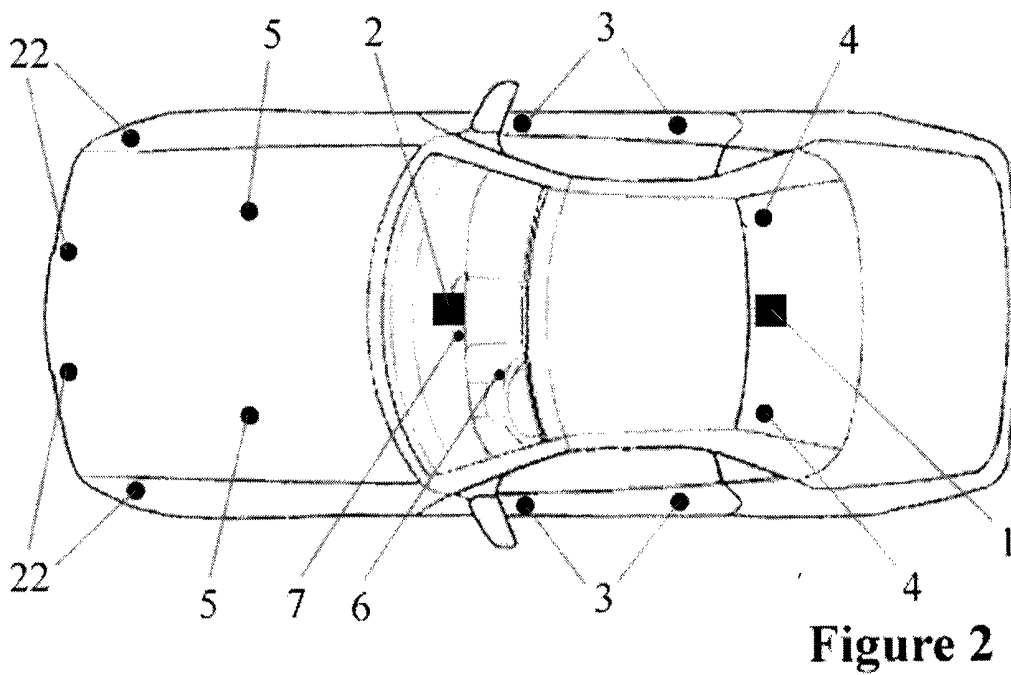
(57) A vehicle emergency transmitter device transmits automatically information about a vehicle, e.g. geographical position, in the event of an emergency or accident. The device has sensors for detecting emergency conditions (impact sensors 3, 4, 22, temperature and smoke sensors 5, and tilt device 17) and a GPS car navigation system 2. The device also has a central control unit 1 including signal processor 10, transceiver 11, memory 14 and power supply 12. If a sensor detects an emergency, control unit 1 activates transceiver 11 which transmits an emergency message, containing the latest geographical position of the vehicle, over a wireless cellular communications network 21 to the emergency services. Additionally, any other vehicles in the vicinity of the emergency fitted with a similar device will also receive this message via a beacon radio signal.



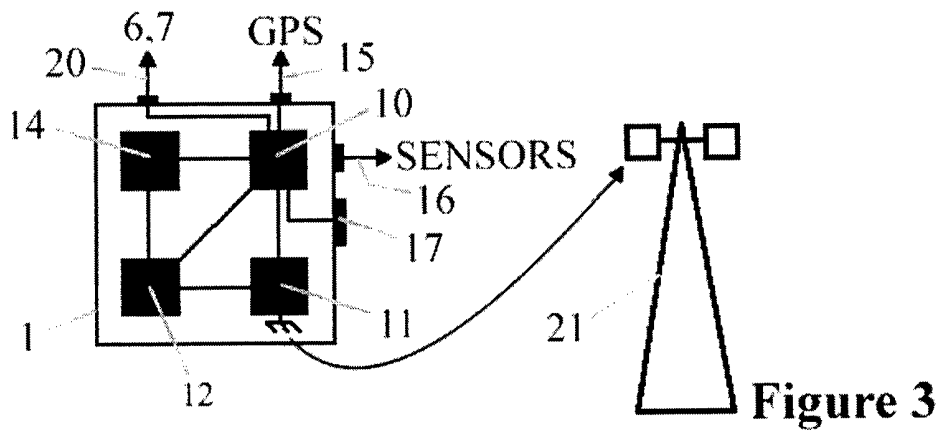
**GB 2 397 930 A**



**Figure 1**



**Figure 2**



**Figure 3**

## VEHICLE EMERGENCY TRANSMITTER DEVICE

The invention relates to a vehicle emergency transmitting device that when activated automatically transmits information about a vehicle in an emergency.

If a vehicle is involved in an emergency the emergency services and other road users in the vicinity are not automatically notified about the incident.

An object of this invention is to reduce the time taken for emergency services to reach the scene of an emergency and provide the emergency services with information to deal with any hazards present at the emergency scene.

An object of this invention is to inform emergency services and other road users in the vicinity of the emergency.

