

(21) Application No: **0323880.5**
(22) Date of Filing: **21.11.2000**
Date Lodged: **11.10.2003**
(62) Divided from Application No **0028302.8** under Section 15(4) of the Patents Act 1977

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(51) INT CL⁷:
H04M 11/04

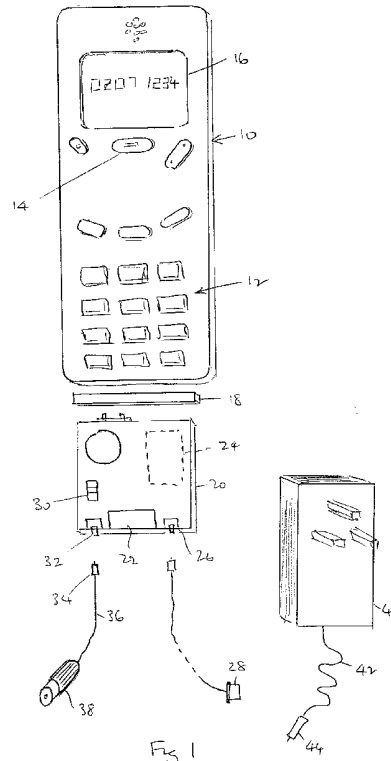
(52) UK CL (Edition W):
G4N NDAX N2A1 N2V1 N6V1
U1S S2215

(56) Documents Cited:
GB 2362545 A **GB 2334412 A**
GB 2220778 A **JP 110113069 A**
US 5767788 A **US 5555286 A**

(58) Field of Search:
UK CL (Edition W) **G4N, H4L**
INT CL⁷ **G08B, H04M**
Other: **Online: EPODOC, JAPIO, WPI**

(54) Abstract Title: **Alarm device with portable telephone and panic button**

(57) A mobile phone 10 is coupled by an edge connector 18 to a detector unit 20 which may include a passive infra-red sensor 22 and a remote PIR sensor 28. The combined phone and detector can be mounted inside a vehicle to respond to an intruder. The phone has a panic button (not shown) actuation of which automatically calls a preset number and transmits an alarm message. The device may be worn or carried by a user and may be associated with a GPS receiver.



