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# United States Patent [19]

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Miller

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[54] **LOW PASS FILTER FOR PLASMA DISCHARGE**

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[73] Assignee: **Sematech, Inc., Austin, Tex.**

[21] Appl. No.: **965,629**

[22] Filed: **Oct. 22, 1992**

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*Assistant Examiner*—Michael B. Shingleton  
*Attorney, Agent, or Firm*—William W. Kidd

### Related U.S. Application Data

[63] Continuation of Ser. No. 756,649, Sep. 9, 1991, abandoned.

[51] Int. Cl.<sup>5</sup> ..... **H01J 7/24**

[52] U.S. Cl. .... **315/111.21; 315/111.71; 315/111.81; 313/231.31; 333/99 PL**

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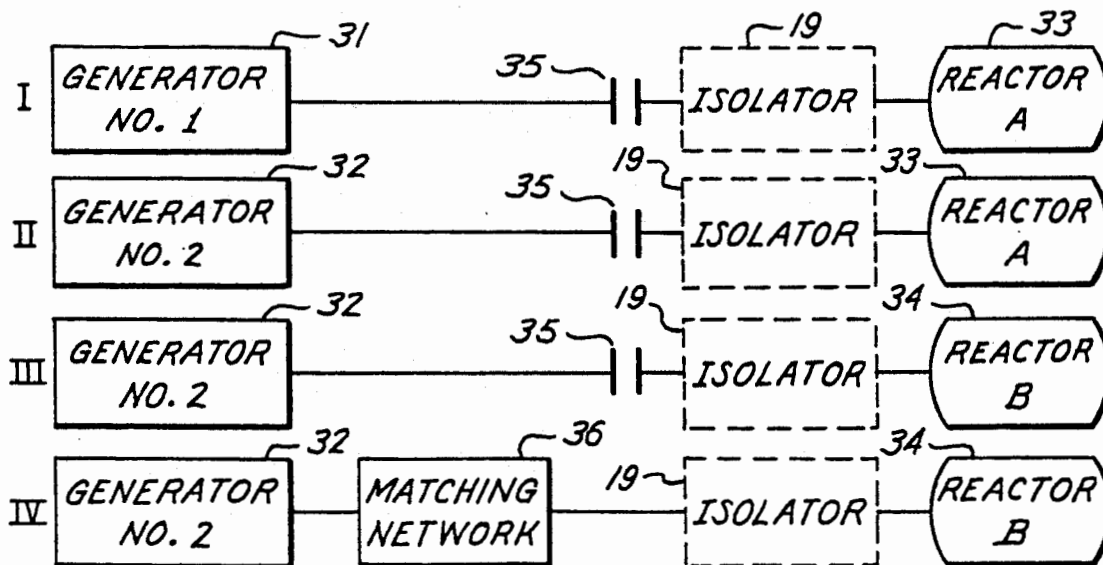
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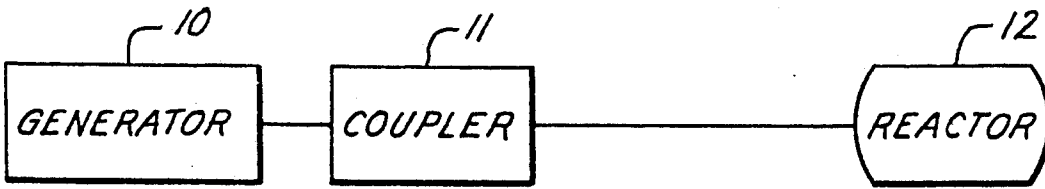
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### [57] ABSTRACT

