

(19)



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(11)

**EP 0 730 119 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:

**04.09.1996 Bulletin 1996/36**

(51) Int Cl.<sup>6</sup>: **F21V 7/20, F21V 7/12**

(21) Application number: **96200547.6**

(22) Date of filing: **01.03.1996**

(84) Designated Contracting States:

**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC  
NL PT SE**

(30) Priority: **02.03.1995 NL 9500409**

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(54) **A lighting armature**

(57) The invention relates to a lighting armature provided with a box-shaped housing comprising an upper plate, side walls extending transversely to said upper plate, at least one light source disposed within said box and a reflector disposed within said box and extending in the longitudinal direction thereof. The reflector is sub-

stantially curved when seen in cross-sectional view. Seen in cross-sectional view, the reflector is furthermore provided with a few reflecting parts, which are interconnected at their ends by connecting parts, which are screened from direct incidence of light from the light source(s) by the reflecting parts.

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## Description

The invention relates to a lighting armature provided with a box-shaped housing comprising an upper plate, side walls extending transversely to said upper plate, at least one light source disposed within said box and a reflector disposed within said box and extending in the longitudinal direction thereof, which reflector is substantially curved when seen in cross-sectional view.

With usual lighting armatures of the above kind, wherein the light source is usually a fluorescence lamp, it is usual to provide openings, inter alia in the reflector, between its side mirrors and a so-called overhead or roof mirror of the reflector, for ventilation of the room being lighted by means of the lighting armature via the armature in question. With the known constructions part of the light emitted by the light source(s) directly falls into said openings and thus cannot be used for lighting the room to be lighted.

According to the invention the reflectors are provided with slots, in those parts that are screened from direct incidence of light from the light source(s) by further parts of the reflector.

By using the construction according to the invention it is thus possible to obtain a higher lighting efficiency and a lower luminance in transverse direction of the armature.

A further drawback of known lighting armatures is the fact that light is reflected from the flat or usually curved overhead/roof mirror positioned above the lamps to the side mirrors positioned beside said mirror, and only then falls into the room to be lighted. To a large extent the light beamed into the room from the overhead/roof mirror via the side mirrors leaves the armature at large emission angles with respect to the vertical.

As a result of this the area in the room that is lighted by a lighting armature will be comparatively wide, whereby, if the armatures are installed at a height of 2.50 - 2.80 m and with a mutual spacing which is usual in modulated offices, the lighting intensity in an area approximately centrally between two lighting armatures disposed in the room will be higher than near areas located nearer the lighting armatures.

This unevenness is undesirable, since the object is to obtain an even lighting intensity with natural contrasts in the lighted room.

Another drawback of flat or conventional curved overhead/roof mirrors is that as a result of the relatively large emission angles the light reflected into the room by the overhead or roof mirror via the reflector side mirrors leads to a higher luminance, which is disadvantageous when working with display units.

Seen in cross-sectional view, the reflector is according to the invention provided with a few reflecting parts, which are interconnected at their ends by connecting parts, which are screened from direct incidence of light from the light source by said reflecting parts.

By using the construction according to the invention

the reflector, in particular the part of the reflector which is positioned higher than the light source(s), may be formed with a more or less serrated profile, whereby the relevant reflecting parts of the reflector may be designed and disposed in such a manner, that they are capable of reflecting light received from the light source(s) directly into the room to be lighted. This may be realized while maintaining a compact construction of the armature.

The invention will be explained in more detail below with reference to a perspective sectional view of a lighting armature according to the invention diagrammatically illustrated in the accompanying Figure.

The Figure diagrammatically shows a lighting armature provided with an upper plate 1 and with side walls 2 joining said upper plate perpendicularly.

Usually cross partitions (not shown in the Figure) are provided between the side walls 2 at the ends of the lighting armature, whereby said cross partitions are provided with means for supporting (a) light source(s), usually an elongated fluorescence lamp 3, under which lamp a grid 3' may be provided.

