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Fire Sensitive Emergency Lighting And Alarm System

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ABSTRACT

There is a fire sensitive emergency lighting and alarm apparatus. The apparatus including a self powerable light unit 2 for location at a position to facilitate emergency evacuation from an enclosed area and an audio alarmed fire detector 1 for said area. The light unit 2 and fire detector 1 being adapted when in a configuration of use for operative communication whereby in the event of a fire the audio alarmed detector 2 when activated converts the light unit 2 from a non illuminating status to a self powered luminous status allowing area occupants to visually identify an exit from said area.

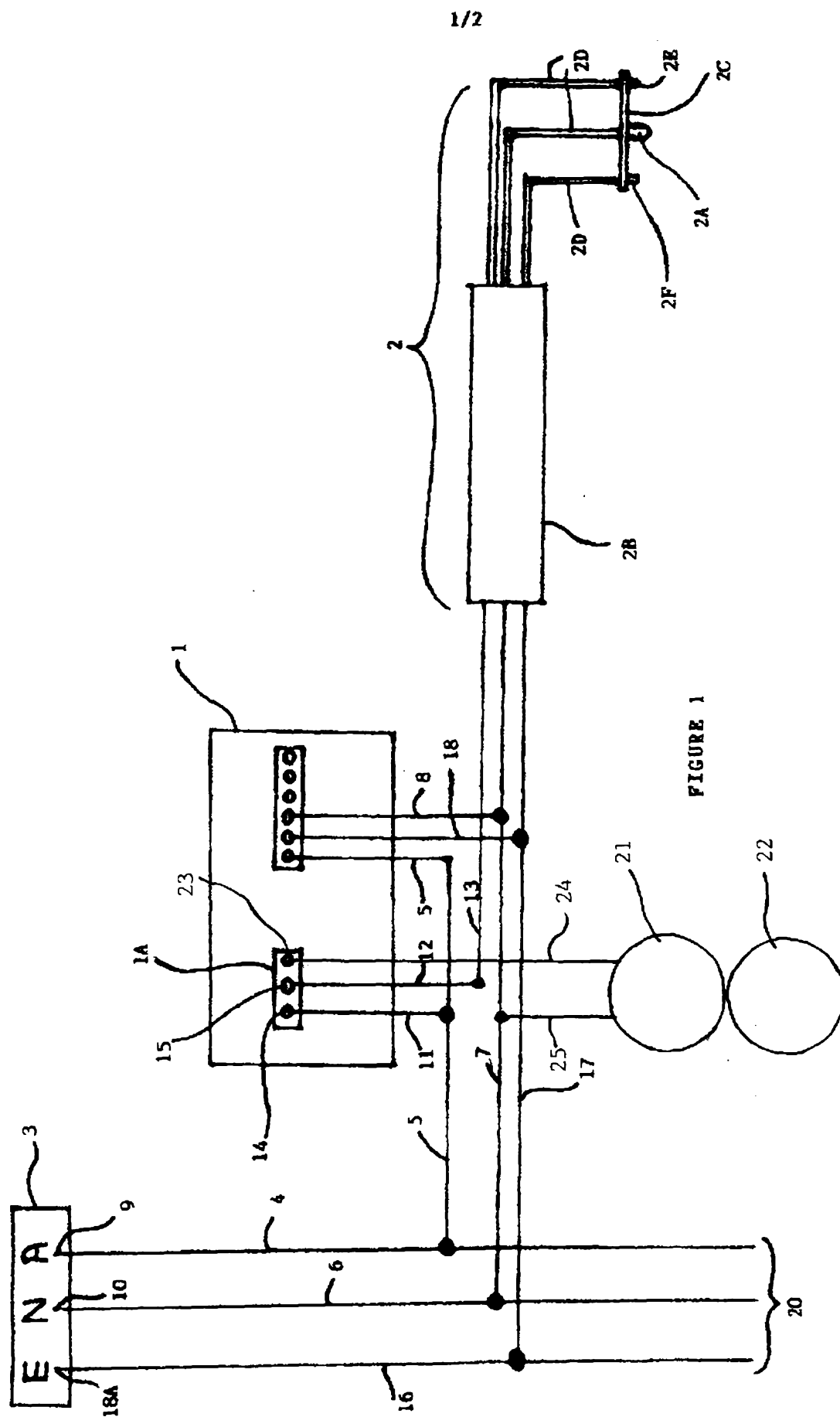


FIGURE 1



PATENTS ACT 1990

ORIGINAL COMPLETE SPECIFICATION STANDARD PATENT

Invention title **FIRE SENSITIVE EMERGENCY LIGHTING AND ALARM SYSTEM**

**The following statement is a full description of this invention,
including the best method of performing known to me.**

FIELD OF THE INVENTION

This invention relates to safety apparatus. More particularly, although not exclusively, it discloses an improved fire emergency lighting and system for buildings.

