

Exhibit 28



United States Patent [19]

Zhou et al.

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[45] **Date of Patent:** Mar. 9, 1999

[54] **CYCLE PURGING A VACUUM CHAMBER DURING BAKEOUT PROCESS**

[75] Inventors: **Jiaxiang Zhou; Stephen D. Dasso**, both of Austin, Tex.

[73] Assignee: **Applied Materials, Inc.**, Santa Clara, Calif.

[21] Appl. No.: **921,811**

[22] Filed: **Sep. 2, 1997**

[51] Int. Cl.⁶ **B08B 5/02**; B08B 5/04; B08B 9/00

[52] U.S. Cl. **134/19**; 134/21; 134/22.1; 134/22.15; 134/22.18; 134/30; 134/37

[58] Field of Search 134/19, 21, 22.1, 134/22.18, 22.15, 30, 37

[56] **References Cited**

U.S. PATENT DOCUMENTS

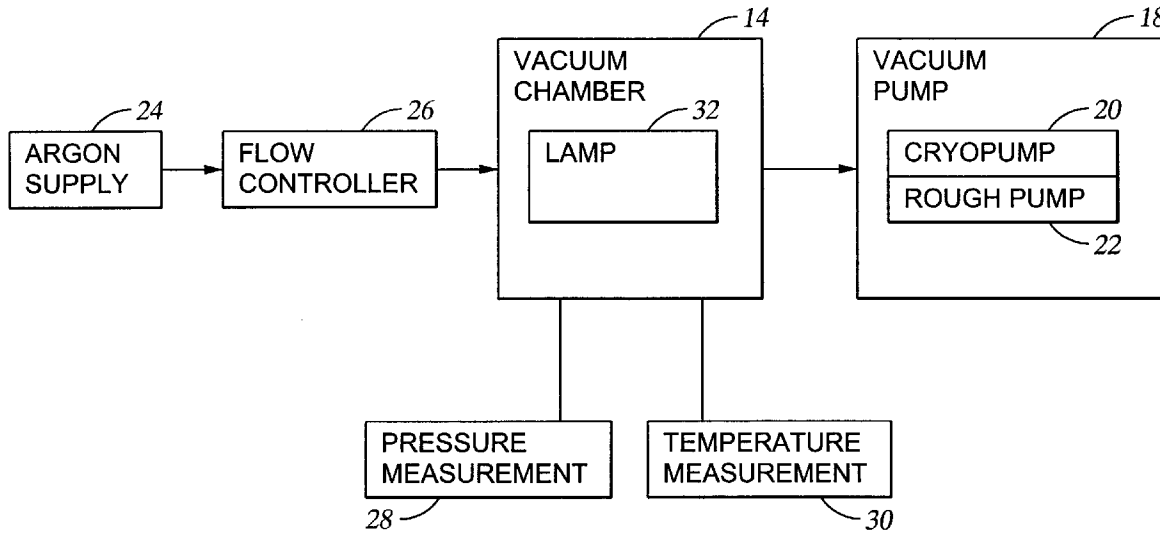
4,873,833 10/1989 Pfeiffer et al. 62/55.5

