

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)**

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2019/058470

International filing date (day/month/year)
04.10.2019

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27.11.2018

International Patent Classification (IPC) or both national classification and IPC
INV. F21V11/06 F21V31/00 F21V5/00 ADD. F21V29/76 F21V29/89 F21Y105/10 F21Y115/10

Applicant
LUX LEDLIGHTING S.R.L.

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application


2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of this opinion

see form
PCT/ISA/210

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into English, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-20</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-20</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-20</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

1 **RE ITEM V**

**REASONED STATEMENT WITH REGARD TO NOVELTY, INVENTIVE STEP
AND INDUSTRIAL APPLICABILITY**

1.1 Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure:

D1 US 2013/147347 A1 (LAPORTE JEAN-FRANCOIS [CA]) 13 June 2013 (2013-06-13)

D2 US 2013/021797 A1 (KUBO TOMOKI [JP]) 24 January 2013 (2013-01-24)

D3 US 2012/087118 A1 (BAILEY CHRISTOPHER L [US] ET AL) 12 April 2012 (2012-04-12)

INDEPENDENT CLAIM 1

Novelty

1.2 The **document D1** is regarded as being the closest prior art to the subject-matter of **claim 1**, and shows (see cited passages in the International Search Report - ISR) (the references in parentheses applying to this document):

1.3 An LED lighting device (10) (suitable) for the irradiation of a cultivated surface comprising:

- a support (60, 70) made of thermally conductive material (60: elastomer; 70: e.g. aluminium), having a lower face (see Fig. 1, 7), intended to be turned toward the cultivated surface, and an opposite upper face (see Fig. 1, 7), provided with a plurality of holes (62, 72) passing from the upper face (see Fig. 1, 7) to the lower face (see Fig. 1, 7), wherein entry openings (see fig. 1, 7) of said holes (62, 72) on the upper face (see Fig. 1, 7) collectively occupy a hole region (see Fig. 1, 7) of said upper face (see Fig. 1, 7);
- a plurality of optical bodies (52) suitable to concentrate or distribute a light emission cone, each optical body (52) being inserted in a respective hole (62, 72) so as to concentrate or distribute the emission cone exiting the lower face (see Fig. 1, 7);
- a thin and flexible membrane (40), in contact with the upper face (see Fig. 1, 7) of the support (60, 70), so as to cover the hole region (see Fig. 1, 7);

- an LED board (20) comprising a plurality of LEDs (30), superimposed on ~~and in contact with~~ the membrane (40), configured so that each LED (30) is turned toward the membrane (40) and aligns with the respective optical body (52).
- 1.3.1 The subject-matter of **claim 1** therefore differs from this known LED lighting device in that the plurality of LEDs is in contact with the membrane as well.
- 1.3.2 The subject-matter of **claim 1** is therefore novel (Article 33(2) PCT).
- 1.3.3 The problem to be solved by the present invention may therefore be regarded as improving the heat transfer to the support directly from the LEDs and to seal the LEDs from the environment.
- 1.3.4 The solution to this problem proposed in **claim 1** of the present application is considered as involving an inventive step for the following reasons:
- 1.3.5 The available prior art as cited in the International Search Report (ISR) contains no incentive for the skilled person to amend/modify the LED lighting device as disclosed in **document D1** in such a way as defined in the characterizing part of **claim 1**. The activity to create a contact between the plurality of LEDs and the membrane as well (characterizing part), results from a step being non-obvious in view of the cited prior art documents (**document D1** explicitly mentions that holes (42) are foreseen in the membrane (40) to avoid contact with the LEDs (32); in **document D2** the lens layer is rigid and not a membrane; **document D3** explicitly mentions holes (116) in the membrane (114) surrounding the LEDs (104)). Thus the LED lighting device according to **claim 1** involves an inventive step.

DEPENDENT CLAIMS 2-19

Novelty / inventive step

- 1.4 **Claims 2-19** are dependent on **claim 1** and as such also meet the requirements with respect to novelty and inventive step. (Articles 33(1)-(3) PCT).

2 **RE ITEM VII**

CERTAIN DEFECTS IN THE INTERNATIONAL APPLICATION

- 2.1 A document reflecting the prior art is not identified in the description (Rule 5.1(a)(ii) PCT).

- 2.2 The features of the claims are not provided continuously with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 2.3 Independent **claim 1** is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate.

3 **RE ITEM VIII**

CERTAIN OBSERVATIONS IN THE INTERNATIONAL APPLICATION

- 3.1 **Reference signs not appearing in the description may not appear in the drawings or vice versa.** This requirement is not met in view of the reference sign "34" (see Fig. 5).
- 3.2 The **lines of each sheet of the description shall preferably be numbered in sets of five**, the numbers appearing on the left side, to the right margin.