Accordingly this invention is to automatically transmit the location and other relevant information of a vehicle involved in an emergency.

Preferably the transmission should be to an emergency services control centre via a communications network, for example a cellular wireless telecommunications network and to any vehicles in the vicinity via a beacon radio signal.

Preferably the device should utilise GPS car navigation technology. The relevant information about the location of the vehicle should be obtained from a GPS system and stored within the device. The geographical location of the vehicle should be constantly updated and stored on the device.

Preferably the device when installed in a first vehicle can also receive information about an emergency involving a second vehicle and relay it to the first vehicle's GPS car navigation system for display.

Preferably, extra information stored on the device could describe any type of hazardous goods carried, the type of emergency service vehicle and warnings (i.e. road closed).

Preferably the automatic activation should only be enabled when the vehicle's ignition is turned on. Preferably the device should incorporate at least one of the following types of sensors; front impact sensors, rear impact sensors and side triggering mechanical sensors for automatic activation in the event of an accident. Preferably it should also incorporate at least one of the following sensors; sensors to detect an engine fire, the activation of an airbag of the vehicle and the overturning of the vehicle.

A preferred extra function is the generation of a warning signal audible or visible within the vehicle, to indicate that the device has been activated. An option to cancel the automatic transmission by the device, for example by pressing a cancel button can then be provided in the case of accidental activation of the device. The warning signal may operate with a short count down before the automatic transmission begins.

A preferred extra function is the activation of the device by a button/switch within the vehicle for emergencies such as a car jacking. The design of this function should lend itself to prevent accidental activation.

A preferred extra function is that the device incorporates its own rechargeable power supply that may be charged by the vehicle's main battery. This is to enable transmission by the device even if the connection to the vehicle's main battery has been severed in an accident.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawing in which:-

Figure 1 shows a vehicle in side elevation, fitted with a vehicle emergency transmitting device according to the present invention;

Figure 2 shows the vehicle of Figure 1 in top elevation; and

Figure 3 shows a central control unit of the device fitted to the vehicles of Figures 1 and 2.

The vehicle emergency transmitting device according to the present invention, as shown in Figures 1 and 2 includes a central control unit (CCU) 1, which itself includes a signal processor 10, a transceiver 11 (preferably a radio frequency transceiver), a memory 14 and a power supply 12. It is located in an area of the vehicle least likely to sustain damage in a collision. It is arranged to constantly receive, via an input 15, and store in the memory 14 the current geographical position of the vehicle from an on board GPS car navigation system 2 fitted to the vehicle. The CCU may also store information in the memory 14 about any type of hazardous goods the vehicle is carrying.

The vehicle is fitted with side impact sensors 3 which can detect a side impact to the vehicle above a threshold force. When the sensors detect a side impact above the threshold force, i.e. if the vehicle is involved in a side impact collision of sufficient severity, then the side impact sensors 3 relay this to the CCU 1, via an input 16. Similarly, rear impact sensors 4 will relay the event of a collision of sufficient severity to the rear of the vehicle to the CCU 1, via input 16 and front impact sensors 22 will relay the event of a collision of sufficient severity to the front of the vehicle to the CCU 1, via input 16. Also, temperature and smoke sensors 5 are installed adjacent the car engine to detect the presence of extreme temperature or smoke and if such high temperatures or smoke are detected the sensors 5 will relay this information to the CCU 1, via input 16. In response to such inputs from the sensors 3, 4, 5 the signal processor 10 automatically activates the transceiver 11.

The CCU could also be fitted with a tilt device 17 to detect transfer of motion of the vehicle through 80 degrees to the vertical. This tilt device 17 would relay to the signal processor 10 if this motion of the vehicle is detected so that the signal processor 10 would automatically activate the transceiver 11 if the vehicle passed through this angle.

A button or switch 6 for manual activation is located near the steering column or on the steering wheel to relay a message to the signal processor 10, via input 20 to activate the transceiver 11. A user may wish to do this, for example, if the vehicle is being carjacked.

A button or switch 7 for ending the transmission or cancelling the transmission in the case of accidental activation, may be located near the centre of the dashboard to relay a message to the CCU 1, via input 20, to cease transmission or prevent the CCU 1 from activating transmission.

When the CCU 1 activates its transceiver 11, a radio frequency signal carrying an emergency message is transmitted by the transceiver, for example, over a local wireless cellular communications network 21 to a local emergency control centre. The emergency message includes information giving at least an indication that an emergency situation has occurred and the latest geographical position of the vehicle stored on the memory 14 of the device. As described above, other relevant information may be included in the message. The transceiver also transmits the same information via a beacon radio signal.

On receiving the message the control centre can dispatch emergency service vehicles to the scene of the emergency.

Any vehicles in the vicinity of the emergency, which are also fitted with the device, will also receive this message via the beacon radio transmission. The message will be displayed on the onboard GPS car navigation system of the vehicles in the vicinity. Where there is an emergency services vehicle fitted with the device located in the vicinity, the emergency services vehicles can then automatically deploy to the scene of the emergency. The message can be used by other users in the vicinity to avoid the emergency.

