

HANDHELD PERSONAL ALARM DEVICE

Field of the Invention

[0001] The present invention relates to handheld device. In particular, the invention relates to a personal alarm device embedded in a mobile communication device.

Background

[0002] Pocket size personal alarm devices are often useful when the user encounters a distress situation. Some of these alarm devices emits loud ear-piercing noise as a first level defense. Such alarm device requires no weapons, training or permits to carry. Such device, when activated, may frighten away the potential assailant, and also draw attention for help. Such devices usually come in a small keychain size with a button to activate its alarm.

[0003] However, as such devices are extra items to carry along with the users and they are seldom used; therefore, users often left them at home, or left them in places where it is difficult to access during distress situation. For example, the device may be hidden inside a female handbag stacked under the other personal items.

[0004] Another limitation of such devices is that its use will not be effective in a secluded area, where the alarm sound is not audible to nearby by-passers.

[0005] EP1679670 provides a handset having a pressurized can integrated therein. The handset provides a mechanical means for actuating spray. It is used as a defensive tool in an emergency situation. However, such spray is only used for short distance attack and it does not alarm the others for help.

[0006] EP1387331 provide a spray can intergraded with a transmitter device. The transmitter device sends out pre-stored message to pre-stored contacts when the

spray can is in used during emergency situation. As mentioned, this is an additional device for used only in distress situation, users often misplace as it.

[0007] US5,712,619 relates to a global positioning system enabled personal alarm integrated with a cellular phone system. When the alarm is activated, the global positioning system identifies the user's position and the cellular phone system sends the position information to a monitoring center for appropriate action. The alarm may be set to generate audible alarm.

[0008] US6,166,639 teaches a personal security system for transmitting distress information to a remote receiver when triggered. Responsive to receiving distress information, a remote receiver connected to a central office via a communication link, such as telephone line, and the personnel of the central office may provide the necessary assistance.

[0009] WO2004/104962 discloses a portable alarm device for communicating a signal indicative of a location of the user with a base station. The communication is established via a mobile phone device.

Summary

[0010] In one aspect of the present invention, there is provided a personal security system for a mobile communication device having a speaker and a messaging service, the personal security system comprises a security device controller operable to trigger an alarm that sounds an sound alarm with the speaker and sends a community message to communication devices within a perimeter based on a location of the mobile communication device and to other communication devices pre-designated with the messaging service; and configuration data repository accessible by the security device controller for defining information for activating and deactivating the personal security system.

[0011] In accordance with one embodiment, the personal security system further comprises a switch for activating the alarm, the switch may comprise a

controller operable to activate a camera of the mobile communication device, wherein, said switch is in a standby mode when the camera is being covered, and uncovering the camera thereafter triggers the switch for activating the alarm.

[0012] It is possible that the controller is adapted to turn on a flashlight of the mobile device upon activating the camera.

[0013] In accordance with an alternative embodiment, the sound alarm may have a sound pressure level in a range of 82-130dB and one of the pre-designated communication devices situated at a police command center.

[0014] It is also possible that the community message may further include the location of the mobile communication device.

[0015] In yet another embodiment, the location of the mobile communication device may be detected based on Location-Based Service. The community message may be a short messaging service (SMS).

[0016] In accordance with another aspect of the present invention, there is provided a method for generating an alarm with a mobile communication device, said method comprises activating a personal security system; and triggering the alarm. Further the alarm includes sounding a sound alarm; detecting a location of the mobile communication device; sending a community message to mobile devices within a perimeter based on the location of the mobile communication device; and sending the community message to mobile devices pre-designated in the personal security system.

[0017] In accordance with one embodiment, the method may further comprise activating a camera of the mobile communication device; covering the camera; and uncovering the camera to trigger the alarm. The method may further comprise prompting for de-activating the personal security system.

[0018] The location of the mobile communication device may be detected based on Local Based Service.

[0019] In accordance with yet another aspect, there is provided a mobile communication device comprising the aforementioned personal security system.

[0020] In accordance with yet another aspect, there is provided a switch for activating an alarm of a mobile device, said device having a camera, said switch comprising a controller operable to activate the camera, wherein, said switch is in a standby mode when the camera is being covered, and uncovering the camera thereafter triggers the switch for activating the alarm.

