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(12) **United States Patent**  
**Credelle et al.**

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(54) **MULTI-FEATURE-SIZE ELECTRONIC STRUCTURES**

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(75) Inventors: **Thomas Lloyd Credelle**, Morgan Hill, CA (US); **Glenn Gengel**, Hollister, CA (US); **Roger Green Stewart**, Morgan Hill, CA (US); **William Hill Joseph**, Los Gatos, CA (US)

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(73) Assignee: **Alien Technology Corporation**, Morgan Hill, CA (US)

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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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*Primary Examiner*—David Martin

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*Assistant Examiner*—Dameon E. Levi

(65) **Prior Publication Data**

(74) *Attorney, Agent, or Firm*—Blakely, Sokoloff, Taylor & Zafman LLP

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**ABSTRACT**

- (51) **Int. Cl.**<sup>7</sup> ..... **H05K 1/11**; H05K 1/14; H05K 7/02
- (52) **U.S. Cl.** ..... **361/737**; 361/760; 361/761
- (58) **Field of Search** ..... 361/737, 760, 361/761, 764; 438/19, 455; 257/786

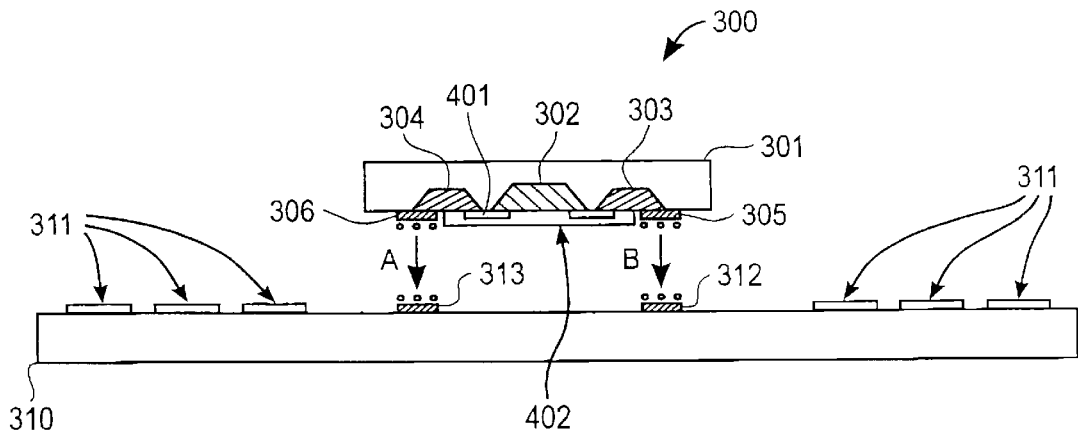
Methods and apparatuses for an electronic assembly. The electronic assembly has a first object created and separated from a host substrate. The first object has a first electrical circuitry therein. A carrier substrate is coupled to the first object wherein the first object is being recessed below a surface of the carrier substrate. The carrier substrate further includes a first carrier connection pad and a second carrier connection pad that interconnect with the first object using metal connectors. A receiving substrate, which is substantially planar, including a second electrical circuitry, a first receiving connection pad, and a second receiving connection pad that interconnect with the second electrical circuitry using the metal connectors. The carrier substrate is coupled to the receiving substrate using the connection pads mentioned.

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**15 Claims, 6 Drawing Sheets**