BACKGROUND TO THE INVENTION

While it is known to install smoke detectors in buildings such devices typically only activate audio alarms and do not otherwise assist the evacuation of occupants from smoke filled or darkened portions of a building. Existing battery operated emergency lighting devices on the other hand while adapted to provide illumination during mains power failures do not activate during the early stages of a fire if the mains power supply is still operative. Consequently fire emergency situations can arise when building occupants, although being alerted by the audio alarm of a smoke detector, still are unable to find their way out of a dark and/or smoke filled environment.

SUMMARY OF THE INVENTION

It is therefore an object of this invention to ameliorate the aforementioned disadvantages and accordingly a fire sensitive emergency lighting and alarm system is disclosed, said apparatus including at least one self powerable light unit for location at a position to facilitate emergency evacuation from an enclosed area and one or more audio alarmed fire detection means for said area, the light unit

and fire detection means being adapted when in a configuration of use for operative communication whereby in the event of a fire said audio alarmed detection means when activated converts said light unit from a non illuminating status to a self powered luminous state allowing area occupants to visually identify an exit from said area.

Preferably said fire detection means comprises a smoke detector.

It is further preferred that said smoke detector is self powerable from a built-in battery.

It is further preferred that said light unit is also self powerable from a built-in battery.

It is further preferred that said batteries are rechargeable from mains electrical power during inactive periods.

It is further preferred that said light unit is adapted to operate from said battery upon interruption of said mains power supply.

BRIEF DESCRIPTION OF THE DRAWINGS

One currently preferred embodiment of the invention will now be described with reference to the attached

representations in which:-

figure 1 is a schematic wiring diagram of an emergency lighting and smoke detector system according to said invention,

figure 2 is a cross-sectional view of a ceiling section showing one possible installation arrangement for the aforementioned components, and

figure 3 is an underside view of the ceiling section of figure 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to figure 1 the smoke detector 1 with this embodiment may be a model No. BA 158 Relay Base Brooks Alarms Cat. No. EIPFSPTLH electric photo cell smoke alarm with lithium re-chargable battery. One type of emergency light unit 2 which may be used is Polycarbonate SPU's Cat. No. 6820.20 as manufactured by Legrand Pty Ltd of 3/107 Carnarvon Street SILVERWATER NSW 2128. This lighting unit is designed for connection to the mains power supply 3 in a building. During normal operation of the mains supply the lamp 2A is inoperative and a built-in rechargeable battery 2B is maintained at full capacity from said mains supply. However, upon failure of the mains supply the unit is designed to immediately illuminate this lamp 2A for up to

several hours from its battery power. In accordance with this invention the detector 1 and light unit 2 are installed within a building and connected to the mains power supply as shown. The circuit is such that during normal operation the smoke alarm 1 and lamp 2A are inoperative and the aforementioned batteries are maintained at full charge by said mains power supply. More specifically, with this particular embodiment the smoke alarm battery is charged via conductor paths 4, 5 and 6, 7, 8 from the active and neutral terminals 9, 10 of the mains power supply and the light unit battery is charged via conductor paths 6, 7 and 4, 5, 11, 12, 13 through relay terminals 14 (closed) and 15 (normally closed). There is also a permanent conductor path 16, 17, 18 from the earth terminal 18A to the detector and light unit.

Although not shown in the drawings, in accordance with this invention additional detectors and/or light units may be connected to the mains power and earth leads at 20.

As further shown in figures 2 and 3 the smoke alarm 1 and light unit 2 are preferably installed in the ceiling 19 of a building. Although for the purpose of illustration these components are shown in close proximity they can be located remote from each other whereby for example the detector is mounted over a stove or heater and the light unit is located in a bedroom or adjacent stairs or a building exit.

The light unit with this embodiment preferably includes a separate remote mounting panel 2C connected to the battery by wires 2D. This panel carries the lamp 2A (which may be tungsten halogen and be adapted for 10 watts output at 6 volts), a "power on" indicator 2E and a test button 2F for trialing the light unit. The panel 2C and smoke detector are typically secured to the underside of the ceiling. The light unit battery pack 2B and associated circuitry are concealed above the ceiling.

In use of the system the light unit and detector remain inoperative in the absence of a power failure or any smoke detection. However, upon failure of the mains power supply and consequent loss of the conventional lights in the building the light unit is adapted to immediately illuminate the lamp 2A for up to several hours to enable occupants to exit or otherwise find their way within the building. Alternatively, if smoke is detected the smoke detector 1 in addition to sounding its built-in audio alarm is further adapted to open the normally closed relay terminal 15. This isolates the light unit from the mains power supply which in turn causes the lamp 2A to illuminate. In a fire an occupant in addition to being alerted by the detector audio alarm is thus also automatically provided with emergency lighting to facilitate exit from the building.

