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Anthony

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(54) **METAL-INSULATOR-METAL CAPACITORS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **11/809,800**

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(65) **Prior Publication Data**

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Related U.S. Application Data

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(51) **Int. Cl.**
H01L 27/108 (2006.01)

(52) **U.S. Cl.** **257/309; 438/239**

(58) **Field of Classification Search** 438/239,
438/393; 257/300, 308, 309, 532-535, 659,
257/E21.008, E27.048

See application file for complete search history.

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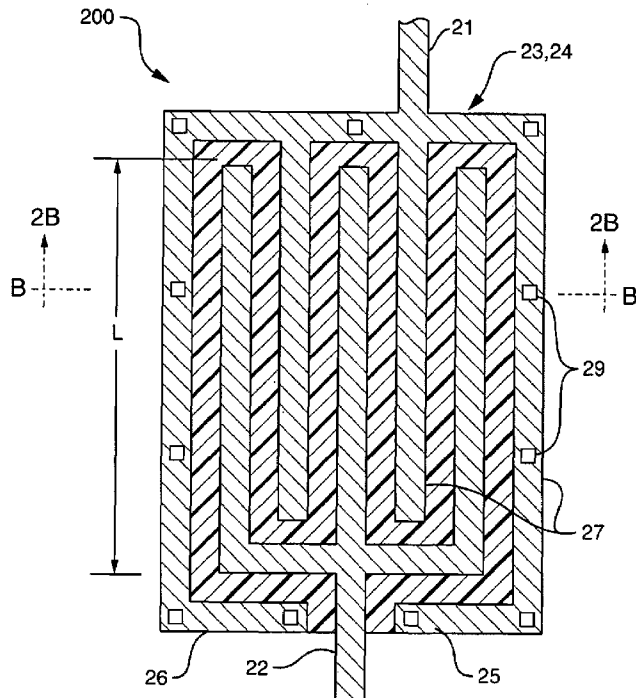
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(57) **ABSTRACT**

An interdigitated Metal-Insulator-Metal (MIM) capacitor provides self-shielding and accurate capacitance ratios with small capacitance values. The MIM capacitor includes two terminals that extend to a plurality of interdigitated fingers separated by an insulator. Metal plates occupy layers above and below the fingers and connect to fingers of one terminal. As a result, the MIM capacitor provides self-shielding to one terminal. Additional shielding may be employed by a series of additional shielding layers that are isolated from the capacitor. The self-shielding and additional shielding may also be implemented at an array of MIM capacitors.

