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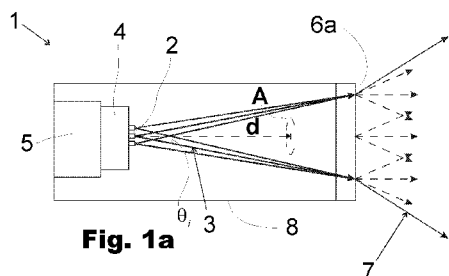
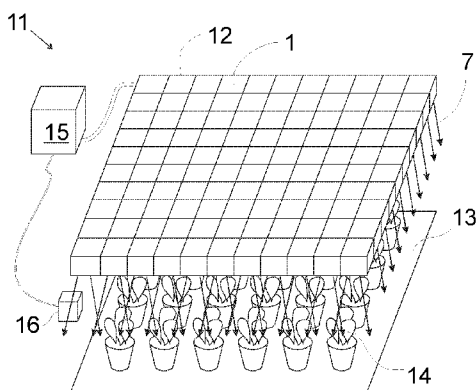
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[Continued on next page]

(54) Title: ILLUMINATION FOR ACTIVATING PHOTSENSITIVE BIOLOGICAL PROCESSES

**Fig. 1a****Fig. 2**

(57) Abstract: An illumination device (1) for producing an illuminating light beam (7) to activate a photosensitive biological process comprises a light source element (2) configured to emit light at a wavelength range overlapping with the absorption wavelength band of the photosensitive biological process. According to the present invention, the light source element comprises a plurality of laser diodes (2) configured to emit primary light beams (3) at different wavelengths; and the illumination device (1) further comprises at least one diffuser surface (6a, 6b) configured and placed to diffusively redistribute the energy of the primary light beams (3) into the illuminating light beam (7) so that the energy density of the illuminating light beam leaving the illuminating device does not exceed the maximum permissible exposure of a human eye.



GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *of inventorship (Rule 4.17(iv))*

Published:

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— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

(88) Date of publication of the international search report:

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INTERNATIONAL SEARCH REPORT

International application No
PCT/FI2012/050646

A. CLASSIFICATION OF SUBJECT MATTER

INV. A01G7/04 A01G9/20
ADD. F21Y101/02 F21Y113/00 F21V23/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A01G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2007 259796 A (GRADUATE SCHOOL FOR THE CREATI) 11 October 2007 (2007-10-11) the whole document	1-5,8-15
X	US 6 431 731 B1 (KRIETZMAN MARK HOWARD [US]) 13 August 2002 (2002-08-13) abstract; figure 9 column 1, line 25 - line 36 column 2, line 6 - line 15 column 3, line 15 - line 45 claims 17,18	1-5,14, 15
A	US 2009/301979 A1 (TANAKA MICHIO [JP] ET AL) 10 December 2009 (2009-12-10) paragraphs [0023], [0040]	1,3,8, 10,12, 14,15
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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI2012/050646

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-5, 8-15

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No

PCT/FI2012/050646

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 1 326 229 A (UNIV ADELAIDE; PALEG L G) 8 August 1973 (1973-08-08) the whole document -----	1,2,8,14

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/FI2012/050646

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 6431731 B1	13-08-2002	US 6431731 B1 US 2002196625 A1	13-08-2002 26-12-2002
US 2009301979 A1	10-12-2009	EP 1859673 A1 US 2009301979 A1 WO 2006098139 A1	28-11-2007 10-12-2009 21-09-2006
GB 1326229 A	08-08-1973	NONE	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5, 8-15

Use of laser diodes of different wavelengths to activate a photosensitive biological process together with a diffuser to obtain an eye-safe illuminating device.

2. claims: 6, 7, 16, 17

Detecting and monitoring a luminescence from a biological organism and controlling a lighting device based on said monitoring.
