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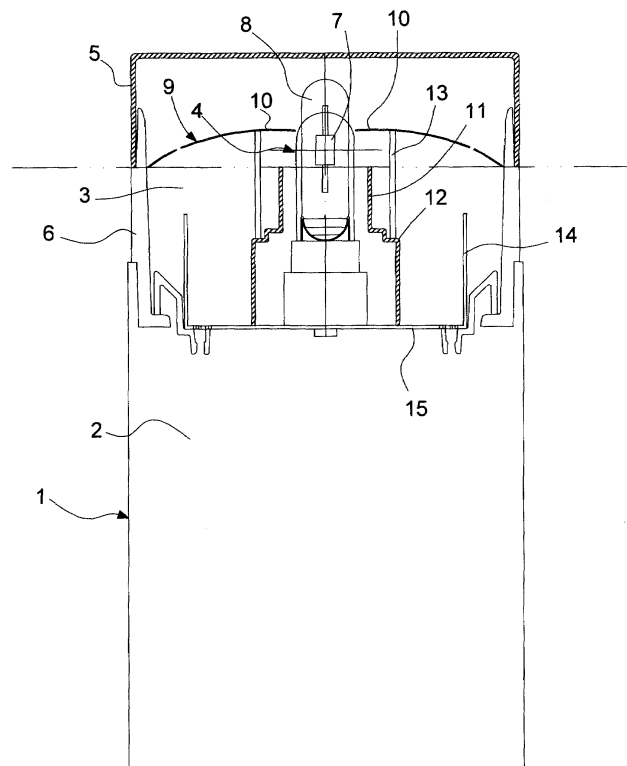
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(54) **Column lighting device**

(57) Column lighting device (1) consisting of a supporting structure or column (2), in the upper part of which there is a light source (4), situated in a housing (3) laterally surrounded by a shield (6) which allows the passage of light and above by a cover (5), the emitting bulb (7) of said light source (4) being positioned higher up with re-

spect to said light passage shield (6), in which there is a single reflector screen (9), possibly obtained by means of a series of adjacent reflector elements, whose reflecting surface has a central portion situated above the emitting bulb (7) and the perimetric portions at a lesser height with respect to the height of the lower end of the emitting bulb (7).

Fig. 1



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Description

[0001] The present invention relates to a column lighting device.

[0002] In particular, according to the present invention, a column lighting device is proposed, of the bollard type, having optics which allow the uniform distribution of the light emitted and ensure visual comfort.

[0003] Column lighting devices, also called bollards, can be divided into two groups of products: those in which the light source is visible and those in which the light source is shielded with respect to the observer.

[0004] It is known that the column lighting devices of the first group have the problem of possibly dazzling the observer, whereas the lighting devices of the second group have a very low light emission due to the fact that the shield absorbs a consistent part of the light radiation.

[0005] One of the problems connected with the low performance of shielded lighting devices relates to the occurrence of diffraction phenomena which result in a non-uniform lighting of the ground close to the devices themselves and which generate so-called "light and shadow smudges".

[0006] Furthermore, in all known column lighting devices, upward light emissions, which are undesired, are relatively high, considering the quantity of light that is emitted from the product.

[0007] The main objective of the present invention is therefore to provide a column lighting device which is able to combine requirements of visual comfort, efficiency and upward light dispersion limitation, maintaining ground distribution and also illuminating the ground close to its base.

[0008] A further objective of the present invention is to provide a column lighting device which is easy and economical to produce and handle.

[0009] These objectives according to the present invention are achieved by providing a column lighting device having the characteristics specified in claim 1.

[0010] Further characteristics of the column lighting device of the present invention are indicated in the dependent claims.

[0011] The characteristics and advantages of a column lighting device according to the present invention will appear more evident from the following illustrative and non-limiting description, referring to the enclosed schematic drawing which shows a sectional view of a preferred embodiment of the column lighting device of the invention.

