



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
05.08.2020 Bulletin 2020/32

(51) Int Cl.:
G08B 25/12 (2006.01) G08B 29/02 (2006.01)

(21) Application number: **19382079.2**

(22) Date of filing: **04.02.2019**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **Carrier Corporation**
Palm Beach Gardens, FL 33418 (US)
(72) Inventor: **MUÑOZ RODRIGUEZ, Jairo**
8950 Esplugues de Llobregat, Barcelona (ES)
(74) Representative: **Dehns**
St. Bride's House
10 Salisbury Square
London EC4Y 8JD (GB)

(54) **ALARM CALL DEVICE WITH OBSTRUCTION DETECTION**

(57) Disclosed is an alarm call device 200 having a controller 240 configured for monitoring for one or more proximately disposed objects 220, the controller 240 being configured to carry out a method comprising: effecting a first communication with a sensor 250, the sensor configured to sense the one or more proximately disposed

objects 220, determining that a fault condition exists when the sensor 250 senses the one or more proximately disposed objects 220, and effecting a first communication upon determining that the fault condition exists, the first communication being indicative of the occurrence of the fault condition.

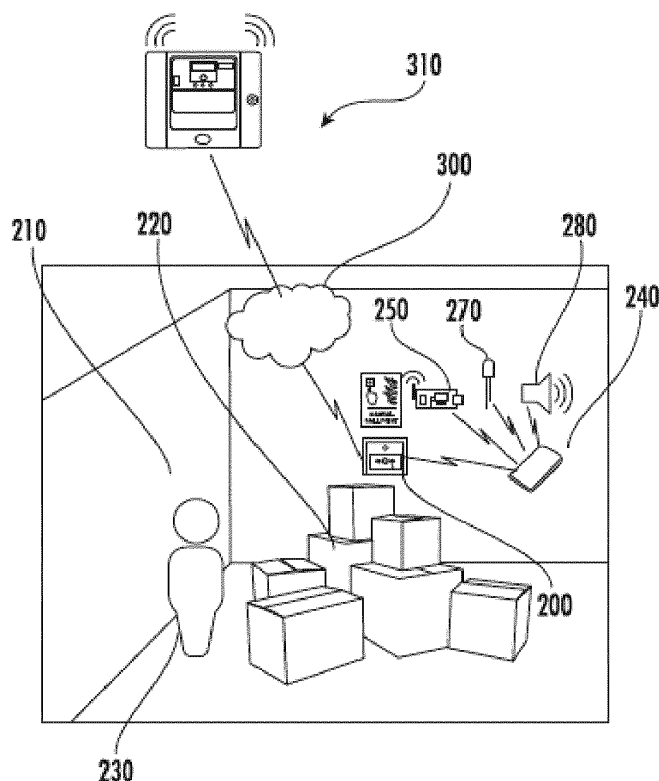


FIG. 1

Description

[0001] The present invention relates to an alarm call device for monitoring objects and to a related method of monitoring using an alarm call device. Exemplary embodiments pertain to the art of fire detection systems and more specifically to an alarm call device with obstruction detection.

[0002] Manual fire alarm activation is typically achieved through the use of a pull station (for example in the United States and Canada) or a call point (for example in Europe, Australia, and Asia), which sounds an evacuation alarm for a relevant building or zone. Manual fire alarm activation typically requires human intervention. Systems in completed buildings tend to be wired in and to include a control panel. Systems for use during construction can also be wireless or mechanical. Installation standards may require alarm call devices to be disposed at a specific height, and be accessible, well-illuminated and a conspicuous position free from potential obstructions. Once an alarm call device is installed, there may be a lack of supervision by which to detect potential obstructions that may prevent access to the alarm call device during an emergency condition.

[0003] Viewed from a first aspect, the invention provides an alarm call device comprising a controller configured for monitoring for one or more proximately disposed objects, the controller being configured to carry out a method comprising: effecting a first communication with a sensor, the sensor configured to sense the one or more proximately disposed objects, determining that a fault condition exists when the sensor senses the one or more proximately disposed objects, and effecting a first communication upon determining that the fault condition exists, the first communication being indicative of the occurrence of the fault condition. The alarm call device may comprise the sensor.

[0004] Optionally, the controller is configured for effecting the first communication with a visual alert.

