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13/095,818 27 April 2011 (27.04.2011) US(71) Applicant (for all designated States except US): **APPLIED MATERIALS, INC.** [US/US]; 3050 Bowers Avenue, Santa Clara, California 95054 (US).

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[Continued on next page]

(54) Title: HIGH SENSITIVITY EDDY CURRENT MONITORING SYSTEM

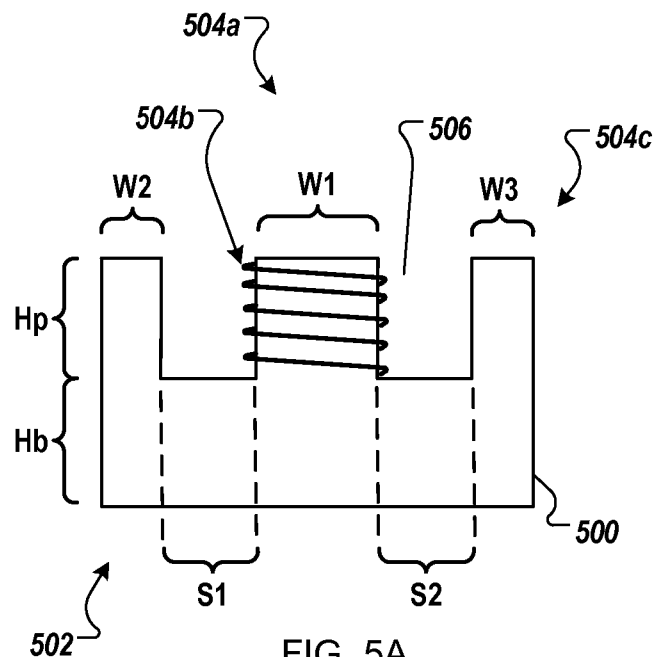


FIG. 5A

(57) Abstract: A method of chemical mechanical polishing a substrate includes polishing a metal layer on the substrate at a polishing station, monitoring thickness of the metal layer during polishing at the polishing station with an eddy current monitoring system, and controlling pressures applied by a carrier head to the substrate during polishing of the metal layer at the polishing station based on thickness measurements of the metal layer from the eddy current monitoring system to reduce differences between an expected thickness profile of the metal layer and a target profile, wherein the metal layer has a resistivity greater than 700 ohm Angstroms.

**Declarations under Rule 4.17:**

- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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A. CLASSIFICATION OF SUBJECT MATTER***H01L 21/304(2006.01)i, H01L 21/66(2006.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01L 21/304; C09K 13/00; G01B 7/06; G01N 27/72; C03C 15/00; B24B 1/00; G01B 7/10; H01L 21/461; H01L 21/00; B24B 49/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: CMP, metal layer, monitoring, thickness, eddy current, core, coil

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002-0055192 A1 (FRED C. REDEKER et al.) 09 May 2002 See abstract; figures 3A-13; paragraphs [0009]-[0014], [0031]-[0070].	1-15
Y	US 2005-0020185 A1 (STEVEN ZUNIGA et al.) 27 January 2005 See abstract; figures 1-3, 5-8; and paragraphs [0026]-[0056].	1-5, 11-15
Y	US 2006-0021974 A1 (FENG Q. LIU et al.) 02 February 2006 See abstract; figures 3-8D; and paragraphs [0039]-[0065], [0096]-[0121].	5
Y	US 2007-0139043 A1 (G. LAURIE MILLER et al.) 21 June 2007 See abstract; figures 6A, 11; and paragraphs [0056]-[0066].	6-10
A	US 05343146 A (FRANK J. KOCH et al.) 30 August 1994 See figures 4a-7; and column 8 line 12 - column 12 line 27.	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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"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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INTERNATIONAL SEARCH REPORT

Information on patent family members

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