



United States Patent [19]
Bernstein et al.

[11] **Patent Number:** **6,057,221**
[45] **Date of Patent:** **May 2, 2000**

- [54] **LASER-INDUCED CUTTING OF METAL INTERCONNECT**
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- [73] Assignees: **Massachusetts Institute of Technology**, Cambridge, Mass.;
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- [21] Appl. No.: **08/825,808**
- [22] Filed: **Apr. 3, 1997**
- [51] **Int. Cl.⁷** **H01L 21/44**
- [52] **U.S. Cl.** **438/601; 438/132**
- [58] **Field of Search** 438/601, 132

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Primary Examiner—Richard Booth
Assistant Examiner—Jonathan Hack
Attorney, Agent, or Firm—Hamilton, Brook, Smith & Reynolds

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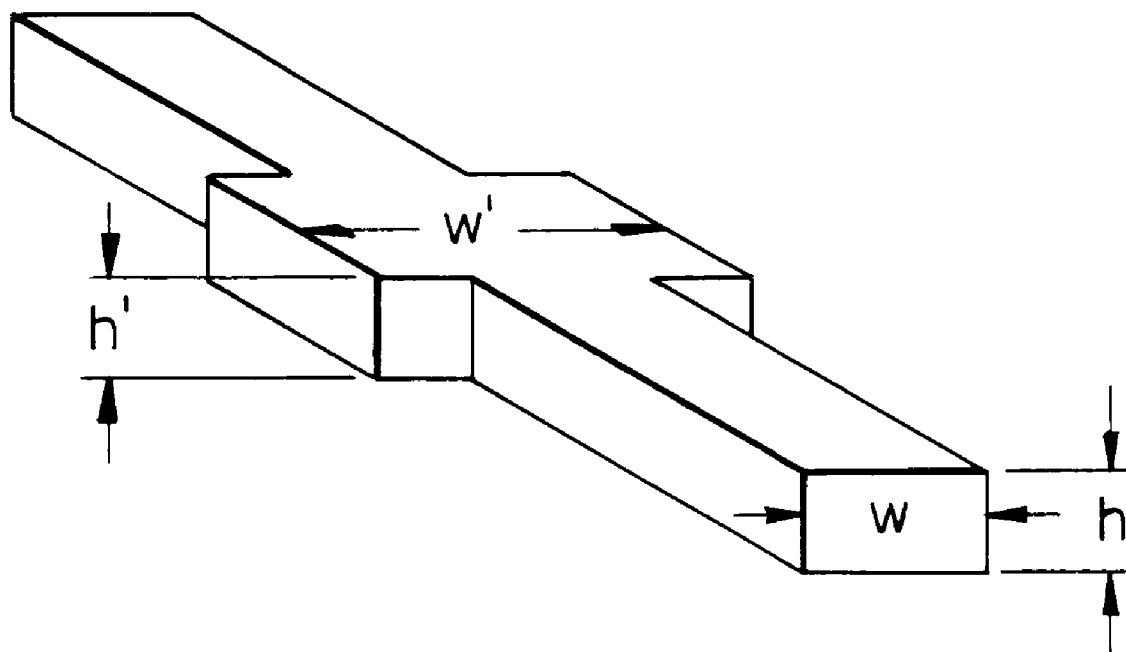
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[57] **ABSTRACT**

An electrical interconnect includes a substrate having an insulating surface upon which is placed an electrically-conductive cut-link pad and a pair of electrically-conductive lines. The lines are bonded to the cut-link pad and are substantially more resistant to heat flow per unit length than is the cut-link pad. In a preferred embodiment, the thermal resistance per unit length of the cut-link pad is lowered by designing the pad such that its width is greater than the width of either of the lines. A method for cutting a circuit includes directing a laser upon the cut-link pad of an interconnect, as described above. The laser is maintained upon the pad until the cut-link pad is ablated, severing the circuit.