[0005] Optionally, the controller is configured for effecting the first communication with an audible alert.

[0006] Optionally, the controller is configured for effecting the first communication with a monitoring panel.

[0007] Optionally, the first communication includes first data, the first data identifying one or more of a location of the alarm call device and a location of the one or more proximately disposed objects.

[0008] Optionally, the controller is configured for effecting the first communication with the monitoring panel over a wireless network.

[0009] Optionally, the controller is configured for effecting the first communication with the monitoring panel over a personal area network.

[0010] Optionally, the device is a manual alarm call device.

[0011] Optionally, the device is a manual call point or a pull station.

[0012] Optionally, the alarm call device is a handle or

push-bar on an emergency exit door.

[0013] Viewed from a second aspect, the invention provides a method of monitoring by an alarm device, by a controller, for one or more proximately disposed objects, the method comprising: effecting a first communication with a sensor, the sensor configured to sense the one or more proximately disposed objects, determining that a fault condition exists when the sensor senses the one or more proximately disposed objects, and effecting a first communication upon determining that the fault condition exists, the first communication being indicative of the occurrence of the fault condition. The method may include one or more optional features as discussed above.

[0014] The following descriptions relate to certain preferred embodiments by way of example only, and should not be considered limiting in any way. With reference to the accompanying drawings, like elements are numbered alike:

FIG. 1 illustrates an alarm call device proximate one or more obstructions;

FIG. 2 illustrates an alarm call device scanning for obstructions;

FIG. 3 illustrates an alarm call device detecting one or more obstruction;

FIG. 4 disclosed a process executed by an alarm call device of detecting one or more obstruction; and

FIG. 5 illustrates an alternative alarm call device.

[0015] A detailed description of one or more embodiments of the disclosed apparatus and method are presented herein by way of exemplification and not limitation with reference to the Figures.

[0016] Turning to FIGS. 1-3, an alarm call device 200 is shown. The device 200 may be installed in a room 210. The room 210 may have one or more objects 220 such as boxes that may be proximate the device 200 and obstruct access to the device 200 by a person 230.

[0017] The device 200 may include a controller 240 and a sensor 250 that communicates with the controller 240. The controller 240 may be configured to communicate with the sensor 250 for sensing the one or more objects 220, for example, within a spatial geometry 260 such as an area or volume proximate the device 200. The controller 240 may be configured for activating a light source 270 and/or a sound source 280 for communicating when the one or more objects 220 are sensed as being proximate the device 200. The controller 240 may be configured for communicating over a network 300 with a fire system monitoring panel 310 for communicating when the one or more objects 220 are sensed as being proximate the device 200.

[0018] Turning to FIG. 4, illustrated is a process S100 executed by the controller 240 for monitoring for one or more proximately disposed objects 220. Process S100 may include step S110 of effecting a first communication with the sensor 250, which, as indicated, is configured to sense the one or more proximately disposed objects

220. Step S120 may include the controller 240 determining that a fault condition exists when the sensor 250 senses the one or more proximately disposed objects 220. Step S130 may include the controller 240 effecting a first communication upon determining that the fault condition exists, the first communication being indicative of the occurrence of the fault condition.

[0019] As indicated the controller 240 may be configured for effecting the first communication with a visual alert using the light source 270 and/or with an audible alert using the sound source 280. In addition, or alternatively, the controller 240 may be configured for effecting the first communication at step S130 with the fire system monitoring panel 310 over the network 300. When communicating over the network 300, the first communication may include first data, and the first data may identify one or more of a location of the alarm call device 200 and a location of the one or more proximately disposed objects 220. The controller 240 may be configured for effecting the first communication with the fire system monitoring panel 310 over a wireless network. The wireless network 300 may be a personal area network, such as a Bluetooth network. Upon completing the process that initiated at step S100, the controller 240 may terminate the process at step S140.

[0020] The device 200 may be a manual alarm call device. More specifically the device 200 may be a manual call point. Alternatively, the device 200 may be a pull station. In an alternative arrangement, as illustrated in FIG. 5, the alarm call device 200 may be a handle or push-bar 300 on an emergency exit door and the spatial geometry 260 sensed by the sensor 250 is proximate the door.

