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(54) **Spoked Rotor for a Gas Turbine Engine**

(57) A rotor (60C) for a gas turbine engine includes a plurality of blades (64) which extend from a rotor disk (66), each of the plurality of blades (64) extends from the

rotor disk (66) at an interface (801), the interface (801) defined along a spoke (80).

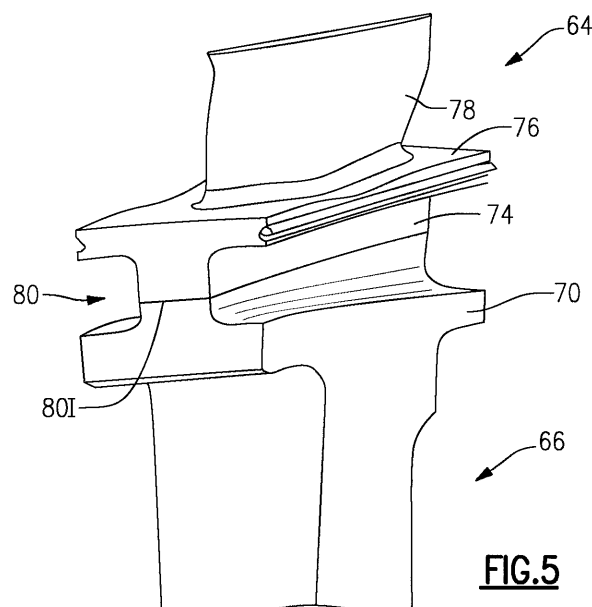


FIG.5



EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT				
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)	
X	DE 19 46 826 A1 (ROLLS ROYCE) 9 April 1970 (1970-04-09)	1-12,15	INV. F01D5/08 F01D11/00 F01D25/12 F01D5/30	
Y	* paragraph [0015] * * figure 2 *	13,14		
X	DE 675 222 C (RHEINMETALL BORSIG AG) 3 May 1939 (1939-05-03)	1-12,15		
Y	* figure 2 *	13,14		
X	US 2010/329849 A1 (NISHIOKA EIJI [JP] ET AL) 30 December 2010 (2010-12-30)	1-12,15		
Y	* figures 8,9 * * paragraph [0047] *	13,14		
X	DE 10 2009 011965 A1 (MTU AERO ENGINES GMBH [DE]) 9 September 2010 (2010-09-09)	1-12,15		
Y	* paragraph [0014] * * figures 3,4 *	13,14		
X	GB 802 871 A (HENSCH & SOHN GMBH) 15 October 1958 (1958-10-15)	1-12,15		TECHNICAL FIELDS SEARCHED (IPC) F01D
Y	* figure 1 *	13,14		
X	DE 103 40 823 A1 (ROLLS ROYCE DEUTSCHLAND [DE]) 31 March 2005 (2005-03-31)	1-12,15		
Y	* figure 1 *	13,14		
X	US 4 784 572 A (NOVOTNY RUDOLPH J [US] ET AL) 15 November 1988 (1988-11-15)	1-12,15		
Y	* figure 2 *	13,14		
X	DE 10 2007 050142 A1 (MTU AERO ENGINES GMBH [DE]) 23 April 2009 (2009-04-23)	1-12,15		
Y	* figure 5 *	13,14		
X	US 2003/223873 A1 (CARRIER CHARLES WILLIAM [US]) 4 December 2003 (2003-12-04)	1-12,15		
Y	* figure 12 *	13,14		
		-/--		
The present search report has been drawn up for all claims				
Place of search Munich		Date of completion of the search 24 March 2017	Examiner Rapenne, Lionel	
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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EUROPEAN SEARCH REPORT

 Application Number
 EP 12 19 0261

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35

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45

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 10 2008 057160 A1 (MTU AERO ENGINES GMBH [DE]) 20 May 2010 (2010-05-20)	1-12,15	
Y	* figure 1 *	13,14	
Y	----- US 2 656 147 A (DENISON BROWNHILL FRANK ET AL) 20 October 1953 (1953-10-20) * figure 1 *	13,14	
Y	----- US 4 483 054 A (LEDWITH WALTER A [US]) 20 November 1984 (1984-11-20) * figure 2 *	13,14	

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
Place of search		Date of completion of the search	Examiner
Munich		24 March 2017	Rapenne, Lionel
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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ON EUROPEAN PATENT APPLICATION NO.**

EP 12 19 0261

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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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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 1946826 A1	09-04-1970	CH 513323 A	30-09-1971
		DE 1946826 A1	09-04-1970
		FR 2018233 A1	29-05-1970
		GB 1266505 A	08-03-1972
		US 3588276 A	28-06-1971
DE 675222 C	03-05-1939	NONE	
US 2010329849 A1	30-12-2010	CN 101936189 A	05-01-2011
		JP 5193960 B2	08-05-2013
		JP 2011012549 A	20-01-2011
		US 2010329849 A1	30-12-2010
DE 102009011965 A1	09-09-2010	DE 102009011965 A1	09-09-2010
		EP 2404037 A1	11-01-2012
		WO 2010099783 A1	10-09-2010
GB 802871 A	15-10-1958	FR 1138797 A	19-06-1957
		GB 802871 A	15-10-1958
DE 10340823 A1	31-03-2005	NONE	
US 4784572 A	15-11-1988	NONE	
DE 102007050142 A1	23-04-2009	CA 2702435 A1	23-04-2009
		CN 101821480 A	01-09-2010
		DE 102007050142 A1	23-04-2009
		EP 2198128 A1	23-06-2010
		JP 2011501019 A	06-01-2011
		US 2010284817 A1	11-11-2010
		WO 2009049596 A1	23-04-2009
US 2003223873 A1	04-12-2003	NONE	
DE 102008057160 A1	20-05-2010	DE 102008057160 A1	20-05-2010
		EP 2344298 A1	20-07-2011
		US 2011219616 A1	15-09-2011
		WO 2010054634 A1	20-05-2010
US 2656147 A	20-10-1953	CH 278723 A	31-10-1951
		DE 971297 C	08-01-1959
		GB 612097 A	08-11-1948
		US 2656147 A	20-10-1953
US 4483054 A	20-11-1984	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82