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United States Patent [19]
Ohmi et al.

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[45] **Date of Patent:** **Nov. 28, 2000**

[54] **PARALLEL PLATE SPUTTERING DEVICE WITH RF POWERED AUXILIARY ELECTRODES AND APPLIED EXTERNAL MAGNETIC FIELD**

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[21] Appl. No.: **09/035,325**

[57] **ABSTRACT**

[22] Filed: **Mar. 5, 1998**

The present invention provides a sputtering device provided with two electrodes I and II of parallel plate type within a vessel inside which pressure can be reduced, wherein: a target to be sputtered is placed on said electrode I, and a base body on which a film is to be deposited is placed on said electrode II, with the target and the base body being opposed to each other; a process gas is introduced into said vessel from a gas supply system; radio frequency power is applied to said target through at least said electrode I so as to excite plasma between the electrode I and the electrode II; characterized in that: outside said vessel, is provided a means for introducing magnetic field horizontal at least to a surface to be sputtered of said target.

[30] **Foreign Application Priority Data**

Mar. 7, 1997 [JP] Japan 9-070431

[51] **Int. Cl.⁷** **C23C 14/34**

[52] **U.S. Cl.** **204/298.06; 204/298.08; 204/298.14**

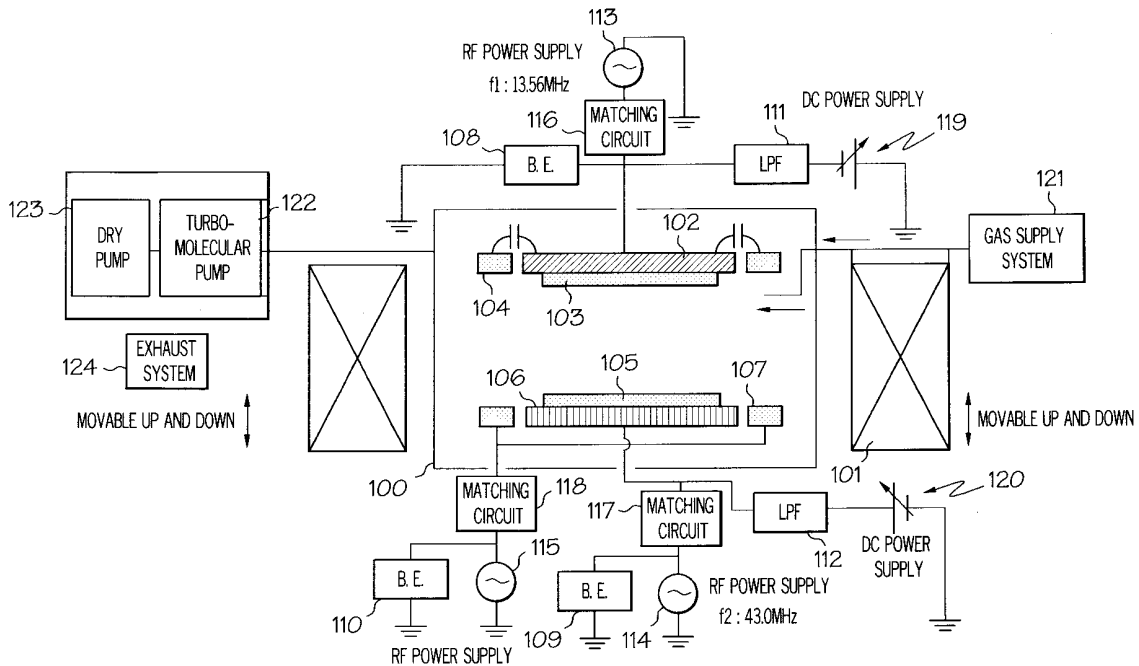
[58] **Field of Search** 204/192.12, 298.01, 204/298.02, 298.06, 298.07, 298.08, 298.16, 298.17, 298.19, 298.14

