



(11) **EP 2 149 744 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.02.2010 Bulletin 2010/05

(51) Int Cl.:
F21S 9/02 (2006.01)

(21) Application number: **09166384.9**

(22) Date of filing: **24.07.2009**

(84) Designated Contracting States:
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 SE SI SK SM TR
Designated Extension States:
AL BA RS

(72) Inventors:
• **Fisher, Simon**
Bedfordshire SG19 2RU (GB)
• **Dean, Steven**
Hertfordshire SG4 8SD (GB)
• **Campion, Glenn**
Hertfordshire SG10 6DF (GB)

(30) Priority: **31.07.2008 GB 0813973**

(74) Representative: **Gillam, Francis Cyril et al**
SANDERSON & CO.
34, East Stockwell Street
Colchester
Essex CO1 1ST (GB)

(71) Applicant: **Humankind Limited**
Lemsford Village,
Hertfordshire AL8 7TW (GB)

(54) **Safety lighting**

(57) A safety light assembly has a frame adapted to fit between a conventional light switch and a wall supporting that switch. The frame has a housing (19) for a battery or battery holder and supports a mains detector circuit (24) and a light source (22) connected to the circuit and the battery or battery holder. Detection of failure of mains electricity supply to the conventional switch causes the light source to be energised by the battery or by a battery located in the battery holder.

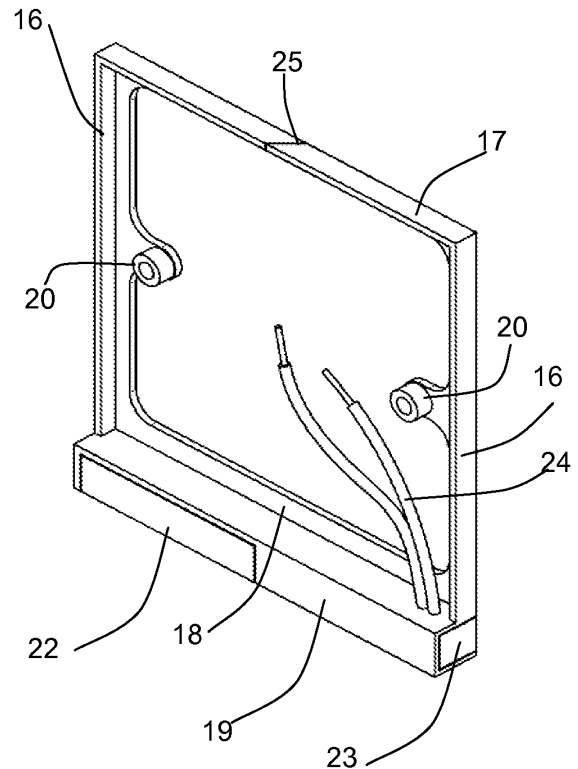


Fig.4

EP 2 149 744 A1

Description

[0001] This invention relates to a safety lighting arrangement intended for use in a domestic environment, and in particular for use when the mains electricity supply fails.

[0002] Emergency lighting equipment is well known and widely used in commercial and industrial premises. A typical emergency lighting unit includes a rechargeable battery and a charging circuit driven by mains electricity supplied to the unit. A lamp, and usually a fluorescent discharge lamp, is mounted within the unit and is energised when a conventional light switch is turned on. Should the mains supply to the unit fail, then the lamp is energised with current from the rechargeable source, irrespective of the setting of the light switch.

[0003] Emergency lighting is useful in any environment where the route to an exit is to be illuminated during the hours of darkness or if there is no natural lighting, in the event that the conventional mains electricity lamps should become inoperable, through a failure in the electricity supply. Such a failure could happen in the case of fire leading to the main fuses blowing, so disconnecting the electricity supply from the conventional lamps. Particularly if there is a fire, it can be very important for the exit route from a building to be sufficiently illuminated for people within the building to be able to find their way quickly and easily out of the building. This is of course equally applicable in industrial and commercial premises, as well as to domestic dwellings.

