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(54) A COMPONENT OF AN OPTICAL SYSTEM OF AN ANTI-GLARE LIGHTING FIXTURE

(57) A component of an optical system of an anti-glare lighting fixture for fluorescent light bars comprising the main reflector (3), whose side walls have a shape similar to the sectors of parabola arms, equipped with an auxiliary reflector (1), whose cross-section has a shape similar to a section of a parabola with a vertex, wherein the auxiliary reflector (1) is located on the main reflector (3), and the cross-section of the joined reflectors is similar to a parabola, wherein the auxiliary reflector (1) is equipped with at least four primary mounting springs (2) arranged symmetrically in pairs on its both sides, wherein the main reflector (3) is also equipped with at least four secondary mounting springs (4) arranged in the same manner as the primary mounting springs (1), wherein the primary (2) and secondary (4) mounting springs are located next to each other in shared mounting openings (5) in the walls of profiles (7) whose cross-section has a shape similar to the letter "L", and which are located on the bottom edge of the fixture (6).

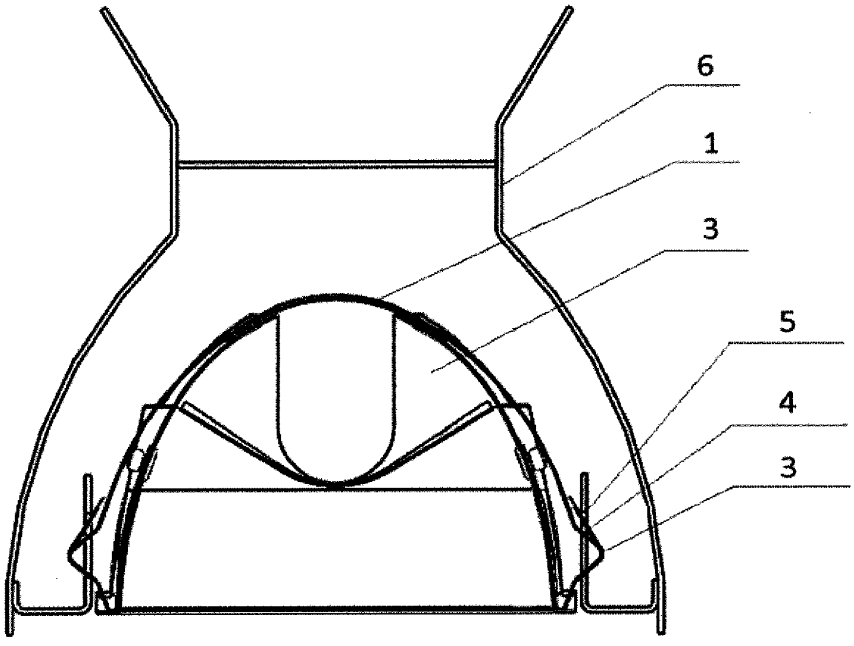

Fig. 1

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Description

[0001] The subject of the invention is a component of an optical system of a fixture for fluorescent light bars.

[0002] The prior art knows fixtures equipped with reflectors.

[0003] Patent description PL 175285 discloses a reflector with two main areas whose slant heights in the cross-section are shaped as circular sectors. The main areas in the central section are connected with a central protrusion.

[0004] The central protrusion forms a radial surface tangent to the main surfaces of the reflector. The main surfaces of the reflector change their shape along external transitional radial surfaces into parabolic side walls. The main areas are covered with longitudinal stripes shaped as obtuse triangles, whose longest sides that constitute the base of the stripes correspond to the slant heights of the main areas. The width of the external radial transitional surfaces varies. The main areas include in their longitudinal section slant heights in the form of circular sectors, and intersect via the radial transition with the parabolic front and rear wall thus forming an "M" shaped interpenetration edge.

[0005] Application PL 357289 discloses a lighting fixture reflector with at least one longitudinal lamp, wherein the longitudinal reflector extends along the longitudinal direction of the lamp, and there are provided several reflective partitions arranged at a distance from each other and transverse to the longitudinal direction of the lamp, and which - when viewed in the longitudinal direction - are equipped in the middle with a recess on the side of the lamp (lamps), wherein the recess of a partition includes a reflective central part that is generally flat and parallel to the exit aperture of the reflector.

