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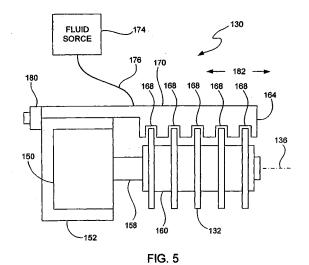
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- (71) Applicants:
  - Towa-Intercon Technology, Inc. Morgan Hill, CA 95037 (US)
  - Koninklijke Philips Electronics N.V. 5621 BA Eindhoven (NL)

- (72) Inventors:
  - Mihai, Chris Morgan Hill CA 95037 (US)
  - Khor, Teang K.
     Milpitas
     CA 95035 (US)
  - Donker, Marcus Franciscus 6605 Wijchen ZA (NL)
  - Van Gemert, Leo 6652 BC Nijmegen (NL)
- (74) Representative: Schoppe, Fritz et al Schoppe, Zimmermann, Stöckeler & Zinkler Patentanwälte Postfach 246 82043 Pullach bei München (DE)

## (54) Apparatus for cutting semiconductor devices

(57)An apparatus for cutting semiconductor devices comprises cutting blades (132) for cutting a semiconductor device, generally annular rigid spacers, a fluid reservoir (174), an elongated member and an adjustment mechanism. The rigid spacers separate adjacent ones of the cutting blades, the spacers each having an inner surface at its inner radius and an outer surface at its outer radius, and each contacting the adjacent ones of the cutting blades on first and second substantially planar surfaces each extending substantially from the inner surface to the outer surface. The elongated member is in movable proximity to the cutting blades and in fluid communication with the fluid reservoir and has channels configured to at least partially surround the cutting blades so as to simultaneously direct flow of a fluid from the fluid reservoir onto the cutting edges of the cutting blades and onto the sides of the cutting blades. The adjustment mechanism is configured to move the elongated member so as to adjustably align the channels with the cutting blades.





# **EUROPEAN SEARCH REPORT**

Application Number EP 07 01 4806

	DOCUMENTS CONSIDERE  Citation of document with indication	on, where appropriate.	Relevant	CLASSIFICATION OF THE		
Category	of relevant passages		to claim	APPLICATION (IPC)		
Υ	US 2003/153247 A1 (TRICET AL TRICARD MARC J M 14 August 2003 (2003-08 * paragraph [0023] - pa figures 1,2 *	[US] ET AL) 3-14)	1-6	INV. B28D5/00 B28D5/02 B23D59/02		
Υ	US 3 623 520 A (NEILD F 30 November 1971 (1971- * column 2, line 5 - co figures 1,2 *	-11-30)	1,2,5,6			
Υ	US 6 463 920 B1 (KONDO AL) 15 October 2002 (20 * column 6, line 37 -	002-10-15)	3			
Υ	EP 0 249 197 A1 (DISCO LTD [JP]) 16 December 1 * column 6, line 50 - of figure 2 *	1987 (1987-12-16)	4			
				TECHNICAL FIELDS SEARCHED (IPC)		
				B28D		
	The present search report has been of	rawn up for all claims  Date of completion of the search		Examiner		
	Munich	21 May 2010	Fri	sch, Ulrich		
CATEGORY OF CITED DOCUMENTS  X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category		T : theory or princip E : earlier patent d after the filing d. D : document cited L : document cited	lole underlying the in ocument, but publis ate I in the application for other reasons	nvention shed on, or		
A : technological background O : non-written disclosure P : intermediate document			& : member of the same patent family, corresponding document			

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

EP 07 01 4806

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.

21-05-2010

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 2003153247	A1	14-08-2003	TW WO	578230 03068450		01-03-200 21-08-200
US 3623520	Α	30-11-1971	NONE			
US 6463920	B1	15-10-2002	CN	1296871	A	30-05-200
EP 0249197	A1	16-12-1987	DE US	3760993 4872289		21-12-198 10-10-198

 $\stackrel{\circ}{\mathbb{L}}$  For more details about this annex : see Official Journal of the European Patent Office, No. 12/82