GB 2393306 A continuation

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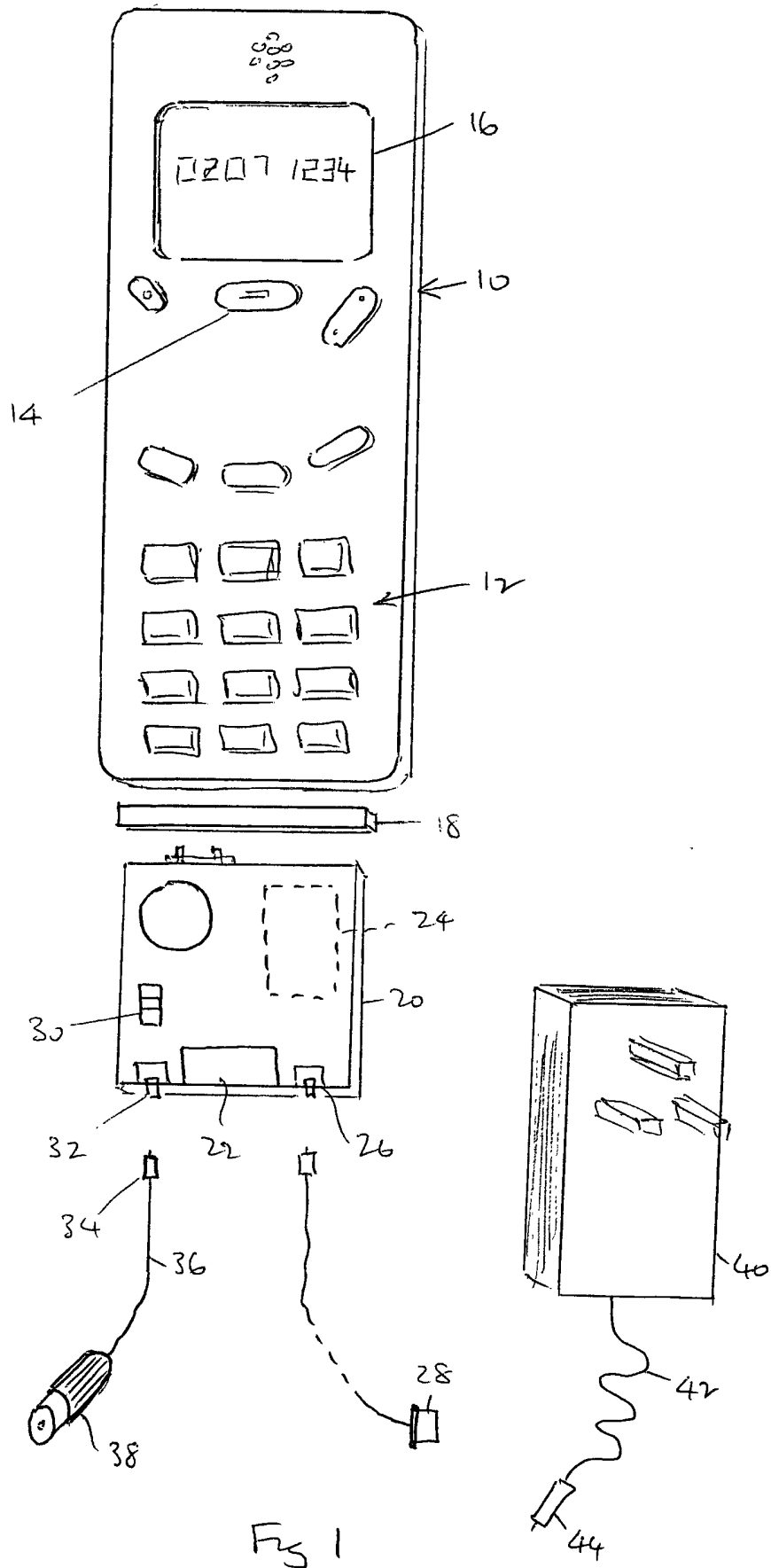


