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(54) **Cutting structure and rotary drill bit comprising such a structure.**

(57) A cutting structure, for use in a rotary drill bit for drilling or coring holes in subsurface formations, comprises an elongate stud 17 of hard material, such as cemented tungsten carbide, there being at least partly embedded in the stud, at one end thereof, one or more thermally stable polycrystalline diamond cutting elements 14, 15, 16. The diamond elements, which may be in the form of small rectangular blocks or cylinders, are bonded into the stud by a hot pressing or an infiltration process.

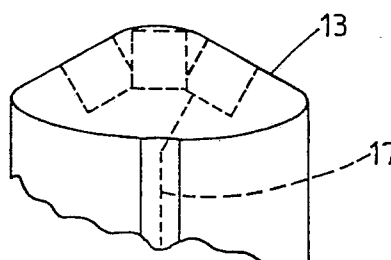


FIG. 3.



EP 88 30 4325

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. 4)
X	GB-A-2 138 864 (SUMITOMO CO.) * Whole document *	1-4,6,8 -10,13- 16,18, 20-22 5,23	E 21 B 10/56 B 22 F 7/06
Y	---		
X	EP-A-0 169 683 (NL PETROLEUM PRODUCTS) * Abstract; figure 7; page 10, lines 1-14 *	1,6-8, 12,14- 18,24, 25,27- 29,31	
X	US-A-4 646 857 (THOMPSON) * Abstract; figures *	1,14,26	
X	EP-A-0 029 535 (GENERAL ELECTRIC) * Abstract; figures *	1-4,7, 13-15	
X	US-A-4 148 368 (EVANS) * Abstract; figures *	1,14	
Y	EP-A-0 156 235 (NORTON CHRISTENSEN) * Abstract; figures *	5,23	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
X	EP-A-0 211 642 (NL INDUSTRIES INC.) * Figure 3; abstract *	1,11,14	E 21 B
A	US-A-3 106 973 (CHRISTENSEN) * Figures *	1,14	
A	US-A-4 339 009 (BUSBY) * Figures; abstract *	1,14	
A,P	EP-A-0 246 789 (NL PETROLEUM PRODUCTS) * Figures; abstract * --- -/-	1,14	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10-07-1989	Examiner WEIAND T.
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			



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.4)
A,D	US-A-4 529 047 (MESKIN) ---		
A,D	US-A-4 491 188 (GRAPPENDORF) ---		
A,D	US-A-4 499 959 (GRAPPENDORF) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
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