In the illustrated embodiment a central part 4 of the upper wall also constitutes the central part of a reflector of the lighting armature. As will be apparent from the Figure, this part 4 of the upper wall, which constitutes a central part of the reflector, is disposed above the light source 3, in practice it is also called the "overhead or roof mirror".

Said roof mirror 4 comprises a central part, which is built up of two abutting parts 5 and 6 being disposed symmetrically with respect to a vertical longitudinal centre plane of the lighting armature and being slightly curved, when seen in sectional view, whereby the point at which the slightly curved (seen in sectional view) parts 5 and 6 extending in the longitudinal direction of the lighting armature abut each other is positioned lower than the other portions of said parts 5 and 6.

At their ends facing away from each other said parts 5 and 6 abut against connecting parts 7 and 8 respectively extending at least substantially parallel to the vertical longitudinal centre plane of the armature, in which connecting parts ventilation slots 9 are formed.

Further parts 10 and 11 of the roof mirror 4, which are curved when seen in sectional view, join the upper edges of the connecting parts 7 and 8, said parts 10 and 11 extending outwards and downwards from connecting parts 7 and 8, as will be apparent from the Figure.

Further connecting parts 12 and 13 extending at least substantially parallel to connecting parts 7 and 8 abut against the ends of the curved parts 10 and 11 of the roof mirror 4 of the reflector that face away from each other, said parts 12 and 13 extending upwards from their abutment against parts 10 and 11. Also connecting parts 12 and 13 are provided with ventilation slots 14.

Further parts 15 and 16 of the roof mirror, which are curved when seen in sectional view, abut against the upper ends of connecting parts 12 and 13. Said parts 15 and 16 in turn extend outwards and downwards from

their abutment against connecting parts 12 and 13. At their ends remote from connecting parts 12 and 13 said curved parts 15 and 16 of roof mirror 4 are connected to the substantially horizontally extending side edges of upper plate 1 by means of connecting parts 17 and 18 respectively, which slope upwards from the ends in question.

The upper boundary edges of further parts of the reflector, the so-called side mirrors 19 and 20, which are each built up of two curved (seen in sectional view) parts 21, 22 and 23, 24 respectively, abut against the outer boundary edges of curved parts 15 and 16 of the roof mirror.

As a result of the above-described stepped or more or less serrated configuration of the roof mirror 4 the curved (seen in sectional view) parts 10, 11, 15, and 16, which are disposed symmetrically with respect to the vertical longitudinal centre plane of the lighting armature extending through the connecting line between parts 5 and 6, may be designed to have a comparatively small radius of curvature, such that light falling on said curved parts 10, 11, 15, 16 from the light source 3 will be reflected directly into the room located under the lighting armature, without said light first falling on side mirrors 19 or 20, for example. As a result of this a larger part of the light from the light source, which is being emitted in the direction of the reflector, will be reflected directly into the room located under the lighting armature, and considerably less light will be emitted over a comparatively large distance in a direction transversely to the longitudinal direction of the lighting armature, with the consequential reflection losses, after having been reflected in the reflector twice. Thus undesirable overlaps between themselves of areas being lighted by neighbouring lighting armatures in a room are avoided, at least to a considerable extent, whilst furthermore a particularly even lighting is achieved.

Another important advantage of the lighting armature described above and illustrated in the Figure is the fact that the ventilation slots 9 and 14 are formed in those parts of the reflector that are screened by further parts of the reflector in such a manner, that light from the light source cannot fall directly on the parts provided with ventilation slots, so that no light emanating directly from the light source can "disappear" through said ventilation slots. This also contributes substantially towards enhancing the efficiency of the light given off by the light source.

Of course additions and/or variations to the illustrated embodiment described above are conceivable within the spirit and scope of the invention.

Thus it is for example possible to use rectilinear (seen in sectional view) parts instead of curved (seen in sectional view) parts 5, 6, 10, 11, 15 and 16.