21 Claims, 6 Drawing Sheets



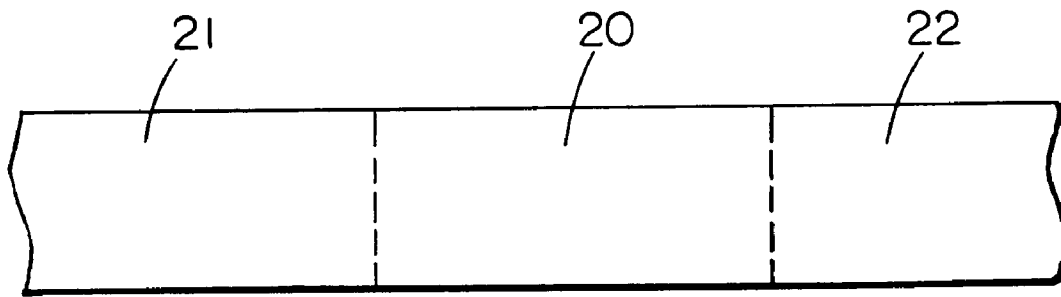


FIG. 1
PRIOR ART

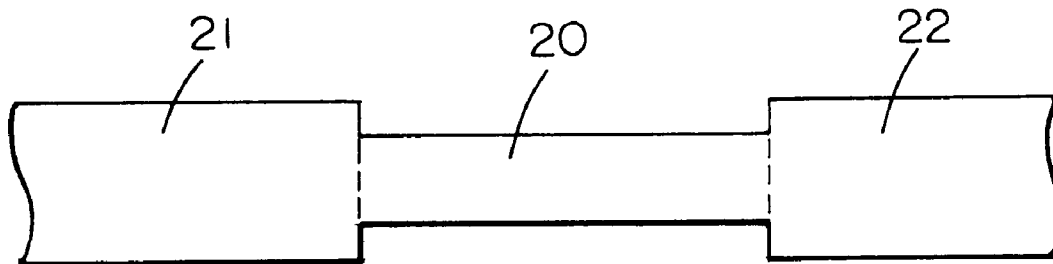


FIG. 2
PRIOR ART

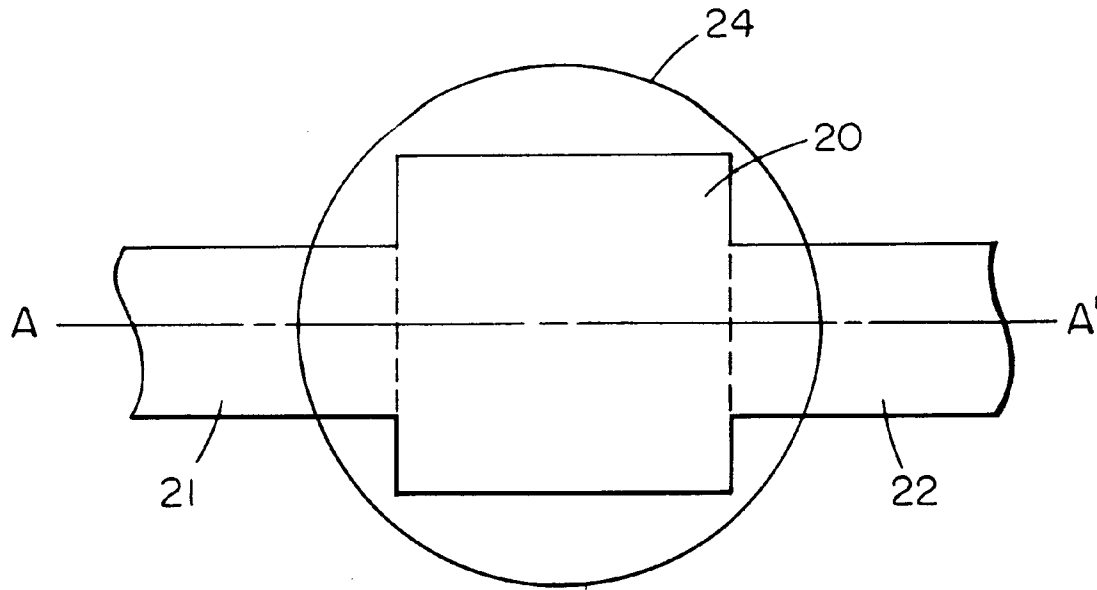


