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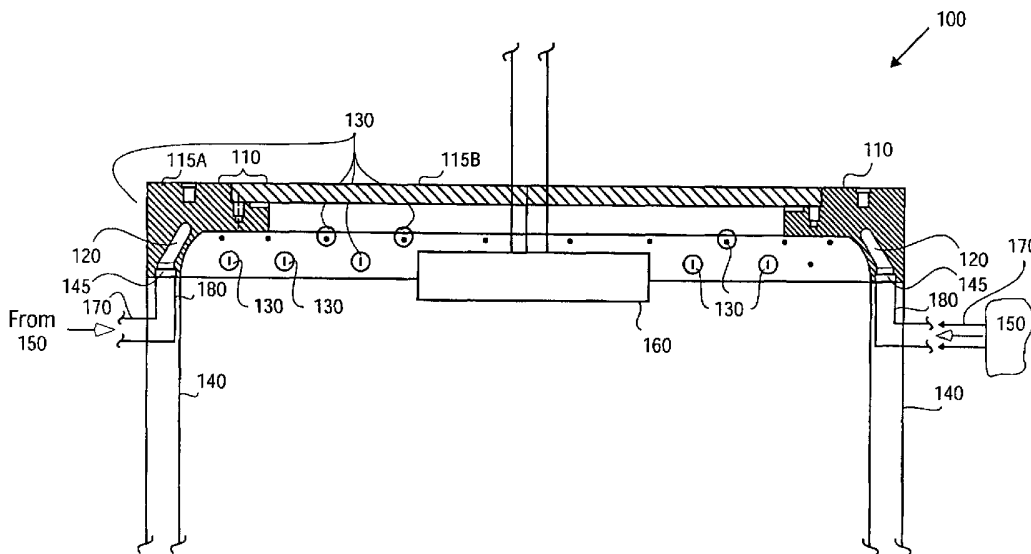
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[Continued on next page]

(54) Title: SYSTEMS AND METHODS FOR IMPROVED GAS DELIVERY



(57) Abstract: An improved chemical vapor deposition system including a lid having (110) a channel (120) configured for delivering reactive cleaning gas to the interior of the vapor deposition system (100). The lid (110) including a cleaning gas distribution channel (120) fluidly connected to a plurality of cleaning gas injection ports (130). The lid (110) geometry is configured to generate desirable concentration gradients of reactive cleaning gas to the interior of a vapor deposition chamber (100). In some embodiments, the concentration gradient is selected to compensate for the temperature dependence of cleaning reactions. Methods of using the disclose system are disclosed.

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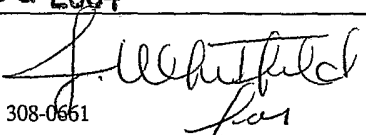
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/31495

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : C23C 16/00, 16/455; B08B 7/00 US CL : 118/715; 135/1, 1.1 According to International Patent Classification (IPC) or to both national classification and IPC</p>																			
<p>B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 118/715; 135/1, 1.1; 156/345.29, 345.33, 345.34</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Please See Continuation Sheet</p>																			
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category *</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X --- Y</td> <td>US 6,001,267 A (OS et al) 14 December 1999 (14.12.1999), figures 2-4.</td> <td>1-7 ----- 8-21</td> </tr> <tr> <td>X --- Y</td> <td>US 6,059,885 A (OHASHI et al) 09 May 2000 (09.05.2000), figures 4, 6-12.</td> <td>1-4, 6, 7 ----- 5, 8, 10-21</td> </tr> <tr> <td>X --- Y</td> <td>US 6,143,078 A (ISHIKAWA et al) 04 November 2000 (04.11.2000), figures 2, 4-10.</td> <td>1-9 ----- 10-21</td> </tr> <tr> <td>X --- Y</td> <td>US 2002/0000196 A1 (PARK) 03 January 2002 (03.01.2002), figures 3, 4, 8, and 9.</td> <td>1-4, 6, 8 ----- 5, 7, 10</td> </tr> <tr> <td>Y</td> <td>US 5,824,607 A (TROW et al) 20 October 1998 (20.10.1998), entire document.</td> <td>1-21</td> </tr> </tbody> </table>		Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X --- Y	US 6,001,267 A (OS et al) 14 December 1999 (14.12.1999), figures 2-4.	1-7 ----- 8-21	X --- Y	US 6,059,885 A (OHASHI et al) 09 May 2000 (09.05.2000), figures 4, 6-12.	1-4, 6, 7 ----- 5, 8, 10-21	X --- Y	US 6,143,078 A (ISHIKAWA et al) 04 November 2000 (04.11.2000), figures 2, 4-10.	1-9 ----- 10-21	X --- Y	US 2002/0000196 A1 (PARK) 03 January 2002 (03.01.2002), figures 3, 4, 8, and 9.	1-4, 6, 8 ----- 5, 7, 10	Y	US 5,824,607 A (TROW et al) 20 October 1998 (20.10.1998), entire document.	1-21
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"P" document published prior to the international filing date but later than the priority date claimed																			
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Jeffrie R. Lund  Telephone No. (703) 308-0661																		

INTERNATIONAL SEARCH REPORT

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,086,677 A (UMOTOY et al) 11 July 2000 (11.07.2000), entire document.	7, 13
Y	US 5,851,294 A (YOUNG et al) 22 December 1998 (22.12.1998), entire document.	1-21
A	US 6,013,155 A (MCMILLIN et al) 11 January 2000 (11.01.00), entire document.	1-21

INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:
USPAT, US-PGPUB, EPO, JPO, IBM_TDB, DERWENT
search terms: channel, conduit, pipe, port, hole