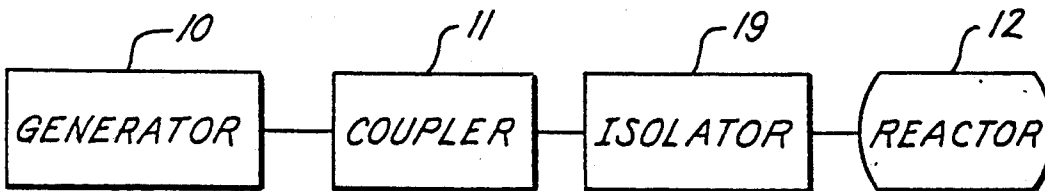
An isolator is disposed between a plasma reactor and its electrical energy source in order to isolate the reactor from the electrical energy source. The isolator operates as a filter to attenuate the transmission of harmonics of a fundamental frequency of the electrical energy source generated by the reactor from interacting with the energy source. By preventing harmonic interaction with the energy source, plasma conditions can be readily reproduced independent of the electrical characteristics of the electrical energy source and/or its associated coupling network.

13 Claims, 4 Drawing Sheets

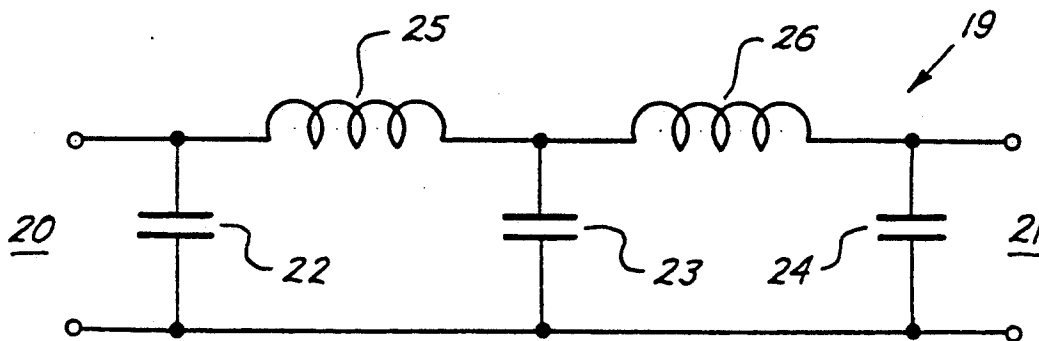




*Fig. 1*  
PRIOR ART



*Fig. 2*



*Fig. 3*

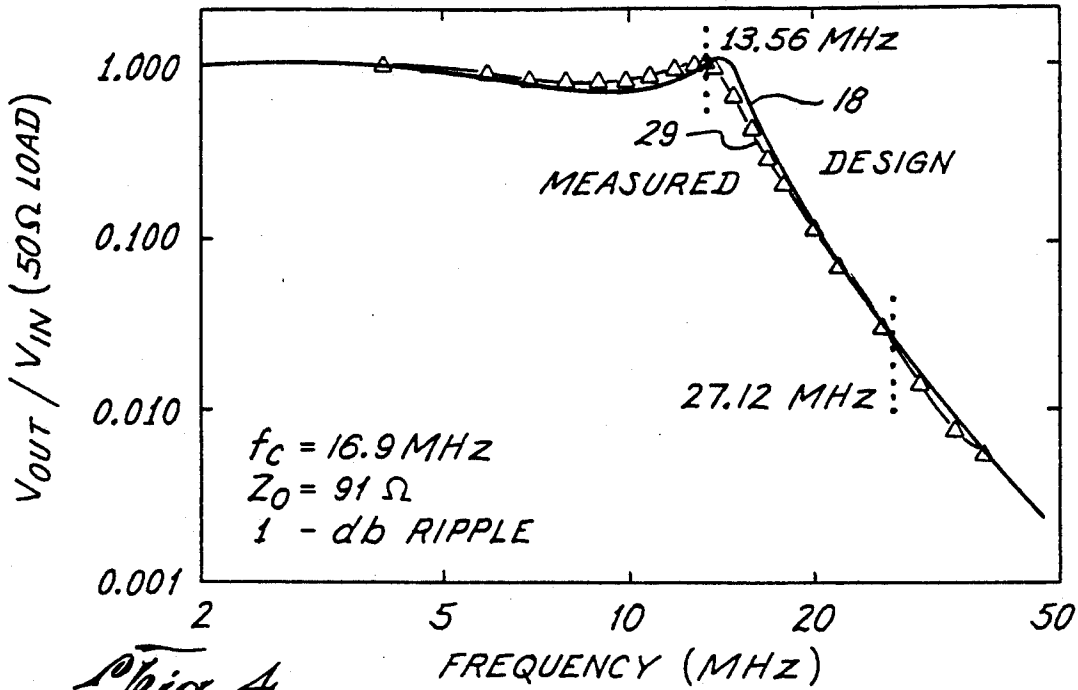


Fig. 4

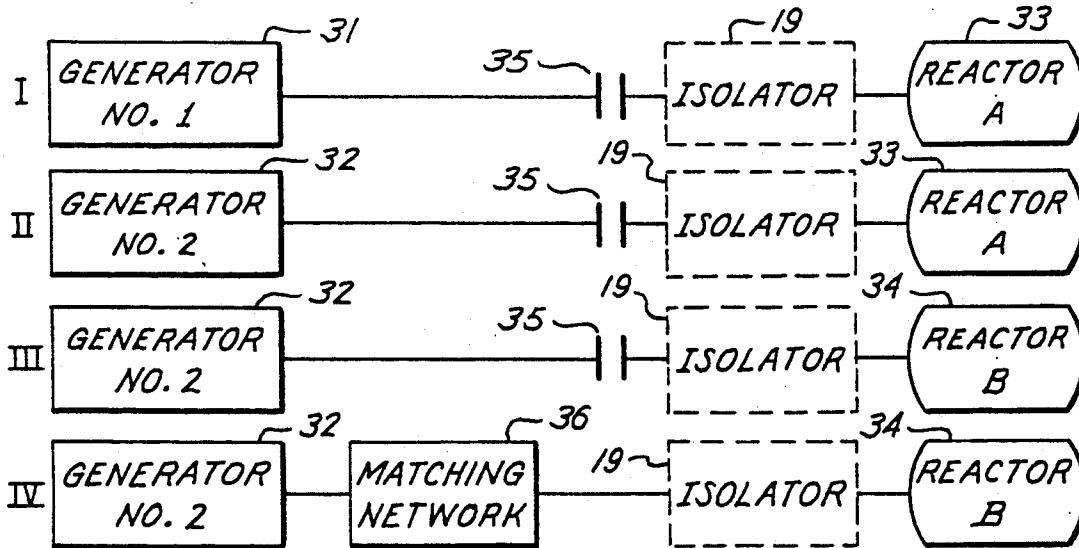
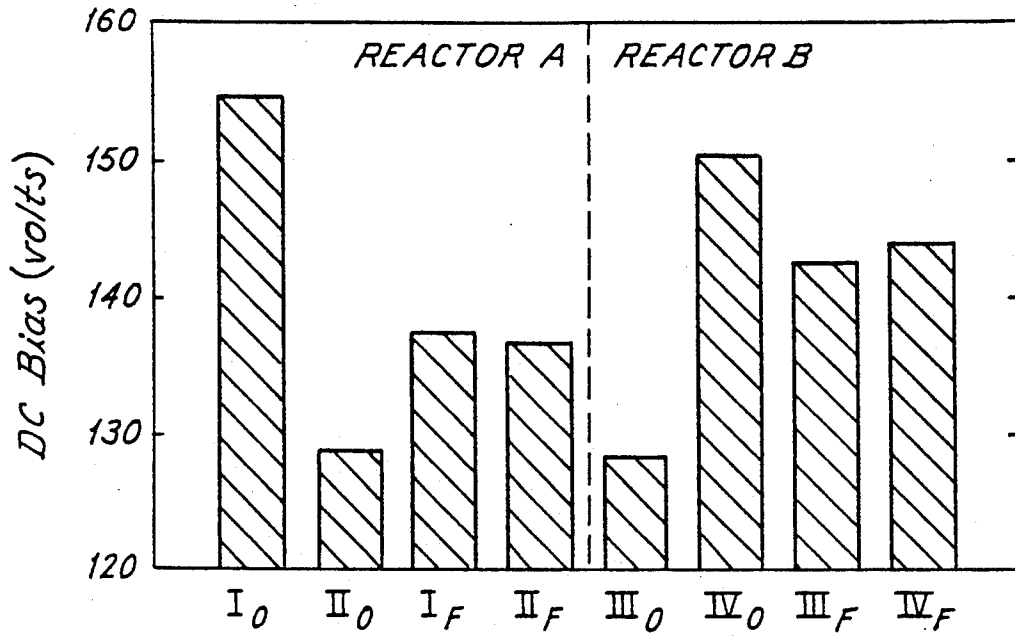
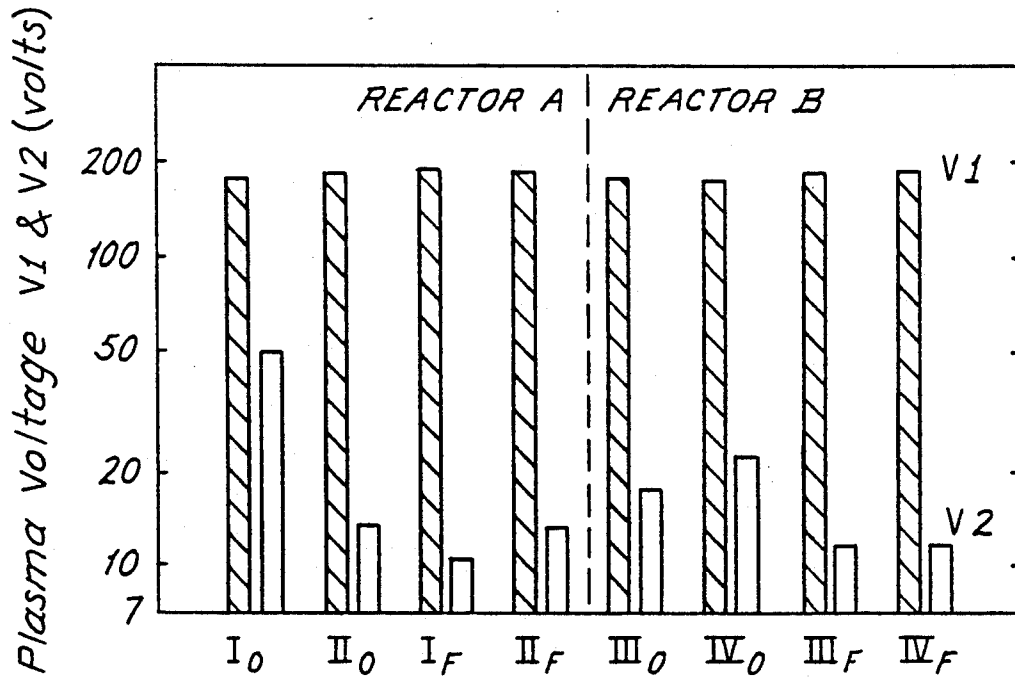


