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(54) **Lighting fixture**

(57) The invention relates to a lighting fixture (1) which comprises a casing (10), inside of which there is at least one light source (3) arranged to illuminate at least one wall of the casing, which forms a translucent surface (2) made of translucent material, and a reflecting surface (4) towards which the light source (3) is di-

rected so that the beams produced by the light source (3) are reflected from the reflecting surface (4) onto the translucent surface (2), to which a text or a figure can be attached. The walls of the casing are arranged at an angle with respect to each other to provide a substantially V-shaped lighting fixture (1).

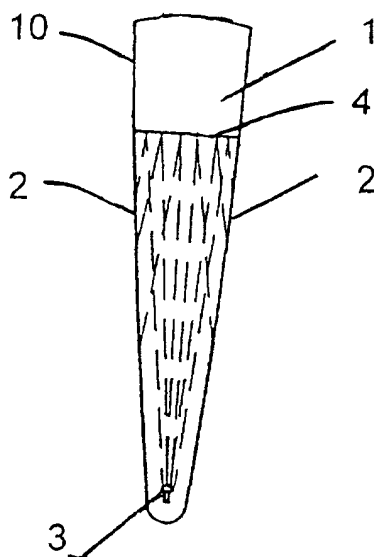


FIG. 1a

Description

[0001] The invention relates to a lighting fixture which comprises a casing, inside of which there is at least one light source arranged to illuminate at least one wall of the casing, which forms a translucent surface made of translucent material, and a reflecting surface towards which the light source is directed so that the beams produced by the light source are reflected from the reflecting surface onto the translucent surface, to which a text or a figure can be attached. The invention primarily relates to an illuminated sign used for showing emergency exits and fire-extinguishing equipment. It should be noted, however, that the lighting fixture according to the invention can also be used for other purposes.

[0002] It is known to use as illuminated signs lighting fixtures the casings of which comprise a translucent surface made of translucent material and in which the light sources illuminating the translucent surface and the text sign or figure attached thereto are placed inside the casing. The light sources are often LEDs (Light Emitting Diode) and they are placed at the top of the lighting fixture. Lighting fixtures may be either one-sided or two-sided. In two-sided lighting fixtures, the light sources illuminate both of the translucent surfaces provided on the opposite sides of the lighting fixture.

[0003] In practice it has been difficult to see the text sign or figure attached to the translucent surfaces of lighting fixtures clearly, particularly when the lighting fixture is placed high and far away from the person who looks at it. This problem results e.g. from the fact that the brightness differs on the translucent surfaces of the lighting fixtures due to the narrow light sector of the LEDs. For this reason it is necessary to use a larger number of light sources to provide the whole translucent surface with sufficiently even brightness.

[0004] The object of the present invention is to provide a lighting fixture in which the text or figure attached to the translucent surface or surfaces of the lighting fixture can be seen clearly when the translucent surface or surfaces are illuminated evenly with as small number of light sources as possible. This object is achieved with a lighting fixture according to the invention which is characterized in that the walls of the casing are arranged at an angle with respect to each other to provide a substantially V-shaped lighting fixture.

[0005] The basic idea of the invention is that the distance travelled by the beam can be nearly doubled compared to the prior art lighting fixtures by using a reflecting surface towards which light sources are directed so that the beams travel from the light source onto the translucent surface via the reflecting surface. In that case the beams can disperse more, and thus the beam illuminates a larger area. Consequently, the light spreads more evenly onto the translucent surface and fewer light sources are needed. The light spreads best onto the translucent surface in a V-shaped lighting fixture. Furthermore, a text sign or figure attached to the translucent

surface of a V-shaped lighting fixture can be seen better than those attached to a lighting fixture with parallel translucent surfaces when, for example, a person looking at the sign walks along a corridor to the ceiling of which the lighting fixture is attached and looks at it from below. When a narrow string consisting of light sources is used at the bottom of the V-shaped lighting fixture, such as a row of light emitting diodes, the beam is also reflected downwards from the reflecting surface e.g. towards the floor, and thus the lighting fixture can function both as an illuminated sign and as a safety light.