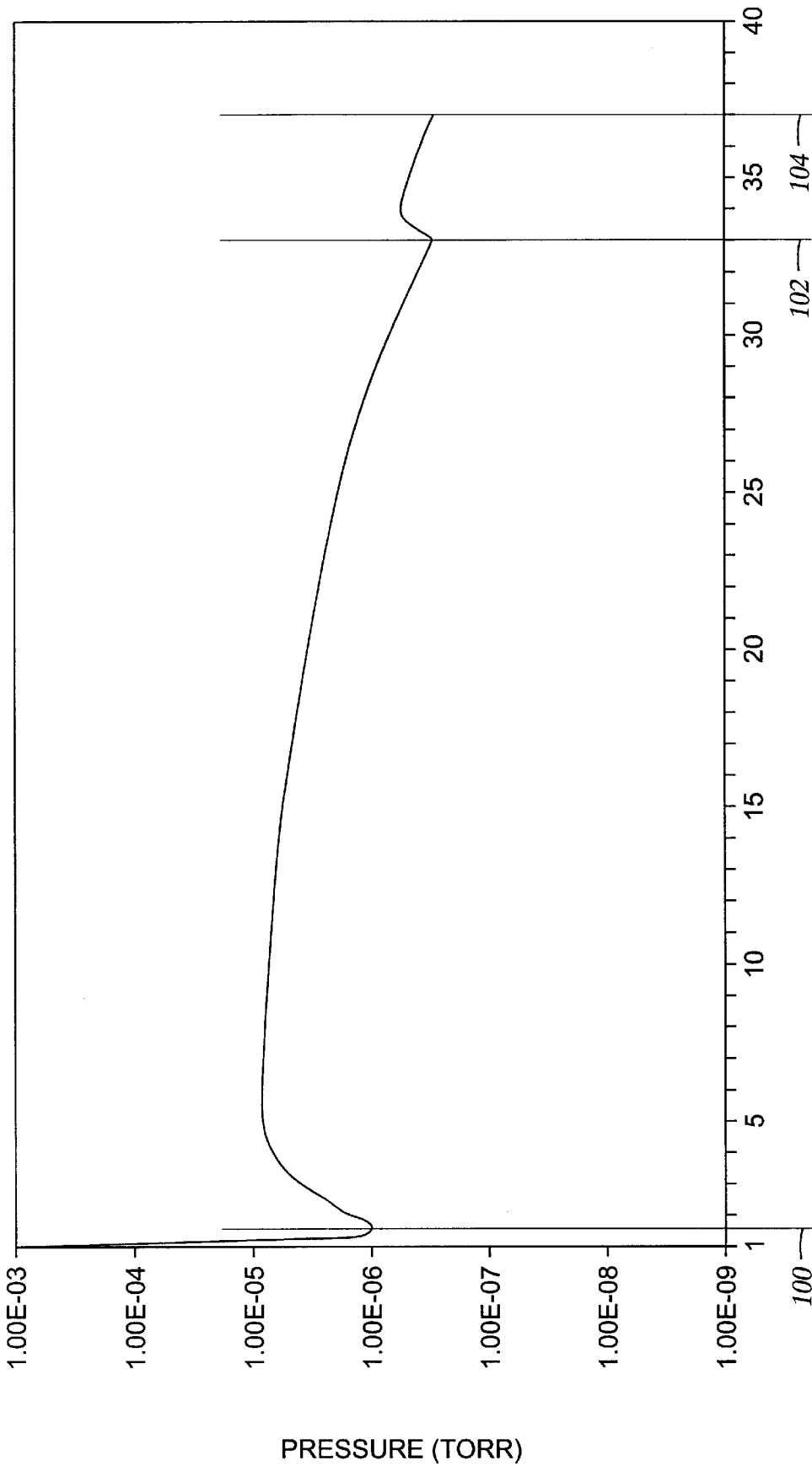
Primary Examiner—Zeinab El-Arini
Attorney, Agent, or Firm—Patterson & Associates

[57] **ABSTRACT**

A vacuum system bakeout process is performed by cycling the system between two pressures, pumping the system down to a lower pressure, and holding the system at that lower pressure for a period of time. A gas, such as argon gas, is introduced into the system. This gas introduction is done while cycling between the two pressures. The pump is used to lower the pressure during cycling, and the gas flow is used to raise the pressure. A rough pump performs the cycling between pressures, and then a high vacuum pump evacuates the system to the lower pressure.

35 Claims, 6 Drawing Sheets





TIME (HOURS)
Fig. 1
(PRIOR ART)

