

PATENT SPECIFICATION

(11) 1 446 166

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- (21) Application No. 9195/76 (22) Filed 14 Aug. 1973
(62) Divided out of No. 1 445 705
(31) Convention Application No. 101 013/72 (32) Filed 31 Aug. 1972 in
(33) Japan (JA)
(44) Complete Specification published 18 Aug. 1976
(51) INT. CL.² G08B 21/00
(52) Index at acceptance
G4N 1D 5A3 6G



(54) ACCIDENT PREVENTION DEVICE

(71) I, MOTOHIRO GOTANDA, a Japanese Subject, residing at No. 6-29, 3-chome, Inokashira, Mitaka City, Tokyo, Japan, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to accident prevention devices.

Many electrical alarm devices have been proposed for avoiding accidents in rooms of a building. In such devices, a power source is switched on when a person leaves a room and the lock of a door is fastened from outside.

According to the present invention there is provided an accident prevention device for a building or room of a building said device including a switch located such that it is closed upon the locking of a door of the room or building to thereby connect an electrical power source to the device, a light source which is illuminated when said switch is closed, said light source being positioned so that light from it falls onto a recording meter arranged to monitor the presence of an endangering condition and having a movable recording element, a light sensitive device positioned to receive light reflected from the meter and arranged to produce an electrical signal indicative of the light intensity incident thereon, and means responsive to said electrical signal to energise alarm means when the light sensitive device senses a change in the light intensity incident thereon resulting from a movement of the recording element.

The invention will be described now by way of example only with particular reference to the accompanying drawings. In the

Figure 1 is a front view of a door having a device in accordance with the present invention;

Figure 2 is a front view of a conventional door operating and locking mechanism;

Figure 3 is a circuit diagram of a device in accordance with the invention, and

Figures 4 and 5 are views illustrating the application of the present device to an electricity meter.

Referring to Figures 1 and 2 a door 1 has a handle 4 for opening and closing the door. The door has a door frame 2 which is set in the wall of a room. The handle 4 is mounted on a shaft 3 the rotation of which moves a latch bolt 5. The door 1 is provided with a keyhole K for receiving a key for operating a dead bolt 6. When the door 1 is closed and locked the latch bolt 5 and dead bolt 6 are accommodated in respective recesses 7 and 9 formed in a fixing board 8 which is mounted on the frame 2 or the room wall.

The dead bolt 6 is used to operate a switch SW shown in the circuit of Figure 3. This circuit comprises a DC or AC source S, the switch SW and an accident prevention means X. The switch SW is normally open when the dead bolt 6 is in its withdrawn position and closed when the dead bolt 6 is accommodated within the recess or aperture 9.

The accident prevention means X comprises a power source A, light source B, photoelectric conversion element C and amplifier D. The light source B is arranged to illuminate the face of an electricity meter E and the reflected light transmitted along the path 1 is detected by the conversion element C. Typical meter faces are shown in Figures 4 and 5, Figure 4 showing a digital type and Figure 5 a pointer type. Light from the source B is directed towards the window or scale representing the lowest unit on the meter face and the light is reflected along the path 1' to the conversion element C.

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In use when the door 1 is closed and locked so that the dead bolt 6 projects into the recess or aperture 9 the switch SW is closed. Power is thus supplied to the accident prevention means X. The light source B is energised and the meter face illuminated. If electrical power is used the figure or pointer indicating the lowest unit on the meter face moves so that the light intensity incident upon the conversion element C changes. The output of the amplifier D changes and this change is detected and an alarm signal F is provided.

The apparatus can be used to provide an alarm when, for example, a door of a room is locked and an electrical appliance such as an electric fire is left switched on my mistake. It will be noted that the alarm circuit is only energised when the door is locked.

The above-described example relates to the case when electric power is used. The device can be applied also to the consumption of gas or water as well as temperature change.

WHAT I CLAIM IS:—

1. An accident prevention device for a building or room of a building said device including a switch located such that it is closed upon the locking of a door of the room or building to thereby connect an electrical power source to the device, a light source which is illuminated when said switch is closed, said light source being

positioned so that light from it falls onto a recording meter arranged to monitor the presence of an endangering condition and having a movable recording element, a light sensitive device positioned to receive light reflected from the meter and arranged to produce an electrical signal indicative of the light intensity incident thereon, and means responsive to said electrical signal to energise alarm means when the light sensitive device senses a change in the light intensity incident thereon resulting from a movement of the recording element.

2. An accident prevention device as claimed in claim 1 wherein the switch is located in a recess in a door frame which recess accommodates a locking member when the door is closed, said switch being closed when the locking member is moved into the recess.

3. An accident prevention device as claimed in claim 1 or claim 2 wherein the light source is arranged to illuminate the dial of an electricity meter.

4. An accident prevention device substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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