[0021] In accordance with one embodiment, the controller of the switch may be adapted to operable to further turn on a flashlight of the mobile device.

[0022] It is possible that the controller may prompt to deactivate the alarm before activating the alarm. When the alarm is not deactivated within a prescribed period, the alarm may be activated automatically.

[0023] In accordance with yet another aspect, there is provided a method for triggering an alarm of a mobile communication device, said device having a camera, the method comprising activating the camera; covering the camera; uncovering the camera; and triggering the alarm.

[0024] In accordance with one embodiment, the method may further comprise prompting to deactivating the alarm.

Brief Description of the Drawings

[0025] This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

[0026] FIG.1a illustrates a front view of a mobile phone device in accordance with an embodiment of the present invention;

[0027] FIG. 1b illustrates a rear view of the mobile phone device of FIG. 1a;

[0028] FIG. 1c illustrates a schematic block diagram of the mobile phone device of FIGs. 1a and 1b featuring a personal security system in accordance with another embodiment of the present invention;

[0029] FIG. 2 illustrates an overview of the personal security system of the present invention when an alarm is triggered;

[0030] FIG. 3 illustrates a flow diagram showing the operation of a personal security system in accordance with one embodiment of the present invention;

[0031] FIG. 4 exemplifies a screenshot of the mobile phone device of FIG. 1a where the personal alarm function may be turned off;

[0032] FIG. 5 illustrates a flow diagram shown the operation of a armed mode in accordance with one embodiment of the present invention; and

[0033] FIG. 6 exemplifies a screenshot of the mobile phone device of FIG. 1a where shortcuts for various important modes may be activated.

Detailed Description

[0034] In line with the above summary, the following description of a number of specific and alternative embodiments are provided to understand the inventive features of the present invention. It shall be apparent to one skilled in the art, however that this invention may be practiced without such specific details. Some of the details may not be described at length so as not to obscure the invention. For ease of reference, common reference numerals will be used throughout the figures when referring to the same or similar features common to the figures.

[0035] FIG. 1a shows a front view of a mobile phone device **100** in accordance with one embodiment of the present invention. The mobile phone device **100** comprises a speaker grill **110**, a keypad **120**, a screen **130** and an alarm switch **140**. FIG. 1b shows a rear view of the mobile phone device **100**, where a camera **150**, a flashlight **160**, and a battery compartment **170** are provided thereon. As shown in FIG. 1c, the mobile phone device **100** includes a personal security system **101** which provides an alarm when it is triggered. The personal security system **101** may be activated by several ways: (1) accessing the security system through selecting the personal security feature from a menu via the keypad **120**; (2) pressing the alarm switch **140**; or (3) turning on an "armed mode". When the user chooses to activate the personal security system **101** manually, the user selects the personal security feature from the menu on the screen **130** via the keypad **120**. Alternatively, the user may simply press the alarm switch **140** to enter the personal security system **101** directly. The alarm switch **140** is a shortcut button that allow user to skip though the phone menu and selections to allow fast access. To prevent the user pressing the alarm switch by mistake and activate the alarm unnecessarily, the user may be required to pressed and hold the alarm switch for a pre-determined length of time before the personal security system **101** can be activated.

[0036] Referring now to FIG. 1c, the personal security system **101** includes a security device controller **102**, a configuration data repository **103** and an armed mode controller **104**, which are adapted to interface with the speaker **111**, keypad **120**, the alarm switch **140**, the camera **150**, flash **160**, and a messaging features **190** of the

mobile phone device **100**. Briefly, the keypad **120** and the alarm switch **140** are used for activating and deactivating the alarm. The camera **150** and the flash **160** are associated with the armed mode that is controlled by the armed mode controller **104**. The security device controller **102** controls the operation of the Personal security system **101**. When the alarm is activated, the security device controller **102** commands the mobile phone device **100** to sound an alarm and send out distress messages for immediate help. The configuration data repository **103** defines shortcuts for the armed mode; these functions include the options for activating the personal security system **101**, various time intervals for operations of the personal security system **101**, personal identity number (PIN) for activating and/or deactivating the personal security system **101**, pre-defined messages, and etc. The configuration data repository **103** is user configurable.

