

(19) World Intellectual Property
Organization
International Bureau



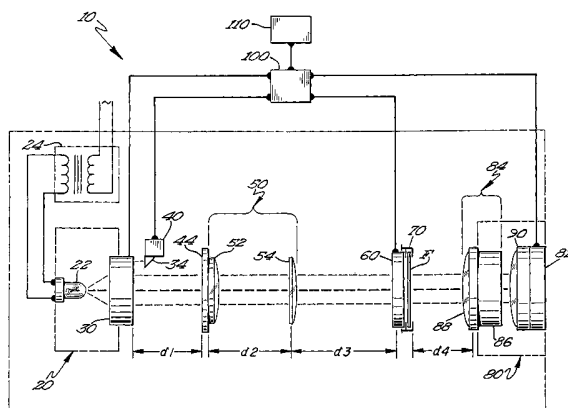
(43) International Publication Date
4 December 2003 (04.12.2003)

PCT

(10) International Publication Number
WO 2003/100770 A3

- (51) International Patent Classification⁷: **H04N 7/14**, 5/253
- (21) International Application Number:
PCT/US2003/016344
- (22) International Filing Date: 23 May 2003 (23.05.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
10/155,685 23 May 2002 (23.05.2002) US
- (71) Applicant: **IMAGE PREMASTERING SERVICES, LTD.** [US/US]; 179 Lakeview Road East, Chanhassen, MN 55317 (US).
- (72) Inventors: **BASTASZ, Thomas, J.**; 179 Lakeview Road East, Chanhassen, MN 55317 (US). **HILL, Louis, F.**; 5793 Royal Oaks Drive, Shoreview, MN 55126 (US). **FARLEY, Patrick, M.**; 452 Betty Lane, West St. Paul, MN 55118 (US).
- (74) Agents: **HAKOMAKI, James, R.** et al.; 2900 Wells Fargo Center, 90 South Seventh Street, Minneapolis, MN 55402 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, 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, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, 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, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report
- (88) Date of publication of the international search report:
26 February 2004
- 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.

(54) Title: APPARATUS AND METHOD FOR DIGITAL RECORDING OF A FILM IMAGE



(57) Abstract: An apparatus and method for digitally duplicating and storing film images. The apparatus (10) has a projection section (20) that includes a low-power, white-light source of illumination (22) and an image receiving section (80) that includes a digital camera with a charge-coupled device (82). The apparatus (10) also has a tunable liquid crystal filter (60) that is used to produce monochromatic images onto the image receiving section (80). In operation, light from the illumination section (22) is transmitted through the liquid crystal filter (60) that is operating at a first, predetermined frequency, through the film image and onto the image receiving section (80) for subsequent recordation. Then, the liquid crystal filter (60) is tuned to a second, predetermined frequency and light from the illumination section (22) is again transmitted through the same film image, and recorded. Once the requisite number of monochromatic images are recorded, they are recombined into a single image and transferred to an optical recording medium (110).

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/16344

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04N 7/14; H04N 5/253

US CL : 348/96, 97

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)
U.S. : 348/96, 97

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,034,719 (TAZAWA et al.) 07 March 2000, figures 1(a)-3, cols. 3-6	1-29
X,P	US 6,552,778 B1 (KONAGAYA) 22 April 2003, figs. 1-11, cols. 5-10	1-29
Y	US 5,982,957 (DECARO et al.) 09 November 1999, figs. 17-20, cols. 9-13.	1-29
Y,P	US 2002/0140992 A1 (KONAGAYA) 03 October 2002, figs. 1-3	1-29

☐ 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	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"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	"&" document member of the same patent family

Date of the actual completion of the international search

07 October 2003 (07.10.2003)

Date of mailing of the international search report

25 NOV 2003

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Tung T. Vo

Telephone No. (703) 305-4700

Peggy Han