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[Continued on next page]

(54) Title: CYCLOIDAL DIFFRACTIVE WAVEPLATE AND METHOD OF MANUFACTURE

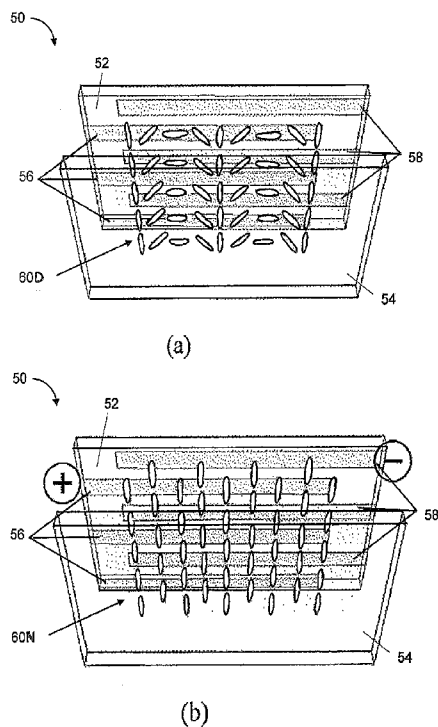


Fig. 5

(57) Abstract: A liquid crystal diffractive waveplate comprising first and second substrate layers, a liquid crystal layer between the first and second substrate layers, and transparent positive and negative electrodes on the first substrate layer. The liquid crystal layer has a diffractive state in which the orientation of the optical axes of the liquid crystal molecules varies across a plane of the waveplate and a non-diffractive state in which the optical axes of the liquid crystal molecules are all orientated in the same direction in the plane of the waveplate. The electrodes are arranged in an alternating series, such that when an electric voltage is applied to the electrodes an electric field is produced in the plane of the waveplate and the liquid crystal layer is switched from the diffractive state to the nondiffractive state.



(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, 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, KM, ML, MR, NE, SN, TD, TG).

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A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G11B 7/1353 (2014.01) CPC - G11B 7/1369 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(8): G11B 7/1353 (2014.01) CPC: G11B 7/1369 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched IPC(8): G11B 7/1353 (2014.01) CPC: G02F 1/292; G02F 1/13501; G11B 7/1369; USPC: 349/201,187,193,202 (keyword limited; terms below) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatBase; PubWEST; Science Direct; Google Scholar Search Terms: liquid crystal, transparent, electrodes, substrate, etching, waveplate, diffractive, fabrication, positive, negative, LCD, deposition, pattern																				
C. DOCUMENTS CONSIDERED TO BE RELEVANT <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>US 2011/0188120 A1 (TABIRIAN et al.) 04 August 2011 (04.08.2011), entire document, especially; FIG 1A, 3, Abstract, para [0012], [0031], [0033]-[0035]</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>US 2005/0057701 A1 (WEISS) 17 March 2005 (17.03.2005), entire document, especially; para [0001], [0186], [0188], [0199]-[0205]</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>US 6,049,369 A (YANAGAWA et al.) 11 April 2000 (11.04.2000), entire document, especially; col 1, ln 6-10, col 4, ln 46-54, col 5, ln 34-40, col 10, ln 34-64, col 11, ln 46-67, col 12, ln 1-21</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>US 6,081,310 A (KATSUYA et al.) 27 June 2000 (27.06.2000), entire document</td> <td>1-14</td> </tr> <tr> <td>A</td> <td>US 5,299,037 A (SAKATA) 29 March 1994 (29.03.1994), entire document</td> <td>1-14</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	A	US 2011/0188120 A1 (TABIRIAN et al.) 04 August 2011 (04.08.2011), entire document, especially; FIG 1A, 3, Abstract, para [0012], [0031], [0033]-[0035]	1-14	A	US 2005/0057701 A1 (WEISS) 17 March 2005 (17.03.2005), entire document, especially; para [0001], [0186], [0188], [0199]-[0205]	1-14	A	US 6,049,369 A (YANAGAWA et al.) 11 April 2000 (11.04.2000), entire document, especially; col 1, ln 6-10, col 4, ln 46-54, col 5, ln 34-40, col 10, ln 34-64, col 11, ln 46-67, col 12, ln 1-21	1-14	A	US 6,081,310 A (KATSUYA et al.) 27 June 2000 (27.06.2000), entire document	1-14	A	US 5,299,037 A (SAKATA) 29 March 1994 (29.03.1994), entire document	1-14
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