14 Claims, 14 Drawing Sheets



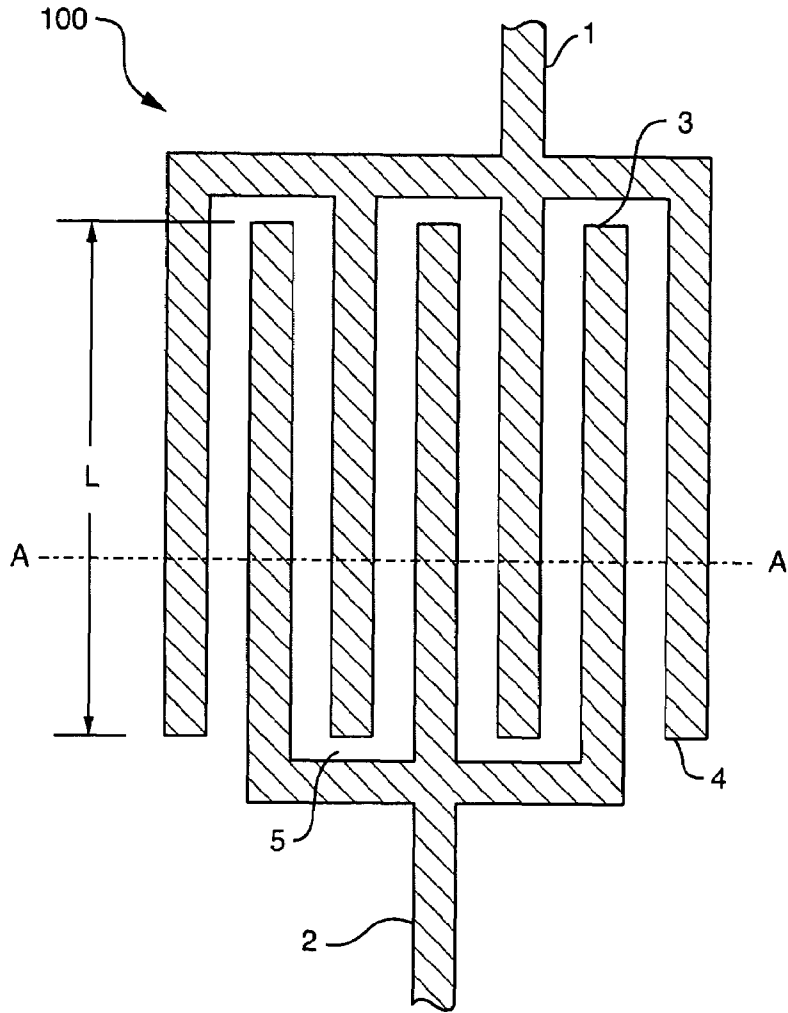


FIG. 1A
PRIOR ART

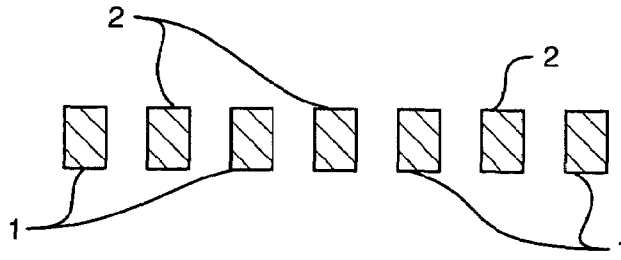


