(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 February 2001 (15.02.2001)

PCT

(10) International Publication Number
WO 01/11890 A1

(51) International Patent Classification?: H04N 7/26

(21) International Application Number: PCT/US00/21003

(22) International Filing Date: 1 August 2000 (01.08.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/369,642 6 August 1999 (06.08.1999) US

(71) Applicant: MACROVISION CORPORATION [US/US]; 1341 Orleans Drive, Sunnyvale, CA 94089 (US).

(72) Inventor: RYAN, John, O.; 1210 Canyon Road, Woodside, CA 94026 (US).

(74) Agent: NGUYEN, Frank; 1341 Orleans Drive, Sunnyvale, CA 94089 (US).

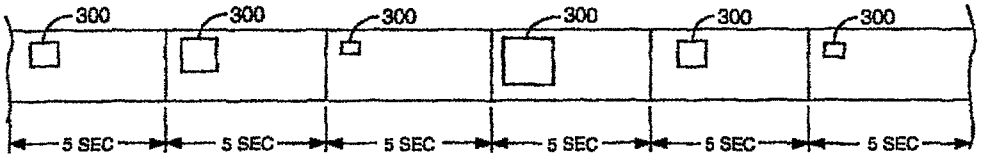
(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, 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), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*
— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

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: A SCALING INDEPENDENT TECHNIQUE FOR WATERMARKING IMAGES



(57) Abstract: A robust technique to prevent illicit copying of video information notwithstanding the use of image scaling is presented. A watermark is embedded into the video signal at different scales (i.e., sizes). The watermark is maintained at each scale for a predetermined time duration that is sufficient to allow the detector circuit in a digital format recorder to detect, extract, and process information contained in the watermark. At the end of the predetermined time duration, the watermark is changed to a different scale preferably on a pseudo-random basis to ensure that each one of all the scales in a predetermined scaling range is achieved a predetermined number of times. In this way, a particular scale that has the counter effect of restoring the watermark to its original position and size can be identified and used to allow the watermark to be detected.

WO 01/11890 A1