Fig 1

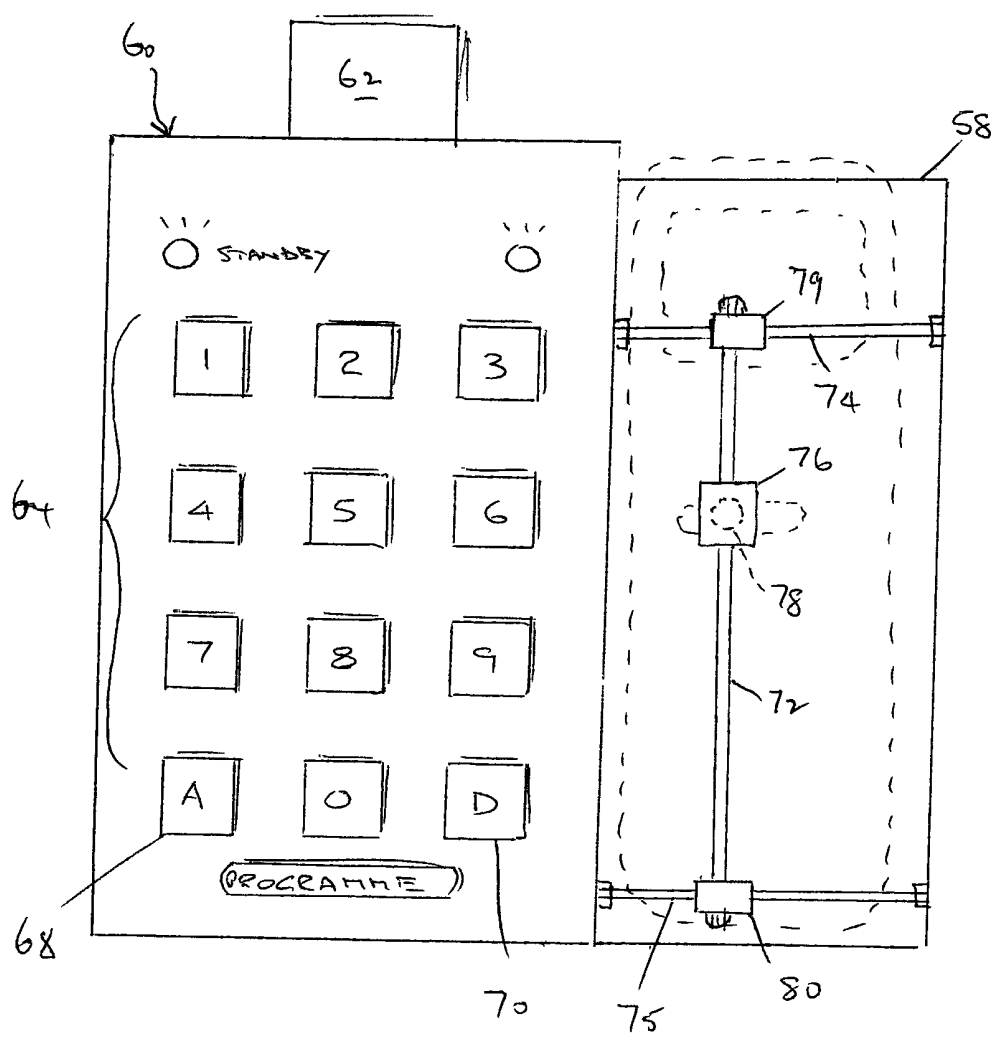


Fig 3

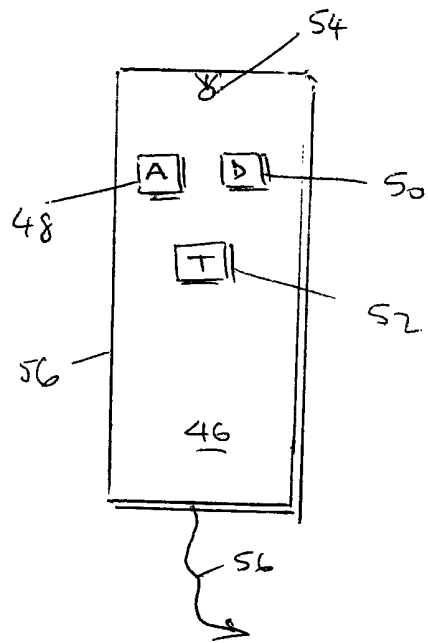


Fig 2

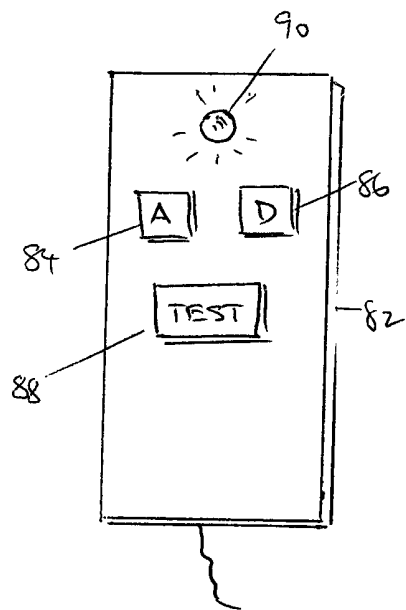


Fig 4

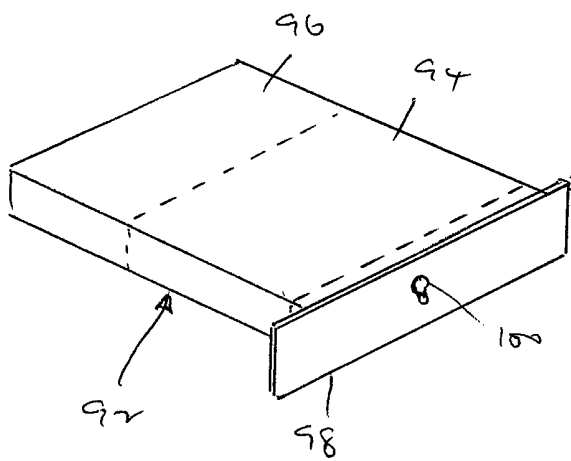


Fig 5A

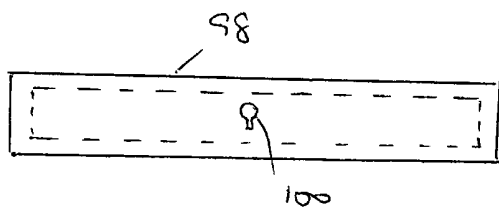


Fig 5B

Title: Security System

Field of the Invention

This invention concerns the remote signalling of a monitored condition, to alert the recipient of the information that the particular change or event has occurred.

