



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



(11) **EP 0 857 541 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**03.02.1999 Bulletin 1999/05**

(51) Int. Cl.<sup>6</sup>: **B24B 37/04**, B24B 41/06

(43) Date of publication A2:  
**12.08.1998 Bulletin 1998/33**

(21) Application number: **98101376.6**

(22) Date of filing: **27.01.1998**

(84) Designated Contracting States:  
**AT BE CH 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: **06.02.1997 JP 38427/97**

(71) Applicant: **Speedfam Co., Ltd.**  
**Ohta-ku, Tokyo (JP)**

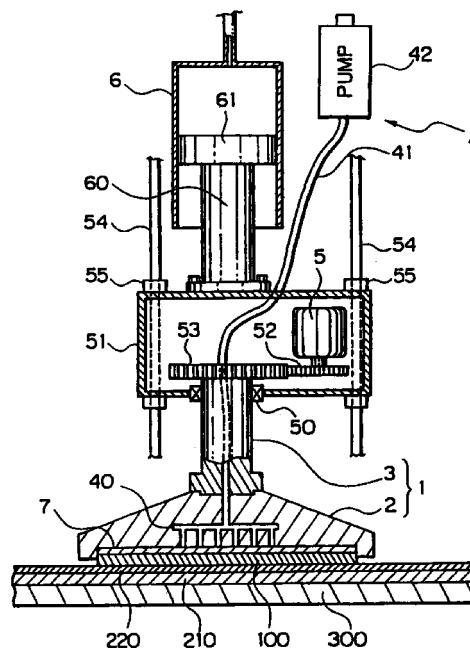
(72) Inventors:  
• **Izumi, Shigeto**  
**Ayase-shi, Kanagawa-ken (JP)**  
• **Arai, Hatsuyuki**  
**Ayase-shi, Kanagawa-ken (JP)**

(74) Representative:  
**Füchsle, Klaus, Dipl.-Ing. et al**  
**Hoffmann Eitle,**  
**Patent- und Rechtsanwälte,**  
**Arabellastrasse 4**  
**81925 München (DE)**

(54) **Chemical and mechanical polishing apparatus**

(57) A CMP apparatus has an extended life and improved polishing accuracy and is capable of not only preventing a wafer 100 from dashing out of a carrier 1 and being damaged or wound, but also adjusting the elasticity of a pressure pad to a desired value in a fine manner. The CMP apparatus includes the carrier 1, a suction mechanism 4 having an air passage 40 disposed to open on a lower surface of the carrier 1 for drawing air, and a surface plate 300 having a hard polishing pad 220 and a soft pad 210 adhered thereto. The pressure pad in the form of a porous thin Teflon layer 7 having a thickness of 5 mm is adhered to a lower surface of the carrier 1 which holds the wafer 100. Thus, the rear surface of the wafer 100 is maintained in a horizontal state by the Teflon layer 7, and the warpage and/or irregularities in the thickness of the wafer 100, which appear on the front surface of the wafer 100, can be absorbed by the soft pad 210 and the hard polishing pad 220.

**FIG. 1**



**EP 0 857 541 A3**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 98 10 1376

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	PATENT ABSTRACTS OF JAPAN vol. 096, no. 004, 30 April 1996 & JP 07 320995 A (SONY CORP), 8 December 1995 * abstract; figures *	1-3,6-9, 12	B24B37/04 B24B41/06
Y	---	4,5,10, 11	
Y	US 4 954 141 A (TAKIYAMA ET AL.) 4 September 1990 * column 2, line 44 - line 48 *	4,5,10, 11	
X	EP 0 454 362 A (SHINETSU HANDOTAI KK) 30 October 1991 * page 3, line 38 - page 4, line 54 *	1,3,6,7, 9,12	
X	EP 0 578 351 A (SHINETSU HANDOTAI KK) 12 January 1994 * example 1 *	1,3,6,7, 9,12	
A	PATENT ABSTRACTS OF JAPAN vol. 012, no. 190 (M-704), 3 June 1988 & JP 62 297063 A (HITACHI LTD), 24 December 1987 * abstract; figures *	1,7	TECHNICAL FIELDS SEARCHED (Int.Cl.6) B24B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 10 December 1998	Examiner GARELLA, M
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> <p>&amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)