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(54) **EMERGENCY LIGHTING SYSTEM**

(57) It is disclosed an emergency lighting system which includes an elongated hollow profile (1) of a transparent or translucent material, a LED strip (15) mounted inside the profile (1), the LED strip being powered by an electrical power supply, and a photoluminescent strip

(18) mounted inside the profile (1) and which is adapted to be charged by an external light source, wherein a surface of the photoluminescent strip (18) is turned 90° from an external light source, and the light from the LED strip (15) is passing beside the photoluminescent strip (18).

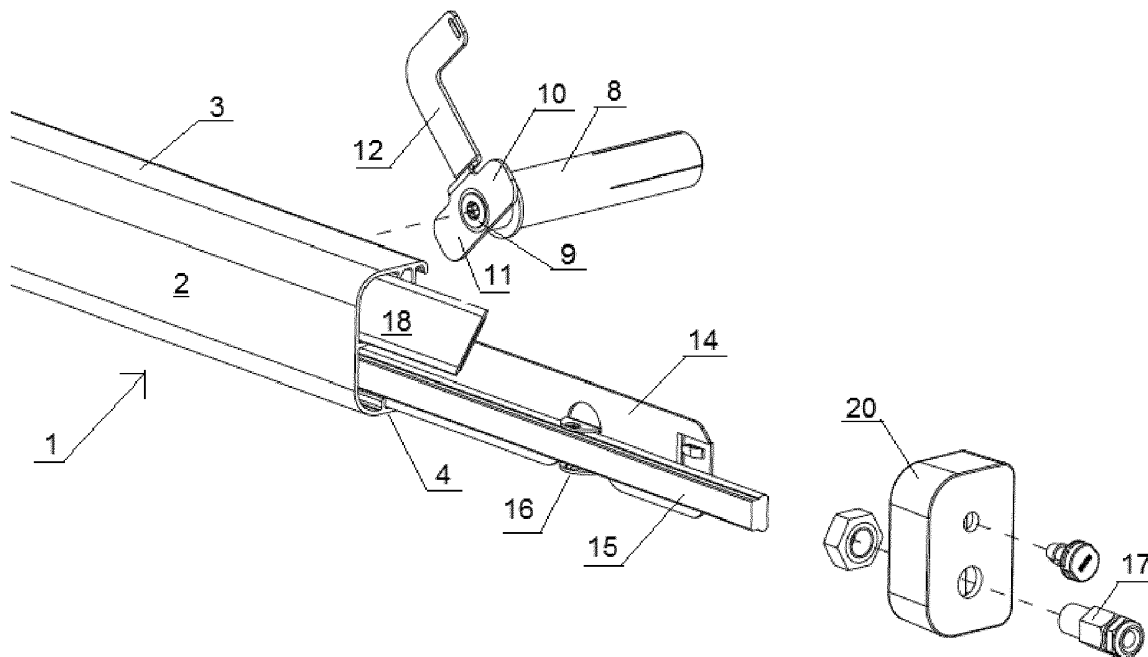


Fig. 1

Description

Field of the Invention

[0001] The present invention relates to an emergency lighting system particularly suited for tunnels.

Background

[0002] In tunnels it is common to use emergency lighting in the form of lamps mounted at even intervals along one of the sidewalls. In case of an accident inside the tunnel, whereupon people have to leave their vehicles and escape through an exit, they should have light so they may find their way out even if the permanent lighting system should fail. Emergency lighting systems commonly include separate power supplies, or are driven by rechargeable batteries located at each lighting point. Modern systems for emergency lighting commonly use LEDs as they have clear advantages as to longevity and power consume.

Summary of the Invention

[0003] It is an object of the present invention to provide an emergency lighting system which is simple to mount, reliable and with little need for maintenance.

[0004] This is achieved with an emergency lighting system as claimed in the appended claims.

[0005] In particular, the inventive emergency lighting system includes an elongated hollow profile of a transparent or translucent material, a LED strip mounted inside the profile, the LED strip being powered by an electrical power supply, and a photoluminescent strip mounted inside the profile and which is adapted to be charged by an external light source, wherein a surface of the photoluminescent strip is turned 90° from an external light source, and the light from the LED strip is passing beside the photoluminescent strip.

[0006] In case of an accident, all electric power may fail. Then, the photoluminescent strip will still provide sufficient light to enable persons to escape. The photoluminescent strip is optimally angled to collect as much light as possible for charging.

[0007] Further, in a preferred embodiment of the inventive emergency lighting system the profile includes a front wall, upper sidewall, lower sidewall and back wall, the profile further including first external fastening grooves behind the back wall, which are adapted to engage a mounting bracket, second fastening grooves inside the profile, the second fastening grooves being adapted to hold the LED strip, and third fastening grooves adapted to hold the photoluminescent strip.