[0004] The fitting of emergency lighting equipment in a domestic environment is not particularly easy and certainly not a do-it-yourself job for an average householder. It is necessary to rewire the lighting circuits in order that there is a non-switched supply to the unit in addition to the switched supply, in order to give the required functionality. Moreover, an emergency lighting unit of the kind described is relatively expensive. As a consequence, very few domestic dwellings are provided with any kind of emergency or safety lighting.

[0005] It is a principal aim of the present invention to provide a safety lighting arrangement which is relatively cheap, easy to install and yet provide lighting within a particular room or passageway in the event that the mains electricity supply fails, without the complication of the installation of conventional emergency lighting units.

[0006] According to this invention there is provided a safety light assembly comprising a mains detector circuit and a light source arranged such that detection of failure of the mains electricity supply causes the light source to be energised. Such a safety light assembly is characterised by a frame adapted to fit between a conventional light switch and a supporting wall therefor, the frame including a housing in which is provided the light source, the detector circuit and a battery or battery holder, the detector circuit being adapted for connection to the conventional switch such that detection of failure of the mains electricity supply to the switch causes the light source to

be energised by the battery or a battery located in the battery holder.

[0007] With the assembly of this invention, safety lighting can be provided in a domestic environment, such that in the event the mains electricity supply fails, the safety lighting will automatically be turned on and provide for a limited period of time (depending upon the capacity of the battery) sufficient lighting to enable people within a dwelling to find their way safely out of the dwelling.

[0008] Preferably, the light source is mounted within the housing and that housing includes a translucent or transparent window through which light emanating from the source is directed. Advantageously, the light source comprises either a single high powered white-light LED or a group of LEDs, perhaps directed in slightly different directions in order to give a divergent beam of light from the source and so provide generalised safety lighting.

[0009] A battery holder may be provided within the housing such that a simple dry cell battery may be positioned within the housing and connected to the detector circuit also within the housing. This allows for easy changing of the battery, either when exhausted through use or on a routine basis so that safety lighting may be provided in the event of a failure in the mains supply. In the alternative, a rechargeable battery may be furnished within the housing and in this case that battery may be wired to the detector circuit, though it still would be possible for the rechargeable battery to be carried within a battery holder. In either case, a charger may be incorporated within the detector circuit such that the battery is maintained in a fully charged condition whenever the mains supply is present, though possibly only when the conventional light switch is open, such that there is a potential difference across the terminals of the switch.

[0010] The frame advantageously is dimensioned to match the external profile of a conventional light switch. In many countries, the design of such light switches has been standardised and the majority of the domestic light switches have a face plate of standard dimensions and with holes at a predetermined spacing to accommodate fixing screws. The frame should be profiled to match such a face plate and preferably includes a pair of bores through opposed sides thereof, for accommodating the fixing screws used to secure to a wall or other surface the light switch with which the assembly is to be used.

[0011] The frame may include a split section within a side thereof or at a corner region, such that the frame may be sprung around existing wiring associated with the switch with which the assembly is to be used, in order to allow fitting of the frame between the switch and the wall. The ends of the frame at the split section may interlink, in order to maintain the shape of the frame once it has been fitted around existing wiring, as the fixing screws are being tightened.

[0012] Conveniently, the housing is disposed along one edge of the frame, so as in use to be located externally of the face plate of a light switch with which the assembly is to be used. When in use, the housing may

be located along the lower edge of the light switch and with the window in the front face of the housing such that light emanating from the source is directed away from the mounting surface for the light switch.

[0013] This invention extends to a safety light kit comprising a safety light assembly of this invention as described above in combination with a pair of relatively long screws (as compared to the fixing screws for the conventional light switch) for securing an existing light switch to a wall or other surface, with the frame of the assembly located between the existing light switch and the wall.

[0014] By way of example only, one specific embodiment of safety lighting assembly of this invention will now be described in detail, reference being made to the accompanying drawings, in which:-

Figure 1 is a front view of a conventional light switch having the embodiment of safety lighting assembly associated therewith;

Figure 2 is an isometric view of the light switch and assembly of Figure 1;

Figure 3 is a front view of the embodiment of safety lighting assembly; and

Figure 4 is an isometric view of that embodiment.