[0037] The armed mode controller **104** turns on the personal security system **101** into a standby mode during a high alert situation when the armed mode is turned. It is useful when the user is in danger and do not have time/or chance to trigger the alarm and yet the alarm can be triggered automatically. The armed mode works with the camera **150**. When the mobile phone device **100** is switched to the armed mode, the user of the mobile phone device **100** is required to cover the build-in camera **150** while holding the mobile phone device **100**. As the build-in camera **150** is generally in a handheld size, it is possible that the build-in camera **150** can be covered and held with one hand by putting a finger over the build-in camera **150**. As soon as the camera **150** is uncovered, for example when the mobile phone device **100** is dropped from hand, the alarm is triggered if it is not deactivated within a prescribed period of time, which can be pre-set in the personal security system **101** and stored in the configuration data repository **103**. Detail operations of the armed mode will be described later in details.

[0038] In accordance with an alternative embodiment, the armed mode further works with the flashlight **160**. When the armed mode is turned on, the flashlight **160** is also turned on in a continuous manner, or a flashing manner. The user of the mobile phone device **100** has to cover the build-in camera **150** as described in the above embodiment. When the camera **150** is uncovered in a very dark area where the natural

light is not sufficient to activate the personal security system **101**, the light emitted by the flash light **160** aid to activate the personal security system **101**.

[0039] The armed mode controlling by the armed mode controller **104** is a switching means for activating the personal security system **101**. In accordance with an alternative embodiment of the present invention, the personal security system **101** is adapted without the armed mode controller **104**.

[0040] FIG. 2 in conjunction with FIG. 3 shows the operation of activating the personal security system **101** of the mobile phone **100** in accordance with one embodiment of the present invention. When the personal security system **101** is activated/turned on at step **310**, the personal security system **101** prompts the user to confirm whether to proceed further, i.e. to activate the alarm. This step is provided for preventing false alarm. At step **330**, if the user selects to stop the personal security system **101** or no action is taken within a predetermined amount of time, the personal security system **101** is deactivated and the mobile phone device **100** reverts to usual standby mode until the user provides a further command. If, at step **330**, the alarms are required, the user inputs a required command to trigger the alarms upon prompting. The required command may be a set of password pre-set in the mobile device **100**, or a set of combined key pressing for triggering the alarm. When the alarm is triggered, at step **340**, the mobile phone device **100** sounds a sound alarm **212** with high pitch noise. At step **350**, the personal security system **101** then sends out pre-stored Short Message Service (SMS), to other mobile devices **210** which are within a pre-defined distance from the mobile phone device **100**. At step **360**, the personal security system **101** further sends out SMS to mobile devices **220**. The mobile devices **220** are the pre-designated by the user from a contact list/phonebook of the mobile phone device **100**. At step **370**, the personal security system **101** further sends out SMS to police command center **260** for help.

[0041] For easy reference, the SMSs that are sent to the mobile devices **210** and **220**, and/or the police command center **260** may refer to as “community SMS”. In addition, the community SMS may not be the only means for transmitting distress signal for seeking for help. It should be understood by one skilled in the art that

Multimedia Messaging Service (MMS), emails and the like, work equally well for the purpose of the present invention. Further, the distress signals are not restricted to text messages only, other multimedia types of messages, like voice messages may be desired.

[0042] Still referring to FIGs. 2 and 3, at the step **320**, when the personal security system **101** is activated, the mobile phone device **100** prompts the user for deactivating the alarm on the screen **130**. If the user does not deactivate the personal security system **101** within a period pre-defined in the personal security system **101** by entering an appropriate command, the alarms will be triggered. The prompt for deactivating the alarm is to further ensure that the personal security system **101** is not activated by mistake. FIG. 4 shows a screenshot **400** of the prompt in accordance with one embodiment of the present invention. The appropriate command to deactivate the personal security system **101** is by entering a personal identification number (PIN) or a password in field **450**. The PIN is a string of code pre-set in the mobile phone device **100** by the user and stored in the configuration data repository **103**. At the step **330**, if a correct code is entered within the pre-defined period, the personal security system **101** will be deactivated and the mobile phone device **100** returns to normal operations. If no correct code is being entered in the field **450** within the pre-defined period, the alarm of the personal security system **101** will be triggered and steps **340** to **370** will be performed.

