

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
7 August 2008 (07.08.2008)

PCT

(10) International Publication Number
WO 2008/094293 A3

- (51) **International Patent Classification:**
G06F 17/00 (2006.01)
- (21) **International Application Number:**
PCT/US2007/072841
- (22) **International Filing Date:** 5 July 2007 (05.07.2007)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
11/481,889 7 July 2006 (07.07.2006) US
- (71) **Applicant (for all designated States except US):** **ITT MANUFACTURING ENTERPRISES, INC.** [US/US]; 1105 North Market Street, Suite 1217, Wilmington, DE 19801 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **HOFFER, Gary** [US/US]; 215 Galway Bay, Alameda, CA 94502 (US). **MCLEMORE, Donald** [US/US]; 10900 San Rafael Place, NE, Albuquerque, NM 87122 (US).
- (74) **Agents:** **SHAPIRO, Stuart, B.** et al.; Edell, Shapiro & Finnan, LLC, 1901 Research Blvd Suite 400, Rockville, MD 20850-3164 (US).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, **BR**, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, **HR**, HU, **ID**, IL, IN, IS, **JP**, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
- (88) **Date of publication of the international search report:**
9 October 2008

(54) **Title:** METHOD AND APPARATUS FOR TARGET DISCRIMINATION WITHIN RETURN SIGNALS

(57) **Abstract:** A template representing a desired target is applied to response signals from an area including a plurality of targets and illuminated by electromagnetic radiation. The response signals include poles or damped sinusoids representing resonances (e.g., resonant frequencies) distinctly associated with each of the targets within the area. An embodiment of the present invention utilizes pole or damped sinusoid frequencies of a desired target to construct the template or comb-like pattern that is compared to the mixture of pole frequencies within the response signals from the area. The comparison yields a resulting score that indicates the presence of the desired target within the area.



WO 2008/094293 A3

INTERNATIONAL SEARCH REPORT

International application No

PCT/US 07/72841

A CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06F 17/00 (2008 04)

USPC - 700/90

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)

USPC 700/90

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC 700/1, 90, 91, 93, 701/200, 205, 209, 213

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST(USPT,PGPB,EPAB,JPAB), Google Scholar

Search Terms detect, determine, discriminate, target, object, damping, sinusoid, resonant, frequency, electromagnetic, radiation, return, signal, template, compare etc

C DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X — Y	US 4,992,797 A (Gjessing et al) 12 February 1991 (12 02 1991), col 1, ln 41-44, ln 56-60, col 2, ln 57-60, col 3, ln 22-26, ln 54-58, col 4, ln 1-6, col 5, ln 55-57, ln 68, col 6, ln 1-2, ln 2-6-34, ln 36-38	1, 6, 7, and 12 2-5, 8-11, and 13-24
Y	US 2002/0153891 A1 (Smith et al) 24 October 2002 (24 10 2002), abstract, para [0003], [0033], [0058], [0065], [0100], [0102], [0104], [01 12]	2-5, 8-11, and 13-24
A	US 5,986,602 A (Frink) 16 November 1999 (16 11 1999), entire document	1-24
A	US 5,933,079 A (Frink) 03 August 1999 (03 08 1999), entire document	1-24

☐ I Further documents are listed in the continuation of Box C

• 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 application or patent 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

14 July 2008 (14 07 2008)

Date of mailing of the international search report

18 JUL 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn ISA/US, Commissioner for Patents
P O Box 1450, Alexandria, Virginia 22313-1450

Facsimile No 571-273-3201

Authorized officer

Lee W Young

PCT Helpdesk 571-272-4300
PCTOSP 571-272-7774