[0015] Referring to the drawings, there is shown a conventional domestic rocker lighting switch 10 including a face plate 11 and a rocker dolly 12 mounted centrally in the face plate. The dolly operates a switch mechanism mounted behind the face plate but that mechanism forms no part of this invention and will not be described in further detail here. Two fixing screws 13 extend through opposed holes to each side of the dolly 12 into threaded bores in a box mounted in a wall, behind the light switch. The spacing of those holes together with the overall dimensions of the face plate 11 are standardised and all manufacturers of domestic lighting switches produce at least some switches to those dimensions.

[0016] Also shown in the drawings is the embodiment of safety lighting assembly of this invention. This comprises a moulded plastics frame 15 of square shape and having two side rails 16, a top rail 17 and a bottom rail 18 which supports a housing 19. The external dimensions across the two side rails and across the top and bottom rails but excluding the housing 19 match the overall dimensions of the face plate 11 such that the face plate may be fitted to the frame as shown in Figure 2. When so fitted, the housing 19 extends along the lower edge of the face plate and that housing is so dimensioned that the front wall 20 thereof is substantially co-planar with the front surface of the face plate 11.

[0017] The two side rails 16 are provided with central bosses 20 furnished with through-bores, at the same spacing as the fixing screws 13 of the conventional light switch. Thus, when the assembly is fitted between a light switch and a wall, the fixing screws will extend through the bores in the bosses 20 in order to ensure proper alignment of the frame with the face plate and also clamping

of the frame between the switch and the wall.

[0018] The front wall 21 of the housing 19 includes a translucent window 22 behind which is mounted an array of high intensity white-light LEDs each directed at a slightly different angle in order that when illuminated, a broadly divergent light beam will be obtained, giving a general spread of lighting. Also accommodated within the housing 19 is a battery holder and the end wall 23 of the housing is removable in order to allow replacement of a battery located within the holder.

[0019] An electronic circuit is provided within the housing which circuit includes a solid-state switch for the supply of current from a held battery to the LEDs such that when the solid-state switch conducts, the LEDs are illuminated. The electronic circuit includes a mains supply detector which controls the solid-state switch for the LEDs; whenever no mains supply is detected, the solid-state switch biased into conduction in order to illuminate LEDs.

[0020] A pair of flying wires 24 are connected to the electronic circuit and leave the housing at one end thereof. Those wires are intended to be connected across the terminals of the light switch operated by the dolly 12, in order to allow the detection of a mains supply at the light switch, by the electronic circuit.