Background to the invention

It is known to provide an auto dialling facility to alert a monitoring organisation or the local police if an intruder alarm system has been triggered by unauthorised entry into a building, or room in a building.

It is an object of the present invention to extend this principle to other applications, and to provide a simple and inexpensive apparatus for warning a person or organisation that the state of a monitored condition has altered.

Systems satisfying this objective may be adapted to alert the person/organisation at the time the monitored condition changes, or when addressed at a later point in time, that the monitored condition has changed.

Summary of the Invention

According to the present invention there is provided a portable telecommunication apparatus and a panic button switch operable by a person carrying the portable apparatus, wherein the telecommunication apparatus is adapted to respond to operation of the switch to dial a predetermined number and transmit a predetermined message to raise the alarm

by virtue of the message delivered by the telecommunication apparatus to the called telephone.

The apparatus may be worn by the user.

The apparatus may be fitted in a handbag or briefcase.

The apparatus may be fitted in a belt, watch, bracelet or brooch.

The apparatus may transmit a pre-recorded message and a signal storage device may be provided for storing information which when read out will produce a voice recording of a pre-recorded message stored therein, for transmitting to the called telephone.

The apparatus may be integrated in, or form part of, or be combined with a GPS receiver capable of determining from satellite radio beacons the latitude and longitude of the position of the receiver, and means may be provided for relaying the latitude and longitude co-ordinates via the telephone link established by the telecommunication apparatus, so that an accurate position fix is obtainable when a call is established via the network to the called 'phone upon being prompted to do so by the operation of the panic button switch, or after being called up via the network to establish a call to the telecommunication apparatus.

The apparatus may comprise a mobile 'phone which is activated so as to make a first call to raise an alarm in response to a signal from the panic button switch, and the activating arrangement may be adapted to terminate the call after the called 'phone has answered.

The mobile 'phone may be programmed so as not to ring on receipt of an incoming call, so as not to alert anyone to its presence.

The telecommunication apparatus responds to the change in the circuit or generated signal to establish a link to the cellular network and establish a call to at least one telephone customer and either transmit at least one alarm message when the dialled number answers,

or store in a permanent or semi-permanent manner information relating to the time when a change in the monitored condition has occurred, or merely that the change has occurred, whereby if the number of the telecommunication apparatus is dialled and a link is established from another telephone via the cellular network, the stored information can be accessed by the calling telephone.

Access to the stored information is preferably only possible after a code or password has been entered by the calling subscriber.

The telecommunication apparatus may be a conventional portable telephone with its own self-contained power supply, with an electrical link to circuit means which is thereby adapted to respond to an incoming call received by the telephone, or for establishing a call from the telephone to a selected telephone number determined by the circuit means.

Where it is only desired that an outgoing call is to be established as soon as a change in the monitored condition is detected, and a conventional portable telephone is to be employed as the telecommunications apparatus for establishing the call, the electrical circuit means may include electromagnetically operated mechanical means for operating the keypad of the 'phone, to dial-up the wanted number.

In a particularly simple arrangement, the portable telephone may be primed by dialling the number which is to be called, leaving only the transmit key needing to be depressed to establish the call to the network (and thence to the called number), and the mechanical means needs only to be a single plunger or lever mechanism adapted to depress the transmit key when activated.

In such an arrangement as aforesaid, the activation of the lever may be by way of an actuator such as an electromagnet or electric motor, which may be powered by a separate power supply from that of the telephone, with a control circuit for converting a change of circuit condition or signal instigated by the detector into an electric current suitable for operating the actuator, or a relay device which in turn controls operating current to the

actuator, or a solid state switching device, adapted to control the flow of operating current to the actuator.

