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**Brand et al.**

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(54) **RAM BOOSTER**

(75) Inventors: **Vance D. Brand**, Tehachapi, CA (US);  
**Walter Ray Morgan**, Simi Valley, CA (US)

(73) Assignee: **The United States of America as represented by the Administrator of the National Aeronautics and Space Administration**, Washington, DC (US)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 612 days.

(21) Appl. No.: **12/045,970**

(22) Filed: **Mar. 11, 2008**

**Related U.S. Application Data**

(63) Continuation-in-part of application No. 11/422,554, filed on Jun. 6, 2006, now abandoned.

(51) **Int. Cl.**  
**B64G 1/00** (2006.01)

(52) **U.S. Cl.** ..... **244/158.9**; 244/158.1; 244/171.1; 244/171.3

(58) **Field of Classification Search** ..... 244/158.1, 244/158.9, 159.1, 159.3, 171.1, 171.3, 171.4  
See application file for complete search history.

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*Primary Examiner* — Joshua Michener

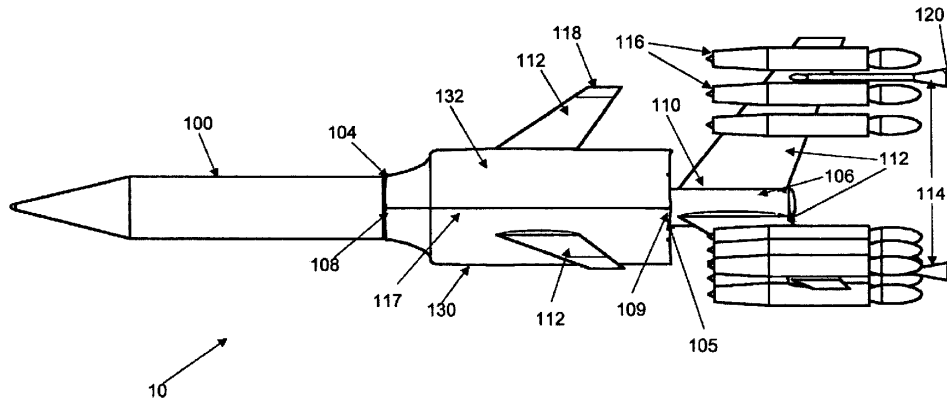
*Assistant Examiner* — Philip J Bonzell

(74) *Attorney, Agent, or Firm* — Mark Homer

(57) **ABSTRACT**

The present invention is a space launch system and method to propel a payload bearing craft into earth orbit. The invention has two, or preferably, three stages. The upper stage has rocket engines capable of carrying a payload to orbit and provides the capability of releasably attaching to the lower, or preferably, middle stage. Similar to the lower stage, the middle stage is a reusable booster stage that employs all air breathing engines, is recoverable, and can be turned-around in a short time between missions.