[0006] The lighting fixture of the invention may be a two-sided illuminated sign, which is to be attached to the ceiling, for example, in which case the light sources attached to the bottom of the lighting fixture between the two translucent surfaces illuminate both translucent surfaces. In that case the reflecting surface is located at the top of the lighting fixture. If the illuminated sign is attached to the wall, for example, it is possible to use the one-sided solution comprising only one translucent surface.

[0007] The shape and finish of the reflecting surface of the lighting fixture can be used for influencing the light dispersion. The purpose of design is to focus the light produced by the light source on the translucent surface. The reflecting surface may be e.g. planar, concave or convex and it may consist of a mirror or of a metal plate painted white. Other shapes and finishes can also be used.

[0008] The preferred embodiments of the lighting fixture according to the invention are disclosed in dependent claims 2 to 7.

[0009] In the following, the invention will be described in greater detail by means of examples with reference to accompanying Figures 1a and 1b, which illustrate a first preferred embodiment of the lighting fixture according to the invention seen from one end and from the front.

[0010] Figures 1a and 1b illustrate a lighting fixture of the invention, which is to be attached to the ceiling, for example. The lighting fixture 1 comprises a casing 10, which consists of an upper surface, lower surface and two side walls, of which the last-mentioned ones form translucent surfaces 2. The lighting fixture is two-sided, i.e. its casing comprises two illuminable translucent surfaces 2 on the opposite sides for a text sign or figure. The translucent surfaces 2 of the lighting fixture are arranged at an angle with respect to each other to provide a V-shaped lighting fixture. The number of light sources 3 is sufficient for illuminating the whole translucent surface 2 and they are arranged close to the lower surface of the lighting fixture between the translucent surfaces 2. The light sources 3 are directed towards a reflecting surface 4, which is close to the upper surface of the lighting fixture and is planar in this example. The light travels as shown by the broken lines from the light source 3 onto the reflecting surface 4, from which it is reflected onto both translucent surfaces 2. As a result of this, the

light disperses better and spreads more evenly onto the translucent surface, and thus disturbing differences in the brightness disappear.

[0011] In the lighting fixtures illustrated in Figures 1a and 1b the shape and finish of the reflecting surface 4 are selected so as to achieve as even brightness for the whole translucent surface 2 as possible. The reflecting surface 4 may be e.g. a mirror or a metal plate painted white, but other finishes can also be used. The light sources 3 may be light emitting diodes.

[0012] It is to be understood that the above description and the related drawings are only intended to illustrate the present invention. It will be obvious to a person skilled in the art that the invention may be modified in various ways without deviating from the scope and spirit of the invention disclosed in the appended claims.

Claims

1. A lighting fixture (1) which comprises a casing (10), inside of which there is at least one light source (3) arranged to illuminate at least one wall of the casing, which forms a translucent surface (2) made of translucent material, and a reflecting surface (4) towards which the light source (3) is directed so that the beams produced by the light source (3) are reflected from the reflecting surface (4) onto the translucent surface (2), to which a text or a figure can be attached, **characterized** in that the walls of the casing are arranged at an angle with respect to each other to provide a substantially V-shaped lighting fixture (1).
2. A lighting fixture according to claim 1, **characterized** in that each wall of the lighting fixture (1) forms an illuminable translucent surface (2).
3. A lighting fixture according to claim 1 or 2, **characterized** in that the reflecting surface (4) of the lighting fixture (1) is shaped to direct the light produced by the light source (3) onto the translucent surface or surfaces (2) of the lighting fixture.
4. A lighting fixture according to claim 3, **characterized** in that the reflecting surface (4) directed towards the light source (3) of the lighting fixture (1) is convex.
5. A lighting fixture according to claim 3, **characterized** in that the reflecting surface (4) directed towards the light source (3) of the lighting fixture (1) is concave.
6. A lighting fixture according to any one of claims 1 to 5, **characterized** in that the reflecting surface (4) of the lighting fixture (1) consists of a mirror or of a finished metal plate.
7. A light according to any one of claims 1 to 6, **characterized** in that the light source (3) consists of a light emitting diode.