[0043] Still referring to FIGs. 2 and 3. Once the alarm is triggered at the step **340**, the personal security system **101** commands the mobile phone device **100** to sound the sound alarm **212** with the high pitch noise. The sound alarm **212** serves as a first line of defense for the user and the high pitch noise may draw attention for help. The high pitch noise is emitted via a speaker (not shown) mounted behind the speaker grill **110** of FIG. 1. The speaker is adapted for supporting a wide range of sounds for mobile phone operations, which include vocal, music, ring-tone and etc. The speaker is further adapted to emit the high pitch noise having sound pressure levels of about 85-130dB. Thereafter, personal security system **101** commands the mobile phone device **100** to send out community SMSs automatically for immediate help and attentions. The community SMSs may include a prescribed paragraph that is stored in the

configuration data repository **103**. The community SMSs may further include information regarding the location of the mobile phone device **100**. The location of the mobile phone device can be detected with location-based service (LBS). Once the location of the mobile phone device **100** is identified, the relevant communication service provider establishes a perimeter **215** based on the location of the mobile phone device **100**, and SMSs are sent to all the mobile devices **210** within the perimeter **215** at the step **350**. The perimeter **215** may be in a range from 250-400m from the location of the mobile phone device **100** so that the other mobile device **210** users may reach to help within a short period. The personal security system **101** further sends out SMSs to mobile devices **220** at the step **360**. The mobile devices **220** are a list of contacts pre-designated by the user of the mobile phone device **100**. The mobile devices **220** may or may not be located within the perimeter **215**. Once users of the mobile devices **220** receive the SMS may immediately contact the user of the mobile phone device **100** to offer for help, when necessary. At the step **370**, the personal security system **101** further commands the mobile phone device **100** to send SMS to a police command center **260** for seek for help. To ensure that it is not a false alarm, officer in the police command center **260** may further contact the mobile phone device **100** for verification. The community SMS may also contain the location information of the mobile phone device **100**.

[0044] It is understood to the person skilled in the art that, other than LBS, any location identification methods, such as Assisted Global Positioning System, Cell ID, Enhanced Observed Time Difference (E-OTD), Time Difference On Arrival (TDOA), Agilent's acceSS7 and etc., may be used for detecting the location of the mobile phone device **100**.

[0045] FIG. 5 shows a flow chart of the armed mode in accordance with one embodiment of the present invention. The armed mode is turn on at step **510** and the personal security system **101** is on standby mode. The mobile phone device **100** then prompts the user to cover the camera **150** at step **520**. When the mobile phone device **100** detected that the camera **150** is not covered at step **520**, the personal security system **101** is turned on, and the user of the mobile phone device **100** is prompted to

deactivate the alarm. If the personal security system **101** is not deactivated within a prescribed period in step **540**, the alarm is triggered at step **550**.

[0046] In accordance with an alternative embodiment of the present invention, the mobile phone device **100** may have a specialized alarm speaker which is adapted for producing sound pressure levels between 85-130dB.

[0047] In an alternative embodiment, there is provided a second alarm switch, of which, the alarm can only be activated by simultaneously pressing the alarm switch **140** and the second alarm switch. This reduces the chances of activating the alarm by mistake.

[0048] In yet another alternative embodiment, the mobile phone device **100** uses only the existing keypad **120** for activating the alarm without providing the alarm switch **140**. For example, user may simultaneously press and hold the “*” and “#” key for 3 seconds to activate the personal security system **101**.

[0049] In yet a further alternative embodiment, the user of the mobile phone device **100** may customized buttons for activating the personal security system **101** and store the customized data in the configuration data repository **103**. FIG. 6 exemplifies a screenshot of keys configuration setting for the armed mode and the personal security system **101**. User may “record” a shortcut key for activating the armed mode and the personal security system **101** by selecting a “RECORD” button **640**. When the button **640** is selected, the user may start providing key combinations for activating the respective option by pressing the keypad **120**. The shortcut recording further records a time interval between each key pressed and the length of time that user holding the key. The key or key combinations and the time interval will be shown in a field **610** and a field **620**. Once the user has completed assigning the shortcut keys, he may select the “OK” button **630** for confirmation, and the assigned shortcut keys will be stored in the configuration data repository **103**.