**7 Claims, 6 Drawing Sheets**



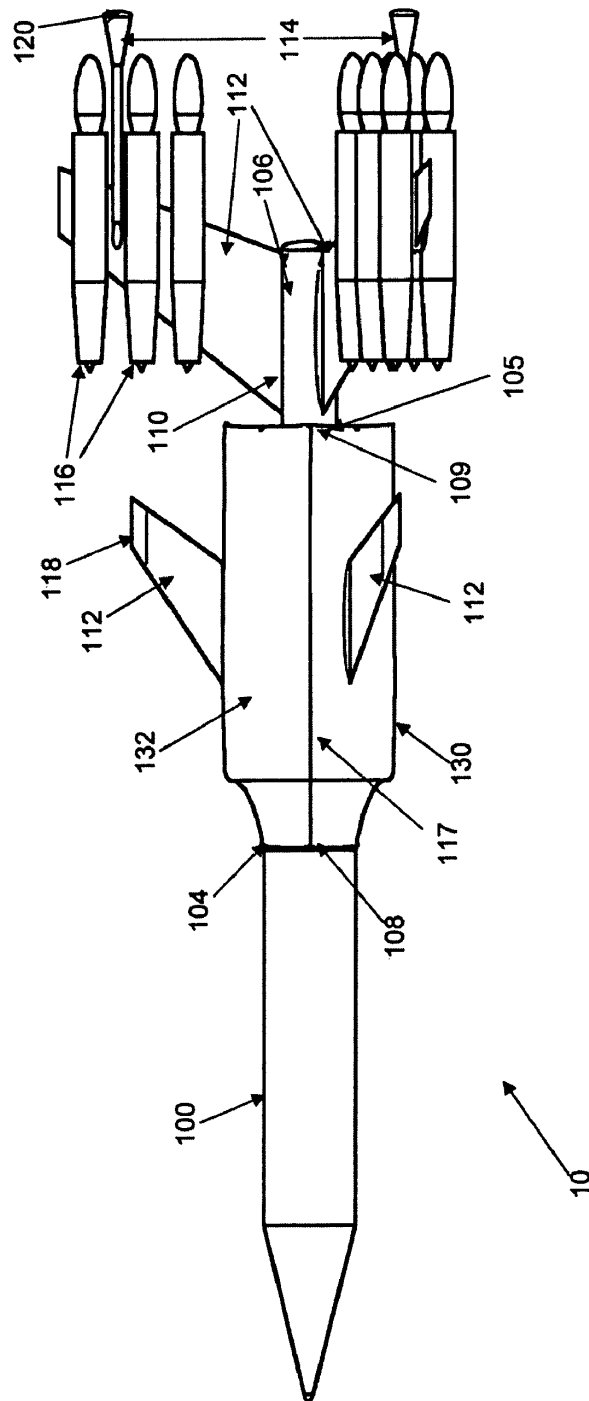


FIGURE 1

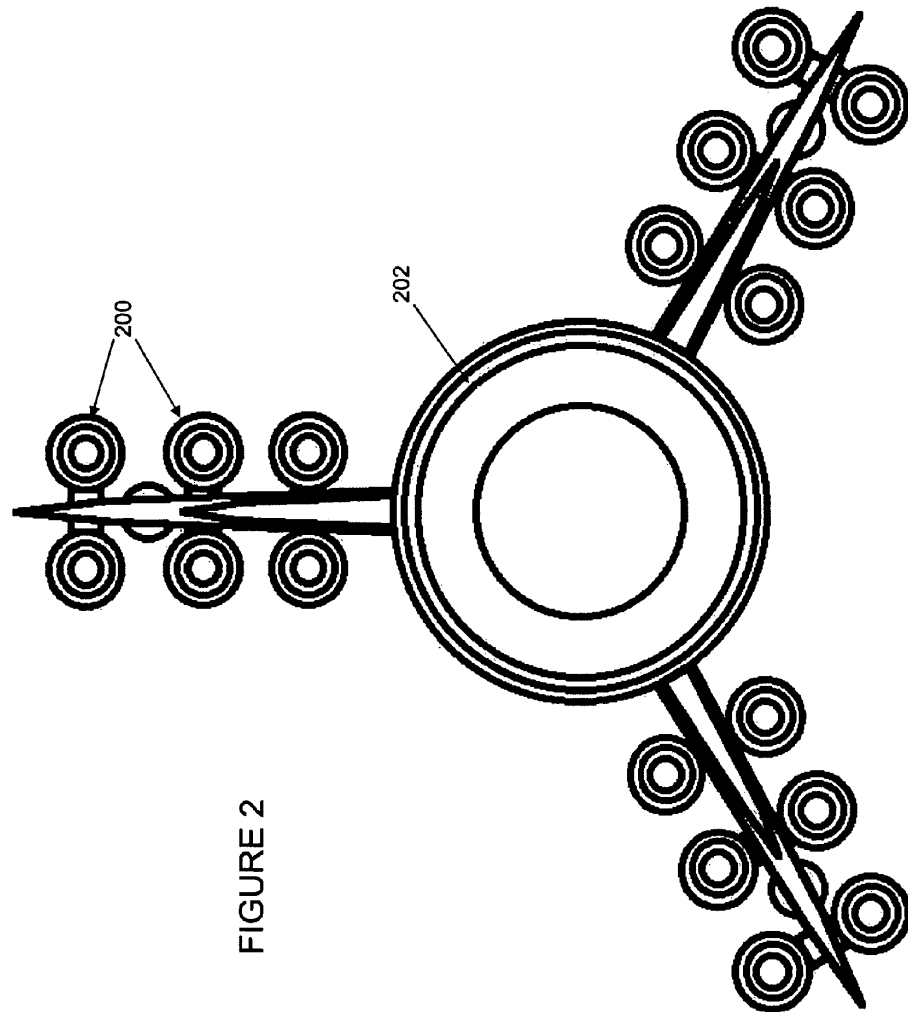


FIGURE 2

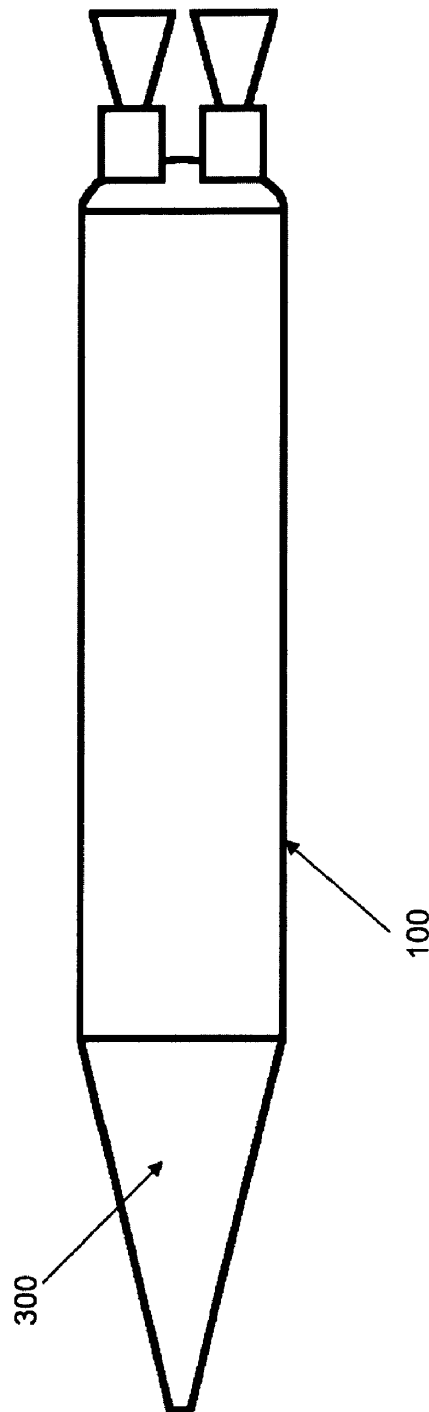