[0006] Application PL 363229 discloses a reflector used in lighting fixtures for illuminating crops in glass and plastic sheet greenhouses. The reflector has a contour in the shape of a prism open at the bottom, and its left and right top walls include vent openings, whereas the opening has a larger diameter and doubles as an opening for mounting. In another embodiment of the reflector, the vent opening in the left top wall is covered with a cap which comprises a disc made of material, and which is removed during cutting the opening. This is applicable if the fixtures are not part of a ventilation system. The reflector is equipped with auxiliary reflector mounted to the top wall on the inside of the reflector. This limits the versatility of such a reflector, as it is not suitable for use with fluorescent light bars.

[0007] Additionally, in the anti-glare fixtures equipped with fluorescent light bars the shape of the photometric body is formed by designing the reflector side walls and the parts that confine the reflector as curved in a parabolic shape. As the reflector is mounted to a fixture after mounting the lamp, the reflector must be equipped with a longitudinal opening in its top part to enable its installation to the fixture. Such a solution reduces the efficiency of the fixture due to the loss of some of the luminous flux of the fluorescent light bar, which is not reflected in the illuminated direction, but remains in the fixture and is absorbed as a result of numerous reflections within the fixture.

[0008] The method of mounting a parabolic reflector in a lighting fixture for a fluorescent light bar using screws or rivets known in the prior art did not provide for the installation of an auxiliary reflector.

[0009] The invention relates to a component of an optical system of an anti-glare lighting fixture characterised in that it is equipped with an auxiliary reflector, whose cross-section has a shape similar to a section of a parabola with a vertex, wherein the auxiliary reflector is located on the main reflector, and the cross-section of the joined reflectors is similar to a parabola, wherein the auxiliary reflector is equipped with at least four primary mounting springs arranged symmetrically in pairs on its both sides, wherein the main reflector is also equipped with at least four secondary mounting springs arranged in the same manner as the primary mounting springs, wherein the primary and secondary mounting springs are located next to each other in shared mounting openings in the walls of profiles whose cross-section has a shape similar to the letter "L", and which are located on the bottom edge of the fixture.

[0010] The solution according to the invention enables the use of this flux by reflecting it in the illuminated direction via an auxiliary reflector in the shape of a sector of a parabola. This increases the luminosity by nearly 20%, which in turn lowers the amount of input energy required to provide the desired luminosity by up to more than a dozen percent, with no detriment to the anti-glare properties of the fixture.

[0011] The invention is shown as an embodiment in schematic figures, in which Fig. 1 shows the cross-section of the invention, Fig. 2 - auxiliary reflector together with mounting springs, Fig. 3 - main reflector together with mounting springs and the attached auxiliary reflector, Fig. 4 - shared mounting opening, fig. 5 - reflector when the spring of the auxiliary reflector settles next to the spring of the main reflector, Fig. 6 - cross-section of a lighting fixture with mounting openings, Fig. 7 - lighting fixture with mounting openings.

[0012] The component of an optical system of an anti-glare lighting fixture for fluorescent light bars comprises the main reflector 3, whose side walls have a shape similar to the sectors of parabola arms. The component of an optical system is equipped with an auxiliary reflector 1, whose cross-section has a shape similar to a section of a parabola with a vertex. The auxiliary reflector 1 is located on the main reflector 3 and the cross-section of the joined reflectors is similar to a parabola. The auxiliary reflector 1 is equipped with at least four primary mounting springs 2 arranged symmetrically in pairs on its both sides, wherein the main reflector 3 is also equipped with at least four secondary mounting springs 4 arranged in the same manner as the primary mounting springs 1. The

primary mounting springs 2 and secondary mounting springs 4 are located next to each other in shared mounting openings 5 in the walls of profiles 7 whose cross-section has a shape similar to the letter "L", and which are located on the bottom edge of the fixture 6. The invention in the embodiment according to Fig. 1-7 is characterised in that the auxiliary reflector 1 in the shape of a parabola is mounted with mounting springs 2 located in the mounting opening 5 in the fixture 6 shared by this reflector 1 and the main reflector 3. The shape of the curvature of the auxiliary reflector 1 corresponds to the shape of the curvature of the main reflector 3, and the mounting spring 2 of the auxiliary reflector 1 is located in the shared mounting opening 5 with the spring 4 of the main reflector 3, which pushes the main reflector 3 and the auxiliary reflector 1 against each other. The auxiliary reflector 1 is installed by mounting the springs 2 of the auxiliary reflector 1 in mounting openings 5 made in the lighting fixture 6. Then, a fluorescent light and the main reflector 3 are installed by mounting the springs 4 in the mounting openings 5 made in the fixture 6. The spring 4 mount prevents the main reflector 3 from extending out of the mounting opening 5.

