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# United States Patent [19]

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Carman et al.

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## [54] CVD PLATEN HEATER SYSTEM UTILIZING CONCENTRIC ELECTRIC HEATING ELEMENTS

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[73] Assignee: **Lam Research Corporation, Fremont, Calif.**

[21] Appl. No.: **757,921**

[22] Filed: **Sep. 11, 1991**

[51] Int. Cl.<sup>5</sup> ..... **H01L 21/306; H01L 21/31**

[52] U.S. Cl. .... **219/385; 219/445; 219/448; 392/418; 338/217; 118/725**

[58] Field of Search ..... **219/385, 445-450, 219/455, 466; 392/416, 418; 338/285, 287, 283, 217, 218; 118/724, 725, 730**

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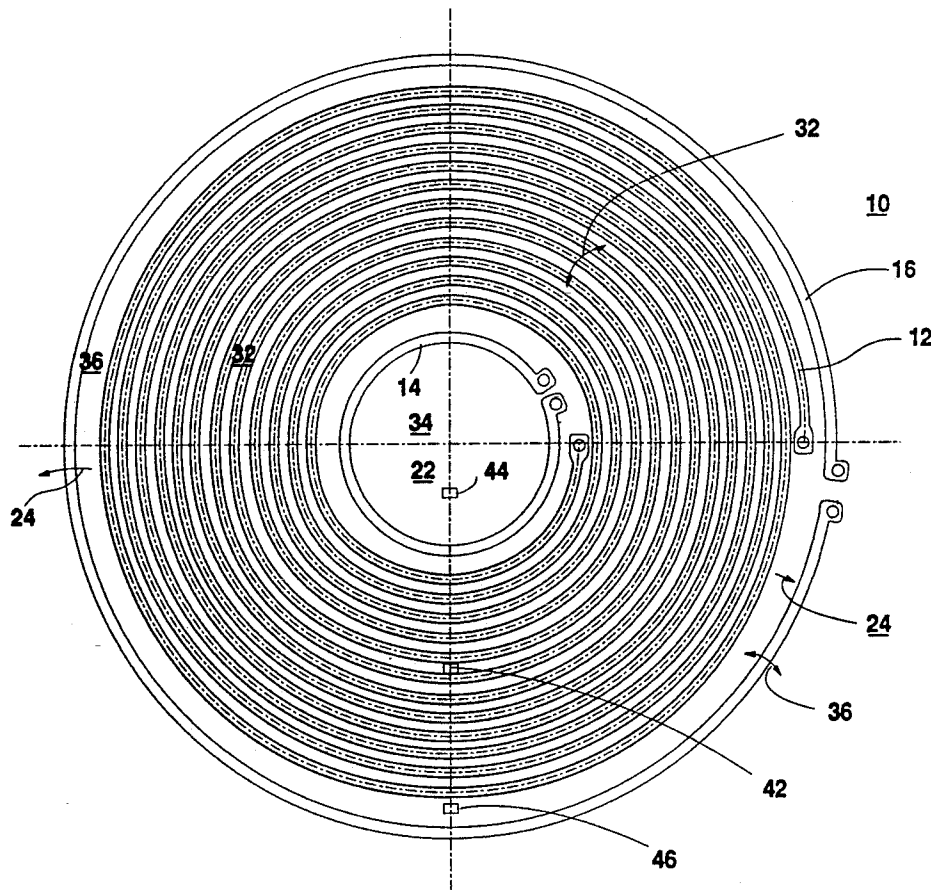
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### [57] ABSTRACT

A wafer support platen heating system for low pressure chemical vapor deposition of apparatus includes multiple resistance heaters for individual heating of multiple portions of the platen to provide a predetermined uniform or non-uniform temperature gradient/profile across the platen. The multiple graphite resistance heaters of the preferred embodiment include a spiral shaped main resistance heater and two single turn edge loss graphite resistance heaters located within the inner diameter and along the periphery of the outer diameter respectively of the main spiral shaped resistance heater.