## Claims

1. A lighting armature provided with a box-shaped housing comprising an upper plate, side walls extending transversely to said upper plate, at least one light source disposed within said box and a reflector disposed within said box and extending in the longitudinal direction thereof, which reflector is substantially curved when seen in cross-sectional view, characterized in that, seen in cross-sectional view, the reflector is provided with a few reflecting parts, which are interconnected at their ends by connecting parts, which are screened from direct incidence of light from the light source(s) by said reflecting parts.
2. A lighting armature according to claim 1, characterized in that, seen in sectional view, at least one part of the reflector, which is positioned higher than said light source(s), is provided with reflecting parts arranged in side-by-side relationship, whereby one reflecting parts slopes downward from a boundary edge extending in the longitudinal direction of said armature toward the outer side of the lighting armature, and is connected at its outer boundary edge extending in the longitudinal direction of the armature, by means of a connecting part extending upwards from the respective boundary edge, to another reflecting (seen in sectional view) part of the reflector, which slopes downward toward the outer side of the lighting armature.
3. A lighting armature according to claim 1 or 2, characterized in that, seen in sectional view, at least that part of the reflector which is positioned above the light source(s) is symmetric with respect to a vertical longitudinal centre plane, whilst said part is provided with at least two reflecting parts on either side of said longitudinal centre plane.
4. A lighting armature according to claim 3, characterized in that the boundary edges located nearest the vertical longitudinal centre plane of the reflecting parts located nearest the vertical longitudinal centre plane are connected to a central part of the reflector by means of connecting parts extending downward from said boundary edges.
5. A lighting armature according to claim 4, characterized in that, seen in cross-sectional view, the central part of said reflector is built up of two abutting reflecting parts, said parts sloping slightly upwards towards the outside from their abutment, in the direction of connecting parts joining their upper edges, by means of which further reflecting parts are connected to said central part.
6. A lighting armature according to any one of the pre-

ceding claims, characterized in that ventilation slots are provided in said connecting parts.

7. A lighting armature according to any one of the preceding claims, characterized in that said reflecting parts are curved. 5
8. A lighting armature provided with a box-shaped housing comprising an upper plate, side walls extending transversely to said upper plate, at least one light source disposed within said box and a reflector disposed within said box and extending in the longitudinal direction thereof, which reflector is substantially curved when seen in cross-sectional view, characterized in that said reflector is provided with slots, in parts which are screened from direct incidence of light from the light source(s) by further parts of said reflector. 10 15