[0021] Disclosed herein is an alarm call device configured to sense obstacles that may otherwise prevent human activation in case of an emergency condition. Upon sensing an obstacle, the alarm call device may generate a fault signal. The fault signal may include a light signal or/and a sound signal. The alarm call device may alternatively or in addition communicate a fault condition to a fire system monitoring panel and identify a location of the fault.

[0022] Network protocols applied by devices disclosed herein may include typical loop protocols. It is within the scope of the disclosure, however, to include local area network (LAN) protocols and/or private area network (PAN) protocols. LAN protocols may apply Wi-Fi technology, which is a technology based on the Section 802.11 standards from the Institute of Electrical and Electronics Engineers, or IEEE. PAN protocols include, for example, Bluetooth Low Energy (BTLE), which is a wireless technology standard designed and marketed by the Bluetooth Special Interest Group (SIG) for exchanging data over short distances using short-wavelength radio waves. PAN protocols may also include Zigbee, a technology based on Section 802.15.4 protocols from the Institute of Electrical and Electronics Engineers (IEEE). More specifically, Zigbee represents a suite of high-level

communication protocols used to create personal area networks with small, low-power digital radios for low-power low-bandwidth needs, and is best suited for small scale projects using wireless connections. Wireless protocols may further include short range communication (SRC) protocols, which may be utilized with radio-frequency identification (RFID) technology. RFID may be used for communicating with an integrated chip (IC) on an RFID smartcard. Wireless protocols may further include long range, low powered wide area network (LoRa and LP-WAN) protocols that enable low data rate communications to be made over long distances by sensors and actuators for machine-to-machine (M2M) and Internet of Things (IoT) applications.

[0023] As described above, embodiments can be in the form of processor-implemented processes and devices for practicing those processes, such as a processor. Embodiments can also be in the form of computer program code containing instructions embodied in tangible media, such as network cloud storage, SD cards, flash drives, floppy diskettes, CD ROMs, hard drives, or any other computer-readable storage medium, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes a device for practicing the embodiments. Embodiments can also be in the form of computer program code, for example, whether stored in a storage medium, loaded into and/or executed by a computer, or transmitted over some transmission medium, loaded into and/or executed by a computer, or transmitted over some transmission medium, such as over electrical wiring or cabling, through fiber optics, or via electromagnetic radiation, wherein, when the computer program code is loaded into an executed by a computer, the computer becomes an device for practicing the embodiments. When implemented on a general-purpose microprocessor, the computer program code segments configure the microprocessor to create specific logic circuits.

[0024] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the present disclosure. As used herein, the singular forms "a", "an" and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, element components, and/or groups thereof.

[0025] While the present disclosure has been described with reference to an exemplary embodiment or embodiments, it will be understood by those skilled in the art that various changes may be made, and equivalents may be substituted for elements thereof without departing from the scope of the present invention as defined by the claims. In addition, many modifications may be made to adapt a particular situation or material to the

teachings of the present invention without departing from the essential scope thereof, as defined by the claims. Therefore, it is intended that the present invention not be limited to the particular embodiment(s) disclosed as the best mode contemplated for carrying out this present invention, but that the present invention will include all embodiments falling within the scope of the claims.

Claims

1. An alarm call device comprising a controller configured for monitoring for one or more proximately disposed objects, the controller being configured to carry out a method comprising:

effecting a first communication with a sensor, the sensor configured to sense the one or more proximately disposed objects, determining that a fault condition exists when the sensor senses the one or more proximately disposed objects, and effecting a first communication upon determining that the fault condition exists, the first communication being indicative of the occurrence of the fault condition.

2. The alarm call device of claim 1, wherein the controller is configured for effecting the first communication with a visual alert.
3. The alarm call device of claim 1 or 2, wherein the controller is configured for effecting the first communication with an audible alert.

4. The alarm call device of claim 1, 2, or 3, wherein the controller is configured for effecting the first communication with a monitoring panel.

5. The alarm call device of claim 4, wherein the first communication includes first data, the first data identifying one or more of a location of the alarm call device and a location of the one or more proximately disposed objects.

6. The alarm call device of claim 5, wherein the controller is configured for effecting the first communication with the monitoring panel over a wireless network.

7. The alarm call device of claim 6, wherein the controller is configured for effecting the first communication with the monitoring panel over a personal area network.

