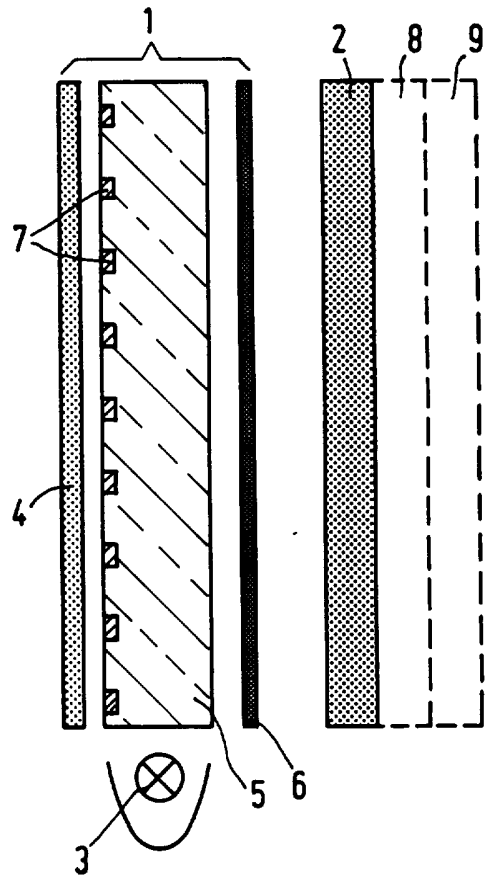


<p>(51) International Patent Classification ⁶ : G02F 1/1335, G02B 5/30</p>	<p>A3</p>	<p>(11) International Publication Number: WO 96/02016 (43) International Publication Date: 25 January 1996 (25.01.96)</p>
<p>(21) International Application Number: PCT/IB95/00528 (22) International Filing Date: 29 June 1995 (29.06.95) (30) Priority Data: 94202006.6 12 July 1994 (12.07.94) EP (34) Countries for which the regional or international application was filed: AT et al. (71) Applicant: PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). (71) Applicant (for SE only): PHILIPS NORDEN AB [SE/SE]; Kottbygatan 5, Kista, S-164 85 Stockholm (SE). (72) Inventors: VAN HAAREN, Johannes, Albertus, Matthijs, Maria; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). BROER, Dirk, Jan; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). (74) Agent: STOLK, Steven, Adolph; Internationaal Octrooibureau B.V., P.O. Box 220, NL-5600 AE Eindhoven (NL).</p>	<p>(81) Designated States: JP, KR, SG, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 29 February 1996 (29.02.96)</p>	

(54) Title: ILLUMINATION SYSTEM, LINEAR POLARIZER FOR SUCH AN ILLUMINATION SYSTEM AND A DISPLAY DEVICE COMPRISING SUCH AN ILLUMINATION SYSTEM

(57) Abstract

The application relates to an illumination system comprising a radiation source and a broadband, cholesteric polarizer. Such a polarizer includes a layer of a polymeric material having a cholesteric ordering, the material being ordered such that the axis of the molecular helix is oriented transversely to the layer. The broadband character of the polarizer is obtained by increasing the pitch of the molecular helix from a minimum value at a first surface of the cholesteric layer to a maximum value at the second surface of the layer. In accordance with the invention, the polarizer must be positioned in the illumination system in such a manner that the second surface of the cholesteric layer faces the radiation source. By virtue thereof, the illumination system attains a surprisingly low viewing-angle dependence of the brightness and the colour. This property is further improved by using a quarter lambda plate having a negative anisotropy in the refractive index. The application further relates to a linear polarizer for use in this illumination system and to a display device which is provided with such a linear polarizer.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 95/00528

A. CLASSIFICATION OF SUBJECT MATTER		
IPC6: G02F 1/1335, G02B 5/30 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)		
IPC6: F21V, G02B, G02F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
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WPI, CLAIMS		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	EP 0606940 A2 (PHILIPS ELECTRONICS N.V.), 20 July 1994 (20.07.94), page 5, line 52 - page 6, line 52; page 9, line 12 - line 19, claims 1,2,13 --	1-3,9,14
X,P	EP 0606939 A1 (PHILIPS ELECTRONICS N.V.), 20 July 1994 (20.07.94), column 8, line 51 - column 11, line 33; column 14, line 7 - line 25 --	1-3,9,14
A	EP 0407830 A2 (F. HOFFMANN-LA ROCHE AG ET AL.), 16 January 1991 (16.01.91), page 3, line 35 - page 4, line 16 -- -----	1-14
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INTERNATIONAL SEARCH REPORT
Information on patent family members

05/01/96

International application No.

PCT/IB 95/00528

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A2- 0606940	20/07/94	NONE	
EP-A1- 0606939	20/07/94	NONE	
EP-A2- 0407830	16/01/91	JP-A- 3045906	27/02/91
		US-A- 5235443	10/08/93
		US-A- 5295009	15/03/94
		DE-D- 59008313	00/00/00
		EP-A, B- 0450025	09/10/91
		EP-A- 0452438	23/10/91
		JP-T- 4502486	07/05/92
		JP-T- 4502524	07/05/92
		US-A- 5309265	03/05/94
		US-A- 5319478	07/06/94
		WO-A- 9106613	16/05/91
		WO-A- 9106889	16/05/91