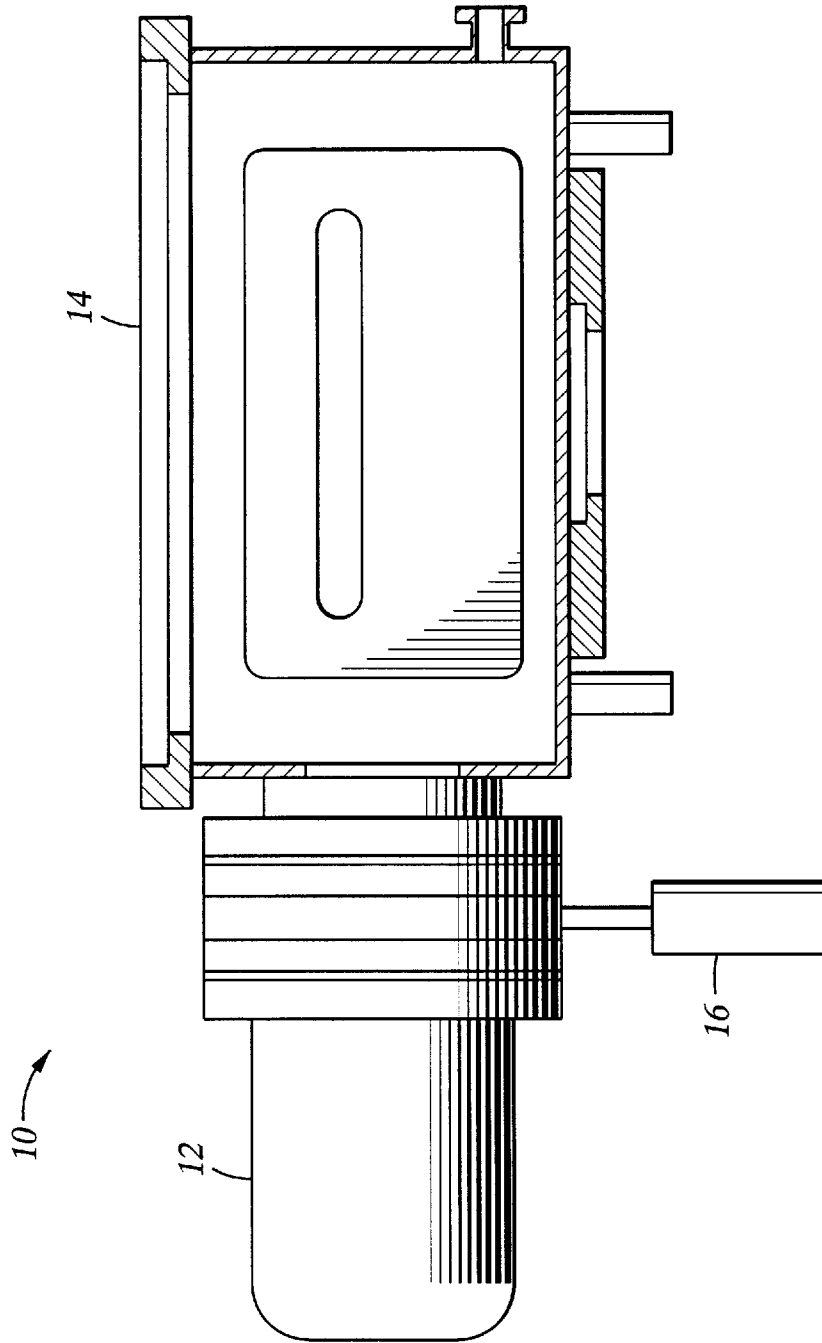


Fig. 2

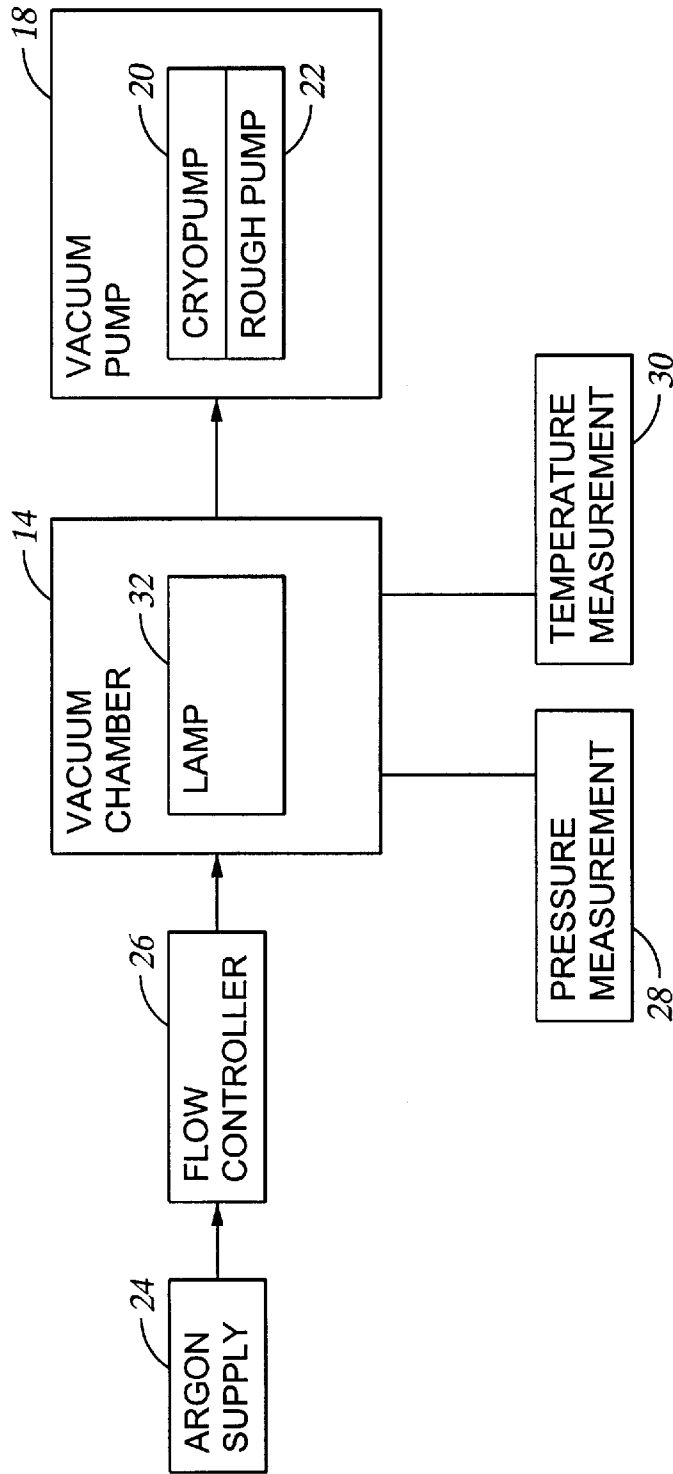


Fig. 3

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