Emergency service vehicles fitted with the device can also transmit their positions via the beacon radio signal when deployed to the scene of the accident. The device fitted to other vehicles in the vicinity will receive this information. The position, distance and direction of travel of the emergency service vehicles can then be relayed to and displayed on the vehicles' GPS car navigation system. This will enable the road users in the vicinity to clear the route to the scene of the accident for the emergency service vehicles.

It should be noted that the positions of the sensors are not precisely shown on the drawing. Existing sensors already located on a vehicle for the deployment of airbags should be used where ever possible.

## CLAIMS

1. A vehicle emergency transmitting device 1 suitable for mounting to a vehicle for automatically transmitting a message about the vehicle in an emergency.
2. A device as claimed in claim 1 wherein the message includes the geographical location of the vehicle.
3. A device as claimed in claim 1 or claim 2 wherein the message includes descriptions of any type of hazardous goods carried by the vehicle or where the vehicle is an emergency service vehicle, a description of the type of emergency service vehicle.
4. A device as claimed in any one of the preceding claims that includes a signal processor 10 for processing information carried in the message, a transceiver 11 for transmitting and/or receiving a message and external sensors 3, 4, 5, 17, 22 for detecting an emergency.
5. A device as claimed in any one of the preceding claims that utilises GPS car navigation technology.
6. A device as claimed in claim 4 or in claim 5 when dependent on claim 4 wherein the vehicle is fitted with a GPS car navigation system 2 and the transceiver 11 can receive a message from a second vehicle and the device can relay information carried in the message to the GPS car navigation system 2 for display.
7. A device as claimed in any one of the preceding claims including a memory 14 for storing information.
8. A device as claimed in any one of the preceding claims wherein the message is transmitted to an emergency services control centre via a telecommunications network 21.
9. A device as claimed in claim 8 wherein the telecommunications network is a wireless cellular telecommunications system 21.
10. A device as claimed any one of the preceding claims wherein the message is transmitted via a beacon radio signal.
11. A device as claimed in any one of the preceding claims that cannot be automatically activated if the ignition is turned off.
12. A device as claimed in any one of the preceding claims that is activated by crash sensors 3, 4, 22 mounted on the vehicle that detect an impact to the vehicle.
13. A device as claimed in any one of the preceding claims that is activated by sensors 5, 17 mounted on the vehicle that detect an engine fire or the overturning of the vehicle.
14. A device as claimed in any one of the preceding claims that incorporates a short delay on activation before transmission starts.

15. A device as claimed in any one of the preceding claims that has a cancel button or switch 7 to end the transmission or cancel the automatic transmission in the case of accidental activation.
16. A device as claimed in any one of the preceding claims that can be activated by a button or switch 6 within the vehicle.
17. A device according to any one of the preceding claims that incorporates its own rechargeable power supply 12 that is charged from the vehicle's main battery.
18. A vehicle emergency transmitting device substantially as hereinbefore described with reference to any one of the accompanying drawings.



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Application No: GB 0302082.3

Examiner: Dr Stephen Richardson

Claims searched: All

Date of search: 13 May 2003

### Patents Act 1977 : Search Report under Section 17

#### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X, Y	X: 1-5, 7-12, 14, 15 Y: 6	GB 2292497 A	(WORLDWIDE) see Figure 1 and page 5, line 5 to page 10, line 21.
X, Y	X: 1-5, 7-9, 11-13, 15, 17 Y: 6	WO 99/31575 A1	(KHAWAM) see Figures 1 & 2, page 4, line 19 to page 6, line 29 and page 9, lines 3-10.
X, Y	X: 1-5, 7-9, 12, 16, 17 Y: 6	US 5515043 A	(BERARD et al.) see Figures 1-3 and col. 3, line 33 to col. 5, line 49.
X, Y	X: 1-5, 7-10, 12, 16 Y: 6	WO 00/37960 A2	(NAVOX) see Figures 2 & 4, page 5, line 10 to page 9, line 5 and page 11, line 34 to page 14, line 25.
X, Y	X: 1-5, 7-10, 12, 13 Y: 6	US 5311197 A	(SORDEN et al.) see Figures 1 & 2 and col. 6, line 50 to col. 9, line 42.
X, Y	X: 1-5, 7-9, 12, 13, 16 Y: 6	EP 0809117 A2	(SUN) see Figure 1 and col. 4, line 35 to col. 8, line 37.
Y	6	EP 0523897 A1	(PIONEER) see whole document.
Y	6	US 5389934 A	(KASS) see whole document.
Y	6	US 5548822 A	(YOGO) see whole document.

#### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.





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**Application No:** GB 0302082.3

**Examiner:** Dr Stephen Richardson

**Claims searched:** All

**Date of search:** 13 May 2003

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>V</sup>:

G4N, H4D

Worldwide search of patent documents classified in the following areas of the IPC<sup>7</sup> :

B60R, G01S

The following online and other databases have been used in the preparation of this search report :

ONLINE: EPODOC, WPI, JAPIO