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(72) Inventor: **Bernieri, Paolo**
54100 Massa (IT)

(74) Representative:
Faggioni, Giovanmaria, Dr. et al
Fumero-Studio Consulenza Brevetti
Franz-Joseph-Strasse 38
80801 München (DE)

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(71) Applicant: **Stalber S.r.l.**
54100 Massa (IT)

(54) **Diamond type cutting tool, with low noise emission, for sawing stone materials, and machine using said tool**

(57) The invention relates to a cutting tool, in particular a diamond-tipped cutting tool for cutting stone materials, formed by a sheet steel support core (1) with a plurality of cutting elements (2), such as highly abrasive diamond segments which are fixed at intervals along its cutting edge. In order to achieve sound-damping of said tool, a series of substantially parallel incisions (3), arranged inclined with respect to the cutting edge at an angle of 20° to 40° is formed in a central zone of said sheet metal support core, the ends of each incision, which are formed in the manner of a curl (3a), being located above the ends of the incisions adjacent thereto. Moreover, filling segments (5) are arranged

between the diamond segments, said filling segments being fixed to the bottom edge of the blades in a manner similar to the said diamond segments, with the function of increasing the bearing contact area of the blades inside the cutting groove. The invention also relates to a frame-type cutting machine, the blade-carrying group of which has, associated with it, damping means suitable for preventing the generation and/or the propagation of acoustic vibrations, such as calibrated spacer strips and/or damping blocks which are made of resilient sound-absorbing material and arranged between each pair of blades and/or between the latter and the frame.

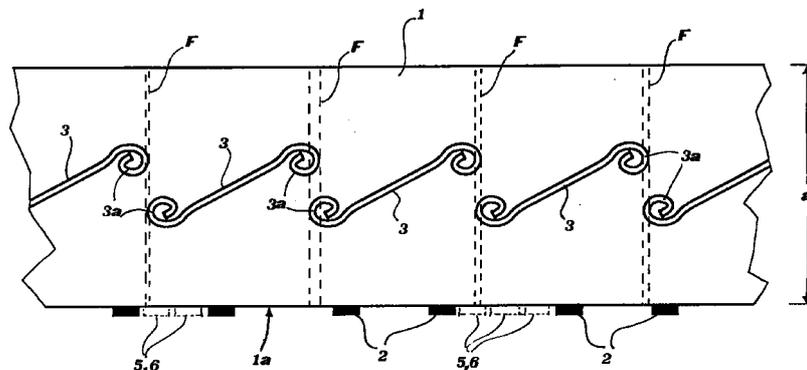


FIG.1

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EUROPEAN SEARCH REPORT

Application Number
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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.6)
X	EP 0 141 042 A (MUMMENHOFF HEINRICH) 15 May 1985 (1985-05-15) * page 9, line 1 - page 16, line 27 * * figures *	1,2,5, 21,22,29	B28D1/12 B28D1/06
Y		6-8	
A		3,4,9	
X	--- EP 0 400 511 A (DIAGLOBE AKTIEBOLAG) 5 December 1990 (1990-12-05) * column 2, line 52 - column 3, line 1 * * column 3, line 14 - line 16 * * column 4, line 35 - line 38 * * column 4, line 43 - line 45 * * column 7, line 1 - line 4 * * figures 1,11 *	1,21,22, 29	
Y		6,8,17	
A		7	
Y	--- US 3 799 025 A (GARBO PAUL W) 26 March 1974 (1974-03-26) * column 1, line 37 * * column 1, line 52 - line 56 *	6,7	
A		8	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
X	--- EP 0 275 860 A (DIAMANT BOART SA) 27 July 1988 (1988-07-27) * the whole document * * in particular column 4, line 44 - line 46 and column 5, line 4 - line 7 *	1,20	B23D B28D B27B
A		2-5	
X	--- PATENT ABSTRACTS OF JAPAN vol. 010, no. 151 (M-483), 31 May 1986 (1986-05-31) -& JP 61 004617 A (OOISHI ENGINEERING:KK), 10 January 1986 (1986-01-10) * abstract *	1,20	
A		2,6,7	
	--- -/--		
-The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 3 August 2000	Examiner Rijks, M
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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Application Number
EP 98 10 9353

