

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 September 2011 (01.09.2011)

(10) International Publication Number
WO 2011/106567 A3

(51) International Patent Classification:
G02B 27/28 (2006.01) **G03B 35/00** (2006.01)
G02B 5/30 (2006.01)

North Crescent Drive, Suite 120, Beverly Hills, CA 90210 (US). **GILMAN, Scott, E.** [US/US]; 100 North Crescent Drive, Suite 120, Beverly Hills, CA 90210 (US).

(21) International Application Number:
PCT/US2011/026131

(74) Agents: **MOTHEW, Neil, G.J.** et al.; Baker & McKenzie LLP, 2001 Ross Avenue, Suite 2300, Dallas, TX 75201 (US).

(22) International Filing Date:
24 February 2011 (24.02.2011)

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

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/307,786 24 February 2010 (24.02.2010) US

(71) Applicant (for all designated States except US): **MOTHEW, Neil** [US/US]; Reald Inc., 100 North Crescent Drive, Suite 120, Beverly Hills, CA 90210 (US).

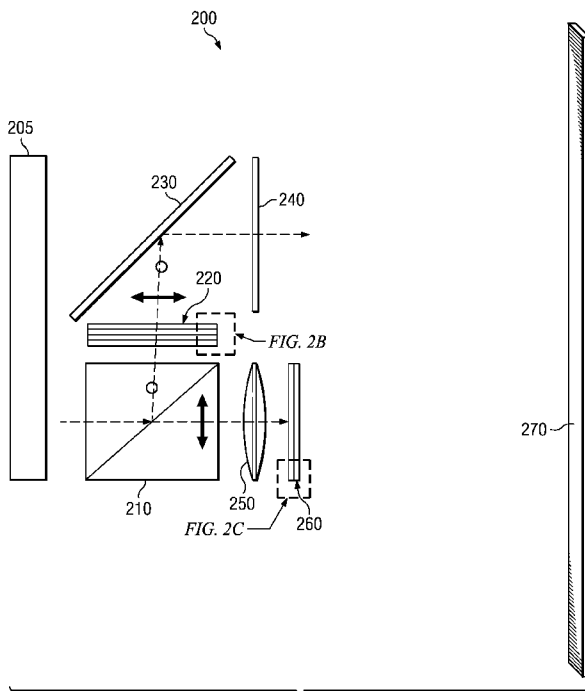
(72) Inventors; and

(75) Inventors/Applicants (for US only): **COLEMAN, David, A.** [US/US]; 100 North Crescent Drive, Suite 120, Beverly Hills, CA 90210 (US). **SCHUCK, Miller, H.** [US/US]; 100 North Crescent Drive, Suite 120, Beverly Hills, CA 90210 (US). **SHARP, Gary, D.** [US/US]; 100

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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,

[Continued on next page]

(54) Title: WAVEPLATE COMPENSATION IN PROJECTION POLARIZATION CONVERSION SYSTEM



(57) Abstract: Three dimensional projection systems may be single projector or multiple projector systems. These 3D projection systems may include a polarization conversion system (PCS). The PCS may be designed for relatively small throw ratios and thus, may be designed to accommodate the small throw ratios. The PCS may include a polarizing beam splitter, a first optical stack, a reflector and a second quarter wave retarder. The first optical stack may include a rotator, a polarizer, a polarization switch and a first quarter wave retarder. The PCS may receive light from a projector and the PBS may direct the light toward the first optical stack. The light may be converted to a different polarization state as it passes through the first optical stack. The converted light may then be re-directed by a reflecting element to the second quarter wave retarder. The second quarter wave retarder may convert linearly polarized light to circularly polarized light.

WO 2011/106567 A3



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).

— before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments (Rule 48.2(h))

Published:

— with international search report (Art. 21(3))

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

12 January 2012

A. CLASSIFICATION OF SUBJECT MATTER**G02B 27/28(2006.01)i, G02B 5/30(2006.01)i, G03B 35/00(2006.01)i**

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)

G02B 27/28; G02B 27/22; G02B 27/01; G02B 5/30; G02F 1/13; G03B 21/00; G02F 1/133; G03B 21/14

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: "polarizing beam splitter, state of polarization(SOP), optical stack, rotator, polarizer, polarization switch, quarter wave retarder"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 10-2009-0094224 A (컬러링크, 인크.) 04 September 2009 See abstract; pages 1, 6, 7, 9; figures 2, 6, 7	1-20
A	KR 10-2009-0089325 A (리얼 디) 21 August 2009 See abstract; pages 1, 7, 8; figure 3	1-20
A	JP 09-265070 A (CANON INC) 07 October 1997 See abstract; pages 1, 3, 4; figure 1	1-20
A	US 2002-0191235 A1 (MICHAEL O&APOS;CONNOR et al.) 19 December 2002 See abstract; pages 1, 2; figure 2	1-20
A	KR 10-2004-0078128 A (툽슨 라이센싱 소시에떼 아노님) 08 September 2004 See abstract; pages 1, 3, 4; figure 1	1-20
A	JP 2009-015128 A (ALPINE ELECTRONICS INC) 22 January 2009 See abstract; pages 1, 6; figure 1	1-20

 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

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of 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

04 NOVEMBER 2011 (04.11.2011)

Date of mailing of the international search report

04 NOVEMBER 2011 (04.11.2011)

Name and mailing address of the ISA/KR


 Korean Intellectual Property Office
 Government Complex-Daejeon, 189 Cheongsa-ro,
 Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

HONG, Seung Moo

Telephone No. 82-42-481-8577



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/026131

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 10-2009-0094224 A	04.09.2009	EP 2067066 A2	10.06.2009
		JP 2010-506199 A	25.02.2010
		US 2008-0225236 A1	18.09.2008
		US 7905602 B2	15.03.2011
		WO 2008-042798 A2	10.04.2008
		WO 2008-042798 A3	10.04.2008
KR 10-2009-0089325 A	21.08.2009	EP 2074479 A2	01.07.2009
		JP 2010-507130 A	04.03.2010
		US 2008-0143965 A1	19.06.2008
		US 2011-0096295 A1	28.04.2011
		US 7857455 B2	28.12.2010
		US 7959296 B2	14.06.2011
		WO 2008-048494 A2	24.04.2008
		WO 2008-048494 A3	24.04.2008
JP 09-265070 A	07.10.1997	None	
US 2002-0191235 A1	19.12.2002	CN 1579100 A	09.02.2005
		CN 1579100 C0	20.06.2007
		EP 1405529 A1	07.04.2004
		JP 2004-531768 A	14.10.2004
		JP 2004-531768 T	14.10.2004
		TW 1244576B	01.12.2005
		TW 244576 B	01.12.2005
		US 6672722 B2	06.01.2004
		WO 02-104040 A1	27.12.2002
		WO 0210-4040A1	27.12.2002
KR 10-2004-0078128 A	08.09.2004	AU 2003-210655 A1	02.09.2003
		AU 2003-210655 A8	02.09.2003
		JP 2006-507514 A	02.03.2006
		US 2005-0017938 A1	27.01.2005
		US 7204592 B2	17.04.2007
		WO 03-065737 A2	07.08.2003
		WO 03-065737 A3	07.08.2003
JP 2009-015128 A	22.01.2009	US 2009-0009594 A1	08.01.2009