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[Continued on next page]

(54) Title: COMPOSITE WING-BODY JOINT

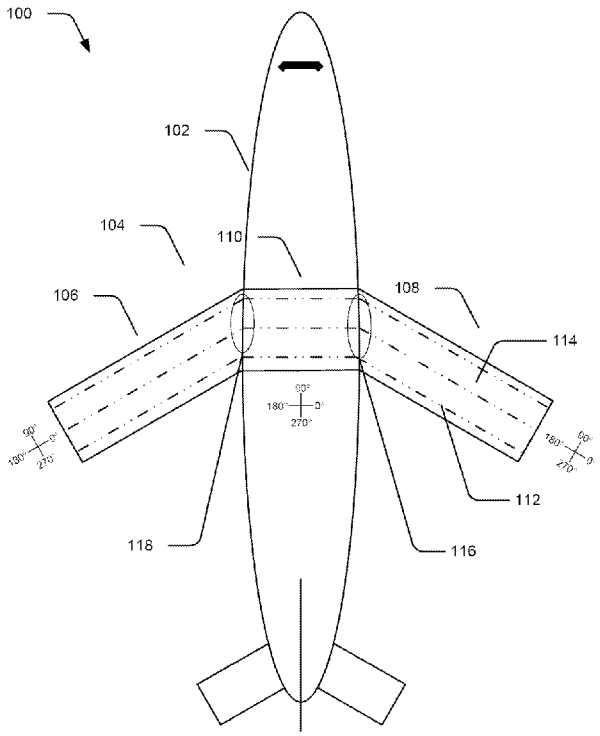

Fig.1

(57) Abstract: Embodiments of integral composite panels and joints for composite structures are described In one implementation, an integrated panel (104) spanning substantially the entire wingspan of an aircraft, includes at least a center portion (110) and a pair of outwardly projecting wing portions (106, 108). The portions may include a skin formed from successive layers or plies of composite material which overlap and offset at the joint between respective sections creating a pad-up area to carry loads between the portions. In a particular implementation, the skin is laid over one or more structural stringers (112) which are transitioned into the joints (116, 118) between sections such as by tapering of the thickness and/or stiffness of the stringer.

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/008695

A. CLASSIFICATION OF SUBJECT MATTER
INV. B64C1/26 B64C3/18 B64C3/26

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	EP 0 353 672 A (MOTOREN TURBINEN UNION [DE]) 7 February 1990 (1990-02-07) column 5, line 29 - column 6, line 7; figures 3,5	1
X A	US 4 565 595 A (WHITENER PHILIP C [US]) 21 January 1986 (1986-01-21) column 1, line 26 - column 2, line 29; figure 4	1-4;8,9
X A	US 6 190 484 B1 (APPA KARI [US]) 20 February 2001 (2001-02-20) column 3, line 20 - column 6, line 26; figures 5,9	1-4,8,9 5,10
A	EP 0 248 161 A (MESSERSCHMITT BOELKOW BLOHM [DE]) 9 December 1987 (1987-12-09) abstract; figures 4,5	1

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[X] Further documents are listed in the continuation of Box C. [X] 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
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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
"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	Date of mailing of the international search report
28 May 2008	15/10/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Kaysan, Rainer

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2007/008695

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2004/011169 A (ROCKY MOUNTAIN COMPOSITES INC [US]; SIMPSON CRAIG [US]; ALLMAN MIKE [U) 5 February 2004 (2004-02-05) page 5, line 23 - line 29 page 10, line 15 - line 20	1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/008695

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-10

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

Integrating interface in composite wing panel

2. claims: 11-15

Joining wings to fuselage section

3. claims: 16-20

Reduce weight of composite panel in area of a joint

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2007/008695

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