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2 Claims, 9 Drawing Sheets



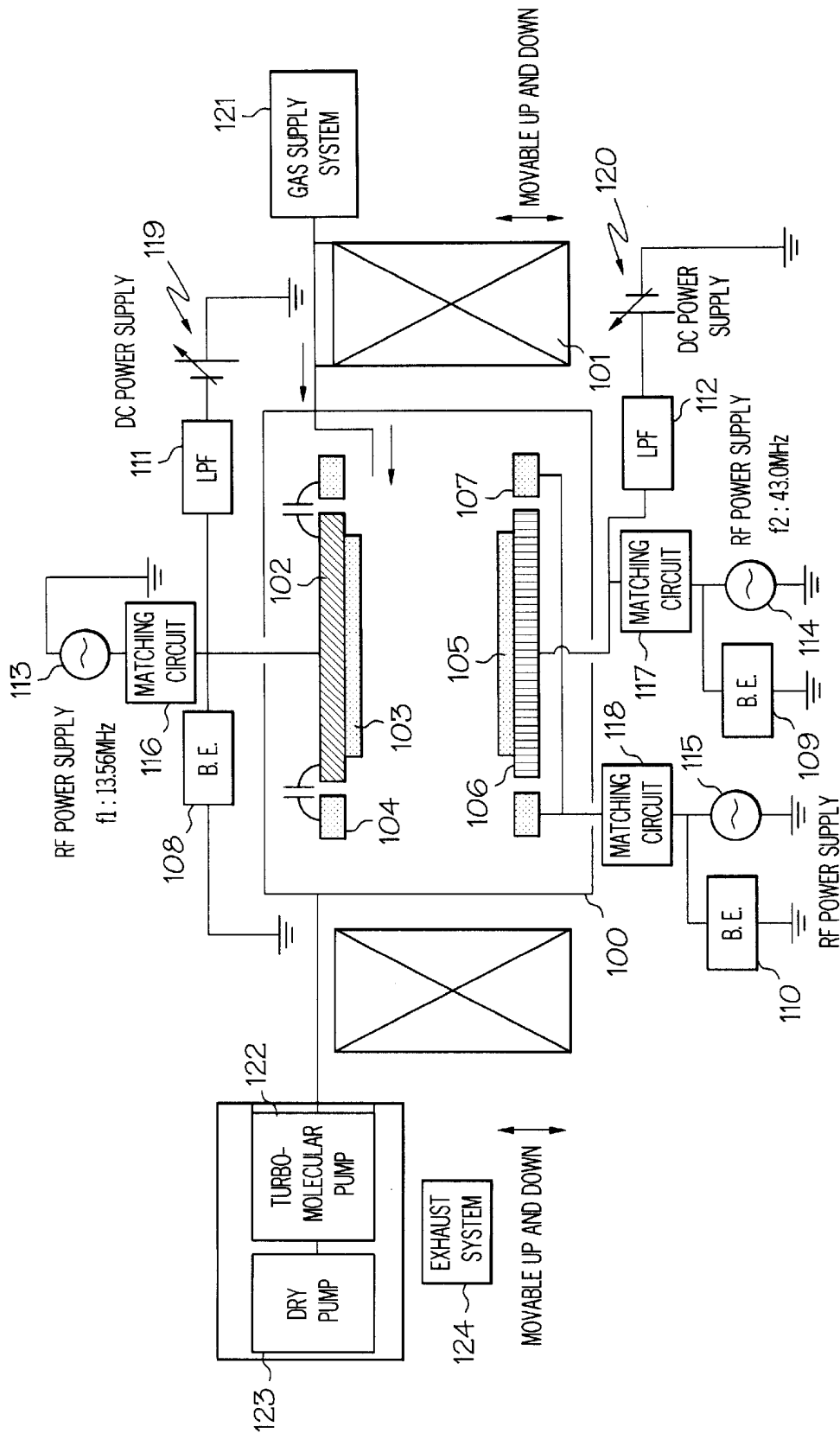


