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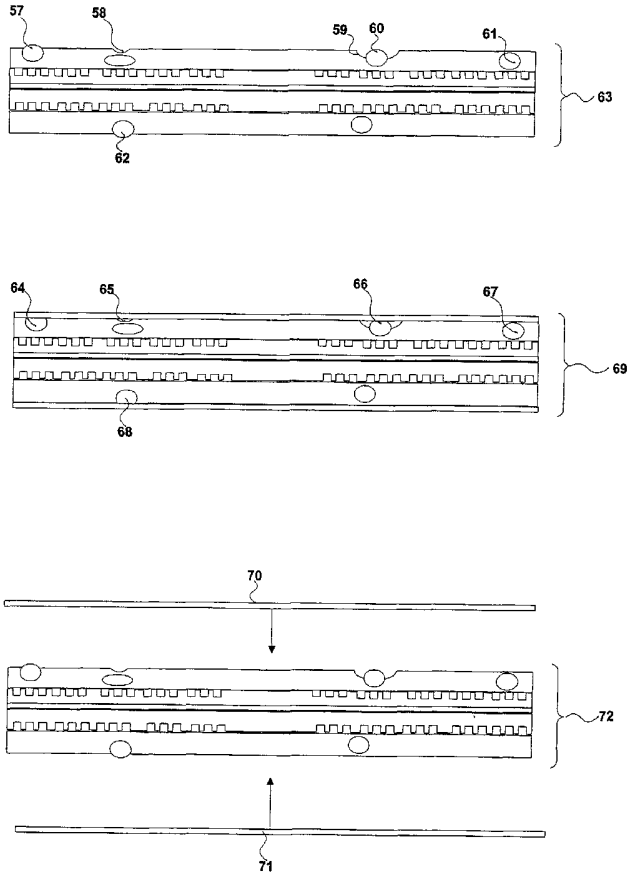
(54) Title: SYSTEMS AND METHODS FOR OPTICAL MEDIA MODIFICATION



(57) Abstract: The present invention involves the modification of optical media (63,69,72) such that selected portions (57-62,64-68) of the media are physically altered, in order to distort and/or attenuate the transmission of such optical signal to a predetermined degree. This slows the copying process to a desired extent by creating media that generates measurable changes in the system's timing and performance related to how and when data is read in standard optical media rives copying devices, in a fashion that makes the process of copying the media more time consuming and difficult, as a deterrent to any such copying. The present invention can create instances of optical media that have uniquely identifiable attributes, whose properties are not encoded as data. These properties form a media signature that may be calculated as a metric of optical media drive and/or system and subsystem performance. The principal benefit of these identifying attributes is that since they are induced by physical means, a purely data-driven bit-for-bit copy of a disc cannot represent all of the necessary attributes inherent in the original disc.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G11B7/24 G11B23/28 G11B7/26

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 G11B

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)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 196 02 804 A (HARRAS ROLAND) 31 July 1997 (1997-07-31) the whole document --- -/--	1-3, 9-11,23, 24, 26-31, 37-39, 50,51, 53-55

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Holubov, C

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 67085 A (SPECTRADISC CORP) 29 December 1999 (1999-12-29) page 14 -page 18; figure 8	1-3,8, 10,15, 16,23, 24, 26-31, 36,38, 42,43, 50,51, 53-55
X	WO 98 41979 A (HIDE AND SEEK TECHNOLOGIES L L) 24 September 1998 (1998-09-24) page 16-46; figures 3-7,12-16	1-8,10, 11,14, 23,24, 26-36, 38-41, 50,51, 53-55
X	EP 0 731 454 A (SONY CORP) 11 September 1996 (1996-09-11) page 2 page 3, line 51 - line 52 -& PATENT ABSTRACTS OF JAPAN vol. 1996, no. 08, 30 August 1996 (1996-08-30) & JP 08 096362 A (SONY), 12 April 1996 (1996-04-12) abstract	1-3,8, 10,11, 23,24, 26-31, 36,38, 39,50, 51,53-55
L	US 2002/048225 A1 (SHINODA MASATAKA) 25 April 2002 (2002-04-25) indicates effect of method disclosed in JP8096362 paragraph '0032! - paragraph '0033!	
X	WO 96 21928 A (BURROUGHS TREVOR ALAN) 18 July 1996 (1996-07-18) page 1 -page 2	29-35, 37-39, 41,50, 51,53-55

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte ıal Application No
PCT/US 01/51442

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19602804 A	31-07-1997	DE 19602804 A1	31-07-1997
WO 9967085 A	29-12-1999	US 6338933 B1	15-01-2002
		AU 4722499 A	10-01-2000
		BR 9912202 A	10-04-2001
		CA 2334516 A1	29-12-1999
		CN 1306474 T	01-08-2001
		EP 1094935 A1	02-05-2001
		FI 20002835 A	22-12-2000
		JP 2002518785 T	25-06-2002
		NO 20006345 A	23-02-2001
		PL 345088 A1	03-12-2001
		TR 200003883 T2	21-09-2001
		WO 9967085 A1	29-12-1999
		US 2002076647 A1	20-06-2002
WO 9841979 A	24-09-1998	AU 722001 B2	20-07-2000
		AU 3369097 A	12-10-1998
		CN 1253653 A ,B	17-05-2000
		EP 1025560 A1	09-08-2000
		JP 2002516017 T	28-05-2002
		US 2002067674 A1	06-06-2002
		WO 9841979 A1	24-09-1998
EP 0731454 A	11-09-1996	JP 8096362 A	12-04-1996
		DE 69520487 D1	03-05-2001
		DE 69520487 T2	12-07-2001
		EP 0731454 A1	11-09-1996
		US 5822287 A	13-10-1998
		CN 1138916 A ,B	25-12-1996
		WO 9610250 A1	04-04-1996
US 2002048225 A1	25-04-2002	JP 2002015468 A	18-01-2002
		CN 1342973 A	03-04-2002
WO 9621928 A	18-07-1996	AT 171298 T	15-10-1998
		AU 714235 B2	23-12-1999
		AU 1840499 A	13-05-1999
		AU 714233 B2	23-12-1999
		AU 1840699 A	13-05-1999
		AU 704323 B2	22-04-1999
		AU 4351996 A	31-07-1996
		BR 9606831 A	30-12-1997
		CA 2210150 A1	18-07-1996
		DE 69600663 D1	22-10-1998
		DE 69600663 T2	06-05-1999
		DK 803121 T3	14-06-1999
		EP 0803121 A1	29-10-1997
		ES 2124624 T3	01-02-1999
		WO 9621928 A1	18-07-1996
		GB 2311890 A ,B	08-10-1997
		GB 2330683 A ,B	28-04-1999
		JP 2955368 B2	04-10-1999
		JP 10508137 T	04-08-1998
		NO 973163 A	01-09-1997
		NO 990980 A	01-09-1997
		NO 990981 A	01-09-1997
		NZ 298111 A	29-03-1999

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int[illegible]nal Application No
PCT/US 01/51442

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9621928 A		NZ 334051 A	29-09-2000
		US 6240061 B1	29-05-2001
		US 6144632 A	07-11-2000