Fig. 5



*Fig. 6*



*Fig. 7*

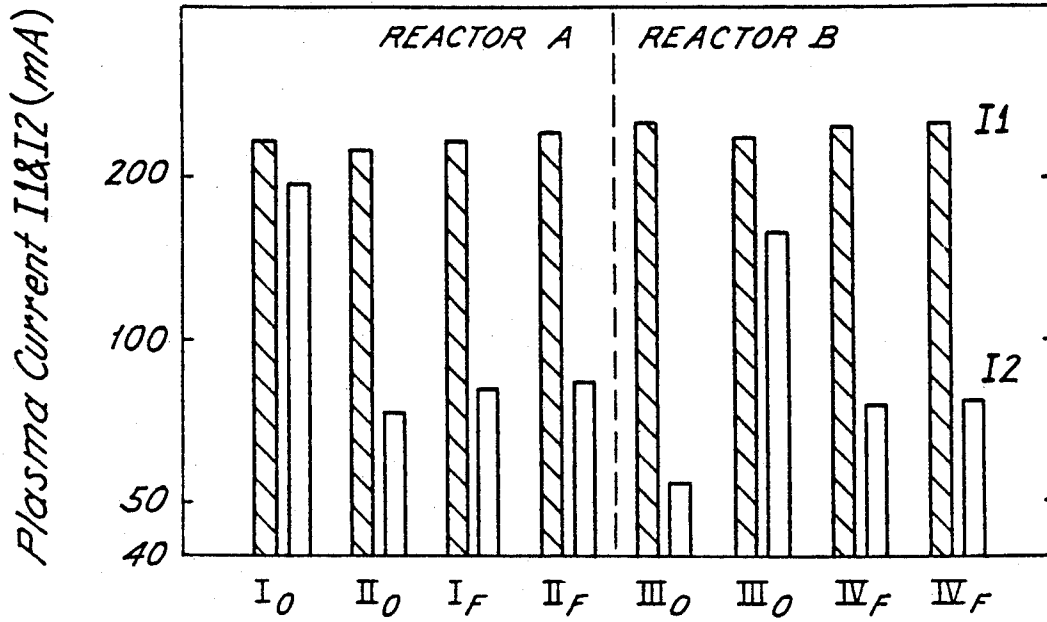


Fig. 8

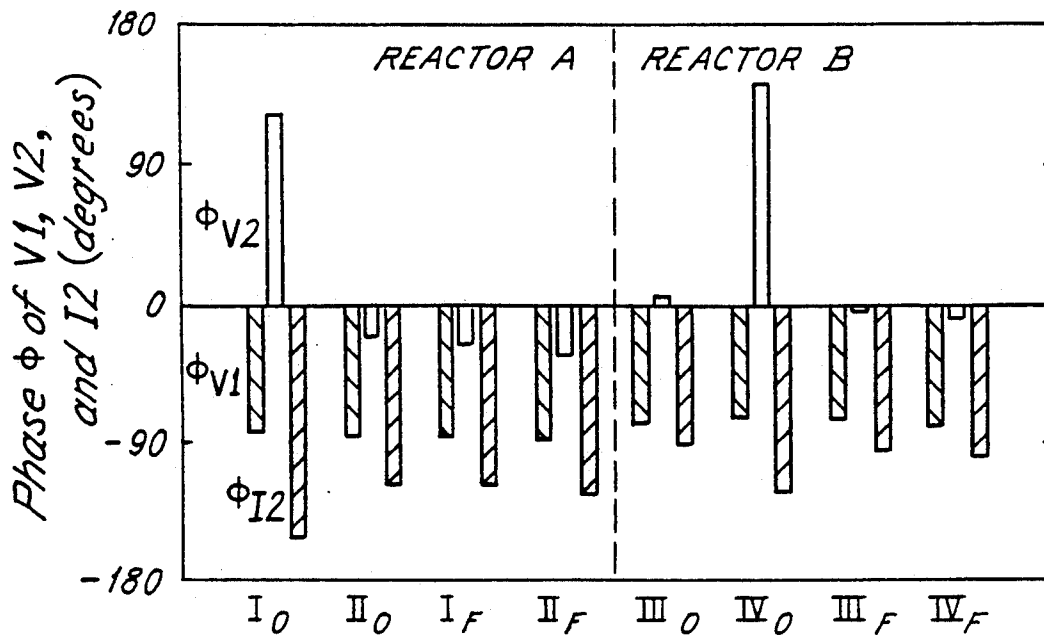


Fig. 9

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