FIG. 1

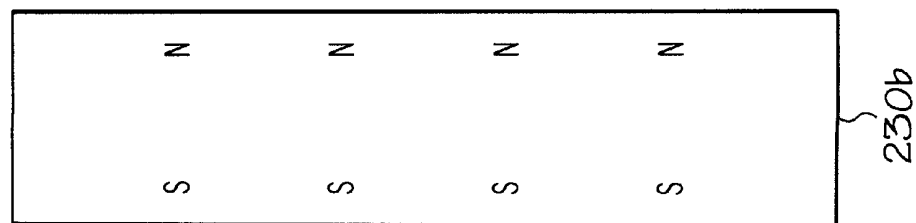
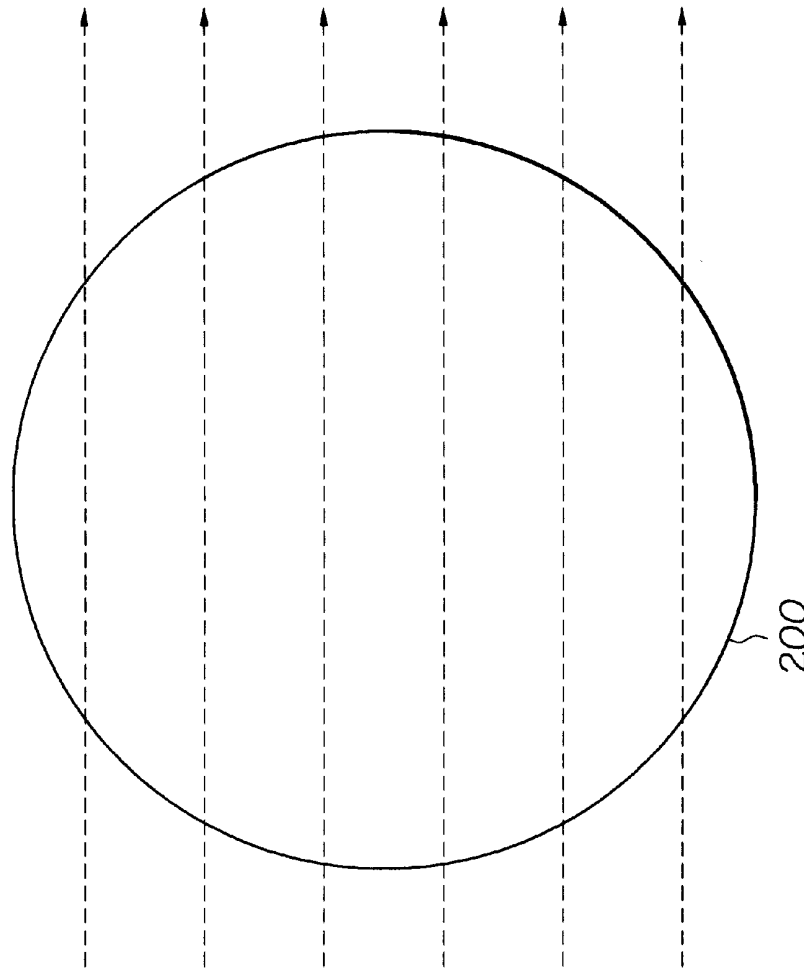
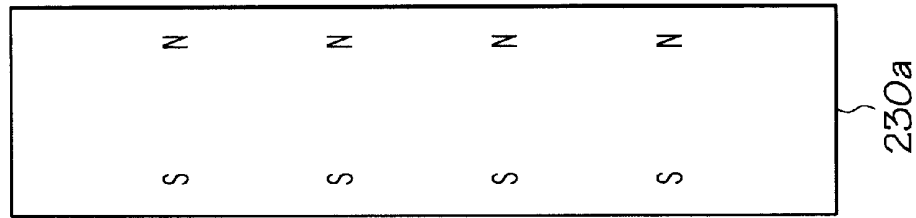


