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United States Patent [19]
Fortune et al.

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[45] **Date of Patent:** **Jan. 4, 2000**

- [54] **OCCUPANT DETECTION METHOD AND APPARATUS FOR AIR BAG SYSTEM**
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Robert John Cashler, Kokomo, both of Ind.
- [73] Assignee: **Delphi Technologies, Inc.**, Troy, Mich.
- [21] Appl. No.: **08/868,338**
- [22] Filed: **Jun. 3, 1997**

- [56] **References Cited**
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5,430,649 7/1995 Cashler et al. 364/424.05
5,732,375 3/1998 Cashler 701/45

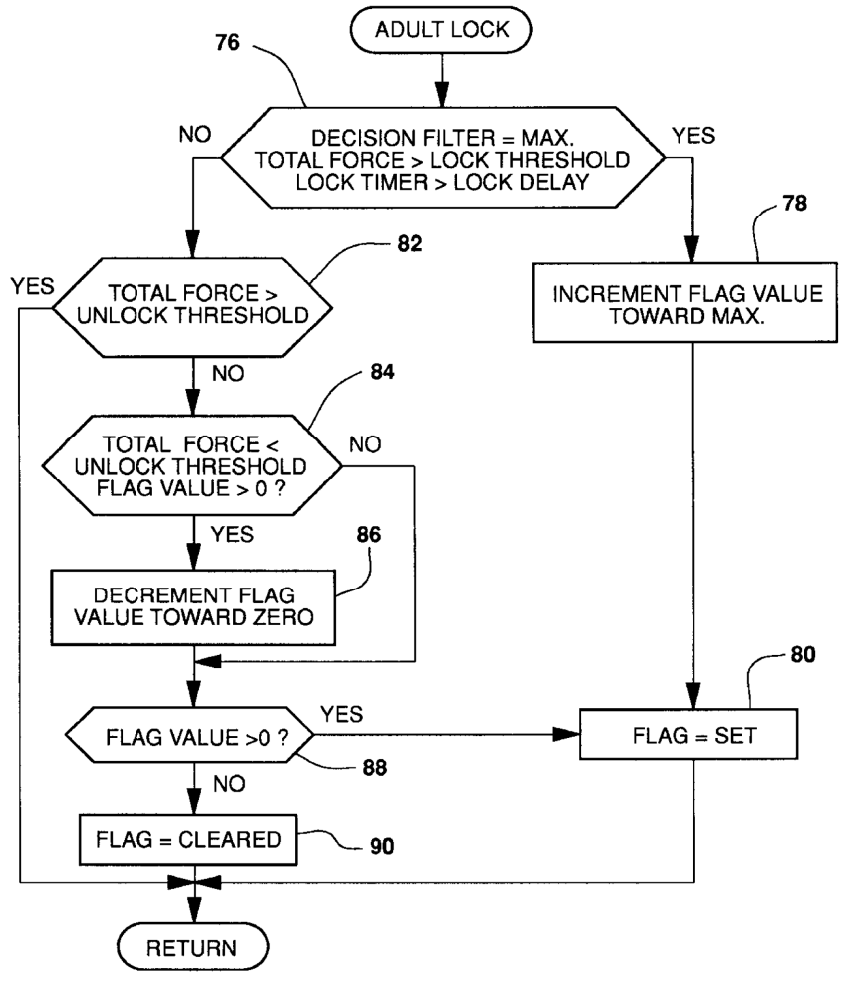
Primary Examiner—William A. Cuchlinski, Jr.
Assistant Examiner—Yonel Beaulieu
Attorney, Agent, or Firm—Jimmy L. Funke

Related U.S. Application Data

- [63] Continuation-in-part of application No. 08/566,029, Dec. 1, 1995, Pat. No. 5,732,375.
- [51] **Int. Cl.**⁷ **B60R 21/12; B60R 21/32**
- [52] **U.S. Cl.** **701/45; 701/46; 340/436; 180/271; 180/273; 280/730.1; 280/735; 307/9.1**
- [58] **Field of Search** 701/45, 46; 340/438, 340/436; 180/271, 273; 280/730.1–735; 307/9.1

[57] **ABSTRACT**
Pressure sensors on the bottom surface of a seat cushion respond to occupant weight. A microprocessor evaluates the sensor outputs according to total force, load rating, long term average, sensor groups and a fuzzy measure to discriminate between large and small occupants and allow air bag deployment for large but not small occupants. Allow and inhibit decisions are filtered avoid sudden response to transient pressure changes on the seat. When a large occupant is positively detected, an allow decision is locked in place as long as total force exceeds a threshold.

