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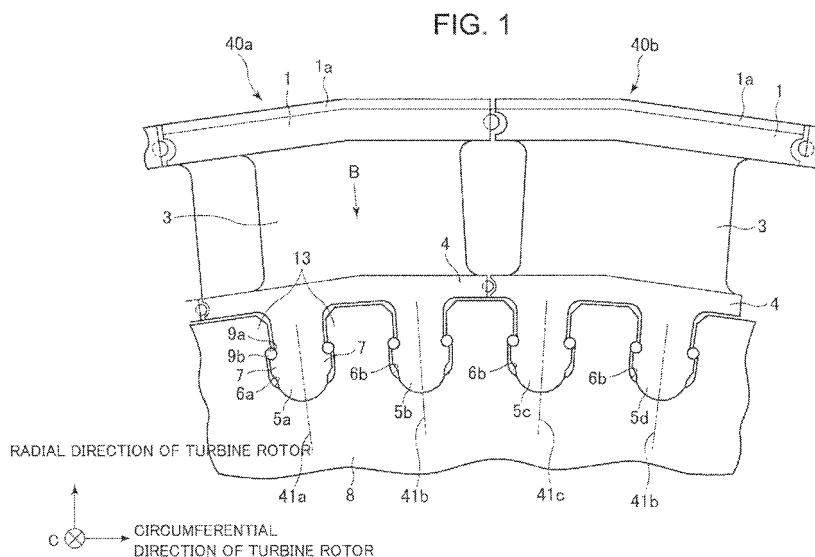
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(54) **Turbine blade and fixation structure thereof**

(57) Disclosed is a turbine rotor blade 40a, 40b that is highly manufacturable and capable of reducing the stress caused by centrifugal force. The turbine rotor blade 40a includes: a vane portion 3 having a blade leading edge 21 which is positioned upstream in the distribution direction of working fluid, and a blade trailing edge 22 which is positioned downstream of the blade leading edge 21; and a blade base 5 portion which is extended

unidirectionally on a base side of the vane portion 3 and engaged with a blade groove 6 formed in the outer circumference of a turbine rotor 8. The turbine rotor 8 circumferential position of the end of the blade base portion 5 on the side toward the blade leading edge 21 is different from the turbine rotor 8 circumferential position of the end of the blade base portion 5 on the side toward the blade trailing edge 22.





EUROPEAN SEARCH REPORT

Application Number
EP 09 16 7300

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	US 2006/222501 A1 (NOGAMI SHUHEI [JP] ET AL) 5 October 2006 (2006-10-05)	1-8,10	INV. F01D5/30
A	* paragraphs [0047] - [0051]; figures 1,10 *	9	

X	US 2007/207034 A1 (NOGAMI SHUHEI [JP] ET AL) 6 September 2007 (2007-09-06)	9	
A	* paragraphs [0012] - [0014], [0023]; figures 7,9 *	1-8,10	

X	US 2005/238492 A1 (DAUSACKER PAUL W [US] ET AL DAUSACKER PAUL WALTER [US] ET AL) 27 October 2005 (2005-10-27)	9	
A	* figures 1,3 *	1-8,10	

X	US 5 425 622 A (MURRAY THOMAS R [US]) 20 June 1995 (1995-06-20)	1-3,5-10	
	* figures 8,9 *		

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			F01D
1 Place of search The Hague Date of completion of the search 8 November 2012 Examiner Herbiet, J			
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.**

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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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08-11-2012

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 2006222501	A1	05-10-2006	CN	1840860 A		04-10-2006
			EP	1707748 A2		04-10-2006
			JP	4869616 B2		08-02-2012
			JP	2006283681 A		19-10-2006
			US	2006222501 A1		05-10-2006

US 2007207034	A1	06-09-2007	CN	101029580 A		05-09-2007
			EP	1830037 A2		05-09-2007
			JP	2007231868 A		13-09-2007
			US	2007207034 A1		06-09-2007

US 2005238492	A1	27-10-2005	CN	1644880 A		27-07-2005
			DE	102005000709 A1		04-08-2005
			JP	2005195021 A		21-07-2005
			RU	2362884 C2		27-07-2009
			US	2005238492 A1		27-10-2005

US 5425622	A	20-06-1995	NONE			