[0012] With reference to the figure, the column lighting device 1 consists of a supporting column 2, in whose upper part there is a housing 3 for a light source 4, in turn covered by a cover 5. The side surface of the housing 3, through which the light is emitted towards the external environment, consists of a shield 6 for the passage of light, made of a shock-resistant and light transparent material, for example glass or, preferably a plastic material such as transparent polycarbonate. Although the struc-

ture of the light passage shield 6 comprises both a portion through which the light can be diffused towards the outside of the lighting device 1 and also other portions whose function is to act as a shield 6 for the rest of the structure, from hereon reference will be made to the shield 6 relating only to the portion through which the light can be diffused outside the lighting device 1, i.e. the portion delimited by the upper edge of the walls of the supporting column 2 and the lower edge of the cover 5.

[0013] The light source 4 consists of an emitting bulb 7, surrounded by a glass ampoule 8. The emitting bulb 7 is situated at a greater height with respect to the shield 6. Immediately above the emitting bulb 7, there is a reflector shield 9, with a curved section, having a concavity facing downwards. In order to obtain optimum results with respect to light distribution and uniformity, close to the base of the column lighting device 1 and also in the surrounding area, the two branches of the curved section, facing the centre, have, proceeding from the centre towards the periphery of the reflector shield 9, a first ascending portion 10, the remaining part of the curve, on the contrary, having a descending tendency. In particular, the ascending portion 10 has a shorter length with respect to the remaining part of the curve. The form and position of the reflector shield 9 have the advantage that the outward distribution of the light emitted from the emitting bulb 7 and reflected from the reflector shield 9 does not require the presence of further reflection optics and is therefore much simpler than the known lighting solutions.

[0014] The reflector shield 9 is centrally perforated to allow it to be positioned slightly above the emitting bulb 7, i.e. to house the upper part of the ampoule 8 in the space defined between the reflector shield 9 and the cover 5, inside which elements capable of dispersing heat (not shown) can be conveniently situated, which also prevent the heat itself from being concentrated in correspondence with specific external areas, the outside temperature of the lighting device thus remaining below the pre-established safety limits in all points.

[0015] Both the lower edge of the cover 5 and the perimetric portion of the reflector shield 9 are lower than the lower end of the emitting bulb 7 of the light source 4. It is therefore impossible for the light emitted from the emitting bulb 7 to pass through the light passage shield 6 following a trajectory parallel to the ground or directed upwards. In this way, the emitting bulb 7 is completely hidden from the sight of an observer whose eyes are at a height above that of the reflector shield 6. Furthermore, the perimetric portions of the reflector shield 9, more downwardly curved, deviate the light with narrower angles and project it into the areas closest to the base of the lighting device 1.

[0016] The column lighting device 1 also envisages the presence of a cylindrical light absorption shield 11, positioned around the light source 4, at a short distance therefrom and immediately below the lower end of the emitting bulb 7, i.e. whose upper end is at the same height as the peripheral end of the reflector shield 9. As the

height of the light absorption shield 11 coincides with the upper end of the light passage shield 6, i.e. with the peripheral (and lower) end of the reflector shield 9, it completely prevents light from being emitted from the lighting device 1 in a direction parallel to the ground, also eliminating the possibility of an observer being dazzled by the reflections which would inevitably be produced. In addition to this, the light absorption shield 11 also allows direct upward emissions of light to be eliminated.

[0017] Close to its base, the form of the light absorbing shield 11 is enlarged by a step 12 which runs along the whole circumference of the shield 11, forming a support for a cylindrically-shaped, transparent casing 13, preferably made of glass, optionally coloured, which laterally surrounds the light source 4 and physically separates the central housing area 3, which houses the light source 4, from the more peripheral areas of the same housing 3. The presence of the casing 13 prevents an excessive overheating of the air in the housing 3, the hot air rising upwards and being sent through the single opening in correspondence with the central hole of the reflector shield 9.

[0018] Furthermore, the column lighting device 1 as shown in the figure, comprises a second cylindrical light absorbing shield 14, positioned further away from the light source 4 and lower down with respect to the shield 11 situated around the light source 4. The function of the second light absorbing shield 14, whose presence is preferred but not necessary for the purposes of the present invention, is to eliminate the formation of unpleasant signs which can be projected to the ground as a result of the inevitable constructive variability of the light sources used and increase visual comfort.