FIG. 3

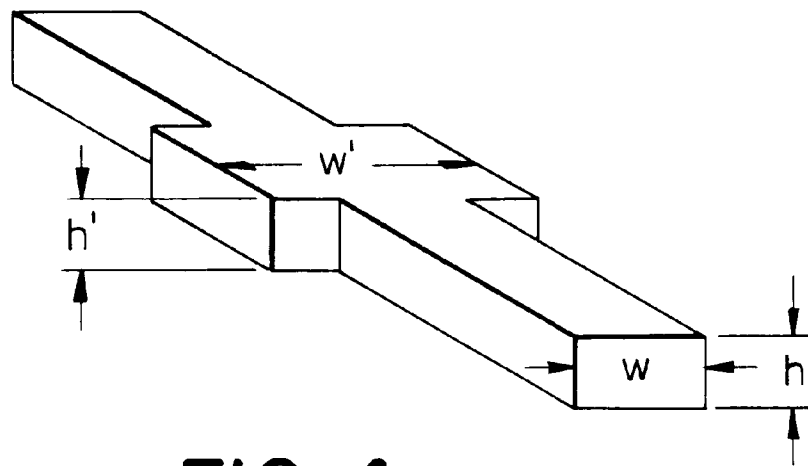


FIG. 4

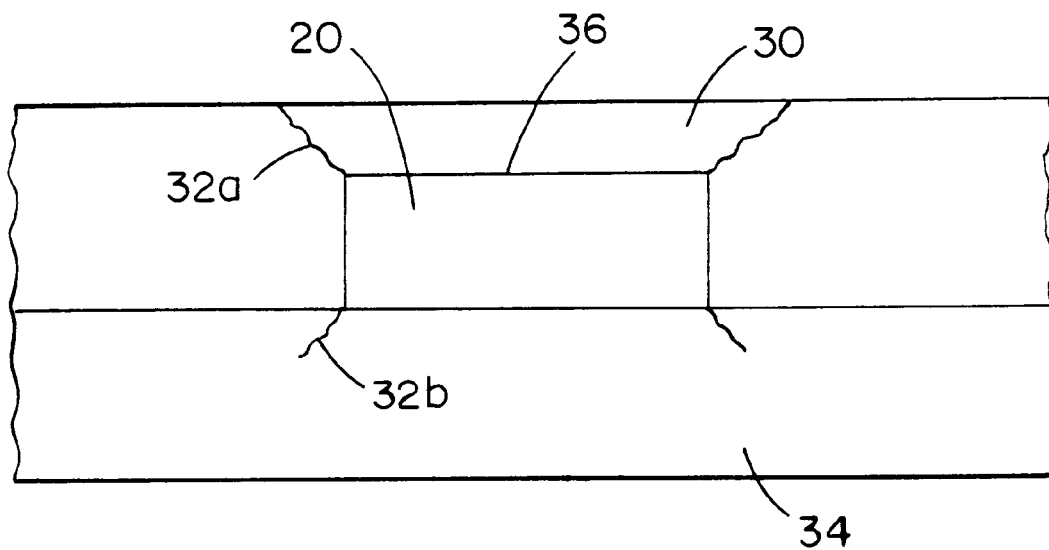


FIG. 5

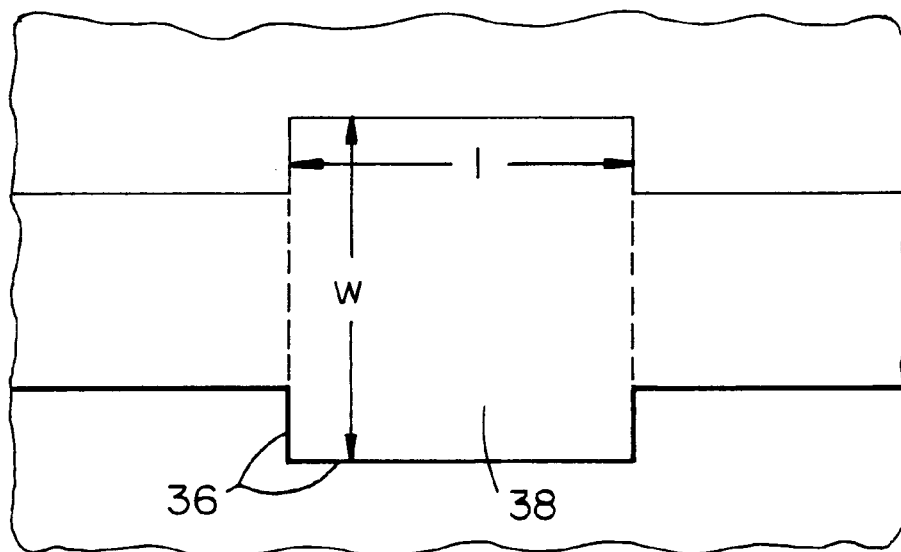


FIG. 6

