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(54) **Fan Case Liner**

(57) A fan containment case assembly (30) of a gas turbine engine (10) includes a hardened fan case liner (42) disposed therein. In the event of a fan blade loss condition, the hardened fan case liner allows for circumferential movement of the fan blade tips (38) around the

fan case (48). Thus, the liner reduces the destructive cutting away of the fan case, minimizing damage to the fan case and decreasing torque loading of the fan case from rotor deflections. The liner is preferably formed from overlapping shingles 52.

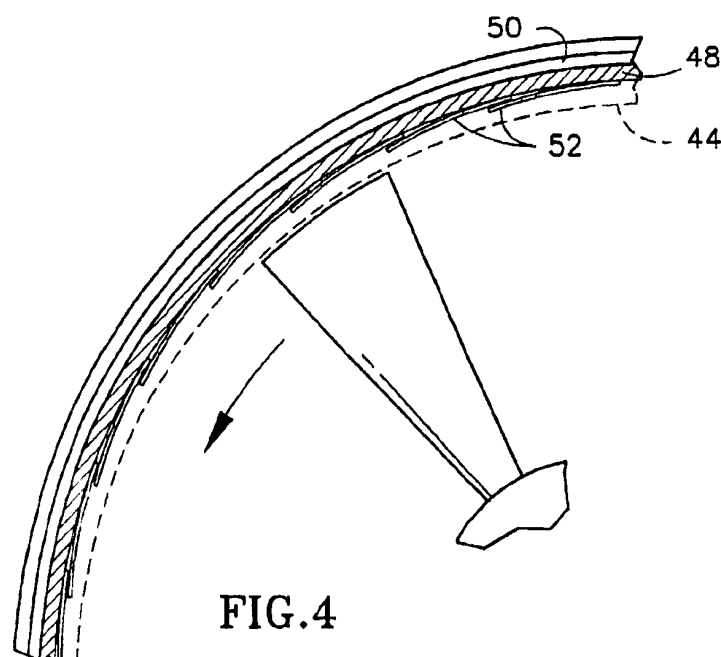


FIG.4



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 98 30 9221

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US 5 447 411 A (CURLEY ROBERT C ET AL) 5 September 1995 (1995-09-05) * column 2, line 59 - line 22 * ---	1-3,5-8	F01D21/04 F01D25/24
X	US 5 403 148 A (FORRESTER JAMES M) 4 April 1995 (1995-04-04) * page 3, column 4, line 27 - line 36 * ---	1-3,5-8	
X	DE 37 12 829 A (MOTOREN TURBINEN UNION) 3 November 1988 (1988-11-03) * claim 1 * -----	1-3,5-7	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F01D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		16 October 2000	Raspo, F
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 30 9221

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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16-10-2000

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5447411	A	05-09-1995	NONE	

US 5403148	A	04-04-1995	NONE	

DE 3712829	A	03-11-1988	AT 63972 T	15-06-1991
			DE 3862989 D	04-07-1991
			EP 0286815 A	19-10-1988
			US 4818176 A	04-04-1989