[0019] The height of the second light absorbing shield 14 is in fact such as to intercept all the light rays emitted from the emitting bulb 7 which could meet, on their straight trajectory, first the upper edge of the first light absorbing shield 11 and then the upper edge of the side wall of the supporting column 2, and which could create undesirable diffraction phenomena responsible for the formation of so-called "light and shadow smudges".

[0020] Finally, the base 15 of the housing 3 is also conveniently produced so as to be able to be considered a light absorbent, to allow the elimination of phenomena relating to the production of parasite reflections (or light reflections) to be even more efficient.

[0021] The column lighting device according to the present invention allows an optimum and uniform light distribution, with particular respect to the areas closest to its base.

[0022] Furthermore, the lighting device according to the present invention prevents the formation of dazzling phenomena for an observer and excessive heating of the housing 3 and outer walls of the light passage shield 6 and cover 5.

[0023] Finally, the column lighting device according to the present invention provides a solution which is simple and economical to produce and handle, particularly in

virtue of the fact that, instead of a complicated combination of optics, it envisages the presence of a single reflector element which distributes light both close to the base of the column lighting device 1 and also in the surrounding area.

[0024] The present invention is described for illustrative but non-limiting purposes, according to one of its preferred embodiments, but variations and/or modifications can obviously be applied by experts in the field, all included in the protection scope, as defined in the enclosed claims.

[0025] In particular, the forms of the lighting device according to the invention, as also the materials, can differ from those shown for purely illustrative and non-limiting purposes in the figure.

Claims

1. A column lighting device (1) consisting of a supporting structure or column (2), in the upper part of which there is a light source (4), situated in a housing (3) laterally surrounded by a shield (6) which allows the passage of light and above by a cover (5), the emitting bulb (7) of said light source (4) being positioned higher up with respect to said light passage shield (6), **characterized in that** it comprises a single reflector screen (9), whose reflecting surface has a central portion situated above the emitting bulb (7) and the perimetric portions at a lesser height with respect to the height of the lower end of the emitting bulb (7).
2. The lighting device (1) according to claim 1, **characterized in that** said reflector shield (9) is obtained by grouping together a series of reflector elements.
3. The lighting device (1) according to claim 1, **characterized in that** the curvature of the reflecting surface of said reflector shield (9) has, proceeding from the centre towards the periphery of the reflector shield (9), a first ascending portion (10), the remaining part of the curve, on the contrary, having a descending tendency.
4. The lighting device (1) according to any of the previous claims, **characterized in that** the perimetric portions of the reflecting surface of said reflector shield (9) are substantially at the same height as the lower edge of the cover (5).
5. The lighting device (1) according to any of the previous claims, **characterized in that** said reflector shield (9) is centrally perforated, housing the portion of light source above the emitting bulb (7) in the space defined between the reflector shield (9) and the cover (5).

6. The lighting device (1) according to any of the previous claims, **characterized in that** it also comprises a transparent casing (13) which laterally surrounds the light source (4), physically separating the central area of the housing (3), which houses the light source (4), from the more peripheral areas of the housing itself (3). 5
7. The lighting device (1) according to claim 6, **characterized in that** said transparent casing (13) is coloured. 10
8. The lighting device (1) according to any of the previous claims, **characterized in that** it also comprises a light absorbing shield (11), positioned around the light source (4), at least as high as the upper end of the light passage shield (6). 15
9. The lighting device (1) according to claim 8, **characterized in that** it also comprises a second light absorbing shield (14), positioned externally with respect to said light absorbing shield (11) situated around the light source (4), whose upper edge is higher than the trajectory of a straight line passing through the upper edge of the light absorbing shield (11) and the upper edge of the side wall of the supporting column (2). 20 25
10. The lighting device (1) according to claim 9, **characterized in that** said base (15) of said housing (3) is light absorbing. 30

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Fig. 1