27 Claims, 5 Drawing Sheets



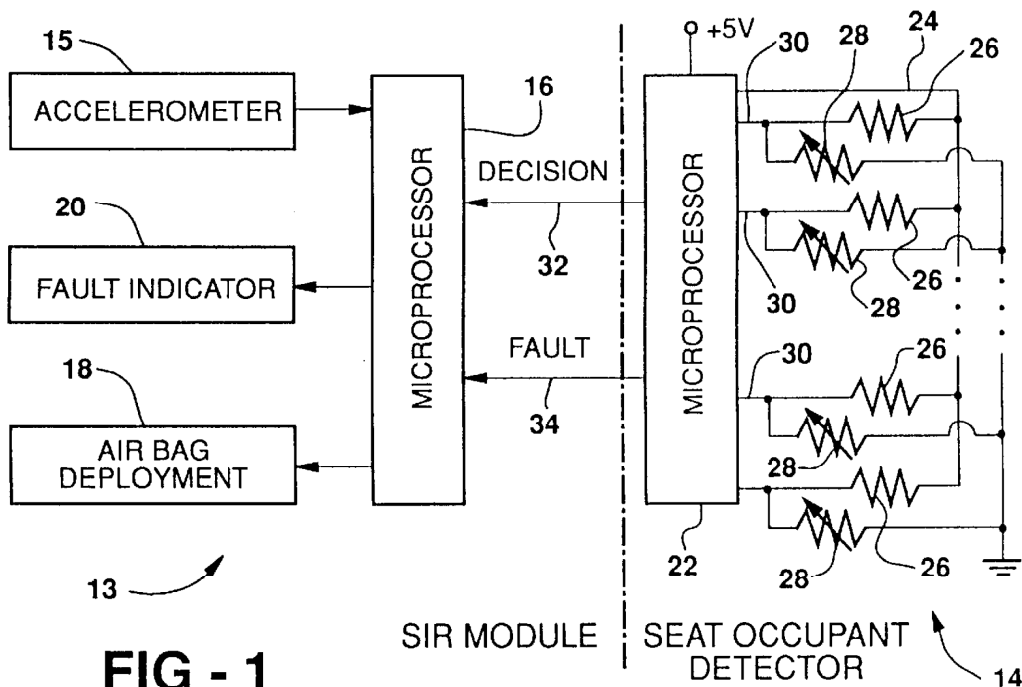


FIG - 1
PRIOR ART

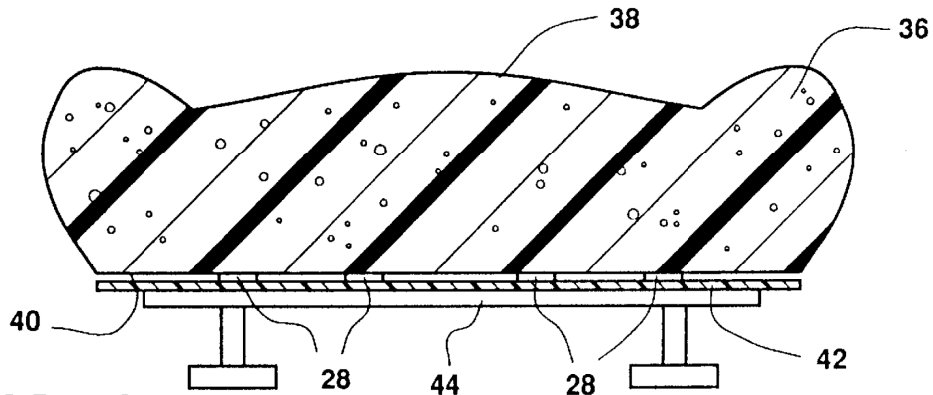


FIG - 2