FIGURE 3

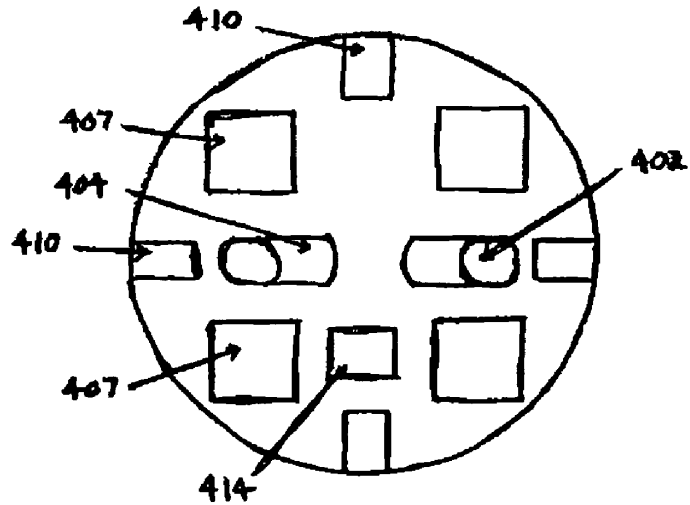


FIGURE 4a

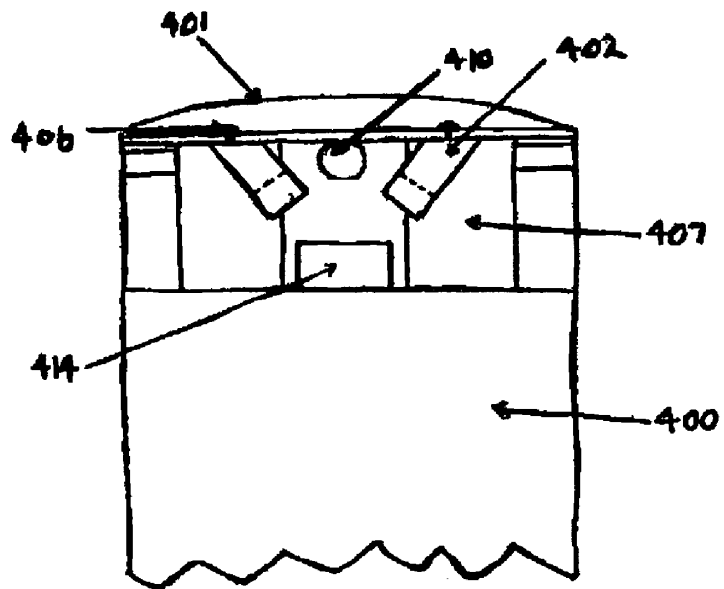


FIGURE 4b

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