In one embodiment the actuator is located in a housing which is adapted to receive the telephone, and the detector may be incorporated into the housing, or mounted adjacent the housing, or may be adapted to be mounted remote from the housing and be connected thereto by a cable or by a wireless link, in which event a simple one-way radio link is required to be built in, or adapted to respond to, the signal generated by, or circuit change of state brought about by, the detector responding to a monitored condition change.

Where a supplementary power supply is available, such as a starter battery in a motor vehicle, power for operating the detector, any wireless link if fitted, actuator and even the portable telephone, may be derived from the supplementary power supply. However, where a covert monitoring device is desired, which cannot be rendered inoperable simply by interfering with connections to such a supplementary power supply such as a vehicle battery, the detector, actuator and telephone, preferably operate from one or more independent separate power supplies, although these may be of a rechargeable variety, in which event a connection may be made from a charging source (such as from a vehicle alternator charging circuit) to keep the independent supply/supplies in a fully charged condition.

The invention thus lies in a portable device such as a belt, handbag, briefcase, watch, bracelet or brooch, when fitted with telecommunication apparatus as aforesaid, together with a detector in the form of a panic button switch operable by the person carrying or wearing the portable device, in the event of an attack or threatened attack or if they merely feel unwell, wherein the telecommunication apparatus in that event is adapted to dial a predetermined number and transmit a predetermined (perhaps pre-recorded) message to raise the alarm by virtue of the message delivered by the telecommunication apparatus to the called telephone.

Where a pre-recorded message is required to be transmitted by the calling telecommunication apparatus a signal storage device is provided, typically a digital store, for storing digital information which when read out and suitably assembled will produce a synthesised voice recording of a pre-recorded message and to this end, reference to telecommunication apparatus herein, is intended to mean such apparatus in combination with digital storage means containing digital data for generating a synthesised voice message for transmitting by the telecommunication apparatus once the call is established.

The telecommunication apparatus may have integrated therein or form part of, or be combined with a GPS receiver capable of determining from satellite radio beacons the latitude and longitude of the receiver, and means is provided for relaying the latitude and longitude co-ordinates via the mobile telephone link, so that an accurate position fix is obtainable all the time the mobile phone call remains established to the network.

This feature of the invention enables the police or the owner to trace the whereabouts of a vehicle or any other item (e.g. a computer) which has been stolen, and moved from where it was left.

Where the cellular telephone network can, in known manner be employed to locate the geographical position of any 'phone which has called the network and established a call – or can be called by the network so as to establish a call, a method of locating the whereabouts of a vehicle or other article which has been fitted with a device as aforesaid, involves establishing a call between the mobile 'phone telecommunication apparatus in the vehicle (or article) and employing the known technique for identifying the position of the 'phone as by using signals from other cells in the network.

Where the telecommunication apparatus is a mobile phone and the latter is activated so as to make a first call to raise an alarm, the activating arrangement is preferably adapted to terminate the call after the called 'phone has answered, to enable the calling 'phone to be recalled either by the first called phone, or by the network, or by the police, for the purpose of either interrogating the vehicle or other enclosure (e.g. building, room) where

the mobile 'phone is located, and audibly monitoring any sound such as a conversation that is occurring therein, and/or for determining its position relative to the transmitters in the network.

Where the facility exists to call up the mobile 'phone which is to instigate the alarm call, that 'phone is preferably programmed so as not to ring on receipt of an incoming call, so as not to alert anyone to its presence in the room or vehicle or other article it is safeguarding.

The invention will now be described by way of example with reference to the accompanying drawings, in which:

Fig 1 shows how a portable telephone can be adapted to constitute a remote monitoring device, in accordance with the invention,

Fig 2 shows how such a device can be controlled from a remote location,

Fig 3 shows a unit which can be adapted to receive and operate any one of a number of different mobile 'phones for the purpose of the invention,

Fig 4 shows a remote control device for the unit of Fig 3, and

Figs 5A and 5B show a modified modular unit adapted to fit into a portable/laptop computer, in place of a modular unit which could normally occupy that position in the computer.