**9 Claims, 6 Drawing Sheets**



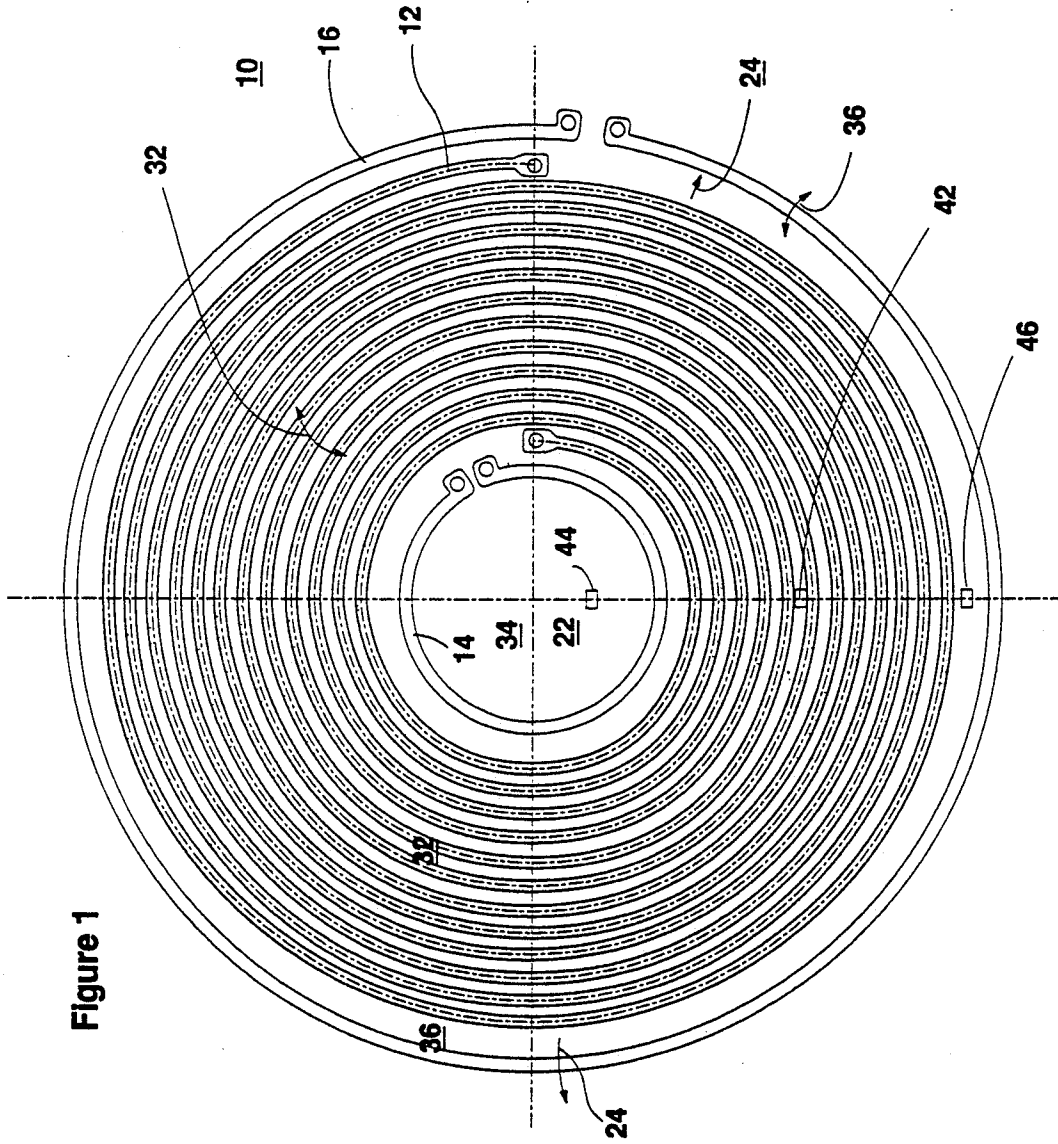
