

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 August 2002 (22.08.2002)

PCT

(10) International Publication Number
WO 02/065215 A3

(51) International Patent Classification⁷: **G03F 7/20**,
G02F 1/167

(21) International Application Number: PCT/US02/04967

(22) International Filing Date: 14 February 2002 (14.02.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/784,972 15 February 2001 (15.02.2001) US

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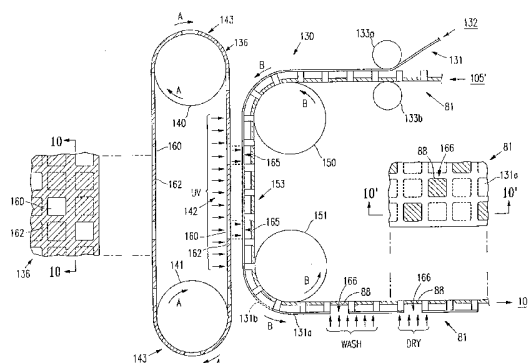
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(81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), 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, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(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, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent

[Continued on next page]

(54) Title: PROCESS FOR ROLL-TO-ROLL MANUFACTURE OF A DISPLAY BY SYNCHRONIZED PHOTOLITHOGRAPHIC EXPOSURE ON A SUBSTRATE WEB



(57) Abstract: This invention relates to an electrophoretic display or a liquid crystal display and novel processes for its manufacture. The electrophoretic display (EPD) of the present invention comprises microcups of well-defined shape, size and aspect ratio and the microcups are filled with charged pigment particles dispersed in an optically contrasting dielectric solvent. The liquid crystal display (LCD) of this invention comprises well-defined microcups filled with at least a liquid crystal composition having its ordinary refractive index matched to that of the isotropic cup material. A novel roll-to-roll process and apparatus of the invention permits the display manufacture to be carried out continuously by a synchronized photo-lithographic process. The synchronized roll-to-roll process and apparatus permits a pre-patterned photomask, formed as a continuous loop, to be rolled in a synchronized motion in close parallel alignment to a web which has been pre-coated with a radiation sensitive material, so as to maintain image alignment during exposure to a radiation source. The radiation sensitive material may be a radiation curable material, in which the exposed and cured portions form the microcup structure. In an additional process step, the radiation sensitive material may be a positively working photoresist which temporarily seals the microcups. Exposure of a selected subset of the microcups via the photomask image permits selective re-opening, filling and sealing of the microcup subset. Repetition with additional colors permits the continuous assembly of a multicolor EPD or LCD display.



(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
9 October 2003

Published:

— with international search report

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.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/04967

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G03F7/20 G02F1/167

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 G03F G02F

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)

PAJ, 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.
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Y	the whole document	3-11, 20-29, 32-39, 41-45
X	--- PATENT ABSTRACTS OF JAPAN vol. 010, no. 064 (P-436), 14 March 1986 (1986-03-14) & JP 60 205452 A (CANON KK), 17 October 1985 (1985-10-17)	1,2, 12-19, 30,31, 40,46-52
Y	abstract	3-11, 20-29, 32-39, 41-45
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☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

15 May 2003

Date of mailing of the international search report

30/05/2003

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 02/04967

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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