[0008] The LED strip may be fastened on a guiding insert which is adapted to slide into the second fastening grooves.

[0009] Further, the LED strip may be fastened to the guiding insert with tabs which are bent out from the guid-

ing inser.

[0010] In one embodiment of the invention the LED strip includes a light guide illuminated by a LED located at an end of the light guide.

Brief Description of the Drawings

[0011] The invention will now be described in detail in reference to the appended drawings, in which:

Fig. 1 is a perspective view of the invention showing its front side and parts of the interior, and

Fig. 2 is a section through the emergency lighting.

Detailed Description

[0012] The emergency lighting system includes an elongate element which is intended to be mounted along a wall in a locality. Several elements may be joined to cover the whole length of the locality to an exit.

[0013] The elongate element includes an outer housing made from a hollow profile 1 of a transparent or translucent synthetic material, i.e. a polymer such as a polycarbonate.

[0014] The embodiment shown in Fig. 1 includes a front wall 2, upper and lower sidewalls 3, 4 and a back wall 5. The profile includes several flanges forming mounting grooves for strips and brackets. Thus, outside the back wall 5 there are a number of first fastening grooves 6 intended to hold a mounting bracket fastening the emergency lighting to a wall where it is to be mounted. The emergency lighting is fastened by first drilling a hole in the wall 7 and inserting an expansion bushing 8 therein. Then, bolts 9 are mounted in the bushings, each bolt holding one of said mounting brackets. Each mounting bracket includes two tabs 10, 11 which can be turned around the bolt 9 to engage the first fastening grooves 6. The part with the tabs 10, 11 is turned with an arm 12. When mounting the emergency lighting, the housing is pressed against the surface, for example the wall of a tunnel, whereupon the bracket is turned with the arm 12 causing the tabs to engage the first fastening grooves 6 locking the emergency lighting to the surface.

[0015] Inside the emergency lighting there are second fastening grooves 13 on the upper sidewall and the front wall, respectively. The second fastening grooves are intended to hold a guiding insert 14 supporting the LED strip 15. The guiding insert may be made from stainless steel. Here, the LED strip 15 is fastened to the guiding insert 14 with fastening tabs 16 which are bent out from the guiding insert. Other means may also be used for fastening the LED strip to the guiding insert, such as glue, snap mounts or screws. In the illustrated embodiment, the LED strip is in the form of a light guide receiving light from a LED 17 mounted at the end of the light guide. The LED is mounted on an end cap 20 terminating the housing 1. The LED is driven by an external power supply (not

shown). In an optional embodiment, the LED strip includes an array of LEDs located in series along the strip.

[0016] In the hollow profile forming the housing 1 there is also installed a photoluminescent strip 18. The photoluminescent strip 18 will be charged from the normal illumination present in the tunnel. This is an extra safety feature which is activated by complete power failure. The photoluminescent strip 18 may be made to light in a pre-defined period after the external illumination has ceased, for example for two hours or more.

[0017] The photoluminescent strip 18 is pushed into a third fastening groove 19. The third fastening grooves are located in such a way that the photoluminescent strip 18 is angled relatively vertical plane. There are two reasons for this: the light from the LED strip should be able to pass freely below the photoluminescent strip 18, and to allow the photoluminescent strip 18 to collect as much light as possible from the light source in the roof of the tunnel. Thus, the surface of the photoluminescent strip should optimally be angled 90° from the direction of the light source.

[0018] The photoluminescent strip will provide a light that is much weaker than the light from the LED strip, but it will be sufficient as a last resort in an emergency situation. The photoluminescent strip is fully independent of electric energy, and in event of an accident causing the LED strip to fail, the people concerned will have the possibility of following the photoluminescent strip to an emergency exit.

[0019] The emergency lighting system according to the invention has been described in relation to tunnels, which is the primary application, but it may also be used in other situations, such as buildings or large ships.

adapted to hold the photoluminescent strip (18).

3. An emergency lighting system according to claim 2, wherein the LED strip (15) is fastened on a guiding insert (14) which is adapted to slide into the second fastening grooves (13).
4. An emergency lighting system according to claim 3, wherein the LED strip (15) is fastened to the guiding insert (14) with tabs (16) which are bent out from the guiding insert (14).
5. An emergency lighting system according to claim 1, wherein the LED strip (15) includes a light guide illuminated by a LED (17) located at an end of the light guide.

