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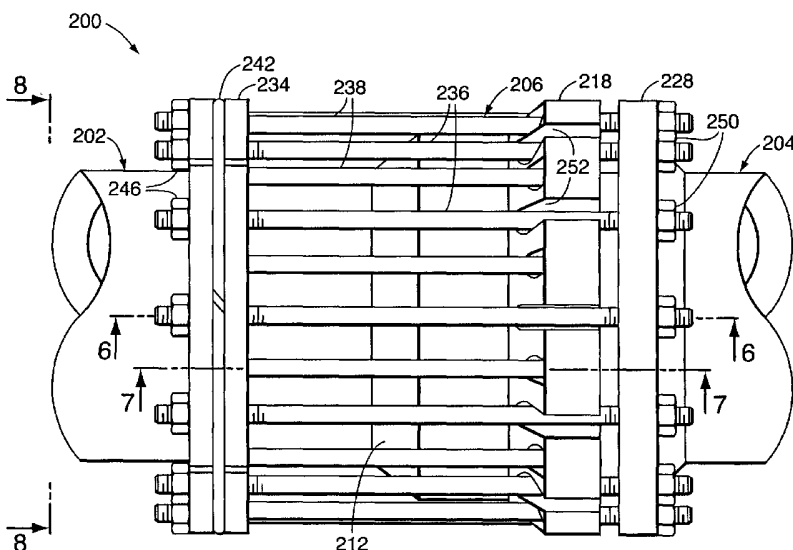
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- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations

[Continued on next page]

(54) Title: BREAKAWAY JOINT FOR SUBSEA COMPONENTS



(57) Abstract: The invention is directed to a breakaway joint (200) for releasably connecting a first component to a second component, the breakaway joint comprising a first member (202) to which the first component is attached; a second member (204) to which the second component is attached; a plurality of columnar members (238) each having first and second ends (256,254) the first ends (256) being coupled to the first member (202); and a mechanism (206) engaged by both the second member (204) and the second ends (254) of the columnar members (238) for latching the first member (202) to the second member (204) and for converting a tensile load acting between the first and second members into a compressive load acting on the columnar members (238); wherein when the tensile load reaches a predetermined level, the columnar members (238) will buckle and the latching means (206) will release the first member (202) from the second member (204).



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<p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p>												
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<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p>												
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.										
A	US 3 659 877 A (KUBASTA JAMES W) 2 May 1972 (1972-05-02) column 2, line 14 -column 3, line 25; figure 2 ---	1-7, 23-27										
A	EP 0 764 809 A (DOVER CORP) 26 March 1997 (1997-03-26) column 2, line 20 - line 58; figure 1 ---	1-7, 23-27										
A	US 5 161 828 A (HYNES JOSEPH H ET AL) 10 November 1992 (1992-11-10) abstract; figure 2 -----	1-3,8,9, 11,23, 28,29,31										
<p><input type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.</p>												
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E earlier document but published on or after the international filing date	*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											
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)	*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.											
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INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3659877	A	02-05-1972 . NONE	
EP 0764809	A	26-03-1997 DE 69620525 D1 EP 0764809 A1 US 5699823 A	16-05-2002 26-03-1997 23-12-1997
US 5161828	A	10-11-1992 NONE	