In addition the invention also includes a siren 21 and coloured strobe light 22 which are activated if smoke is detected. More specifically, when relay terminals 14-15 are opened as described earlier to illuminate light 2A the relay is further adapted to simultaneously bridge the mains active across terminals 14-23 whereby conductor paths 24 and 25 energise said siren and strobe light as an additional warning system.

It will thus be appreciated that this invention at least in the form of the example disclosed provides a novel and improved safety apparatus for buildings or other enclosed areas. Clearly however the example described is only the currently preferred form of the invention and a wide variety of modifications may be made which would be apparent to a person skilled in the art. For example the type, number, circuitry and locations of the smoke detectors, strobe lights, warning sirens and evacuation lights within a building or area may vary according to installation requirements. In domestic dwellings for instance one or more smoke detectors may be installed in proximity to the kitchen or heaters and a series of evacuation lights may be located in bedrooms and/or along a route from said bedrooms to the nearest exit. The siren and strobe light are preferably installed outside of the dwelling to alert people outside that there is a fire inside the dwelling operated by smoke alarms. Other arrangements within the scope of this invention may be devised for commercial or industrial buildings where a larger number of detectors could be located throughout areas of greatest fire risk.

The claims defining the invention are as follows:

1. A fire sensitive emergency lighting and alarm system, said system including at least one self powerable evacuation light to facilitate emergency escape from an enclosed area, one or more audio alarmed fire detection means and one or more siren/strobe light units for said area, the evacuation light, fire detection means and siren/strobe light units being adapted when in a configuration of use for operative communication whereby in the event of fire said audio alarmed detection means activates said siren/strobe units and converts said evacuation light from a non illuminating status to a self powered luminous status allowing area occupants to visually identify an exit from said area.
2. The fire sensitive emergency lighting and alarm system as claimed in claim 1 wherein said fire detection means is a smoke detector.
3. The fire sensitive emergency lighting and alarm system as claimed in claim 2 wherein said smoke detector and evacuation light are self powerable from respective rechargeable batteries.
4. The fire sensitive emergency lighting and alarm system as claimed in claim 3 wherein said evacuation light is adapted to convert from said non illuminating status to said self powered luminous status upon interruption of a mains power supply to said unit.

5. The fire sensitive emergency lighting and alarm system as claimed in claim 4 wherein said smoke detector when alarming upon detection of smoke is adapted to open a relay which interrupts said mains power supply to the light unit.

6. The fire sensitive emergency lighting and alarm system as claimed in claim 5 wherein during inoperative periods said batteries are charged from said mains power supply.

7. The fire sensitive lighting and alarm system as claimed in claim 6 wherein the light unit includes a separate panel for mounting a lamp, power on indicator and test button for trialing said unit.

8. The fire sensitive emergency lighting and alarm system as claimed in claim 7 wherein the panel is adapted for mounting in the ceiling of a building.

9. A fire sensitive emergency lighting and alarm system as claimed in claim 8 wherein there are a plurality of smoke detectors and light units in operative communication.

10. A fire sensitive emergency lighting and alarm system substantially as described herein with reference to the drawings.