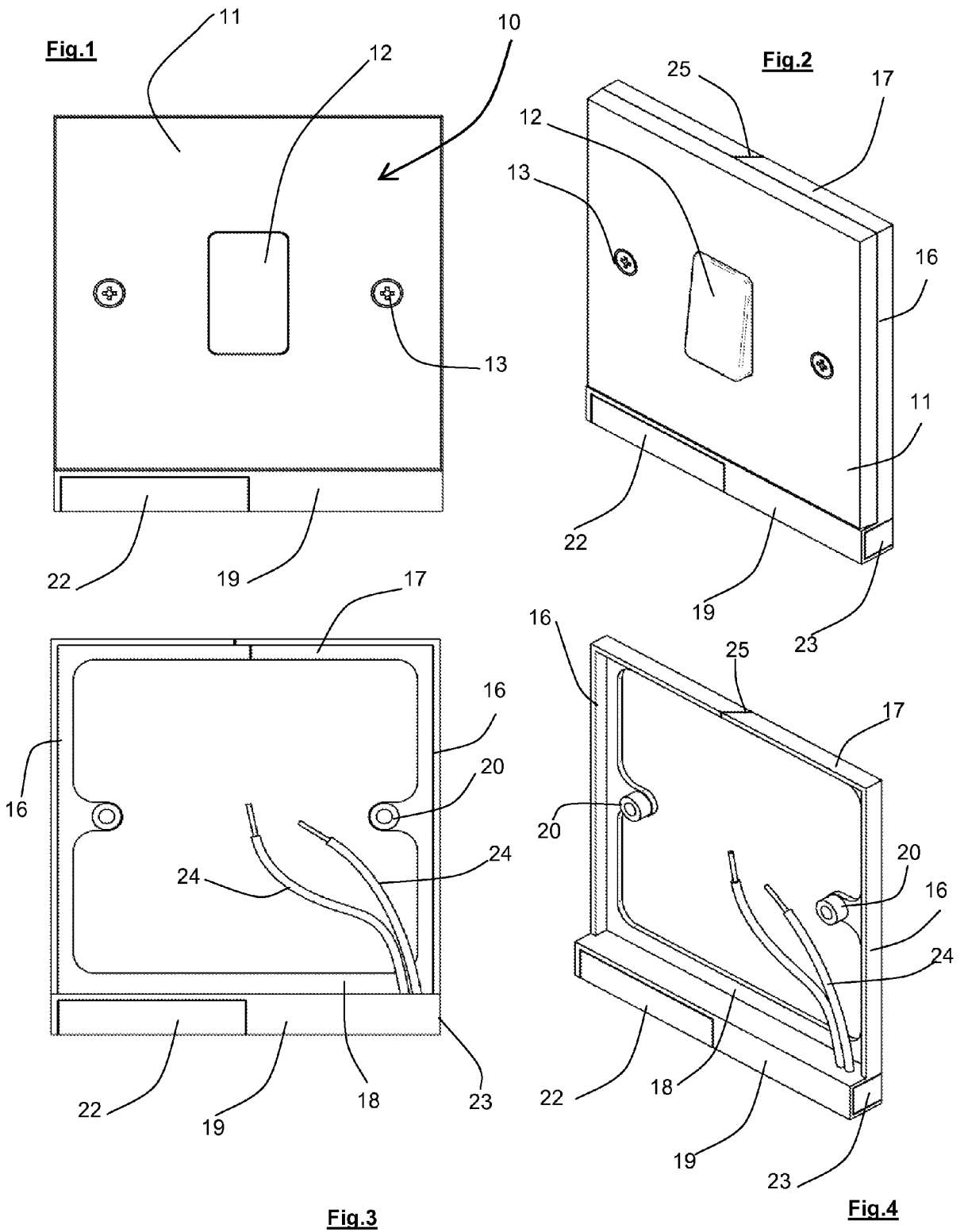
[0021] In order to facilitate the fitting of the safety lighting assembly to an existing switch, the top rail 17 is provided with a split 25, so allowing the rail to be sprung open and wires extending to the switch to be passed into the central region of the frame. Though not shown in the drawings, the ends of the top rail at the split 25 may be shaped to clip together, so as to hold the frame in the required shape during clamping of the frame between the switch and the wall.

[0022] In use, whenever the mains supply to the switch is present, the illumination of the LEDs behind the window 22 is inhibited. Should the mains supply fail, this is detected and the solid state switch is biased into its conducting mode such that the LEDs are illuminated. Though the potential difference between the terminals of the switch is relatively small when the mains supply is present and the light switch is closed, nevertheless there is still a sufficient potential there to allow detection of the mains supply and inhibit illumination of the LEDs, so long as the light switch has properly been installed on the live conductor of the mains supply, as required by the wiring regulations, and the load side of the switch has been connected to the light controlled by the switch.

Claims

1. A safety light assembly comprising a mains detector circuit and a light source arranged such that detection of failure of the mains electricity supply causes the light source to be energised, **characterised in that** the safety light assembly comprises a frame (15) adapted to fit between a con-