In Fig 1 a standard mobile 'phone 10 includes a keypad 12 for entry of numerals 0 - 9 to make up the number of a subscriber to be called and a transmit button 14 which is depressed after the subscriber number has been entered and the display 16 has been checked, to establish a radio link with the cellular net work within which the 'phone operates and thereby make a call to the number which has been entered.

By entering a number it is only necessary thereafter to press button 14 to establish the call, and in general, providing power is left ON, the call can be established at any time thereafter (many hours later if desired).

Most portable 'phones include an edge connector, usually at the base of the 'phone (not shown), to give access to the circuits within the 'phone for externally controlling the phone functions and/or programming the phone. A charging connection is also usually provided (again not shown in Fig 1). To this end an adapter 18 is provided adapted to make a multi-way connection with the edge connector and provide connection to a detector unit 20 which contains a PIR 22, and may contain a battery 24 (which may be rechargeable).

A socket 26 provides for connection to 20, via a lead 27 and plug 29, of a second PIR 28.

A switch 30 allows one or other or both PIRs to be selected and rendered active.

A socket 32 allows for connection to an external power supply such as via a plug 34, lead 36 and connector 39, to a vehicle cigar lighter socket (not shown).

A separate charger unit adapted to be connected to a domestic electricity supply main as via a 13A plug and socket may be provided as at 40, with a lead 42 and plug 44 to connect to the socket 32 in place of plug 34.

Remote control of the unit 20 and 'phone 10 is achieved by a hand held device 46 having three buttons 48, 50, 52 labelled ARM, DISARM and TEST respectively. An LED 54 lights up to indicate the unit 46 is working correctly.

Connection between 46 and 20 may be by cable such as 56 or a wireless link, in which latter case both 46 and 20 need to have wireless transceivers incorporated with appropriate antennae, and 46 would need a power supply such as a battery.

The adapter 18 may to advantage be one of a number of different devices, each adapted to connect to the unit 20, and to one of a range of 'phones – each of the other adapters being adapted to connect to another of the phones in the range.

The combination of 'phone 10 and unit 20 is such that if a PIR such as 22 detects movement, then an electrical signal is supplied via 18 and the edge connector to the 'phone to cause the 'phone to dial a predetermined number (or merely call a number already keyed in and held in the display memory awaiting the transmit instruction). This obviates the need to mechanically depress the transmit button 14 on the 'phone.

The combination can be mounted within an enclosed space such as a vehicle interior, and after the 'phone has been programmed with the number to call, the space can be secured and left. Any intrusion will cause the phone to establish the call to the dialled number (or predetermined number stored in 20). This of course requires the 'phone 10 and unit 20 to be visible.

Alternatively the 'phone 10 and unit 20 may be stored out of sight (e.g. locked in a glove compartment in a car) and a remote PIR 28 discreetly connected via a thin cable to the socket 26, and the remote PIR can be camouflaged or otherwise hidden as much as possible, so as not to be evident to a casual observer. In this event the unit 20 need not actually include a PIR in the simplest case.

Where the 'phone allows a message to be stored for transmission when a number is called, this internal facility may be employed to transmit an "alarm" message.

Alternatively unit 20 may include a further memory (not shown) for storing a pre-recorded message either via a separate microphone or via the 'phone microphone, and this message is transmitted electrically to the 'phone to be transmitted when the call is established.

In one embodiment the 'phone 10 is arranged to dial the number of a mobile 'phone which is carried by the owner of or person responsible for an article such as a vehicle, and in the

simplest case, if that mobile 'phone rings, and the number displayed on the called 'phone is that of the mobile in the vehicle – the recipient will know that the vehicle has been tampered with, or unauthorised entry gained to the vehicle. After terminating the incoming call in the usual way on the receiving 'phone, the recipient can investigate and/or make a 999 call to the police, and give details of the article such as registration number, colour and type of vehicle and place where it was parked, giving the police a good chance of apprehending anyone who is interfering with or has gained access to and is driving away such a vehicle.

