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- (71) Applicant (for all designated States except US): **AVIZA TECHNOLOGY, INC.** [US/US]; 440 Kings Village Road, Scotts Valley, California 95066-4081 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BERCAW, Craig** [US/US]; 605 N. Spring Creek Road, Boulder Creek, California 95006 (US). **COSENTINE, Dan** [US/US]; 117 Dellview Avenue, Santa Cruz, California 95062 (US). **YAO, Jack, Chihchieh** [US/US]; 21 Silver Birch Lane, Scotts Valley, California 95066 (US). **LO, Tommy** [US/US]; 104B San Augustine Way, Scotts Valley, California 95066 (US). **DEDONTNEY, Jay, Brian** [US/US];

17573 Cross Road, Prunedale, California 93907 (US). **BARTHOLOMEW, Lawrence, D.** [US/US]; 181 San Lorenzo Avenue, #2, Felton, California 95018 (US). **CHATHAM III, Robert, Hood** [US/US]; 211 Sherman Drive, Scotts Valley, California 95066 (US).

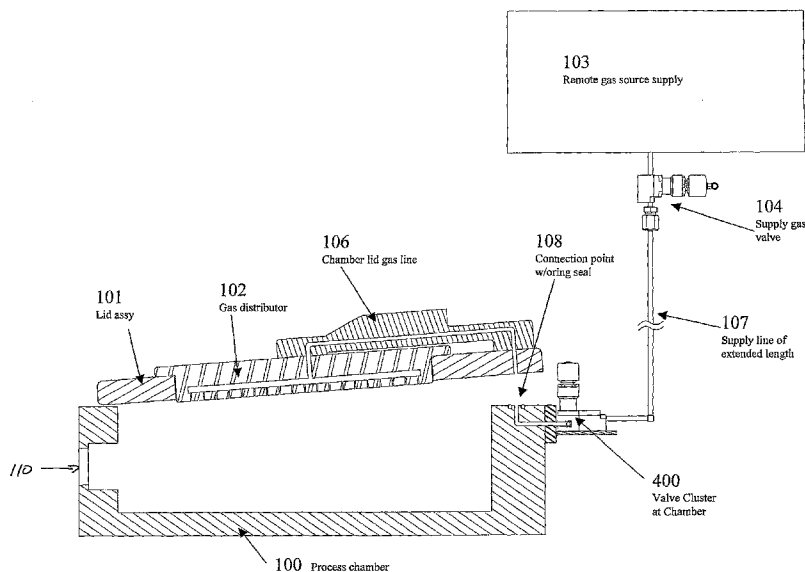
(74) Agents: **SWIATEK, Maria, S.** et al.; Morgan, Lewis & Bockius LLP, 2 Palo Alto Square, 3000 El Camino Real, Palo Alto, CA 94306 (US).

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[Continued on next page]

(54) Title: GAS MANIFOLD VALVE CLUSTER



(57) Abstract: The present invention relates generally to a deposition apparatus for semiconductor processing. More specifically, embodiments of the present invention relate to a gas manifold valve cluster and deposition apparatus. In some embodiments of the present invention a gas manifold valve cluster and system are provided that promotes reduced length and volumes of gas lines that will be exposed to atmosphere during cleaning which minimizes the time required to perform process chamber maintenance and therefore increase the productivity of the process chamber. In other embodiments a gas manifold valve cluster and ALD deposition apparatus are provided.

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B. FIELDS SEARCHED

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Google Patents Database

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Google Patents Database (gas, manifold, valve, cluster, semiconductor, process, chamber, baffle ring, plenum)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X — Y	US 6,364,954 B2 (Umotoy, et al.) 2 Apr 2002 (02.04.2002) column 3, line 56-64, column 6, line 4-5, line 22-51, line 57-67, column 7, line 1-8, line 13-19, column 9, line 4-14, line 30-38, column 12, line 27-35	1-6, 8-10 ———— 7
Y	US 5,441,568 A (Cho, et al.) 15 Aug 1995 (15.08.1995) column 4, line 18-20, column 5, line 27-29	7

Further documents are listed in the continuation of Box C.

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