- ventional light switch (10) and a supporting wall therefor, the frame including a housing (19) in which is provided the light source (22), the detector circuit and a battery or battery holder, the detector circuit being adapted for connection to the conventional switch (10) such that detection of failure of the mains electricity supply to the switch causes the light source (22) to be energised by the battery or a battery located in the battery holder.
- 5
- 10
2. A safety light assembly as claimed in claim 1, wherein the light source (22) is mounted within the housing (19) and the housing includes a translucent or transparent window through which light emanating from the source is directed.
- 15
3. A safety light assembly as claimed in claim 1 or claim 2, wherein the battery is rechargeable and a charger for the battery is provided within the housing.
- 20
4. A safety light assembly as claimed in claim 3, wherein the charger is incorporated within the detector circuit.
- 25
5. A safety light assembly as claimed in any of the preceding claims, wherein the circuit includes a pair of wires (24) for connection to the terminals of a switch (10) with which the assembly is associated.
- 30
6. A safety light assembly as claimed in any of the preceding claims, wherein the light source (22) comprises one or more LEDs arranged to provide safety lighting in the event of mains failure.
- 35
7. A safety light assembly as claimed in any of the preceding claims, wherein the frame (15) is profiled to match the external profile of a conventional light switch (10).
- 40
8. A safety light assembly as claimed in any of the preceding claims, wherein the frame (15) includes a split section such that the frame may be sprung around existing wiring associated with the switch (10) with which the assembly is to be used.
- 45
9. A safety light assembly as claimed in any of the preceding claims, wherein the frame (15) includes a pair of bores through opposed sides thereof for accommodating fixing screws (13) used to secure the switch (10) with which the assembly is to be used to a wall.
- 50
10. A safety light assembly as claimed in any of the preceding claims, wherein the housing (19) is disposed along one edge of the frame (15), so as in use to be located externally of a switch (10) with which the assembly is to be used.
- 55
11. A safety light kit comprising a safety light assembly as claimed in any of the preceding claims in combination with a pair of relatively long screws (13) for securing an existing light switch (10) to a wall with the frame (15) of the assembly located between the existing light switch and the wall.





EUROPEAN SEARCH REPORT

Application Number
EP 09 16 6384

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 5 713 655 A (BLACKMAN STEPHEN E [US]) 3 February 1998 (1998-02-03) * abstract * * column 1, line 42 - column 4, line 22; claims 1,8,11,12; figures 1-4 * -----	1-4,6-11	INV. F21S9/02	
X	US 6 805 469 B1 (BARTON R A [US]) 19 October 2004 (2004-10-19) * the whole document * -----	1,2,5-11		
X	US 6 010 228 A (BLACKMAN STEPHEN E [US] ET AL) 4 January 2000 (2000-01-04) * abstract; figures 1-4,6,7,9-11 * * column 1, line 47 - column 5, line 6 * * column 5, line 35 - column 7, line 53 * -----	1,2,5-7, 9-11		
X	US 6 648 496 B1 (ELGHOROURY HESHAM M [US] ET AL) 18 November 2003 (2003-11-18) * the whole document * -----	1,2,5-7, 9,11		
X	US 4 611 264 A (BRADLEY MORGAN B [US]) 9 September 1986 (1986-09-09) * the whole document * -----	1,2,5,9, 11		TECHNICAL FIELDS SEARCHED (IPC)
X	WO 01/61244 A (RINTZ WILLIAM J [US]) 23 August 2001 (2001-08-23) * page 7, line 9 - page 30, line 14; figures 1-20 * -----	1-5,7-9, 11		F21S
A	US 4 631 649 A (MCCUE ROBERT J [US] ET AL) 23 December 1986 (1986-12-23) * the whole document * -----			
The present search report has been drawn up for all claims				
Place of search Munich		Date of completion of the search 17 November 2009	Examiner Lorenzo Feijoo, S	
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		

4
EPO FORM 1503 03.82 (F04C01)

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

EP 09 16 6384

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.

17-11-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5713655	A	03-02-1998	AU 692341 B2 04-06-1998
			AU 4247796 A 14-08-1996
			BR 9510150 A 02-06-1998
			CA 2211180 A1 01-08-1996
			EP 0805935 A1 12-11-1997
			JP 10513000 T 08-12-1998
			WO 9623164 A1 01-08-1996
			US 5473517 A 05-12-1995
US 6805469	B1	19-10-2004	US 2004218379 A1 04-11-2004
US 6010228	A	04-01-2000	NONE
US 6648496	B1	18-11-2003	NONE
US 4611264	A	09-09-1986	NONE
WO 0161244	A	23-08-2001	NONE
US 4631649	A	23-12-1986	GB 2181906 A 29-04-1987