Dated this 28th day of July, 2010

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By His Patent Attorney
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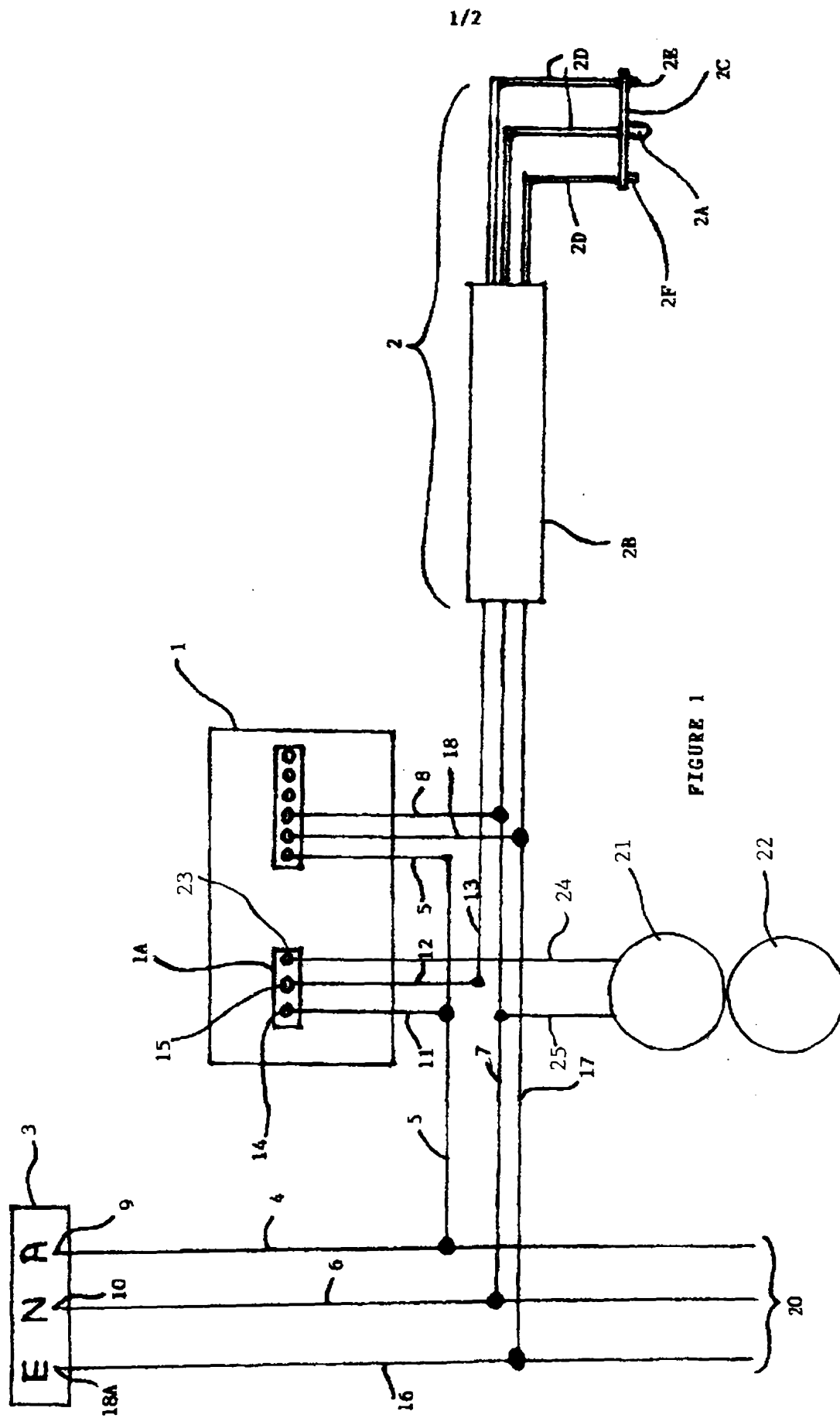


FIGURE 1

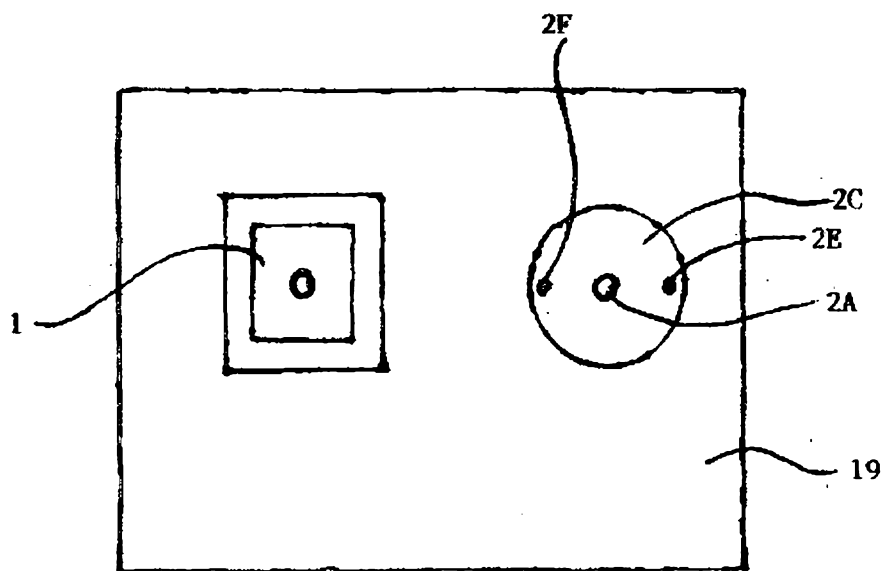


FIGURE 2

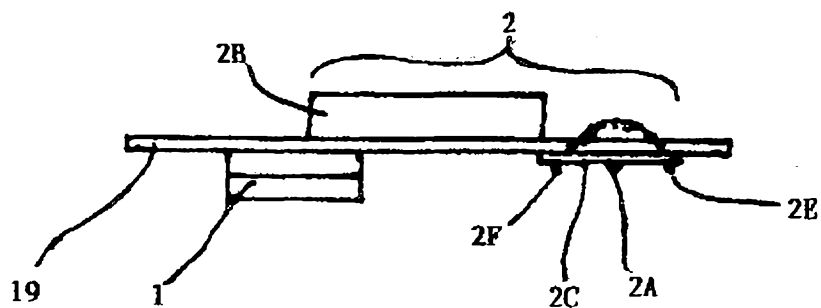


FIGURE 3