

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 December 2001 (13.12.2001)

PCT

(10) International Publication Number
WO 01/94984 A3

(51) International Patent Classification⁷: **G01V 5/00**,
G01N 23/02

GRODZINS, Lee; 14 Stratham Road, Lexington, MA
02173 (US).

(21) International Application Number: PCT/US01/18270

(74) Agents: **PETUCHOWSKI, Samuel, J.** et al.; Bromberg
& Sunstein LLP, 125 Summer Street, Boston, MA 02110
(US).

(22) International Filing Date: 6 June 2001 (06.06.2001)

(25) Filing Language: English

(84) Designated States (*regional*): European patent (AT, BE,
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE, TR).

(26) Publication Language: English

Published:

(30) Priority Data:
60/210,092 7 June 2000 (07.06.2000) US

- 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

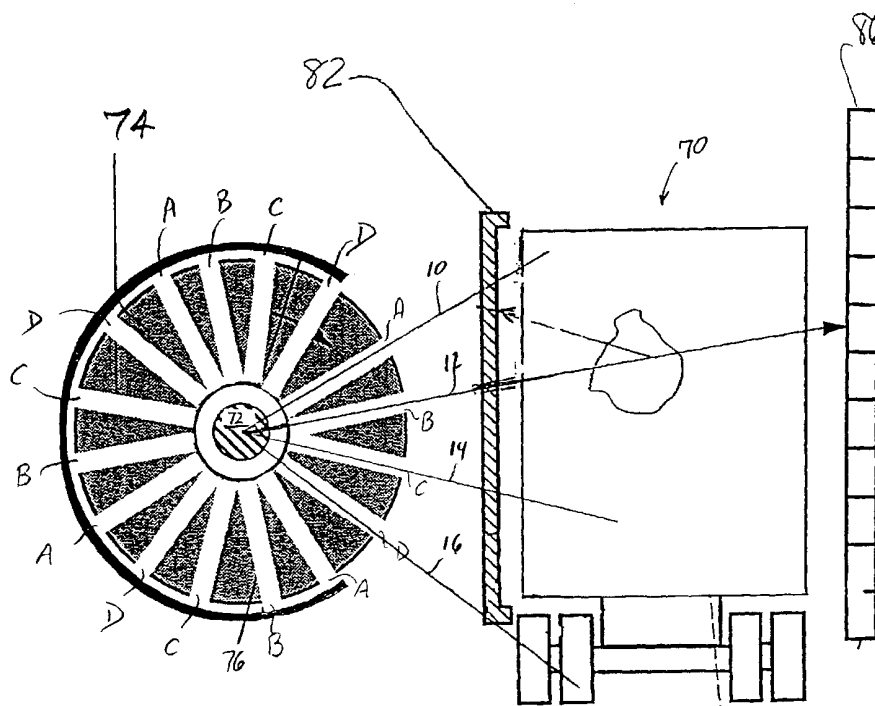
(71) Applicant: **AMERICAN SCIENCE AND ENGINEER-
ING, INC.** [US/US]; 829 Middlesex Turnpike, Billerica,
MA 01821 (US).

(88) Date of publication of the international search report:
2 May 2002

(72) Inventors: **CALLERAME, Joseph**; 17 Bicentennial
Drive, Lexington, MA 02421 (US). **ADAMS, William**;
9600 Olentangy River Road, Powell, OH 43064 (US).

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: X-RAY SCATTER AND TRANSMISSION SYSTEM WITH CODED BEAMS



(57) Abstract: A system and method for inspecting an object with transmitted and/or scattered penetrating radiation using either a fan beam or multiple pencil beams while maintaining resolution comparable to that achievable using a single scannable pencil beam. The system and method provide for spatial resolution of transmitted radiation using a fan beam or multiple pencil beams and a nonsegmented detector.



WO 01/94984 A3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/18270

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01V5/00 G01N23/02

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 G01V G01N

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)

PAJ, WPI Data, INSPEC, EPO-Internal, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 572 037 A (LIU HONG ET AL) 5 November 1996 (1996-11-05) claims 1-20 ---	1,9,11, 16
E	US 6 269 142 B1 (SMITH STEVEN W) 31 July 2001 (2001-07-31) column 5, line 36-48; claims 1-8 ---	1
A	WO 99 09398 A (AMERICAN SCIENCE & ENG INC) 25 February 1999 (1999-02-25) claim 1 ---	1
A	WO 95 19562 A (BLOCK MYRON J) 20 July 1995 (1995-07-20) page 20, line 1-25; claims 1,6,7,20,27-31,47 ---	1,9,11, 16
	-/--	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *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)
- *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

- *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
- *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
- *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.
- *&* document member of the same patent family

Date of the actual completion of the international search

27 February 2002

Date of mailing of the international search report

06/03/2002

Name and 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,
Fax: (+31-70) 340-3016

Authorized officer

Van den Bulcke, E

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/18270

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 488 510 A (RAYMOND KENNETH L JR ET AL) 6 January 1970 (1970-01-06) column 3, line 25-49; claim 1 ---	1
A	US 3 790 799 A (STEIN J ET AL) 5 February 1974 (1974-02-05) claims 1,4 ---	1,11,16
A	US 5 493 596 A (ANNIS MARTIN) 20 February 1996 (1996-02-20) claim 1 ---	1
A	US 4 242 583 A (ANNIS MARTIN ET AL) 30 December 1980 (1980-12-30) claims 1-7 ---	1
A	US 4 839 913 A (ANNIS MARTIN ET AL) 13 June 1989 (1989-06-13) claim 1 -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/18270

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5572037	A	05-11-1996	AU 4914596 A WO 9624047 A1	21-08-1996 08-08-1996
US 6269142	B1	31-07-2001	NONE	
WO 9909398	A	25-02-1999	EP 1005638 A1 WO 9909398 A1 US 6192101 B1	07-06-2000 25-02-1999 20-02-2001
WO 9519562	A	20-07-1995	US 5424545 A CA 2180128 A1 EP 0742897 A1 JP 9510884 T US 6222189 B1 WO 9519562 A1 US 5818048 A US 5672875 A US 6064065 A	13-06-1995 20-07-1995 20-11-1996 04-11-1997 24-04-2001 20-07-1995 06-10-1998 30-09-1997 16-05-2000
US 3488510	A	06-01-1970	NONE	
US 3790799	A	05-02-1974	CA 974332 A1 FR 2189982 A1 GB 1391042 A SE 395999 B	09-09-1975 25-01-1974 16-04-1975 29-08-1977
US 5493596	A	20-02-1996	NONE	
US 4242583	A	30-12-1980	NONE	
US 4839913	A	13-06-1989	NONE	