Claims

1. component of an optical system of an anti-glare lighting fixture for fluorescent light bars comprising the main reflector, whose side walls have a shape similar to the sectors of parabola arms **characterised in that** it is equipped with an auxiliary reflector (1), whose cross-section has a shape similar to a section of a parabola with a vertex, wherein the auxiliary reflector (1) is located on the main reflector (3), and the cross-section of the joined reflectors is similar to a parabola, wherein the auxiliary reflector (3) is equipped with at least four primary mounting springs (2) arranged symmetrically in pairs on its both sides, wherein the main reflector (3) is also equipped with at least four secondary mounting springs (4) arranged in the same manner as the primary mounting springs (1), wherein the primary (2) and secondary (4) mounting springs are located next to each other in shared mounting openings (5) in the walls of profiles (7) whose cross-section has a shape similar to the letter "L", and which are located on the bottom edge of the fixture (6).

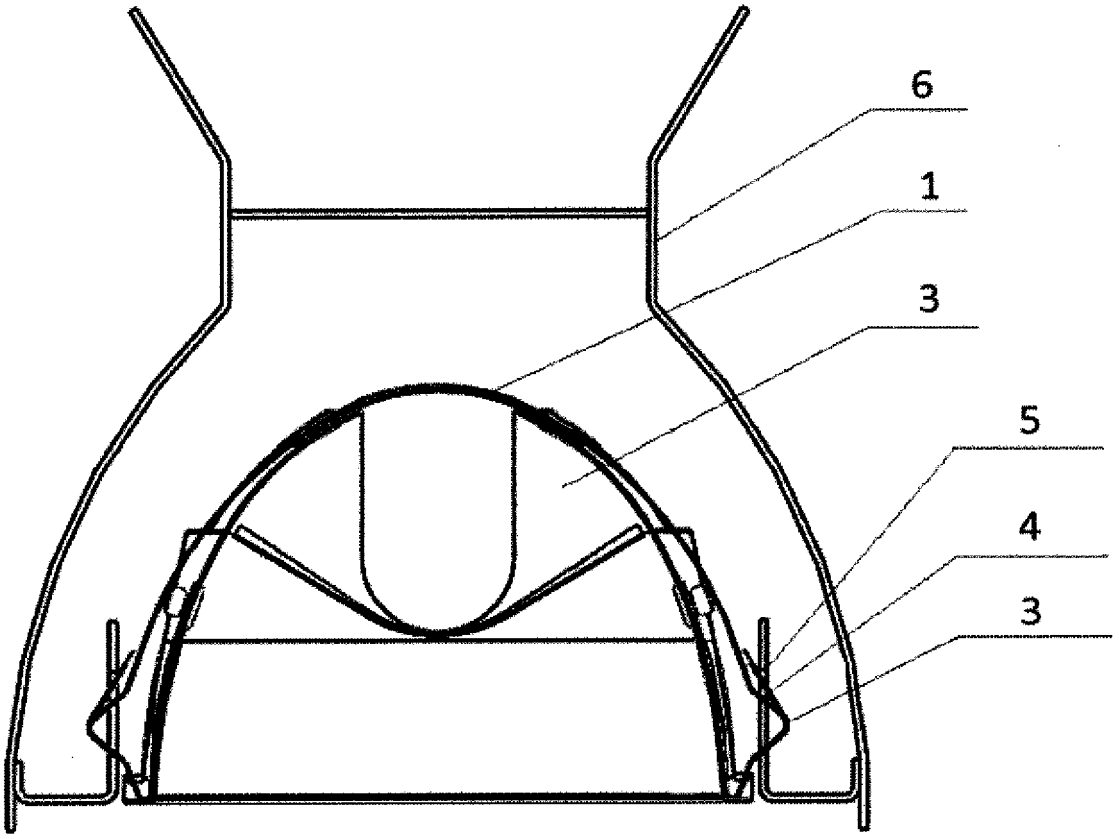

Fig. 1

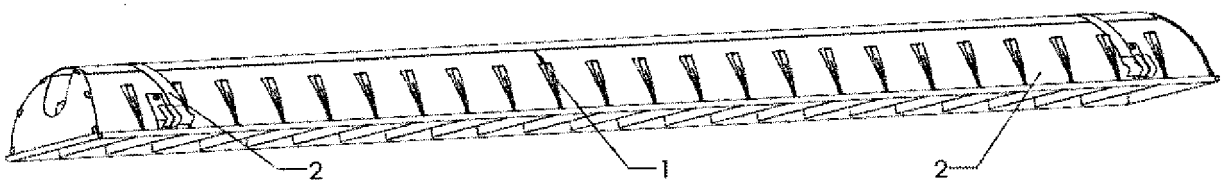

Fig. 2

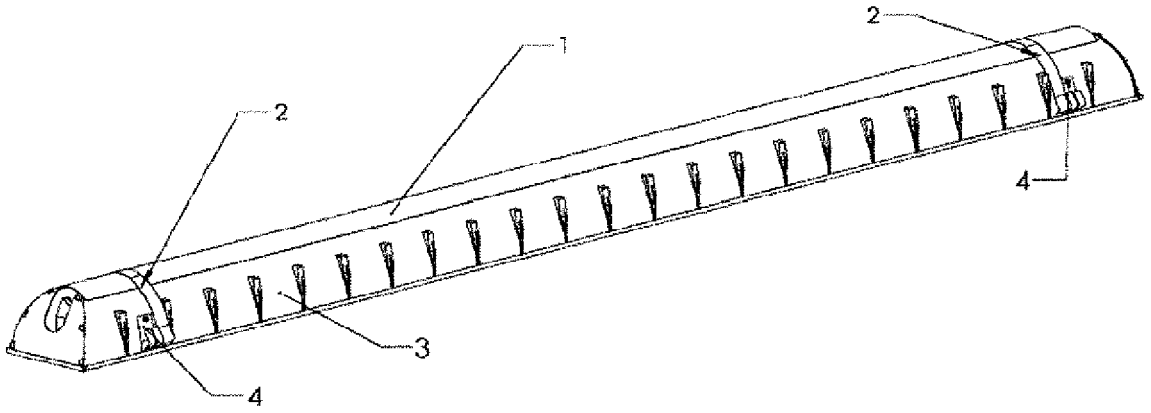

Fig. 3