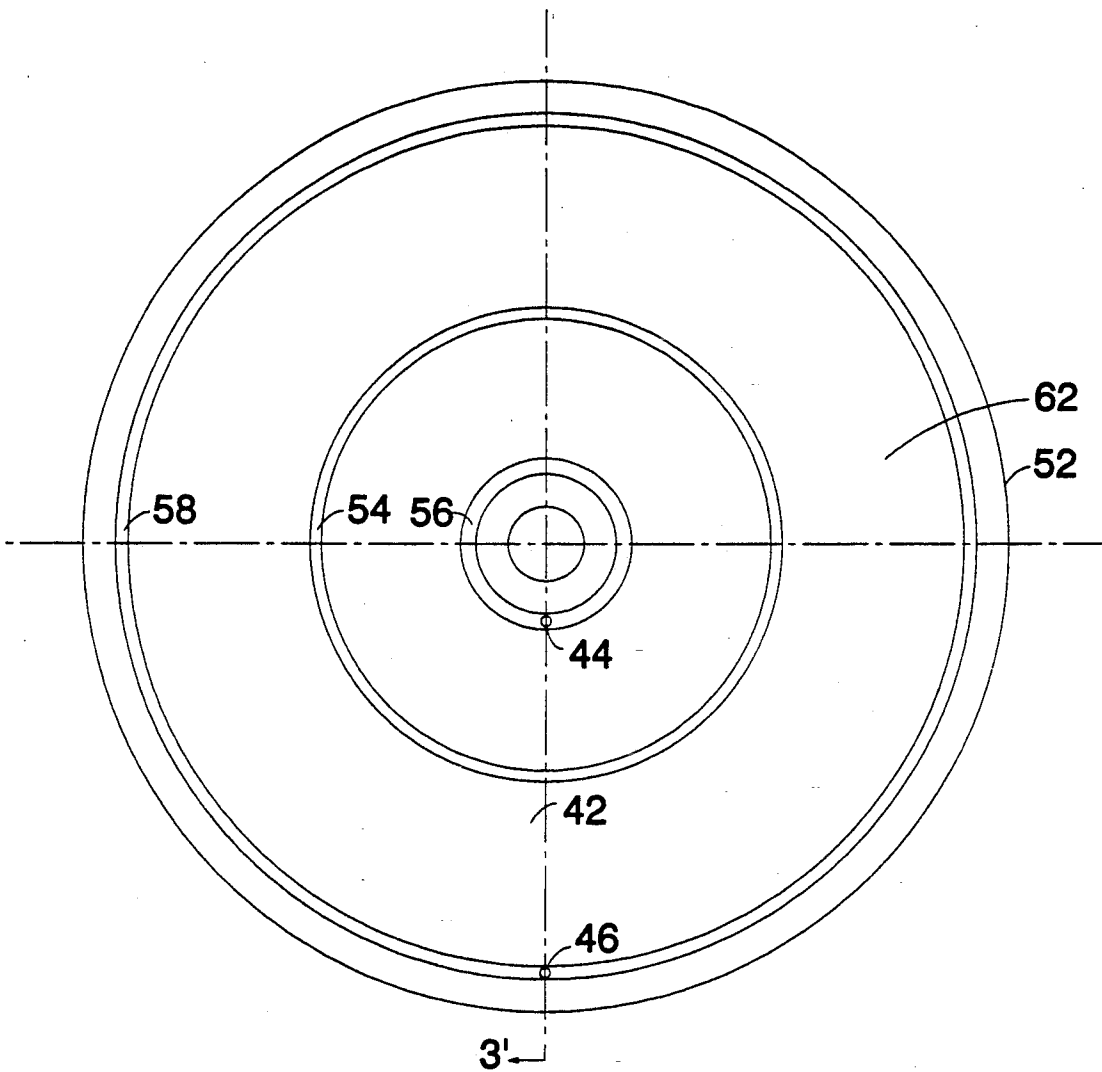


