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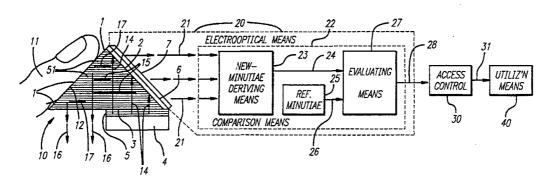
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With international search report.

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(54) Title: FINGERPRINT-ACQUISITION APPARATUS FOR ACCESS CONTROL; PERSONAL WEAPON AND OTHER SYSTEMS CONTROLLED THEREBY



(57) Abstract

At a first end of an optic-fiber prism assembly are fiber terminations to contact a relieved surface, e.g. finger (stabilized by a handgrip). In a region where fiber diameter is essentially constant with longitudinal position, light enters the prism, crosses the fibers and enters individual fibers through their sidewalls, lighting the terminations. To allow crosslighting of the assembly, the fiber-optic numerical aperture (NA) is small: preferably not exceeding one-half. Due to fingerprint etc. detail, fractions of light pass along the fibers; at the assembly second end a detector responds with an electrical-signal array based on the surface relief. The signals are processed to check finger etc. identity and applied to control access to a personal weapon, other equipment, facilities, data, or a money service. FTIR ("frustrated total internal reflection") bright- and dark-field versions have various benefits. For use of small, low-cost detectors - and/or internal-mirror versions that light the finger straight-on - the assembly has a separate element, e.g. a high-NA fiber-optic taper with extramural absorption or "EMA" material (no entry light crosses it). For a weapon, a unitary antibypassing module (which matches a weapon port, and must be present) holds part of the access-control and firing systems. Bullets etc. fire only on a special signal from the module.

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INTERNATIONAL SEARCH REPORT

Intern al Application No PCT/US 96/01615

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A. CLASSI IPC 6	FICATION OF SUBJECT MATTER G06K9/20 A61B5/117 F41A17/06	5	
According to	o International Patent Classification (IPC) or to both national classifi	cation and IPC	
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C. DOCUM	MENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the re-	Relevant to claim No.	
Х	DE,A,44 04 918 (MITSUBISHI ELECTR 18 August 1994	1-3,6, 12,13, 41-43	
Y	see column 9, line 40 - column 12 48; figures 3-9,14	23-25, 33-40	
Y A	US,A,4 467 545 (SHAW JR FREDERIC August 1984 cited in the application see the whole document	23-25, 33-40 44	
A	US,A,3 906 520 (PHILLIPS BRIAN G) September 1975	16	
Fur	rther documents are listed in the continuation of box C.	X Patent family members are lister	d in annex.
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	le actual completion of the international search 18 November 1996	Date of mailing of the international	search report 29.11.96
	d mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fay: (+31-70) 340-3016	Authorized officer Sonius, M	

INTERNATIONAL SEARCH REPORT

national application No.

PCT/US 96/01615

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This International Search 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.: 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:
1. Claims 1-43: Fingerprint image acquisitiondevice, optical details.
2. Claims 44-50: Personal weapon, control of "firing".
1. X As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
As all searchable claims could be searches without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
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

information on patent family members

Intern. al Application No PCT/US 96/01615

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
DE-A-4404918	18-08-94	JP-A- US-A-	6300930 5426296	28-10-94 20-06-95
US-A-4467545	28-08-84	NONE		
US-A-3906520	16-09-75	NONE		

Form PCT/ISA/210 (patent family annex) (July 1992)