Where it is possible for the cellular 'phone network to identify the position of a calling 'phone, the owner and/or police can obtain further assistance by asking the network company to trace the position of the mobile 'phone in the vehicle. Alternatively or in addition a GPS transceiver (not shown) may be incorporated into unit 20 to allow the position of unit 20 to be identified and transmitted by the mobile phone associated with unit 20.

Fig 3 illustrates an alternative arrangement in which a pocket 58 for a mobile 'phone (not shown) is provided to the side of a sensor unit 60. A detector 62 such as a PIR is mounted at the top of the unit 60 and a keypad 64 and associated electronic circuits (not shown) and battery (not shown), allow a code to be entered and to arm and disarm the device, by first entering (say) a four digit number (which has previously been selected and entered by depressing a PROGRAMME button 66), and thereafter depressing either the ARM button 68 or the DISARM button 70.

To the side of the unit 60 is an adjustable rail assembly 72, 74, 75 with a solenoid actuator mounted on a carriage 76 which is slideable up and down 72 to adjust the height of the solenoid plunger 78 (shown dotted). Lateral adjustment of its position is achieved by sliding the rail 72 relative to 74 and 75 to which end 72 is carried at opposite ends in trunnions 79, 80 which slide along the rails 74 and 75 respectively. By appropriate movement along 72 and relative to 74, 75 so solenoid plunger 78 can be positioned opposite the transmit/establish call button of any mobile 'phone located in the pocket 58.

Although not shown further adjustable devices may be provided to grip the sides and/or back and/or front and/or top of a mobile 'phone in the pocket 58, to securely position the 'phone in the pocket.

As with the arrangement of Fig 1, a remote control device 82 may be provided connected to the unit 60 by a cable or by a wireless link. The unit 82 has an ARM button 84, a DISDARM button 86, a TEST button 88 and a test LED 90.

As shown in Figs 5A and 5B in the case of a portable or laptop computer which has one or more modular units which can be removed from the computer housing (e.g. a modem module containing a PCMCIA card). The latter may be replaced by a similarly sized module 92 adapted to fit in the same way into the bay normally occupied by the PCMCIA card module, and a GSM 'phone device 94 and associated battery 96 are mounted within the modular body 92. A front panel 98 (see Fig 5B) includes a key hole 100 leading to an internal lock which when operated prevents the body 92 from being removed from the computer housing.

The front panel 98 may be attached to the body 92 via a weak-link, so that if force is applied, the weak link breaks and the front panel comes away leaving the body embedded in the computer housing, and difficult to remove

A link (not shown) from the computer motherboard to the GSM 'phone device 94, is adapted to convey signals which will cause the latter to establish a call to a network if for example the computer is turned ON or OFF, or if in a standby mode is reactivated, without first a secret code or password being entered via the computer keyboard.

A GPS location determining device (not shown) may be combined with the GSM 'phone device to provide latitude and longitude position data for transmission via the GSM 'phone to assist in the identification of the location of the computer if stolen.

Preferably the GSM 'phone device is silenced so as not to ring if called by the network.

As shown in Figs 5A and 5B the unit consists of a power pack and GSM Cell-phone construction of such a nature that when fitted it locks itself securely to the computer and can only be removed with a suitable key (possibly a self contained chip key as used with modern motor vehicles). If the unit is forcibly removed, the front section 98 breaks away leaving the main unit 92 in place and very difficult to remove without dismantling the computer.

The function of the device is to alert the owner of the computer of unauthorised use and to telephone a predetermined number of the owner's choice as soon as the computer is put to any use, without a password having been entered (or an incorrect password is entered), and being GSM its position could be located by the network.

The device 94 may be programmable with software which enables the function of the unit to be overridden on entering the usual password for the computer, but if the password is not entered within a specified time (or an incorrect password is entered) the GSM 'phone will be activated. In one arrangement, the unit can be removed only after entering an appropriate password, for example to enable the normal module to be inserted in its place. In this event, if there is an attempt to remove the module 92 without having entered the password, the GSM 'phone is activated.

The invention could be incorporated into a computer by means of any other port or port replicator, internally or externally at the manufacturer's discretion, and preferably the GSM device is included on the motherboard at the time of production.

