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Goodman et al.

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(54) **RF POWER SUPPLY WITH INTEGRATED MATCHING NETWORK**

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(51) Int. Cl.⁷ **H05H 1/00**; C23C 16/00

(52) U.S. Cl. **156/345.28**; 156/345.48; 156/345.47; 156/345.41; 118/723 E; 118/723 I; 118/723 MW

(58) **Field of Search** 118/715, 723 I, 118/723 E, 723 MW; 156/345.48, 345.47, 345.41, 345.28

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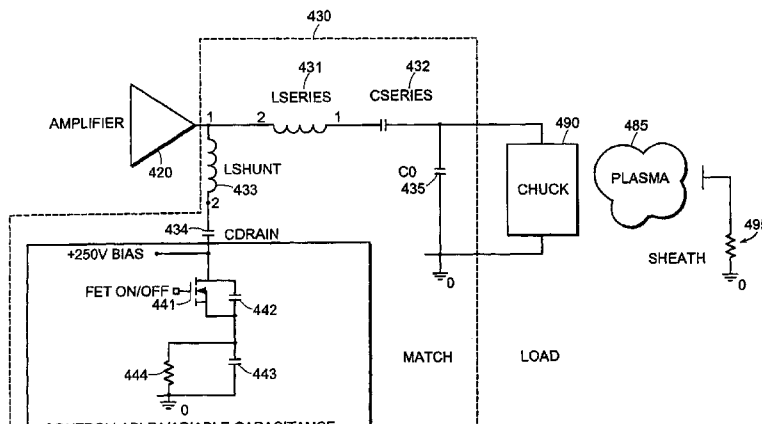
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(57) **ABSTRACT**

The invention features an RF plasma generator. The RF plasma generator includes a variable frequency RF generator, comprising an H-bridge and an RF output. The RF generator generates electromagnetic radiation having a power. The RF plasma generator further includes a matching network that includes at least one variable impedance component. The matching network also includes a first port that is electromagnetically coupled to the output of the RF generator and a second port. The RF plasma generator also includes a load that is electromagnetically coupled to the second port of the matching network, and a plasma chamber for containing a plasma having a power. The plasma chamber is electromagnetically coupled to the load and receives electromagnetic radiation having a power from the load. Adjusting at least one of the frequency of the RF generator and the variable impedance component in the matching network changes the power in the plasma.

21 Claims, 19 Drawing Sheets



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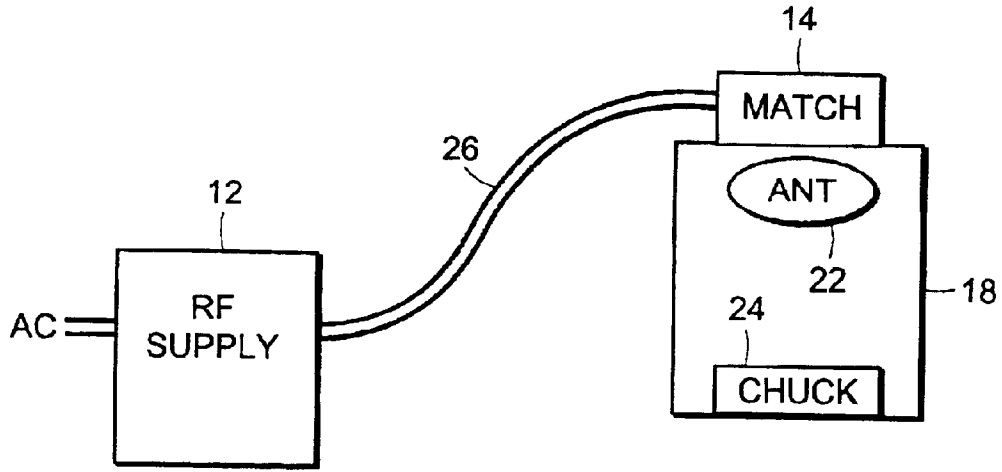