8. The alarm call device of any preceding claim, wherein the device is a manual alarm call device.

9. The alarm call device of claim 8, wherein the device is a manual call point or a pull station.

10. The alarm call device of claim 9, wherein the alarm call device is a handle or push-bar on an emergency exit door.

11. A method of monitoring by an alarm device, by a controller, for one or more proximately disposed objects, the method comprising:

effecting a first communication with a sensor, the sensor configured to sense the one or more proximately disposed objects, determining that a fault condition exists when the sensor senses the one or more proximately disposed objects, and effecting a first communication upon determining that the fault condition exists, the first communication being indicative of the occurrence of the fault condition.

12. The method of claim 11, wherein the controller is configured for effecting the first communication with a visual alert and/or an audible alert, optionally wherein the controller is configured for effecting the first communication with a monitoring panel.

13. The method of claim 11 or 12, wherein the first communication includes first data, the first data identifying one or more of a location of the alarm call device and a location of the one or more proximately disposed objects.

14. The method of claim 13, in which the controller is configured for effecting the first communication with a monitoring panel, and wherein the controller is configured for effecting the first communication with the monitoring panel over a wireless, optionally wherein the controller is configured for effecting the first communication with the monitoring panel over a personal area network.

15. The method of any of claims 11 to 14, wherein the device is a manual alarm call device, preferably wherein the device is a manual call point or a pull station, and optionally wherein the alarm call device is a handle or push-bar on an emergency exit door.