[0050] Still referring to FIG. 6, the user may customize the keys or key combinations manually by defining them in the field **610** and the filed **620** in a

prescribed format. For example, when a string *[*]/[#]+3secs* is inputted in the field **610**, the user is required to press and hold the key “*” and “#” for 3 seconds for activating the armed mode. Similarly, when a string *[5]+8secs* is inputted in the field **620**, the user is required to press and hold the key “5” for 8 seconds for activating the personal security system **101**. Once the keys or key combinations are assigned, user may select “RECORD” button **640** to store them in the configuration data repository **103** and select “OK” button to exit the keys setting screen.

[0051] While specific embodiments have been described and illustrated, it is understood that many changes, modifications, variations and combinations thereof could be made to the present invention without departing from the scope of the invention. For example, the personal security system **101** may be provided as an add-on or upgrade feature the mobile phone device **100**. Further, it is possible that the mobile phone device **100** may be provided with an internal backup battery, which provide sufficient power for sounding alarm and send out SMSs. This internal backup battery may prevent one from deactivating the alarm by removing the main battery compartment **170**.

Claims

1. A personal security system for a mobile communication device having a speaker and a messaging service, the personal security system comprising:

a security device controller operable to trigger an alarm that sounds an sound alarm with the speaker and sends a community message to communication devices within a perimeter based on a location of the mobile communication device and to other communication devices pre-designated with the messaging service; and

a configuration data repository accessible by the security device controller for defining information for activating and deactivating the personal security system.

2. The personal security system according to claim 1, further comprising a switch for activating the alarm, the switch comprising a controller operable to activate a camera of the mobile communication device, wherein, said switch is in a standby mode when the camera is being covered, and uncovering the camera thereafter triggers the switch for activating the alarm.

3. The personal security system according to claim 2, wherein the controller turns on a flashlight of the mobile device upon activating the camera.

4. The personal security system according to claim 1, wherein the sound alarm having a sound pressure level in a range of 82-130dB.

5. The personal security system according to claim 1, wherein one of the pre-designated communication devices situated at a police command center.

6. The personal security system according to claim 1, wherein the community message includes the location of the mobile communication device.

7. The personal security system according to claim 1, wherein the location of the mobile communication device is detected based on Location-Based Service.

8. The personal security system according to claim 1, wherein the community message is a short messaging service (SMS).
9. A method for generating an alarm with a mobile communication device, said method comprising:
 - activating a personal security system; and
 - triggering the alarm;wherein the alarm includes:
 - sounding a sound alarm;
 - detecting a location of the mobile communication device;
 - sending a community message to mobile devices within a perimeter based on the location of the mobile communication device; and
 - sending the community message to mobile devices pre-designated in the personal security system.
10. The method according to claim 9, further comprising:
 - activating a camera of the mobile communication device;
 - covering the camera; and
 - uncovering the camera to trigger the alarm.
11. The method according to claim 9, wherein the location of the mobile communication device is detected based on Local Based Service.
12. The method according to claim 9, further comprising prompting for deactivating the personal security system.
13. A mobile communication device comprising the personal security system in accordance with any one of claims 1-8.
14. A switch for activating an alarm of a mobile device, said device having a camera, said switch comprising a controller operable to activate the camera,
 - wherein, said switch is in a standby mode when the camera is being covered, and uncovering the camera thereafter triggers the switch for activating the alarm.

15. The switch according to claim 14, wherein the controller operable to further turn on a flashlight of the mobile device.
16. The switch according to claim 14, wherein, the controller prompts to deactivate the alarm before activating the alarm.
17. The switch according to claim 16, wherein when the alarm is not deactivated within a prescribed period, the alarm is activated automatically.
18. A method for triggering an alarm of a mobile communication device, said device having a camera, the method comprising:
 - activating the camera;
 - covering the camera;
 - uncovering the camera; and
 - triggering the alarm.
19. The method according to claim 18, further comprising prompting to deactivating the alarm.