

Europäisches Patentamt European Patent Office Office européen des brevets

(11) **EP 0 935 050 A3**

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: **16.05.2001 Bulletin 2001/20**

(51) Int CI.7: **E21B 17/10**, E21B 43/26

(43) Date of publication A2: 11.08.1999 Bulletin 1999/32

(21) Application number: 99300812.7

(22) Date of filing: 03.02.1999

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU

MC NL PT SE

Designated Extension States:

AL LT LV MK RO SI

(30) Priority: 05.02.1998 US 18922

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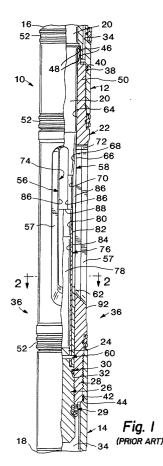
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(54) Wear resistant crossover

(57) A wear resistant crossover comprising a generally tubular element having an axial passage therethrough, and at least one exit port located through an axial wall of said crossover, wherein said crossover is made of a material including a ceramic.





EUROPEAN SEARCH REPORT

Application Number EP 99 30 0812

	DOCUMENTS CONSID	ERED TO BE RELEVANT		
Category	Citation of document with in of relevant pass	ndication, where appropriate, ages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Ρ,Χ	US 5 842 516 A (JON 1 December 1998 (19 * column 4, line 20	98-12-01)	1,3,4	E21B17/10 E21B43/26
Α	US 4 765 205 A (HIG 23 August 1988 (198 * column 5, line 14 * figure 4 *	8-08-23)	1-10	
D,A	US 5 636 691 A (HEN AL) 10 June 1997 (1 * the whole documen		1-10	
				TECHNICAL FIELDS SEARCHED (Int.Cl.6)
	The present search report has t	peen drawn up for all claims		
	Place of search		Examiner	
	THE HAGUE	26 March 2001	Gar	rido Garcia, M
X : parti Y : parti docu A : tech O : non-	ATEGORY OF CITED DOCUMENTS cularly relevant if taken alone cularly relevant if combined with anoti ment of the same category nological background -written disclosure mediate document	E : earlier patent after the filing per D : document cit L : document cit	ed in the application ed for other reasons	shed on, or

EPO FORM 1503 03.82 (P04C01)

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

EP 99 30 0812

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-03-2001

	Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US	5842516	Α	01-12-1998	GB NO	2327959 A 981523 A	10-02-199 05-10-199
US	4765205	Α	23-08-1988	NONE		
	5636691			EP NO		13-08-199 19-03-199