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.6)
P,X	EP 0 839 620 A (DIAMOND PAUBER SRL) 6 May 1998 (1998-05-06) * column 1, line 1 - line 24 * * column 2, line 29 - line 44 * * column 2, line 58 - column 3, line 26 * * column 4, line 20 - line 46 * * column 5, line 13 - line 38 * * claims 5,8,9 * * figures 5,7,8 *	1,10-13, 16,18,20	
A	---	14,15,17	
X	PATENT ABSTRACTS OF JAPAN vol. 007, no. 029 (M-191), 5 February 1983 (1983-02-05) & JP 57 184674 A (NIROU INOUE), 13 November 1982 (1982-11-13) * abstract *	1,10-12, 16,18, 21,22,29	
Y	---	17	
X	FR 1 568 331 A (COMPAGNIE DU DIAMANT INDUSTRIEL) 23 May 1969 (1969-05-23) * page 1, left-hand column, paragraph 1 * * page 1, left-hand column, paragraph 6 * * page 1, right-hand column, paragraph 1 * * page 1, right-hand column, paragraph 5 - page 3, left-hand column, paragraph 2 * * figures *	1,10,11, 18,21, 22,29	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	---	13	
A	US 3 016 661 A (NIELSEN W C) 16 January 1962 (1962-01-16) * column 3, line 11 - line 41 * * figures 1,2 *	13-15	
	---	-/--	
-The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 3 August 2000	Examiner Rijks, M
CATEGORY OF CITED DOCUMENTS		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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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 9353

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.6)
A	US 4 718 398 A (HALLEZ CHARLES P) 12 January 1988 (1988-01-12) * column 1, line 5 - line 16 * * column 1, line 52 - line 57 * * column 2, line 30 - line 63 * * column 3, line 12 - line 16 * * column 3, line 40 - line 42 * * claim 5 * * figure 1 * -----	19	
			TECHNICAL FIELDS SEARCHED (Int.Cl.8)
-The present search report has been drawn up for all claims-			
Place of search		Date of completion of the search	Examiner
THE HAGUE		3 August 2000	Rijks, M
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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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-22, 29



The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-22,29

Diamond cutting tool provided with damping means able to prevent acoustic vibrations.

Machine for sawing stone materials having a rotary tool cutter provided with damping means able to prevent acoustic vibrations.

2. Claims: 22-28

Machine for sawing stone materials in the form of a frame comprising a blade-carrying group containing a plurality of diamond blades provided with damping means able to prevent acoustic vibrations.

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

EP 98 10 9353

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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03-08-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0141042 A	15-05-1985	DE 3330956 A	21-03-1985
		DE 3346321 A	04-07-1985
		AT 30695 T	15-11-1987
		DE 3467323 D	17-12-1987
EP 0400511 A	05-12-1990	SE 463858 B	04-02-1991
		AT 95098 T	15-10-1993
		AU 619114 B	16-01-1992
		AU 5621890 A	06-12-1990
		CA 2018029 A	02-12-1990
		DE 69003593 D	04-11-1993
		DE 69003593 T	20-01-1994
		FI 93323 B	15-12-1994
		JP 3032515 A	13-02-1991
		NO 174456 B	31-01-1994
		SE 8902009 A	03-12-1990
US 5009011 A	23-04-1991		
US 3799025 A	26-03-1974	CA 968997 A	10-06-1975
		US 3857296 A	31-12-1974
EP 0275860 A	27-07-1988	BE 1000242 A	20-09-1988
JP 61004617 A	10-01-1986	JP 1060374 B	22-12-1989
		JP 1576625 C	24-08-1990
EP 0839620 A	06-05-1998	IT M1960734 U	07-05-1998
		ES 2114844 T	16-06-1998
JP 57184674 A	13-11-1982	JP 57184674 T	19-82-1113
FR 1568331 A	23-05-1969	NONE	
US 3016661 A	16-01-1962	NONE	
US 4718398 A	12-01-1988	BE 903178 A	31-12-1985
		AT 45901 T	15-09-1989
		DE 3665273 D	05-10-1989
		EP 0221875 A	13-05-1987
		JP 62116111 A	27-05-1987

EPO FORM P468

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82