

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 May 2008 (15.05.2008)

PCT

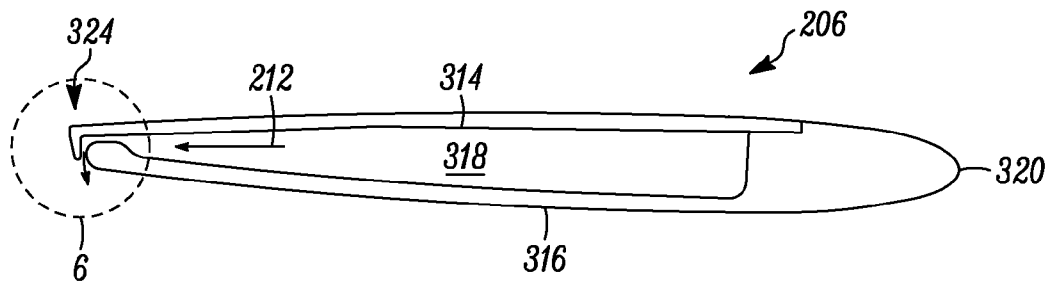
(10) International Publication Number
WO 2008/057627 A3

- (51) **International Patent Classification:**

F04D 27/02 (2006.01)	F01D 5/14 (2006.01)
F04D 29/56 (2006.01)	F01D 17/10 (2006.01)
- (21) **International Application Number:**
PCT/US2007/069200
- (22) **International Filing Date:** 18 May 2007 (18.05.2007)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**

60/801,338	18 May 2006 (18.05.2006)	US
11/494,651	26 July 2006 (26.07.2006)	US
- (71) **Applicants (for all designated States except US):** HONEYWELL INTERNATIONAL INC. [US/US]; Law Department AB/2B, 101 Columbia Road, Morristown, NJ 07962 (US). ACHARYA, Mukund [US/US]; 17803 N. 49th Place, Scottsdale, Arizona 85254 (US).
- (72) **Inventor; and**
- (75) **Inventor/Applicant (for US only):** WILLIAMS, David R. [US/US]; 1846 W. Touhy Avenue, Chicago, Illinois 60626 (US).
- (74) **Agent:** CHESS, Deborah; Honeywell International Inc., Law Department AB/2B, 101 Columbia Road, Morristown, New Jersey 07962 (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, 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
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) **Date of publication of the international search report:**
10 July 2008

(54) **Title:** FLOW-CONTROL TECHNIQUE TO VECTOR BULK FLOW LEAVING A VANE



(57) **Abstract:** A guide vane assembly including an annular casing and vanes that are coupled to and extend radially inwardly from the annular casing. Each vane includes a first wall, a second wall, a leading edge, a first wall trailing edge, and a second wall trailing edge. The first and second walls are coupled at the leading edge and spaced apart to define a plenum therebetween. The trailing edges are spaced apart to define a gap therebetween. The first wall trailing edge includes a lip extending therefrom toward the second wall, and the second wall trailing edge includes a bulb section extending along at least a portion of a length thereof. The second wall trailing edge is disposed at least partially inside the lip, wherein a substantial entirety of the vane between an outer surface of the second wall and an outer surface of the bulb portion is rounded.



WO 2008/057627 A3

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/069200

A. CLASSIFICATION OF SUBJECT MATTER
INV. F04D27/02 F04D29/56 F01D5/14 F01D17/10

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)
F01D F04D B64C F16H

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)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 009 854 A (PRATT & WHITNEY AIRCRAFT) 20 June 1979 (1979-06-20) the whole document figures 1-3 page 2, lines 36-41	1-3,5-7
Y	US 2 935 245 A (MCDONALD JOHN E) 3 May 1960 (1960-05-03) the whole document figures 6,7 column 3, lines 21-26	1-3,5-7
A	US 2 874 894 A (GOLDSCHMIED FABIO R) 24 February 1959 (1959-02-24) the whole document	1,5

Further documents are listed in the continuation of Box C.

See patent family 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

21 May 2008

Date of mailing of the international search report

28/05/2008

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

Brouillet, Bernard

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/069200

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 3 830 450 A (WILLIAMS R ET AL) 20 August 1974 (1974-08-20) the whole document -----	1,5,7
A	DE 10 43 573 B (STORK KONINKLIJKE MASCHF) 13 November 1958 (1958-11-13) the whole document -----	1,4
A	US 3 992 880 A (MCCUTCHEON ANDREW R S) 23 November 1976 (1976-11-23) the whole document -----	1,6,7
A	US 2 920 813 A (GOLDSCHMIED FABIO R) 12 January 1960 (1960-01-12) the whole document -----	1,7

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/069200

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2009854	A	20-06-1979	BR 7803397 A 10-07-1979
			CA 1093318 A1 13-01-1981
			DE 2853340 A1 05-07-1979
			FR 2411984 A1 13-07-1979
			US 4222703 A 16-09-1980
US 2935245	A	03-05-1960	NONE
US 2874894	A	24-02-1959	NONE
US 3830450	A	20-08-1974	NONE
DE 1043573	B	13-11-1958	NONE
US 3992880	A	23-11-1976	NONE
US 2920813	A	12-01-1960	NONE