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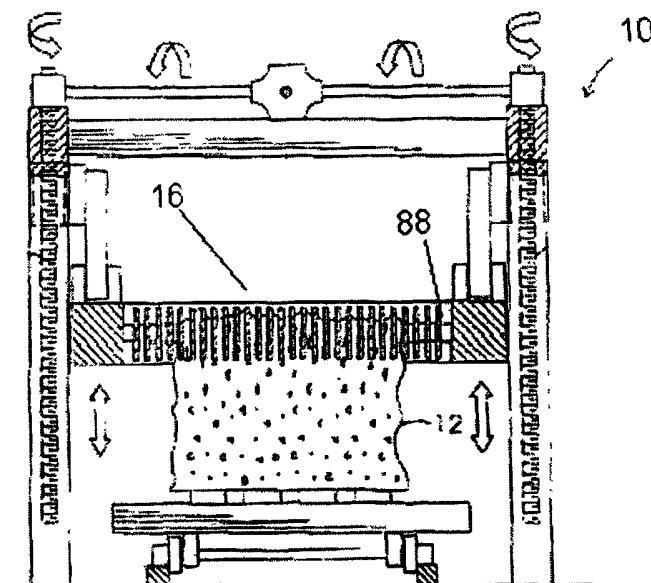
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(54) Title: FRAME SAW FOR CUTTING GRANITE AND METHOD TO IMPROVE PERFORMANCE OF FRAME SAW FOR CUTTING GRANITE



(57) Abstract: A horizontal frame saw (10) is equipped with a plurality of generally parallel, spaced-apart blades (88) for cutting granite (12). Each of the blades (88) has a cutting edge with diamond cutting segments (90, 104) mounted thereon for engaging the granite (12) with a swinging motion for cutting of the granite (12), wherein the segments (90, 104) have optimized / controlled segment variables for uniform wearing of the segments along each blade (88) during cutting of granite (12). Segment variables include one or more of: spacing of segments (90, 104) along the length of the blade (88); diamond concentration in each segment (90, 104); diamond grade (as measured by compressive fracture strength) in each segment (90, 104); segment composition (bond, secondary abrasives); or segment dimensions.

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Section PQ, Week 197603 Derwent Publications Ltd., London, GB; Class P64, AN 1976-A6205X XP002280764 -& SU 467 005 A (AS UKR HARD MATLS), 24 July 1975 (1975-07-24) abstract	1-4, 15, 16
Y		5, 6, 17, 18
X	DE 12 21 133 B (ESTERER A G MASCHF) 14 July 1966 (1966-07-14) the whole document	7-14
Y		5, 6, 17, 18
	--- -/--	
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° Special categories of cited documents : *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family		
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 775 236 A (BLUM HAROLD T) 25 December 1956 (1956-12-25) column 1, line 15 - line 31 column 4, line 3 - line 10 figure 2 ---	1-4,15, 16
X	DATABASE WPI Section PQ, Week 198602 Derwent Publications Ltd., London, GB; Class P64, AN 1986-012926 XP002280765 -& SU 1 164 053 A (NATURAL DIAMOND TOO), 30 June 1985 (1985-06-30) abstract ---	1-4,15, 16
X	WO 02/24426 A (GEO S R L ;MAROCCO GIUSEPPE (IT)) 28 March 2002 (2002-03-28) page 13, paragraph 1 -page 16, last paragraph page 18, last paragraph -page 20, paragraph 1 figures ---	7-14
A		5,6,17, 18
X	GB 1 206 736 A (ERNST WINTER & SOHN) 30 September 1970 (1970-09-30) the whole document in particular: page 2, left-hand column, line 1 - line 5 page 2, left-hand column, line 23 -----	1,15

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/39132

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
SU 467005	A	15-04-1975	SU 467005 A1	15-04-1975
DE 1221133	B	14-07-1966	NONE	
US 2775236	A	25-12-1956	NONE	
SU 1164053	A	30-06-1985	SU 1164053 A1	30-06-1985
WO 0224426	A	28-03-2002	IT T020000877 A1 AU 9221901 A WO 0224426 A1	19-12-2000 02-04-2002 28-03-2002
GB 1206736	A	30-09-1970	BE 731753 A ES 366605 A1 FR 2006618 A5 NL 6905855 A	01-10-1969 16-03-1971 26-12-1969 22-10-1969