FIG. 1B
PRIOR ART

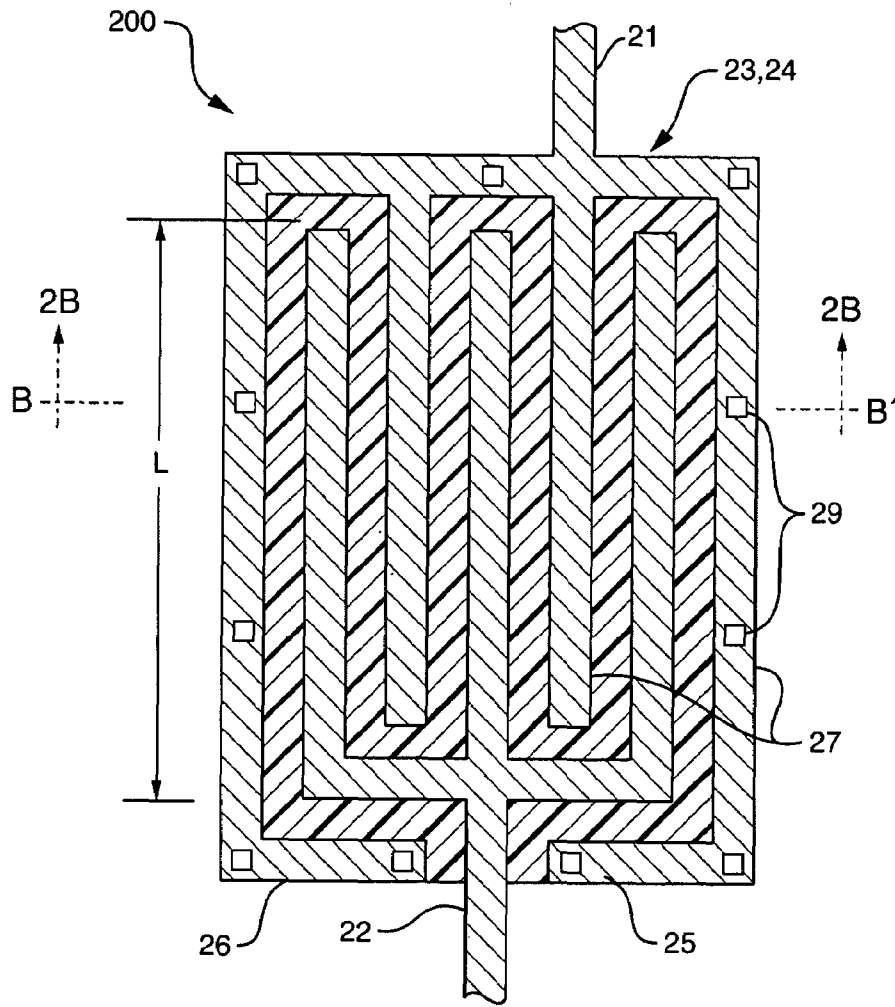


FIG. 2A

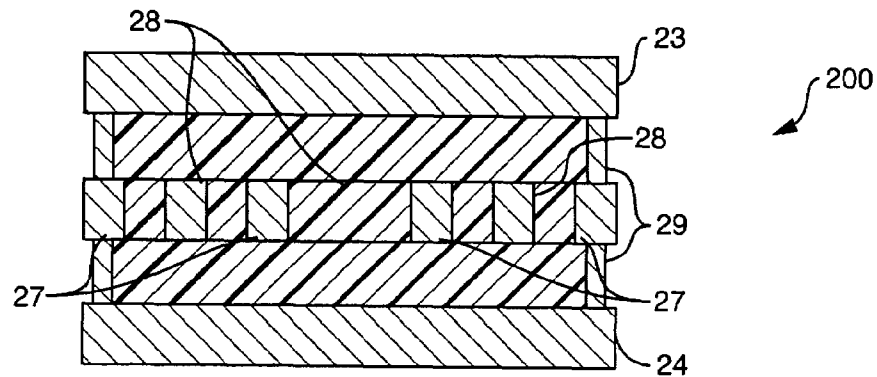


FIG. 2B