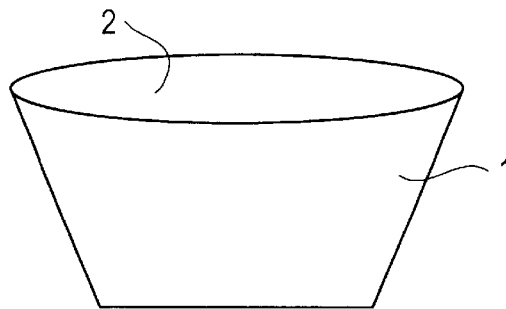


FIG. 1

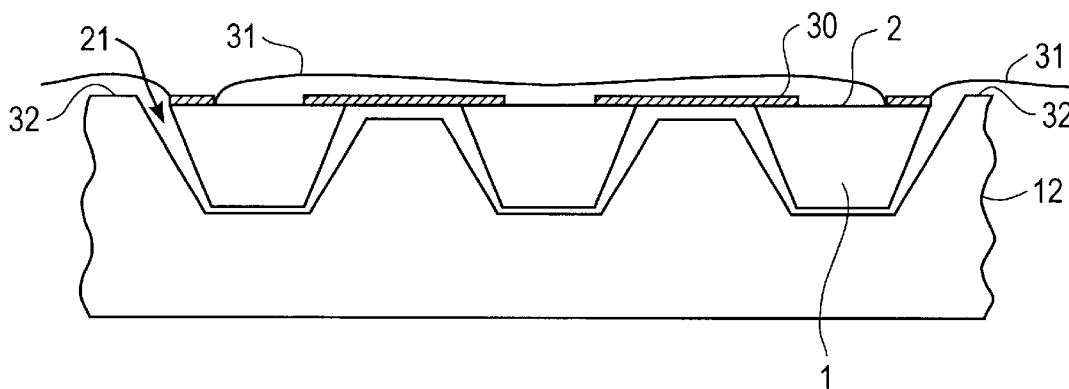


FIG. 2

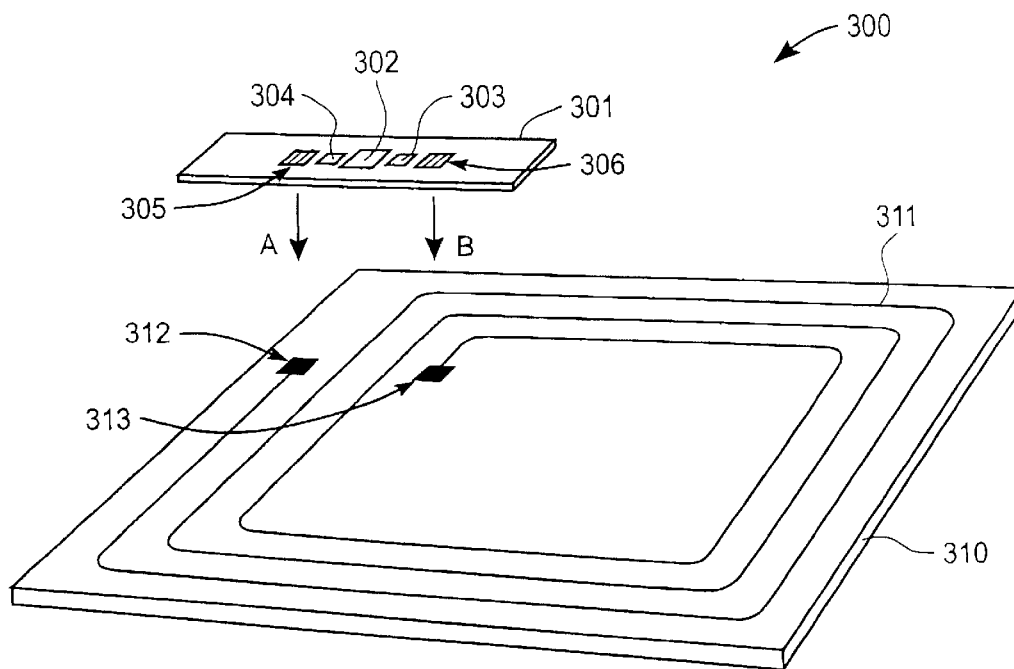


FIG. 3

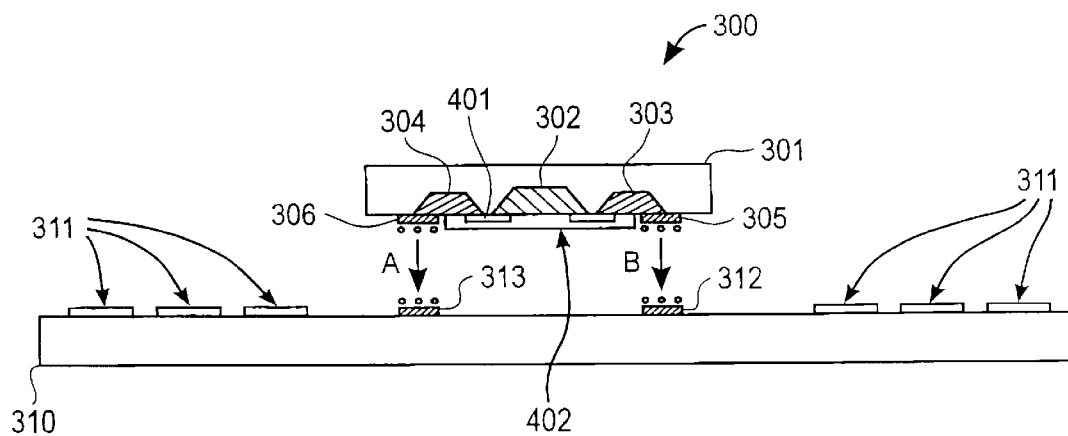


FIG. 4A

