



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G11B 17/22, 5/09, 15/52, 20/10, 27/22, 20/12, H04N 5/76, A63H 3/33	A3	(11) International Publication Number: WO 98/08180 (43) International Publication Date: 26 February 1998 (26.02.98)
(21) International Application Number: PCT/IL97/00266 (22) International Filing Date: 5 August 1997 (05.08.97) (30) Priority Data: 08/689,209 5 August 1996 (05.08.96) US 60/038,080 6 March 1997 (06.03.97) US (71) Applicant: T.T.R. TECHNOLOGIES LTD. [IL/IL]; Hanagar Street 2, 44425 Kfar-Saba (IL). (72) Inventors: SOLLISH, Bruce, David; Beit Israel Street 43, 44854 Emmanuel (IL). HOWE, Dennis; 6141 N. Paseo Valdear, Tucson, AZ 85750 (US). ISRAEL, Henry, Mar- shall; Ben Zackai Street 39, 51482 Bnei Brak (IL). (74) Agent: A. TALLY EITAN - ZEEV PEARL, D. LATZER & CO.; Law Offices, Lumir House, Maskit Street 22, 46733 Herzeliya (IL).	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i> (88) Date of publication of the international search report: 20 August 1998 (20.08.98)	
(54) Title: DIGITAL OPTICAL MEDIA AUTHENTICATION AND COPY PROTECTION METHOD		
(57) Abstract <p>Novel digital optical media has recorded thereon certain symbols belonging to two classes of non-standard codes in precise predetermined locations. One class provides symbols which, when read many times by a standard optical media reader, are decoded as valid but having variable values. A second class embodies codes which are immediately recognized by the player's decoder as invalid. The first class of non-standard codes can be read by a standard optical media reader but cannot be written or reproduced by standard optical media recorders and mastering equipment, and its presence on optical media thereby serves to identify the optical media as authentic, as opposed to an unauthorized copy, which will lack these special symbols. Symbols belonging to the second class of non-standard codes serve to protect the reading of symbols belonging to the first class from being altered or stabilized by the error-correcting system of the player. Patterns combining symbols of these two classes provide a non-copyable mark for automatically verifying the authenticity of optical media and protecting the data recorded thereon from being usable except when present on authentic media.</p>		

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL97/00266

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : Please See Extra Sheet.
US CL : 369/32, 47, 48, 60, 61; 380/ 4, 44.
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. : 369/32, 47, 48, 60, 61; 380/ 4, 44.

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 practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,E	US 5,699,434 A (HOGAN) 16 December 1997, the whole document.	1-4, 13-25, 27-31, 37, 38
X,E	US 5,696,757 A (OZAKI et al.) 09 December 1997, the whole document.	1-4, 13-25, 27-31, 37, 38.
X,P	US 5,572,507 A (OZAKI et al.) 05 November 1996, the whole document.	1-4, 13-25, 27-31, 37, 38.
X,P	US 5,570,339 A (NAGANO) 29 October 1996, the whole document.	1-4, 13-25, 27-31, 37, 38.

Further documents are listed in the continuation of Box C. See patent family annex.

<p>* Special categories of cited documents:</p> <p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document published on or after the international filing date</p> <p>*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)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p>	<p>*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</p> <p>*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</p> <p>*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</p> <p>* & * document member of the same patent family</p>
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Date of the actual completion of the international search 26 MARCH 1998	Date of mailing of the international search report 23 JUN 1998
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No.	Authorized officer <i>Diaine Gordon</i> HRAYR A. SAYADIAN Telephone No.
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL97/00266

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,728,929 A (TANAKA) 01 March 1988, the whole document	1-4, 13-25, 27-31, 37, 38.
X,P	US 5,677,952 A (BLAKLEY III et al) 14 October 1997, the whole document.	26, 32-36.
X,P	US 5,675,652 A (COPPERSMITH et al.) 07 October 1997, the whole document.	26, 32-36.
X	US 5,454,039 A (COPPERSMITH et al.) 26 September 1995, the whole document.	26, 32-36.
X	US 5,231,662 A (VAN RUMPT et al.) 27 July 1993, the whole document.	26, 32-36.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL97/00266

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.: 5-12
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Please See Extra Sheet.

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL97/00266

A. CLASSIFICATION OF SUBJECT MATTER:

IPC (6):

G11B 17/22, 5/09, 15/52, 20/10, 27/22, 20/12; H04N 5/76; A 63 H 3/33.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This International Search Authority has found 6 inventions claimed in the International Application covered by the claims indicated below:

The application is found to contain six groups of claims, which groups are not so linked as to form a single general inventive concept as required by PCT Rule 13.1. The groups lack one or more special technical feature, which technical feature or features would define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art, as required by PCT Rule 13.2.

The groups are:

Group I:	Claims 1-15, 17-21, and 23.
Group II:	Claims 16 and 27-31.
Group III:	Claims 24 and 25.
Group IV:	Claim 26.
Group V	Claims 32-36.
Group VI	Claims 22 and 37-38.

Groups I-VI are related to each other as subcombinations possibly usable together. Claims of Group I are classified in class 369 subclasses 61 and 62; they are characterized by storing data on a CD, which data having various characteristics. Claims of Group II are classified in class 369 subclass 60; they are characterized by reading a CD a multiplicity of times to produce ambiguous results. Claims of Group III are classified in class 369 subclass 32; they are characterized as authenticating a CD. Claims of Group VI are classified in class 369 subclasses 47 and 48; they are characterized by writing on a CD non-correctable pattern of erroneous symbols as invalid channel bit sequences. Claim of Group IV is classified in class 380 subclass 4; it is characterized as using an encryption key to encrypt data and providing the key along with a decryption program to decrypt the encrypted data. Claims of Group V are classified in class 380 subclass 44; they are characterized as uniquely generating an encryption key based on data stored in a CD and using said key to encrypt and decrypt data stored on the CD.

and it considers that the International Application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

The application is found to contain six groups of claims, which groups are not so linked as to form a single general inventive concept as required by PCT Rule 13.1. The groups lack one or more special technical feature, which technical feature or features would define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art, as required by PCT Rule 13.2.

Groups I-VI are related to each other as subcombinations possibly usable together. Claims of Group I are classified in class 369 subclasses 61 and 62; they are characterized by storing data on a CD, which data having various characteristics. Claims of Group II are classified in class 369 subclass 60; they are characterized by reading a CD a multiplicity of times to produce ambiguous results. Claims of Group III are classified in class 369 subclass 32; they are characterized as authenticating a CD. Claims of Group VI are classified in class 369 subclasses 47 and 48; they are characterized by writing on a CD non-correctable pattern of erroneous symbols as invalid channel bit sequences. Claim of Group IV is classified in class 380 subclass 4; it is characterized as using an encryption key to encrypt data and providing the key along with a decryption program to decrypt the encrypted data. Claims of Group V are classified in class 380 subclass 44; they are characterized as uniquely generating an encryption key based on data stored in a CD and using said key to encrypt and decrypt data stored on the CD.