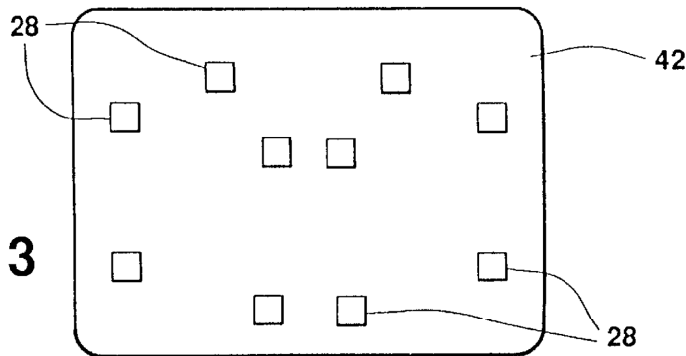


FIG - 3

FIG - 4

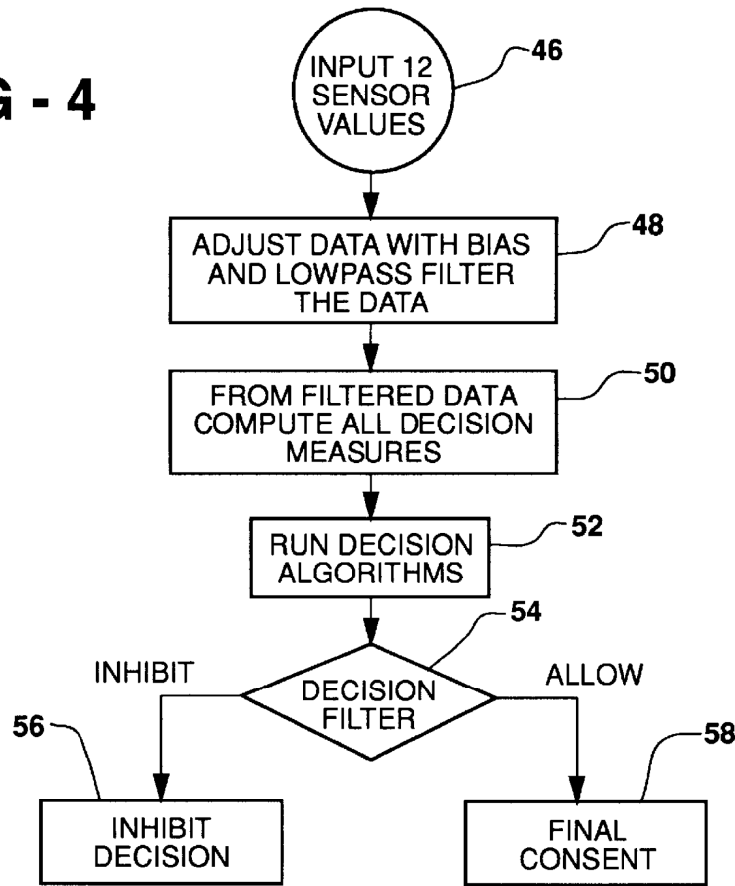


FIG - 5

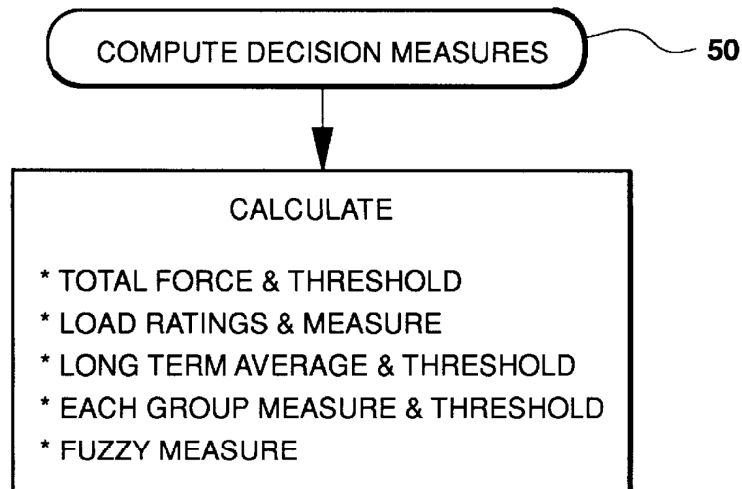


