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(54) **Turbine and rotor blade with brush seal**

(57) A turbine rotor for a turbine engine includes multiple rotor disks (26) having rotor blades (28) mounted about the circumference of each of the rotor disks (26). A fluid seal extends about the circumference of each rotor disk (26) in close proximity to a stationary component (36) of the rotor to separate the space between the rotor blades (28) and a stationary component (36) into separate cavities. The fluid seal includes a seal land (44) on the rotor disk (26) and a brush seal (46) extending from

the stationary component (36). A plurality of disk land segments (54) and a plurality of blade land segments (56) form the seal land (44). The disk seal segments (54) are located on the rotor disk (26) between the rotor blades (28). The blade land segments (56) are located on the rotor blades (28). After the rotor blades (28) are assembled, the blade land segments (56) and the disk land segments (54) fit together to form a segmented ring-like seal land (44) around the circumference of the rotor disk (26).

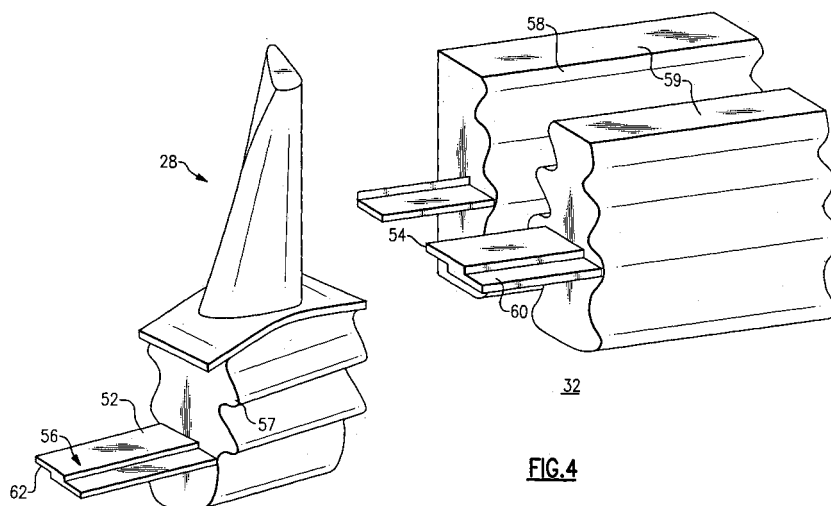


FIG. 4

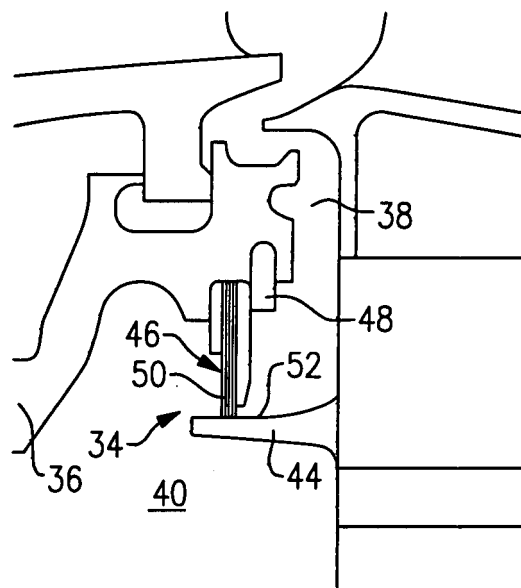


FIG.3



EUROPEAN SEARCH REPORT

Application Number
EP 07 25 4135

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 4 218 189 A (PASK GEORGE [GB]) 19 August 1980 (1980-08-19)	1-4,6-11	INV. F01D11/00 F01D5/30
Y	* figures 3-6 *	1-9	

X	US 4 685 863 A (MCLEAN HOWARD J [US]) 11 August 1987 (1987-08-11)	10,11	
Y	* figures *	1-9	

Y	EP 1 340 902 A2 (GEN ELECTRIC [US]) 3 September 2003 (2003-09-03)	1-9	
	* figure 5 *		

Y	US 3 917 150 A (FERGUSON JOHN GILBERT ET AL) 4 November 1975 (1975-11-04)	1-9	
	* figures *		

Y	EP 0 572 312 A1 (SNECMA [FR]) 1 December 1993 (1993-12-01)	5	
	* figures 3,4 *		

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			F01D
<div> <div>3</div> <div>EPO FORM 1503 03.82 (P04C01)</div> </div>			
Place of search		Date of completion of the search	Examiner
Munich		25 March 2010	Raspo, Fabrice
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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The members are as contained in the European Patent Office EDP file on
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25-03-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4218189	A	19-08-1980	NONE	
US 4685863	A	11-08-1987	DE 3023167 A1	15-01-1981
EP 1340902	A2	03-09-2003	CA 2414992 A1	01-09-2003
			DE 60220636 T2	21-02-2008
			JP 4204310 B2	07-01-2009
			JP 2003254083 A	10-09-2003
			RU 2295046 C2	10-03-2007
			US 2003163984 A1	04-09-2003
US 3917150	A	04-11-1975	DE 2455195 A1	28-05-1975
			DE 2462726 B1	16-10-1980
			FR 2252516 A1	20-06-1975
			GB 1450553 A	22-09-1976
			IT 1030826 B	10-04-1979
			JP 952826 C	25-05-1979
			JP 50112651 A	04-09-1975
			JP 53030854 B	30-08-1978
EP 0572312	A1	01-12-1993	DE 69300621 D1	16-11-1995
			DE 69300621 T2	23-05-1996
			FR 2691749 A1	03-12-1993
			JP 2620493 B2	11-06-1997
			JP 6050104 A	22-02-1994
			US 5328328 A	12-07-1994