Claims

1. An emergency lighting system, **characterized in that** it includes an elongated hollow profile (1) of a transparent or translucent material, a LED strip (15) mounted inside the profile (1), the LED strip being powered by an electrical power supply, and a photoluminescent strip (18) mounted inside the profile (1) and which is adapted to be charged by an external light source, wherein a surface of the photoluminescent strip (18) is turned 90° from an external light source, and the light from the LED strip (15) is passing beside the photoluminescent strip (18).
2. An emergency lighting system according to claim 1, wherein the profile includes a front wall (2), upper sidewall (3), lower sidewall (4) and back wall (5), the profile further including first external fastening grooves (6) behind the back wall (5), which are adapted to engage a mounting bracket (10-12), second fastening grooves (13) inside the profile (1), the second fastening grooves (13) being adapted to hold the LED strip (15), and third fastening grooves (19)

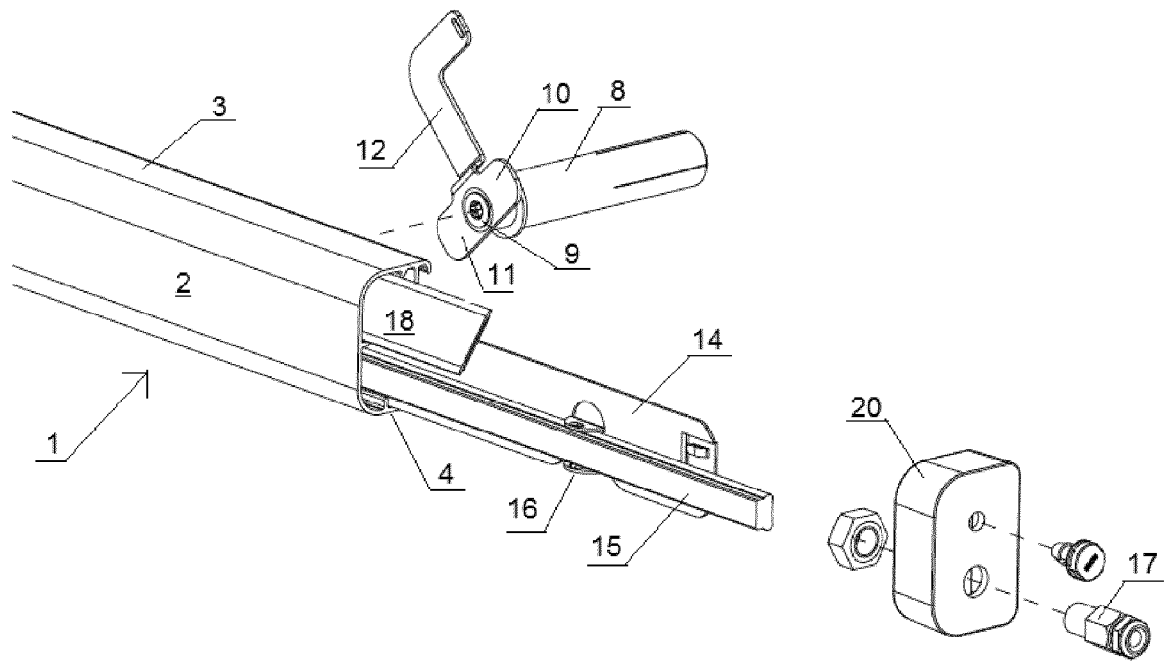


Fig. 1

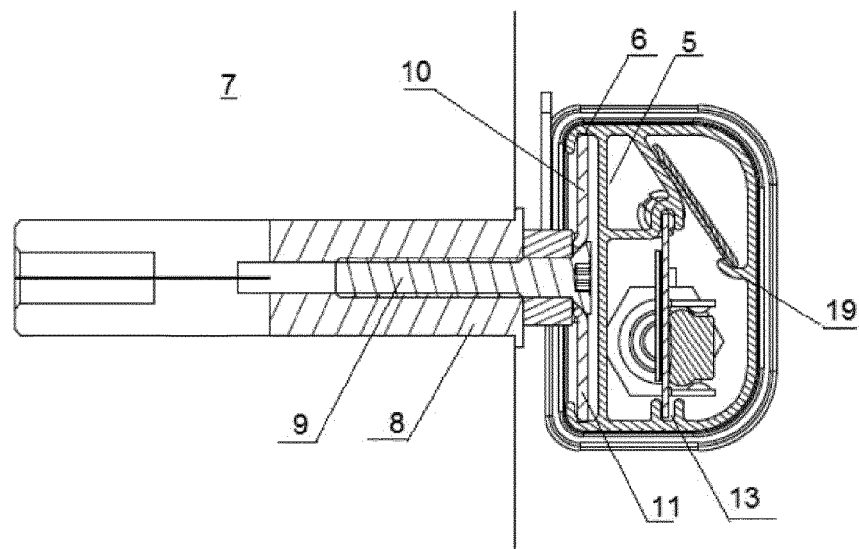


Fig. 2



EUROPEAN SEARCH REPORT

Application Number
EP 16 19 0685

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 January 2017	Examiner Allen, Katie
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 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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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
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