

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
24 April 2008 (24.04.2008)

PCT

(10) International Publication Number  
**WO 2008/048217 A3**

(51) International Patent Classification:  
B64C 21/02 (2006.01)

(21) International Application Number:  
PCT/US2006/029118

(22) International Filing Date: 26 July 2006 (26.07.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
11/201,387 11 August 2005 (11.08.2005) US

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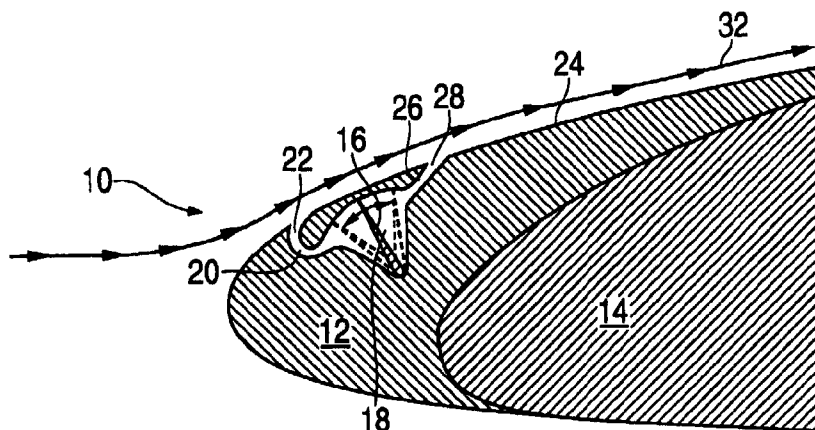
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, ME, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, 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, 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: OSCILLATING VANE ACTUATOR APPARATUS AND METHOD FOR ACTIVE FLOW CONTROL



(57) Abstract: An oscillating vane actuator for active control of fluid flow over a surface (24) includes a pivoted vane (16) surrounded by a wedge-shaped chamber (18), and first (20) and second (26) conduits with openings adjacent the surface (24). The actuator also includes a rotating shaft with a connecting rod to actuate the vane (16) in an oscillatory manner. As the vane (16) travels in one direction, fluid is forced out from the chamber through the first conduit (20) and opening (22) into the fluid stream adjacent the surface, while fluid is simultaneously drawn in through the second opening (28) and conduit (26) into the opposite side of the chamber (18). Similarly, when the vane (16) travels in the opposite direction, fluid is forced out through the second conduit (26) and opening (28) into the fluid stream adjacent the surface (24), while fluid is simultaneously drawn in through the first opening (22) and conduit (24).

WO 2008/048217 A3

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/US2006/029118

**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. B64C21/02

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)  
B64C

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, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 692 130 C (MESSERSCHMITT AG) 13 June 1940 (1940-06-13)  the whole document	1, 2, 5-8, 13-17, 22, 27, 28
A	US 2005/127245 A1 (HASSAN AHMED A [US] ET AL) 16 June 2005 (2005-06-16) abstract; figure 2	1, 15
A	US 2 078 854 A (JONES CLIFFORD C) 27 April 1937 (1937-04-27) column 3, line 34 - line 46; figure 5	1, 15

Further documents are listed in the continuation of Box C.

See patent family annex.

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\*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

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Date of the actual completion of the international search

19 May 2008

Date of mailing of the International search report

28/05/2008

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2006/029118

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 692130	C	13-06-1940	NONE
US 2005127245	A1	16-06-2005	EP 1704088 A2 27-09-2006 WO 2005058694 A2 30-06-2005
US 2078854	A	27-04-1937	NONE