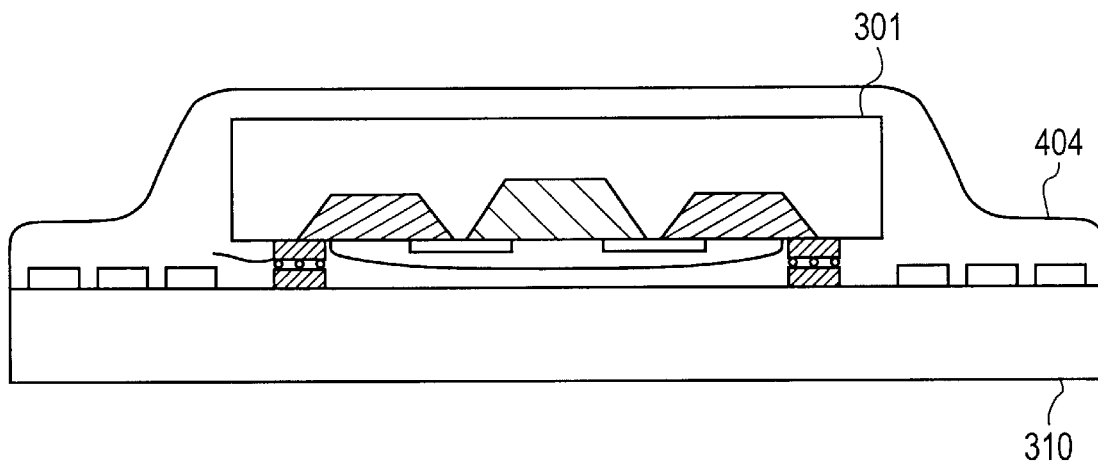


FIG. 4B

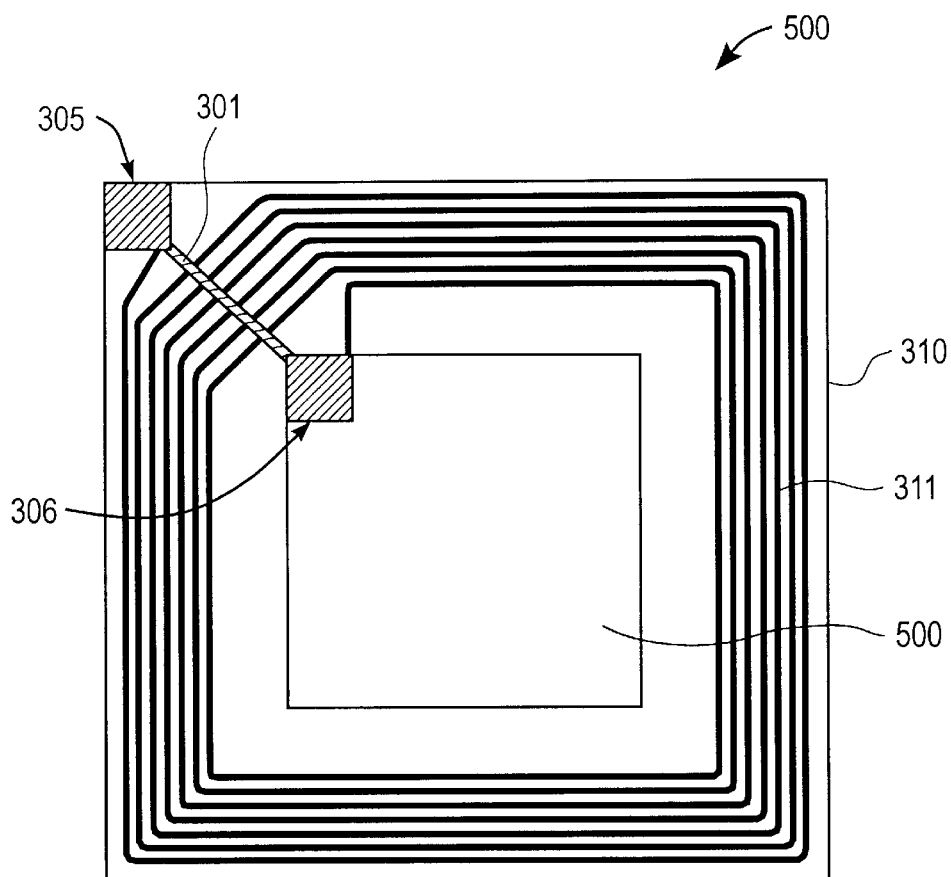


FIG. 5

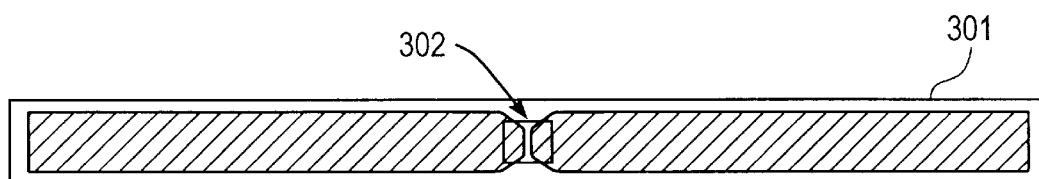


FIG. 6

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