In general the present invention provides electronic telecommunication apparatus for transmitting to and receiving signals from a cellular telephone network which is incorporated into a detector to form a combined detector-transceiver, for placement in a position in which the detector can respond to a change in a defined condition and produce a change in an electrical circuit, or generate an electrical signal.

Likewise the invention a detector adapted to monitor a defined condition and produce a change in an electrical circuit, or generate an electrical signal has incorporated therein electronic telecommunication apparatus for transmitting to and receiving signals from a cellular telephone network.

The invention also lies in a portable device such as a belt, handbag, briefcase, watch, bracelet or brooch, when fitted with telecommunication apparatus as aforesaid, together with a detector in the form of a panic button switch operable by the person carrying or wearing the portable device, in the event of an attack or threatened attack or if they merely feel unwell, wherein the telecommunication apparatus in that event is adapted to dial a predetermined number and transmit a predetermined (perhaps pre-recorded) message to raise the alarm by virtue of the message delivered by the telecommunication apparatus to the called telephone.

In either case the telecommunication apparatus can respond to the change in the circuit or generated signal to establish a link to the cellular network and establish a call to at least one telephone customer and either transmit at least one alarm message when the dialled number answers, or store in a permanent or semi-permanent manner information relating to the time when a change in the monitored condition has occurred, or merely that the change has occurred, whereby if the number of the telecommunication apparatus is dialled and a link is established from another telephone via the cellular network, the stored information can be accessed by the calling telephone.

Claims

1. A portable telecommunication apparatus and a panic button switch operable by a person carrying the portable apparatus, wherein the telecommunication apparatus is adapted to respond to operation of the switch to dial a predetermined number and transmit a predetermined message to raise the alarm by virtue of the message delivered by the telecommunication apparatus to the called telephone.
2. Apparatus as claimed in claim 1 wherein the apparatus is adapted to be worn by the user.
3. Apparatus as claimed in claim 1 wherein the apparatus is fitted in a handbag or briefcase.
4. Apparatus as claimed in claim 2 wherein the apparatus is fitted in a belt, watch, bracelet or brooch.
5. Apparatus as claimed in any of the preceding claims wherein a pre-recorded message is to be transmitted by telecommunication apparatus and a signal storage device is provided for storing information which when read out will produce a voice recording of a pre-recorded message stored therein, for transmitting to the called telephone.
6. Apparatus as claimed in any of the preceding claims having integrated therein, or forming part of, or combined with a GPS receiver capable of determining from satellite radio beacons the latitude and longitude of the position of the receiver, and means is provided for relaying the latitude and longitude co-ordinates via the telephone link established by the telecommunication apparatus, so that an accurate position fix is obtainable when a call is established via the network to the called 'phone upon being

prompted to do so by the operation of the panic button switch, or after being called up via the network to establish a call to the telecommunication apparatus.

7. Apparatus as claimed in any of the preceding claims, comprising a mobile 'phone which is activated so as to make a first call to raise an alarm in response to a signal from the panic button switch, and the activating arrangement is adapted to terminate the call after the called 'phone has answered.

8. Apparatus as claimed in claim 7 wherein the mobile 'phone is programmed so as not to ring on receipt of an incoming call, so as not to alert anyone to its presence.

9. A portable device when fitted with apparatus as claimed in any of the preceding claims.



INVESTOR IN PEOPLE

Application No: GB 0323880.5
Claims searched: 1-9

Examiner: David Brunt
Date of search: 15 January 2004

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 | 1,5,6 | GB 2334412 A (NOKIA) see p.1 ll.14-20, p.3 ll.5-9, p.6 ll.8-10 |
| X | 1 | US 5767788 (NESS) see col.5 ll.19-21 |
| A | - | GB 2362545 A (ROKE MANOR) |
| A | - | GB 2220778 A (AUTOMATED SECURITY) |
| A | - | JP 11113069 A (KANDA TSUSHIN) |
| A | - | US 5555286 (TENDLER) |

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 |

Field of Search:

Search of GB, EP, WO, & US patent documents classified in the following areas of the UKC^w:

G4N, H4L

Worldwide search of patent documents classified in the following areas of the IPC⁷ :

G08B, H04M

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

Online: EPODOC, JAPIO, WPI