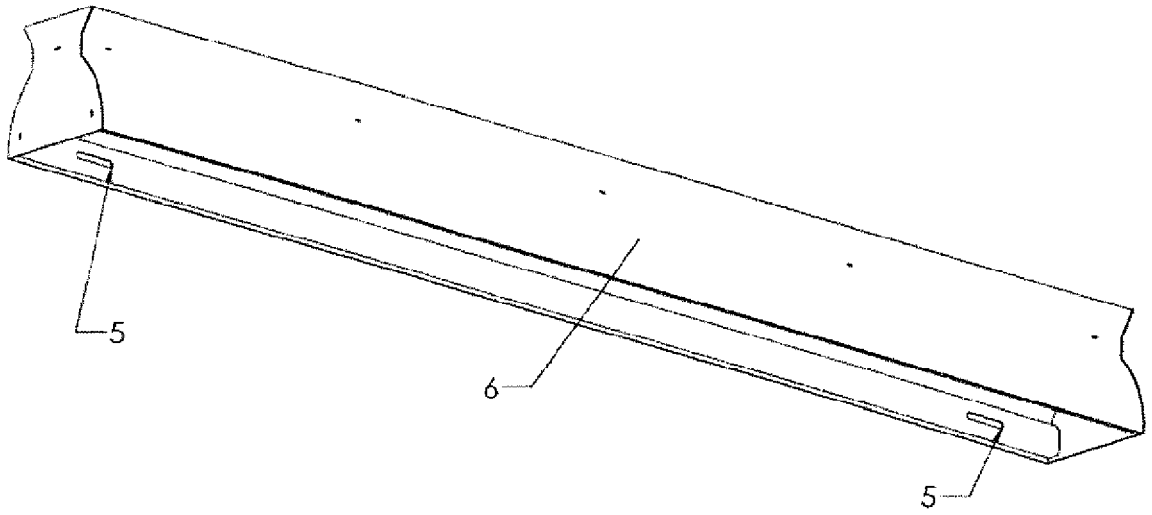

Fig. 4

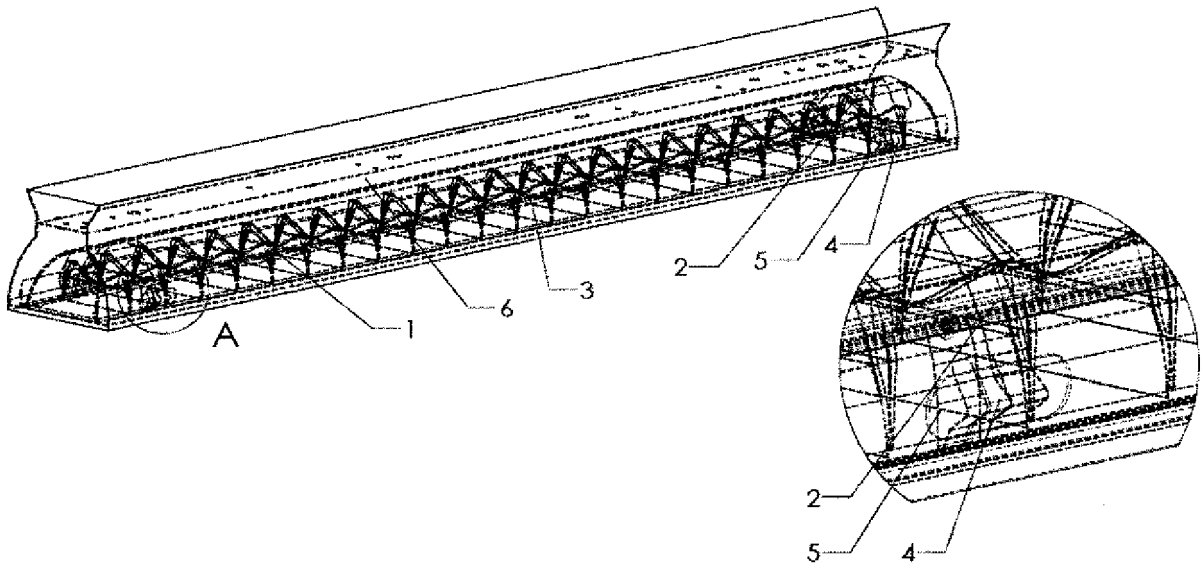

Fig. 5

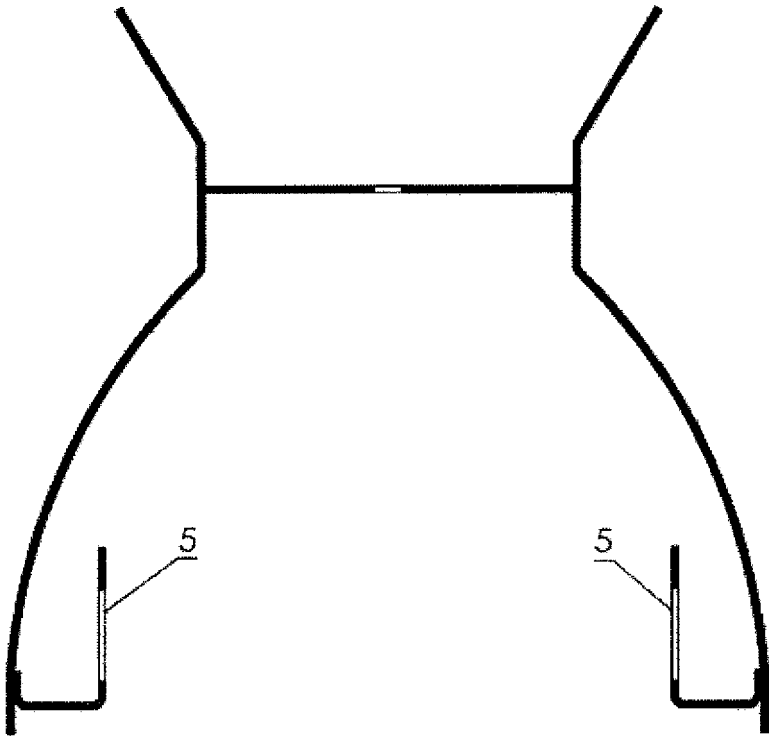

Fig. 6

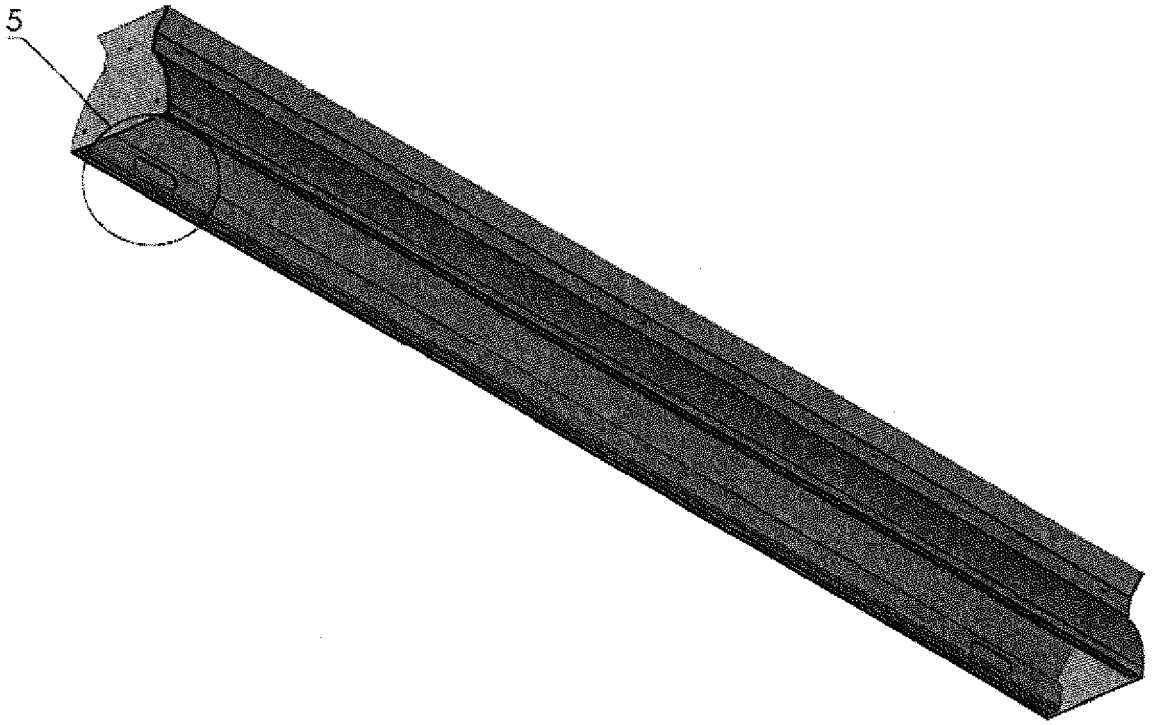

Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 17 46 0002

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	EP 0 952 390 A2 (TRILUX LENZE GMBH & CO KG [DE]) 27 October 1999 (1999-10-27) * figures 4-7 * * paragraphs [0018] - [0029] * -----	1	INV. F21V21/088 F21V7/00 F21V17/00 F21V17/16
X	EP 2 913 582 A1 (TRILUX GMBH & CO KG [DE]) 2 September 2015 (2015-09-02) * figure 6b * * paragraphs [0053], [0054] * -----	1	F21V21/02 ADD. F21Y103/00
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X	WO 00/17574 A1 (HIDE A LITE AB [SE]; HAEGGLUND BENGT [SE]) 30 March 2000 (2000-03-30) * figures 1-3 * * page 4, line 1 - page 5, line 15 * -----	1	
X	DE 20 2011 051094 U1 (ZUMTOBEL LIGHTING GMBH [AT]) 28 November 2012 (2012-11-28) * figures 16, 17 * * paragraphs [0087], [0088] * -----	1	

TECHNICAL FIELDS SEARCHED (IPC)
F21V
F21Y

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 September 2017	Vida, Gyorgy

CATEGORY OF CITED DOCUMENTS

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- PL 357289 **[0005]**
- PL 363229 **[0006]**