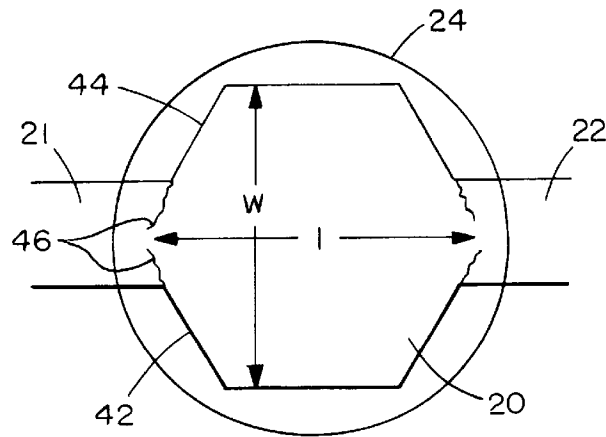


FIG. 7

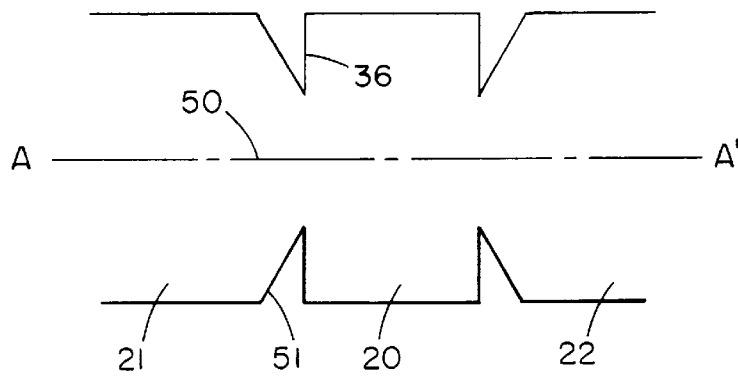


FIG. 8

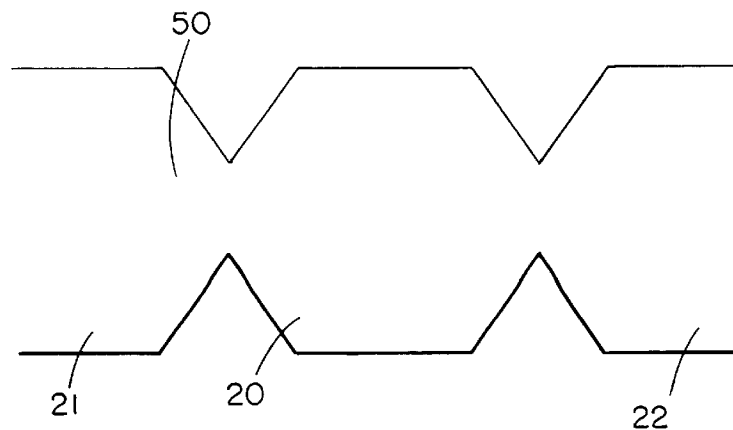


FIG. 9

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