Figure 1



**FIG 2**

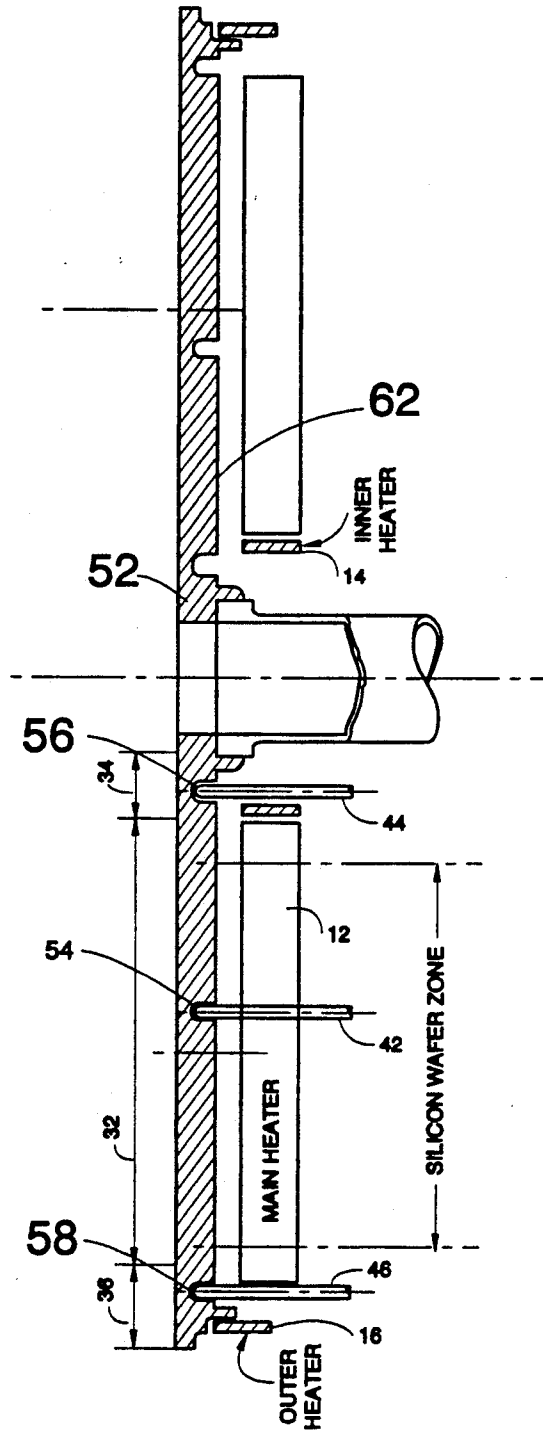
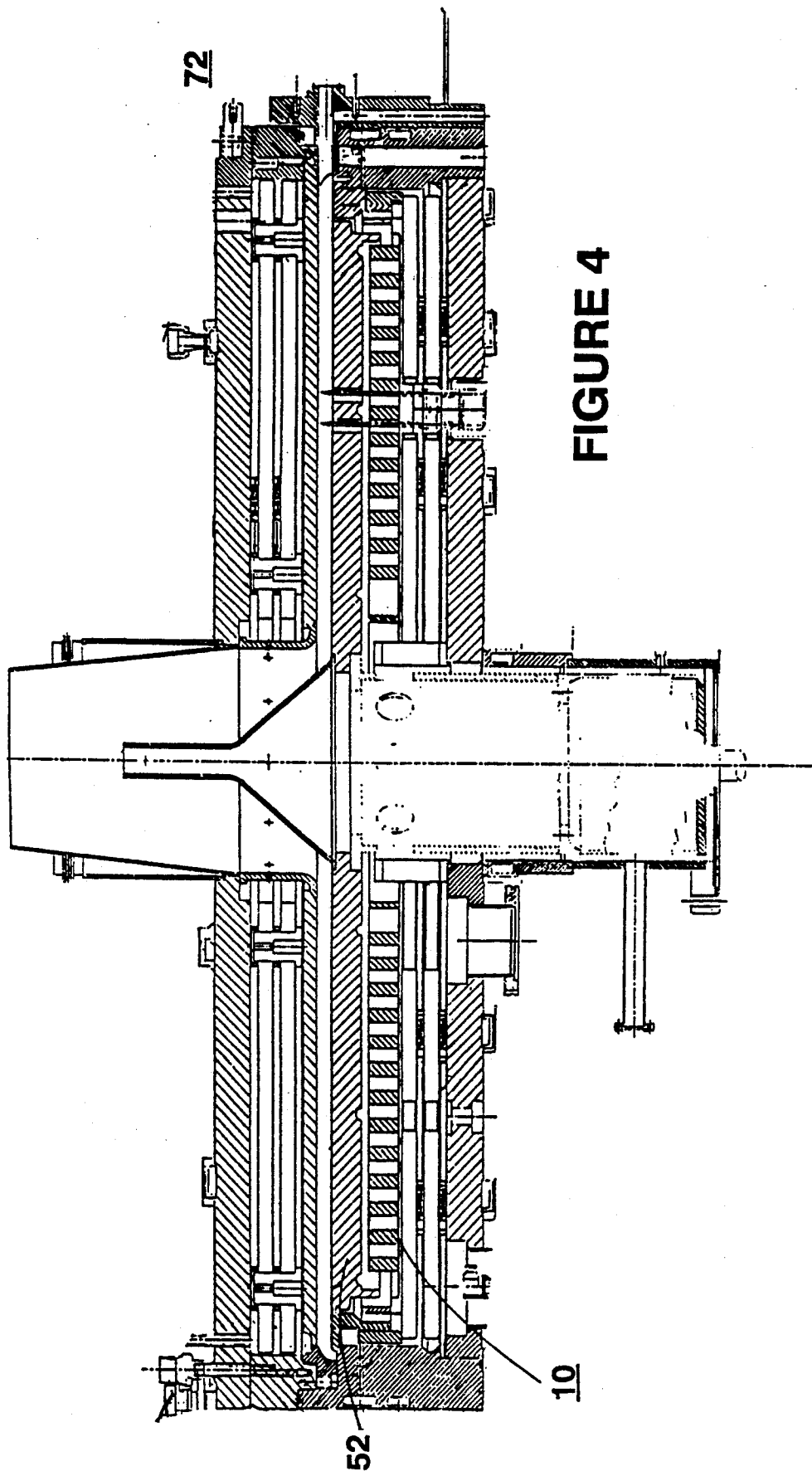


FIG 3



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