# (19) World Intellectual Property Organization International Bureau





## (43) International Publication Date 7 November 2002 (07.11,2002)

#### **PCT**

# (10) International Publication Number WO 02/089088 A3

(51) International Patent Classification<sup>7</sup>: G01S 13/00

(21) International Application Number: PCT/US02/13755

**(22) International Filing Date:** 1 May 2002 (01.05.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 09/848,106

106 2 May 2001 (02.05.2001) US

- (71) Applicant (for all designated States except US): OMAHA AIRPORT AUTHORITY [US/US]; P.O. Box 19103, Eppley Airfield, Omaha, NE 68119 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): SMITHEY, Donald, L. [US/US]; 1334 S. 94th Stret, Omaha, NE 68124 (US).

- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### **Published:**

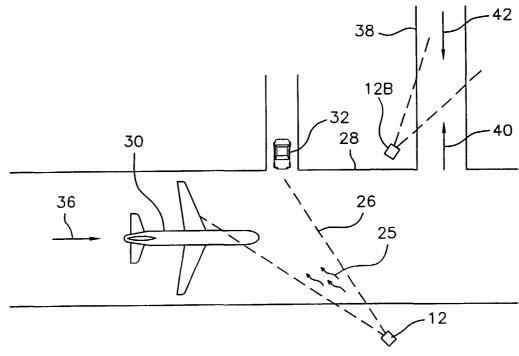
with international search report

(74) Agent: LUECK, Gary; Christie, Parker & Hale, LLP, P.O. Box 7068, Pasadena, CA 91109-7068 (US).

(88) Date of publication of the international search report: 21 August 2003

[Continued on next page]

(54) Title: RUNWAY INCURSION DETECTION AND WARNING SYSTEM



(57) Abstract: An aircraft (30) landing on a runway (28) and moving in a certain direction (36) is directed to exit the runway (28) on a particular exit taxiway (38). While on the runway (28), the aircraft (30) passes through a cone-shaped dispersion pattern (26) from a microwave transceiver (12). The transceiver (12) uses the Doppler principle. Another transceiver (12B) detects the aircraft (30) to ensure that it is travelling in the correct direction (40), and not in the forbidden direction (42).

WO 02/089088 A3

## WO 02/089088 A3



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.

### INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/13755

A. CLASSIFICATION OF SUBJECT MATTER  IPC(7) : G01S 13/00  US CL : 342/29  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.: 342/29, 26, 27, 28, 30-41, 175, 195; 340/933, 945, 947-961			
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.
Α	US 5,508,697 A (KATO et al) 16 April 1996 (16.04.1996), see abstract.		1-22
Α	US 5,530,440 A (DANZER et al) 25 June 1996 (25.06.1996), see abstract.		1-22
Α	US 5,557,278 A (PICCIRILLO et al) 17 September 1996 (17.09.1996), see abstract.		1-22
Α	US 5,629,691 A (JAIN) 13 May 1997 (13.05.1997), see abstract.		1-22
Α	US 5,724.040 A (WATNICK) 03 March 1998 (03.03.1998), see abstract.		1-22
Further	r documents are listed in the continuation of Box C.	See patent family annex.	
* Special categories of cited documents:  "T" later document published after the international filing date or priority date and not in conflict with the application but cited to			
"A" document defining the general state of the art which is not considered to understand the principle or theory underlying the invention be of particular relevance			
"E" earlier ap	1, 1		ered to involve an inventive
to establish the publication date of another citation or other special reason considered to involve an inve- (as specified) combined with one or more or		"Y" document of particular relevance; the considered to involve an inventive st combined with one or more other suc combination being obvious to a personal part of the combination of the combination being obvious to a personal part of the combination being obvious to a personal	ep when the document is th documents, such
"O" documen	t referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent	
"P" document published prior to the international filing date but later than the priority date claimed			
Date of the actual completion of the international search  Date of mailing of the international search report			rch report
03 July 2002 (03.07.2002)			
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231  Bernarr E. Gregory			2
Facsimile No. (703)305-3230 U Telephone No. (703) 306-5765			

Form PCT/ISA/210 (second sheet) (July 1998)