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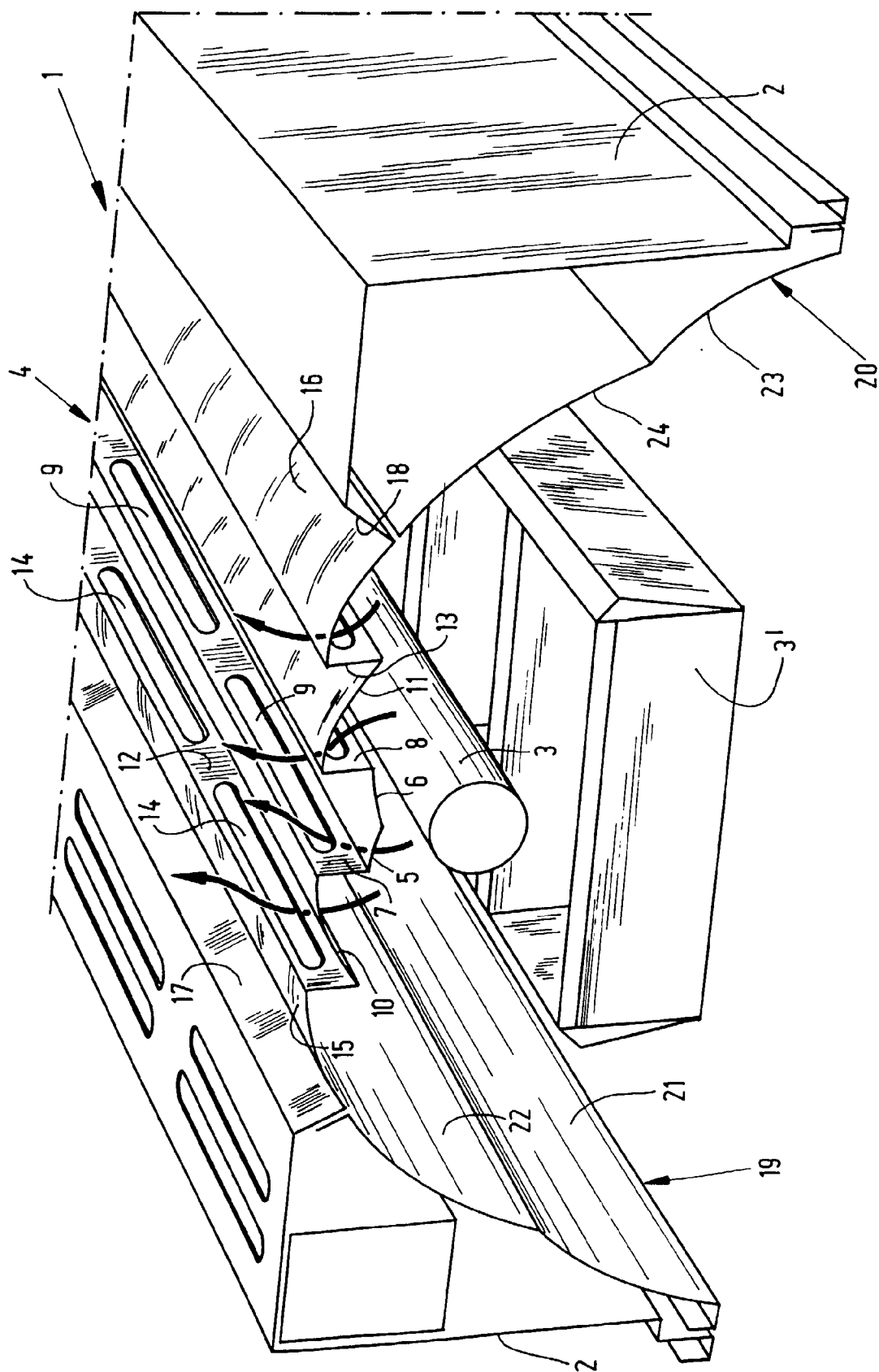
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# EUROPEAN SEARCH REPORT

Application Number  
EP 96 20 0547

| 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.6) |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DE-A-24 59 643 (BARTENBACH) 24 June 1976<br>* the whole document *                                            | 1-8                                             | F21V7/20<br>F21V7/12                         |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | DE-A-28 37 755 (GRÜNZWEIG + HARTMANN MONTAGE GMBH) 13 March 1980<br>* page 4 *<br>* claims 1,3; figures 1,2 * | 1,3,4,<br>6-8                                   |                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                               |                                                 | TECHNICAL FIELDS SEARCHED (Int.Cl.6)         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                               |                                                 | F21V                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                               |                                                 |                                              |
| Place of search<br>THE HAGUE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                               | Date of completion of the search<br>17 May 1996 | Examiner<br>De Mas, A                        |
| <p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone<br/> Y : particularly relevant if combined with another document of the same category<br/> A : technological background<br/> O : non-written disclosure<br/> P : intermediate document</p> <p>T : theory or principle underlying the invention<br/> E : earlier patent document, but published on, or after the filing date<br/> D : document cited in the application<br/> L : document cited for other reasons<br/> &amp; : member of the same patent family, corresponding document</p> |                                                                                                               |                                                 |                                              |

EPO FORM 1503 01.82 (P04C01)