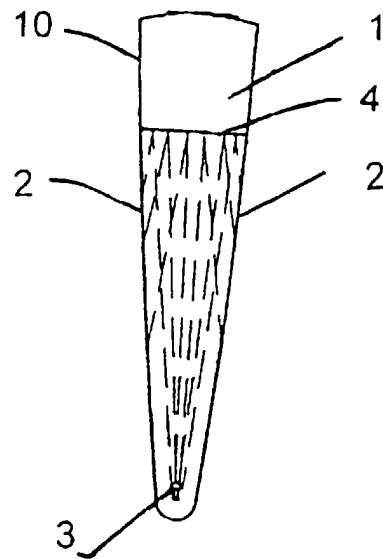


FIG. 1a

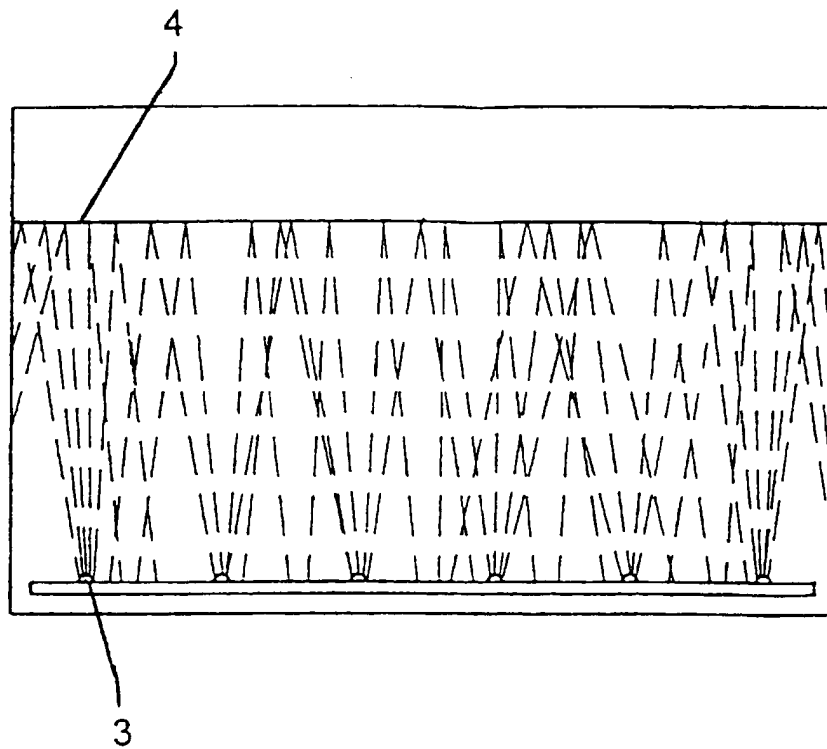


FIG. 1b



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EUROPEAN SEARCH REPORT

Application Number
EP 00 66 0113

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 3 931 689 A (SHINE WILLIAM P) 13 January 1976 (1976-01-13)	1-3,6	G09F13/14
Y	* claims; figure 14 * ---	5	
Y	US 4 561 203 A (MACDONALD JR ROBERT D ET AL) 31 December 1985 (1985-12-31) * figure 3 *	5	
X	US 4 835 661 A (FOGELBERG WEYMOUTH ET AL) 30 May 1989 (1989-05-30) * the whole document * -----	1,3,5,6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			G09F
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		6 September 2000	Gallo, G
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			

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

EP 00 66 0113

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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06-09-2000

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US 3931689 A	13-01-1976	NONE	
US 4561203 A	31-12-1985	NONE	
US 4835661 A	30-05-1989	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82