

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
20 March 2003 (20.03.2003)

PCT

(10) International Publication Number
WO 03/022493 A3

(51) International Patent Classification⁷: B29C 70/44

(21) International Application Number: PCT/US02/24303

(22) International Filing Date: 31 July 2002 (31.07.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/919,128 1 August 2001 (01.08.2001) US

(71) Applicant: LOCKHEED MARTIN CORPORATION
[US/US]; 6801 Rockledge Drive, Bethesda, MD 20871 (US).

(72) Inventors: SLAUGHTER, Steve; P.O. Box 901024, Palmdale, CA 93590 (US). FISH, John, C.; 19018 Saddleback Ridge, Santa Clarita, CA 91351 (US).

(74) Agent: TOWNER, Alan, G.; Pietragallo, Bosick & Gordon, One Oxford Centre, 38th Floor, 301 Grant Street, Pittsburgh, PA 15219 (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, 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, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

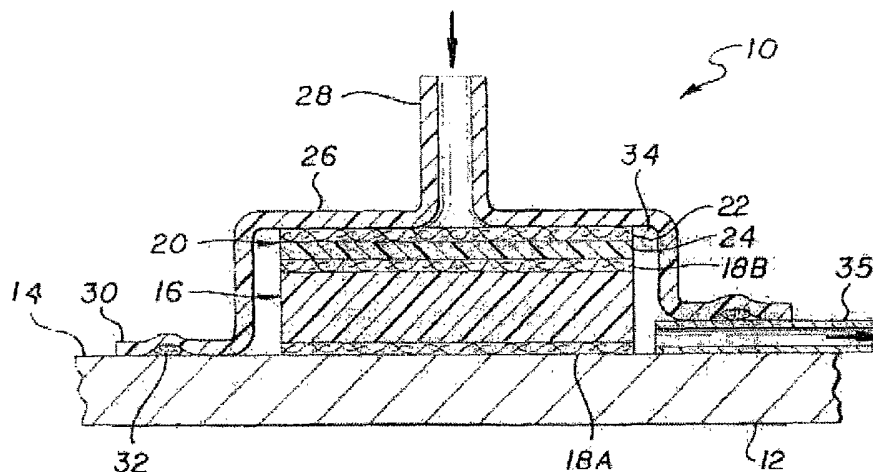
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

Published:

- with international search report

[Continued on next page]

(54) Title: APPARATUS FOR MAKING COMPOSITE STRUCTURES AND METHOD OF MAKING SAME



(57) Abstract: An apparatus (10) for fabricating fiber reinforced plastic structures is disclosed. In detail, the apparatus includes a mold surface (14) upon which can be supported a lay-up (16) of one or more layers of a fibrous material (16A, 16B, 16C, 16D), and over which can be placed a fluid impervious outer sheet (26) with an inlet port (28) and having its edges (30) marginally sealed (32) upon the mold surface (14) to form a chamber (34). A vacuum outlet (35) is connected to the chamber (34) for drawing a vacuum therefrom. A resin distribution system (20) is positioned between the lay-up (16) and the fluid impervious sheet (26). The resin distribution system (20) includes a resin distribution medium (22) for receiving resin from the inlet port (28) and a resin containment layer (24) between the resin distribution medium (22) and lay-up (16) for preventing resin flowing from the resin distribution medium (22) into the lay-up (16) until the resin distribution medium (22) is substantially filled with resin.



WO 03/022493 A3



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

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/US 02/24303

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B29C70/44

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)
IPC 7 B29C

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, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 052 906 A (SEEMANN WILLIAM H) 1 October 1991 (1991-10-01) cited in the application column 4, line 66 -column 5, line 6; figure 1	1-11
A	US 4 132 755 A (JOHNSON JAY) 2 January 1979 (1979-01-02) cited in the application column 5, line 1 - line 63	1-11

Further documents are listed in the continuation of box C.

Patent family members are listed in 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.
- *Z* document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

2 April 2003

10/04/2003

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

Van Wallene, A

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/24303

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5052906	A	01-10-1991	US 4902215 A	20-02-1990
			GB 2257938 A	27-01-1993
US 4132755	A	02-01-1979	NONE	