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| (21) International Application Number: <b>PCT/GB97/01570</b><br>(22) International Filing Date: <b>11 June 1997 (11.06.97)</b><br><br>(30) Priority Data:<br>9612594.3 15 June 1996 (15.06.96) GB<br>9626415.5 19 December 1996 (19.12.96) GB<br>9626397.5 19 December 1996 (19.12.96) GB<br><br>(71) Applicant (for all designated States except US): <b>WESTERN<br/>ATLAS U.K. LIMITED [GB/GB]; 26 Temple Street, Ayles-<br/>bury, Buckinghamshire HP20 2RQ (GB).</b><br>-18/306-<br><br>(72) Inventors; and<br>(75) Inventors/Applicants (for US only): <b>STOCKER, Mark,<br/>Andrew [GB/GB]; 62 Gresham Drive, West Hunsbury,<br/>Northampton NN4 9SZ (GB). FALKNER, Dermot, Robert<br/>[GB/GB]; 94 Foxhill, Olney, Buckinghamshire MK46 5HE<br/>(GB). MORANTZ, Paul, Mastin, Howard [GB/GB]; 26<br/>Mill Street, Newport Pagnell, Buckinghamshire MK16 8ER<br/>(GB). PIERSE, Michael, George [GB/GB]; 216 Castle<br/>Road, Bedford MK40 3TY (GB).</b><br>-pf 8<br><br>(74) Agent: <b>NASH, Keith, Wilfrid; Keith W. Nash &amp; Co., 90-92<br/>Regent Street, Cambridge CB2 1DP (GB).</b> |  | (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR,<br>BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE,<br>HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,<br>LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,<br>RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG,<br>US, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ,<br>UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD,<br>RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES,<br>FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent<br>(BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD,<br>TG).<br><br>Published<br>With international search report. |                                                                                                                               |

(54) Title: **WORKPIECE INSPECTION AND HANDLING**

(57) Abstract

A workpiece alignment and shifting system for moving circular workpieces from a first inspection station to a second machining station, comprises workpiece holding means for attachment to the face of a disc workpiece to move the latter from one position to another. Robotic means controls the position of the workpiece holding means and is adapted to move in at least two orthogonal directions, both of which are parallel to the plane of the disc when it occupies the first station. The disc is rotated in the inspection station and in the machining station and inspection means determines the position of the geometric centre of the disc as it is rotated. Computing means calculates from data delivered by the inspection means the two shifts required along the orthogonal directions of movement of the robotic means, to move the geometric centre of the disc to a second desired position whose coordinates are known. The computing means includes memory means for storing the said coordinates. The coordinates are those of the centre of rotation of the workpiece holder or chuck in the said second station. The workpiece holding means is vacuum operated. A three axis robot is employed to pick and place disc-like wafers of semi-conductor material for edge grinding, and movement along two of the robot axes, X and Z, is used to control the centering of the wafer on a vacuum chuck in the second grinding station.