

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
9 March 2006 (09.03.2006)

PCT

(10) International Publication Number  
**WO 2006/024998 A3**

(51) International Patent Classification:  
**G03F 7/20** (2006.01)

(21) International Application Number:  
PCT/IB2005/052787

(22) International Filing Date: 25 August 2005 (25.08.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
04104148.4 30 August 2004 (30.08.2004) EP

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

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SANDERS, Renatus, H., M.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **WEEKAMP, Johannus, W.** [NL/NL];  
c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

(74) Agents: **GROENENDAAL, Antonius, W., M.** et al.;  
Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

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

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

**Declaration under Rule 4.17:**

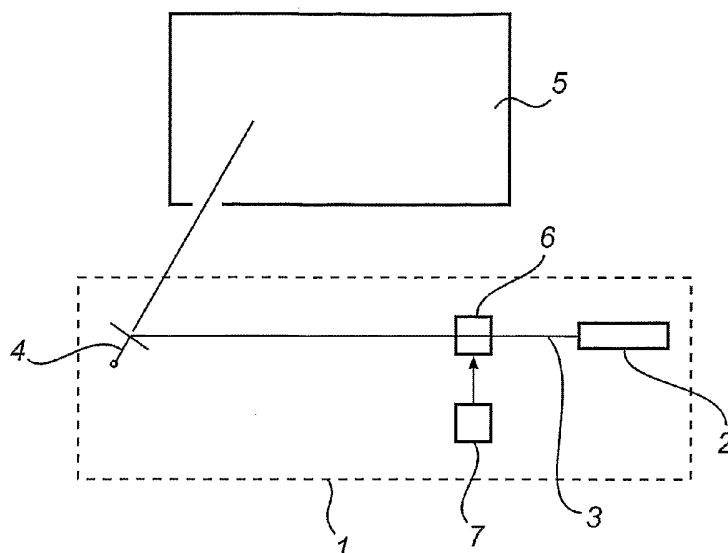
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

**Published:**

— with international search report

[Continued on next page]

(54) Title: A LASER PROJECTION SYSTEM



(57) Abstract: The present invention relates to a laser projection system (1) having means for reducing the coherence of a generated laser beam (3) in order to reduce the occurrence of annoying speckle artefacts in images produced by the system. Coherence is reduced by letting the laser beam (3) pass through a transparent cell (6) comprising first (A) and second (B) immiscible fluids having different refractive indices. The fluids are displaced in the cell, preferably using an electrowetting technique. The cell (6) may thus be realised as an electrowetting lens, which is driven with a pseudo random driving signal.

WO 2006/024998 A3



— *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:**

26 October 2006

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2005/052787

## A. CLASSIFICATION OF SUBJECT MATTER

INV. G03F7/20

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)

G03F G02B H04N G03B

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, INSPEC, IBM-TDB

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2001/007510 A1 (DORSEL ANDREAS ET AL) 12 July 2001 (2001-07-12) paragraphs [0023], [0026], [0029], [0032], [0034], [0035] figures 2-4	1-5
A	US 5 272 473 A (THOMPSON ET AL) 21 December 1993 (1993-12-21) claims 17,19	1-5
A	US 2002/126981 A1 (RODDY JAMES E ET AL) 12 September 2002 (2002-09-12) paragraphs [0009] - [0015]	1-5
P,A	WO 2005/006720 A (KONINKLIJKE PHILIPS ELECTRONICS N.V; WILLEMSSEN, OSCAR, H) 20 January 2005 (2005-01-20) claims 1,2 figures 1,3	1-5

☐ 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 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

11 August 2006

Date of mailing of the international search report

01/09/2006

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

Adams, R

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2005/052787

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2001007510	A1	12-07-2001	NONE	
US 5272473	A	21-12-1993	NONE	
US 2002126981	A1	12-09-2002	NONE	
WO 2005006720	A	20-01-2005	NONE	