FIG. 2

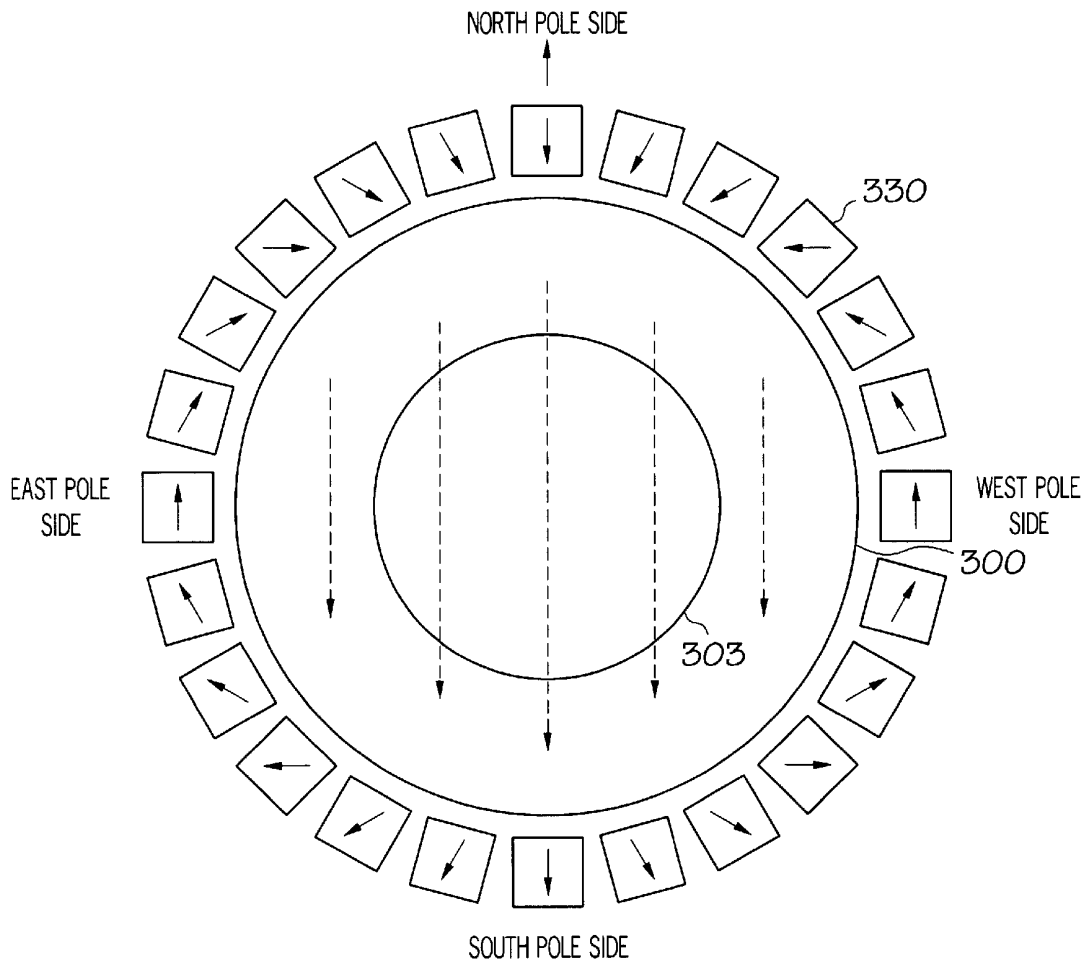


FIG. 3

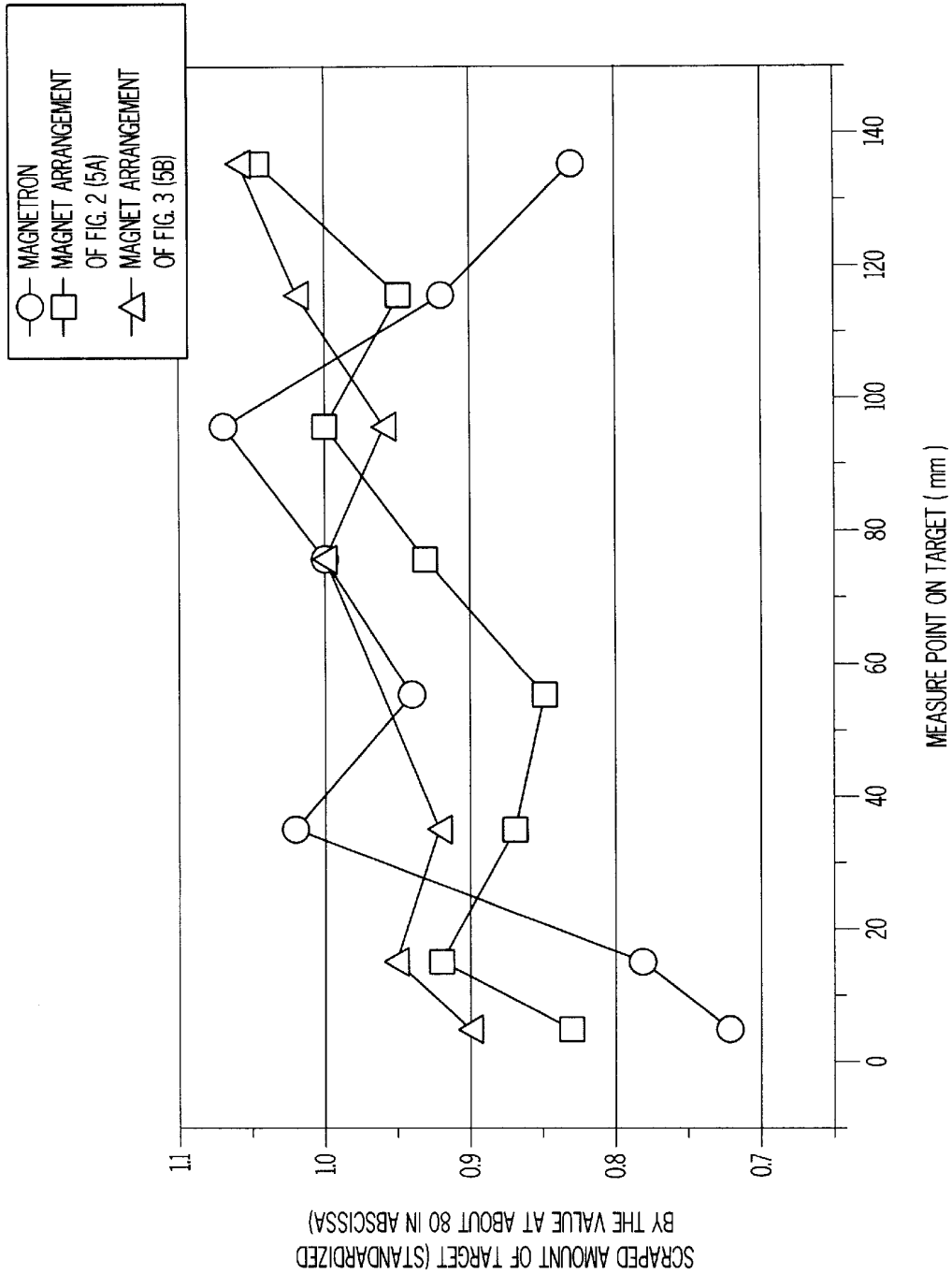


FIG. 4

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