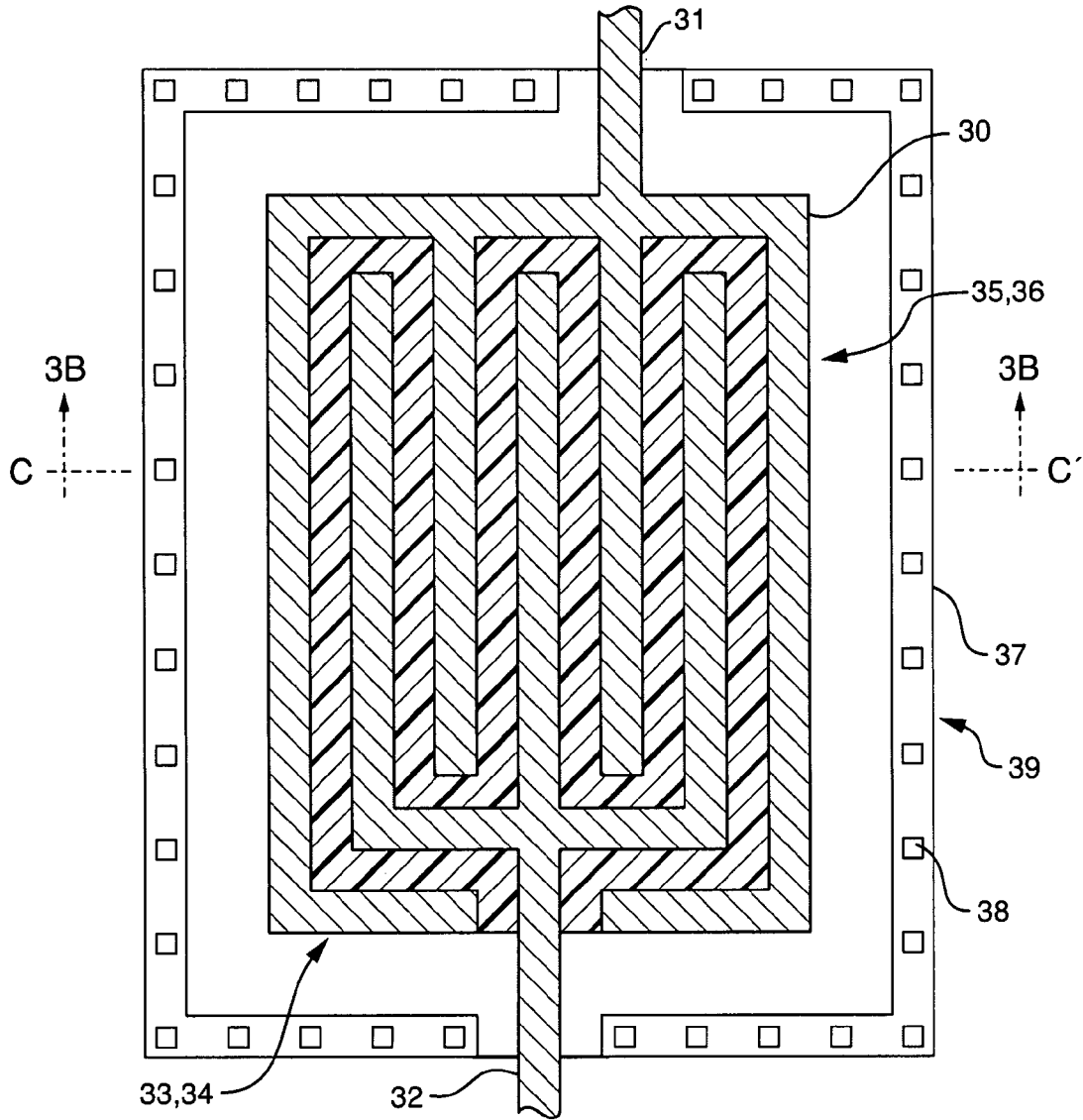


FIG. 3A

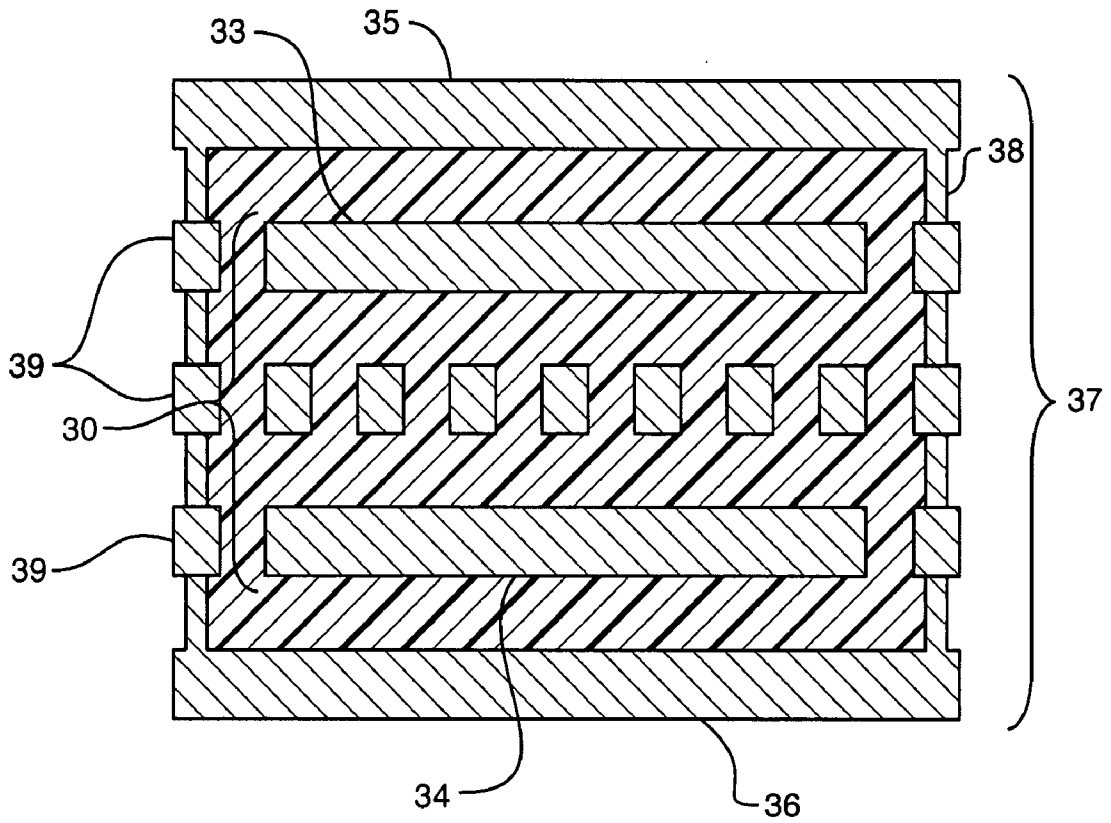


FIG. 3B

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