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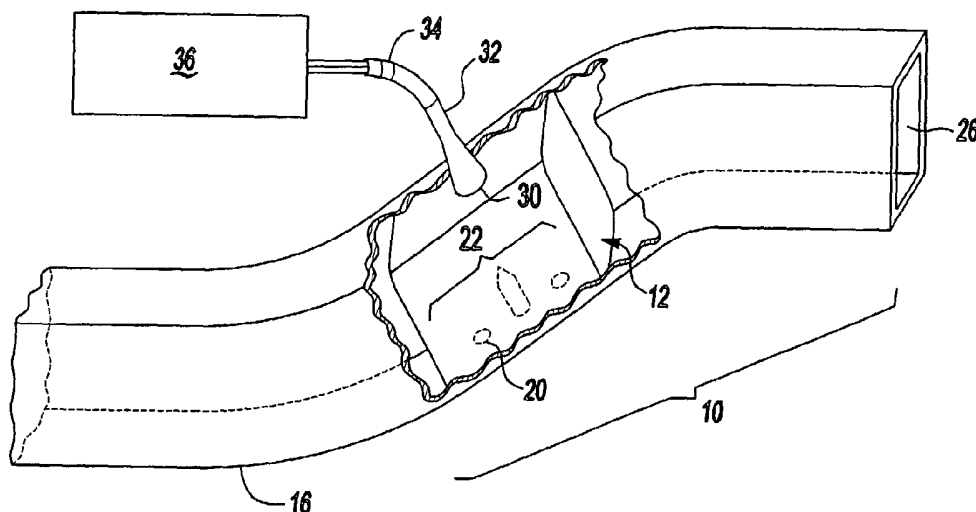
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[Continued on next page]

(54) Title: METHOD FOR REINFORCING STRUCTURAL MEMBERS AND REINFORCEMENT SYSTEM UTILIZING A HOLLOW CARRIER



(57) Abstract: A system and method for reinforcing at least a portion of a structural member (16), including at least one hollow carrier (12), having an exterior shell (20) and an interior portion, which substantially conforms to the dimensions and geometry of the structural member (16) being reinforced; and a lightweight, low density material (14) for filling the interior portion of one or more of the carriers (12). The material (14) filling one or more of the carriers (12) of the present invention can be a reinforcement material, self-curing material, or a heat activated expandable material. The carrier (12) can be produced by blow molding or rotational molding and has an adhesive material (24) disposed along at least a portion of the exterior shell (20) used to place, adhere, and affix the carrier (12) to a targeted portion of the structural member (16) selected to be structurally reinforced.

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Published:

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INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
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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 B62D 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.
X	US 6 321 793 B1 (CZAPLICKI MICHAEL J ET AL) 27 November 2001 (2001-11-27) column 2, line 22 - line 67 column 4, line 1 - column 5, line 15 column 3, line 50 - line 53 column 5, line 59 - line 67; figures 1-3,6,7	1,4-13, 16-18, 21,24, 25,27
Y		2,3,22, 23
A	--- -/--	14,15, 28-60

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents:

<p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*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)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p>	<p>*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</p> <p>*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</p> <p>*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.</p> <p>*&* document member of the same patent family</p>
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Date of the actual completion of the international search 18 December 2003	Date of mailing of the international search report 13. 01. 2004
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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 Pierre, N
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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/13060

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 539 693 A (RENAULT) 27 July 1984 (1984-07-27)	13,16, 19,21, 24,26
A	page 1, line 3 - line 5 page 2, line 5 - line 26; figure 1 ---	14,15, 28-60
X	WO 93 05103 A (RUSSELL TERENCE ALLAN) 18 March 1993 (1993-03-18)	16,18, 20,21, 24-26
A	page 1, line 15 - line 18 page 6, line 10 - line 20 page 7, line 32 -page 8, line 2; claim 1; figure 2 ---	15,25, 28-60
Y	WO 97 02967 A (L & L PRODUCTS INC) 30 January 1997 (1997-01-30)	2,3,22, 23
A	page 1, paragraph 1 page 7, paragraph 1 - paragraph 2 page 13, paragraph 3 page 14, paragraph 2 ---	1,4-13, 16-21, 24-27
E	WO 03 089221 A (DOW GLOBAL TECHNOLOGIES INC ;SAID KOUSAY (US); ALLEN MARK P (US);) 30 October 2003 (2003-10-30)	14,15, 28,29, 31-60
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A	WO 00 13958 A (HENKEL CORP) 16 March 2000 (2000-03-16)	1-13, 16-27
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	column 1, line 13 - line 20 column 8, line 28 - line 40 -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/13060

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 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 all searchable claims.

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

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers 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.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- 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: 1-13, 16-27

local reinforcement of a structural member using a hollow carrier member

2. Claims: 14-15, 28-60

reinforcement of a structural member using a core of specific shape

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internatic . plication No
PCT/US 03/13060

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