FIG. 1A
PRIOR ART

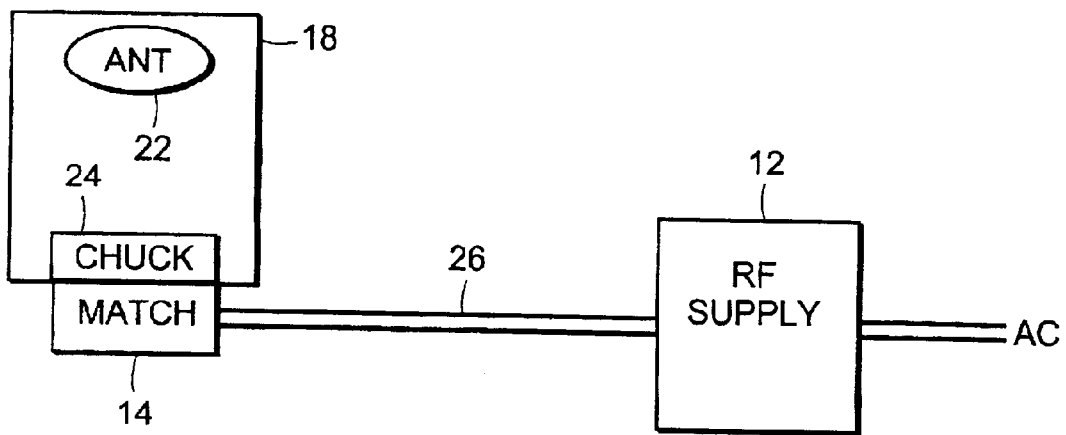


FIG. 1B
PRIOR ART

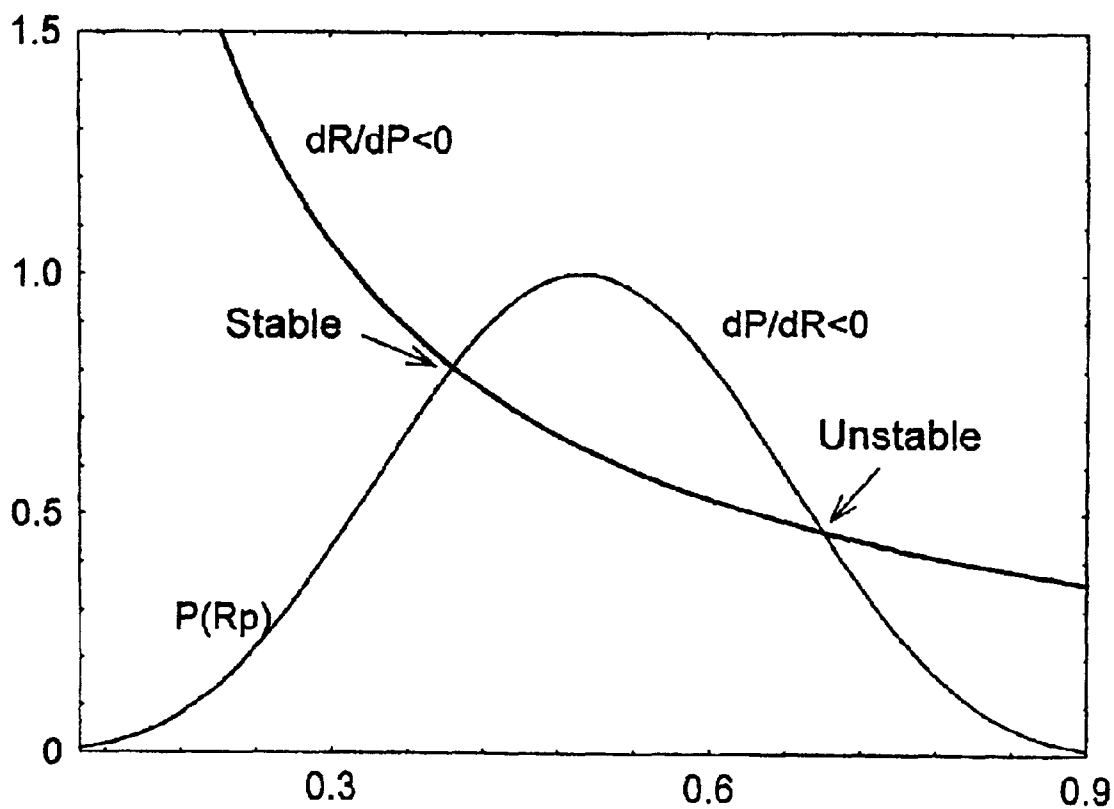


FIG. 2

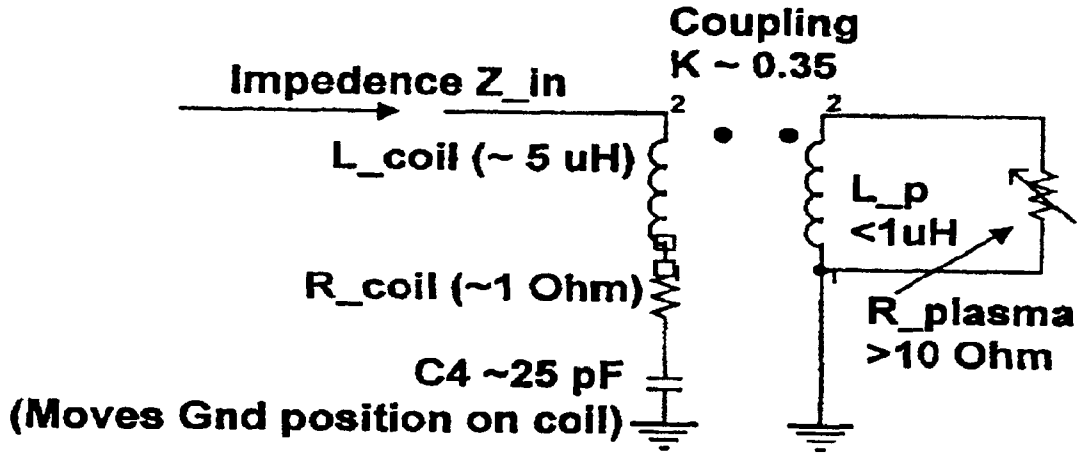


FIG. 3A

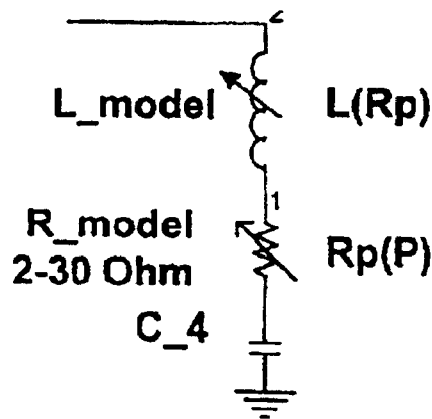


FIG. 3B

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