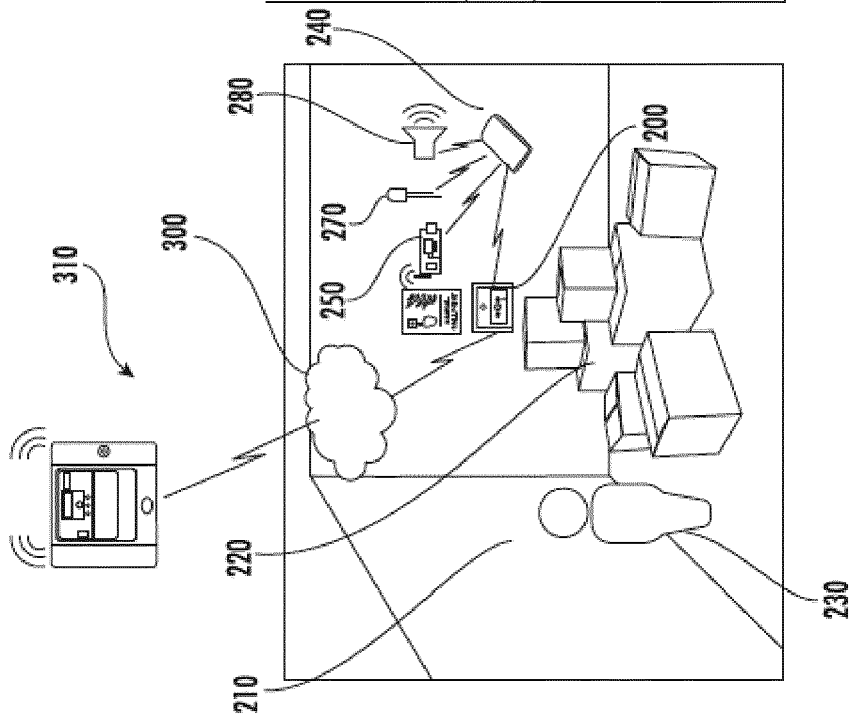


FIG. 1

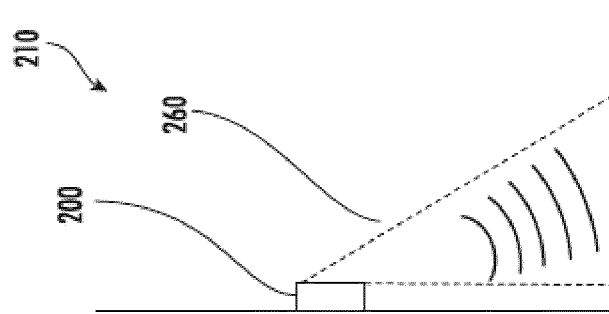


FIG. 2

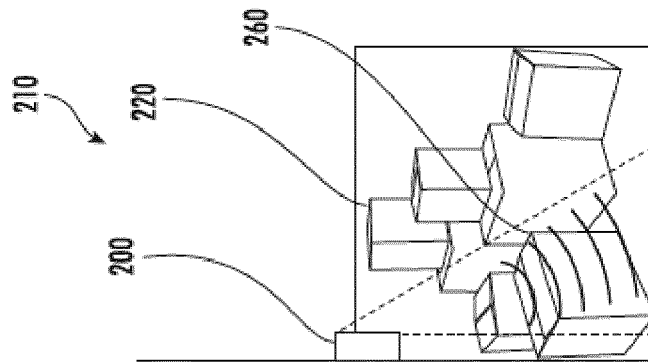


FIG. 3

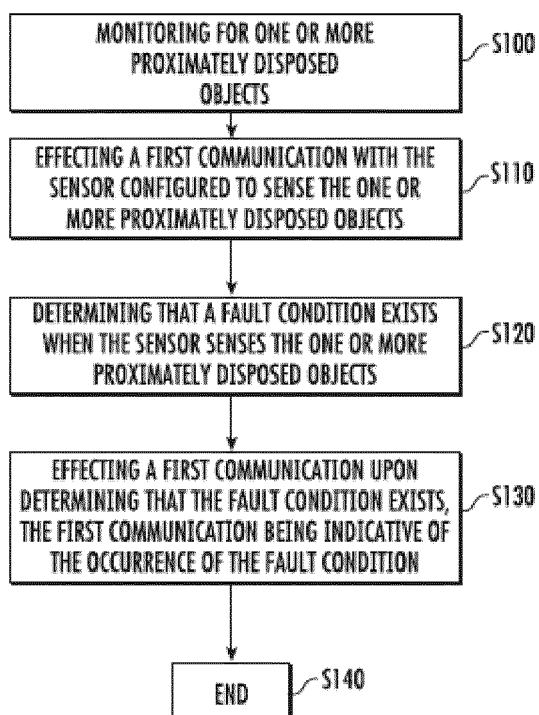


FIG. 4

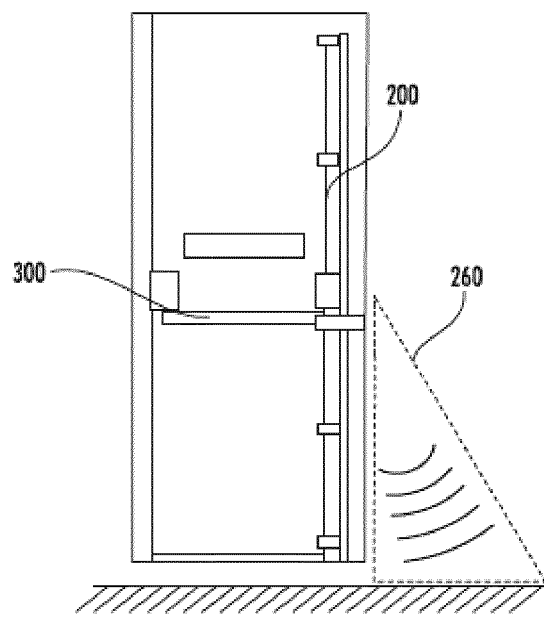


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 19 38 2079

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2004/065451 A1 (MCSHEFFREY JOHN J [US] ET AL) 8 April 2004 (2004-04-08) * abstract * * paragraph [0015] - paragraph [0017] * * paragraph [0039] - paragraph [0041] * * paragraph [0064] - paragraph [0068] * * claims 1,3,6,7,10,11 * * figures 1,6,7,11 *	1-15	INV. G08B25/12 G08B29/02
X	US 2016/037135 A1 (MCSHEFFREY BRENDAN T [US] ET AL) 4 February 2016 (2016-02-04) * paragraph [0005] - paragraph [0006] * * paragraph [0027] * * paragraph [0032] * * paragraph [0036] - paragraph [0039] * * figures 2,9,11 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			G08B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 24 July 2019	Examiner Königer, Axel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 38 2079

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-07-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004065451 A1	08-04-2004	CA 2532041 A1	10-02-2005
		GB 2419719 A	03-05-2006
		US 2004065451 A1	08-04-2004
		US 2011109454 A1	12-05-2011
		WO 2005013227 A1	10-02-2005

US 2016037135 A1	04-02-2016	NONE	
