

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
27 November 2003 (27.11.2003)

PCT

(10) International Publication Number
WO 2003/098659 A3

(51) International Patent Classification⁷: **H01J 61/82**,
H05B 41/392, 41/292

VERMEULEN, Fransiscus, A. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(21) International Application Number:
PCT/IB2003/001547

(74) Agent: **DUSSELDORP, Jan, C.**; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(22) International Filing Date: 22 April 2003 (22.04.2003)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
02076943.6 17 May 2002 (17.05.2002) EP

(71) Applicant (*for all designated States except US*): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

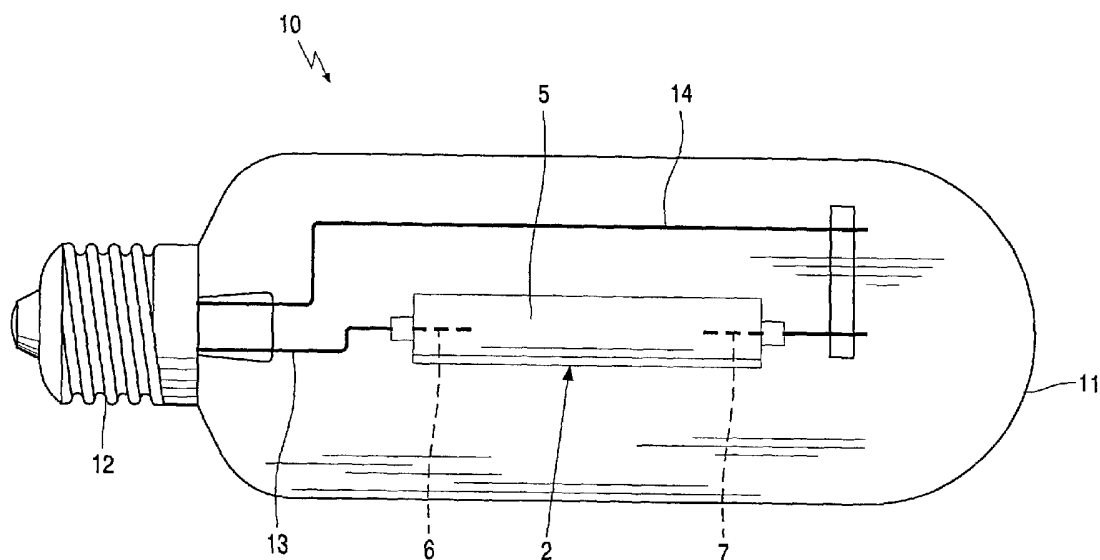
(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **GELJTENBEEK, Johannes, J., F.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **HENDRIX, Johan, L., V.** [BE/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

Published:
— *with international search report*

[Continued on next page]

(54) Title: METHOD AND DEVICE FOR DRIVING A METAL HALIDE LAMP



(57) Abstract: A method for driving a metal halide lamp (1) is described, the method comprising the step of generating a light controlling DC electric field E with a desired direction and a desired strength inside the lamp such as to obtain a desirable ion distribution inside the lamp. The lamp is supplied with a commutating current with a DC component, preferably having a constant current intensity and a duty cycle differing from 50%. By setting the duty cycle, it is possible to set a certain average value of the lamp current, allowing the efficacy and/or color temperature of the lamp to be influenced.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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

13 May 2004

INTERNATIONAL SEARCH REPORT

PCT/IB 03/01547

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H01J61/82 H05B41/392 H05B41/292

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)

IPC 7 H01J H05B H01B

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 practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 369 518 B1 (ZHU HUILING ET AL) 9 April 2002 (2002-04-09)	1-4, 6-13, 15-18, 33
A	column 4, line 51 - column 6, line 43; figures 2, 3, 4a-4d, 5a, 5b	5, 14, 19-28
X	EP 1 089 601 A (OSRAM SYLVANIA INC) 4 April 2001 (2001-04-04) paragraphs '0005!, '0010!, '0014!, '0020!, '0025! - '0027! figures 8-10	1-4, 15-17
A	US 4 128 789 A (OWEN DANIEL V) 5 December 1978 (1978-12-05) abstract	1-23
	----- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in 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 document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

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

1 March 2004

Date of mailing of the international search report

08/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Zuccatti, S

INTERNATIONAL SEARCH REPORT

PCT/IB 03/01547

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 907 196 A (IZAWA MAKOTO ET AL) 25 May 1999 (1999-05-25)	29,31
A	column 4, line 24 - line 50 -----	30,32
X	US 6 133 695 A (FAI CHAN K ET AL) 17 October 2000 (2000-10-17)	29
Y	column 2, line 27 - line 38 column 7, line 39 - line 45 figures 2-5,9B	31
A	-----	30,32
Y	DE 90 17 622 U (ZUMTOBEL AG.) 28 March 1991 (1991-03-28)	31
A	paragraph '0003! -----	30
A	US 3 599 745 A (HUGHES BENJAMIN F) 17 August 1971 (1971-08-17) figures 16,17 -----	30
A	US 2 192 262 A (GRIESEDIECK CARL A) 5 March 1940 (1940-03-05) figures 2,3 -----	30

INTERNATIONAL SEARCH REPORT

PCT/IB 03/01547

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 fee, this Authority did not invite payment of any additional fee.
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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-28,33

Discharge lamp with lamp driving apparatus for controlling the particle distribution during operation

2. claims: 29-32

Position detector and discharge lamp with lamp orientation detector

INTERNATIONAL SEARCH REPORT

PCT/IB 03/01547

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 6369518	B1	09-04-2002	JP	2000223077 A	11-08-2000
EP 1089601	A	04-04-2001	US	6175199 B1	16-01-2001
			CA	2317385 A1	30-03-2001
			EP	1089601 A2	04-04-2001
US 4128789	A	05-12-1978	CA	1093145 A1	06-01-1981
			DE	2729052 A1	05-01-1978
			JP	53010567 A	31-01-1978
			NL	7706367 A	03-01-1978
US 5907196	A	25-05-1999	JP	3128611 B2	29-01-2001
			JP	9290683 A	11-11-1997
			DE	19717575 A1	06-11-1997
US 6133695	A	17-10-2000	CA	2240660 A1	07-02-1999
			EP	0864066 A1	16-09-1998
			WO	9816778 A1	23-04-1998
			US	6144160 A	07-11-2000
			US	6246176 B1	12-06-2001
DE 9017622	U	28-03-1991	DE	4017839 A1	05-12-1991
			DE	9017622 U1	28-03-1991
US 3599745	A	17-08-1971	NONE		
US 2192262	A	05-03-1940	NONE		