FIG - 6

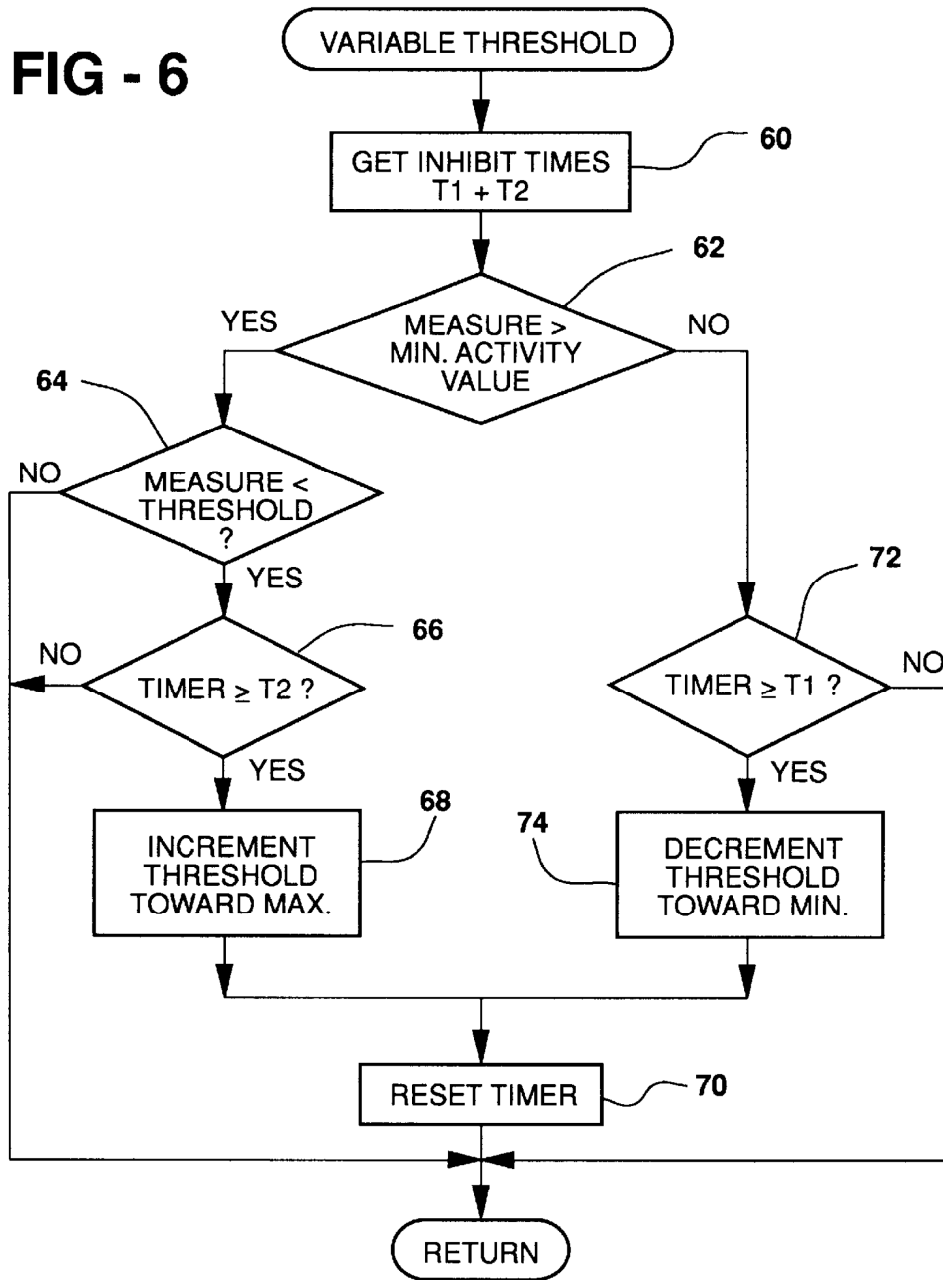
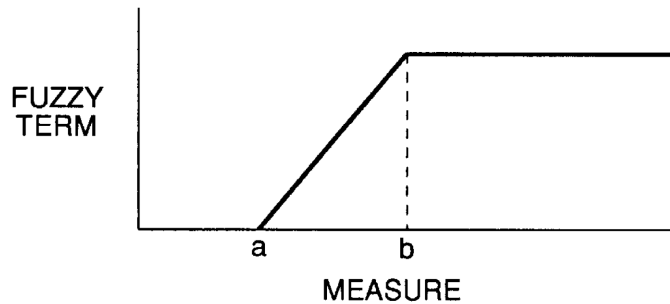
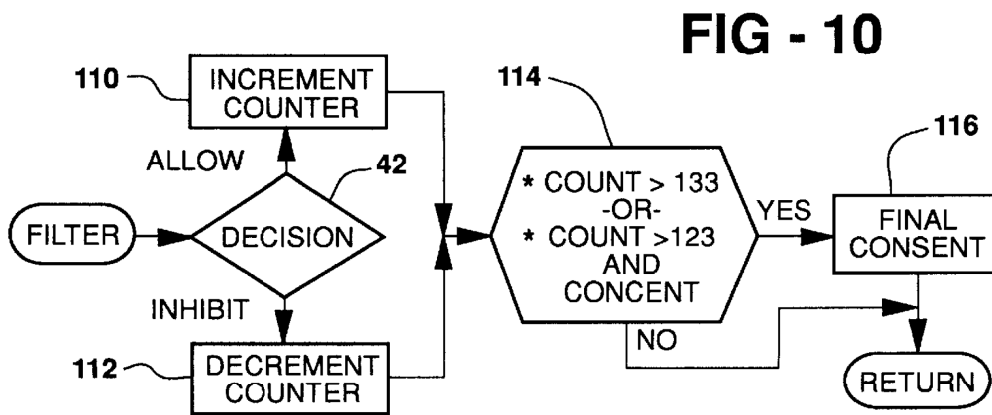
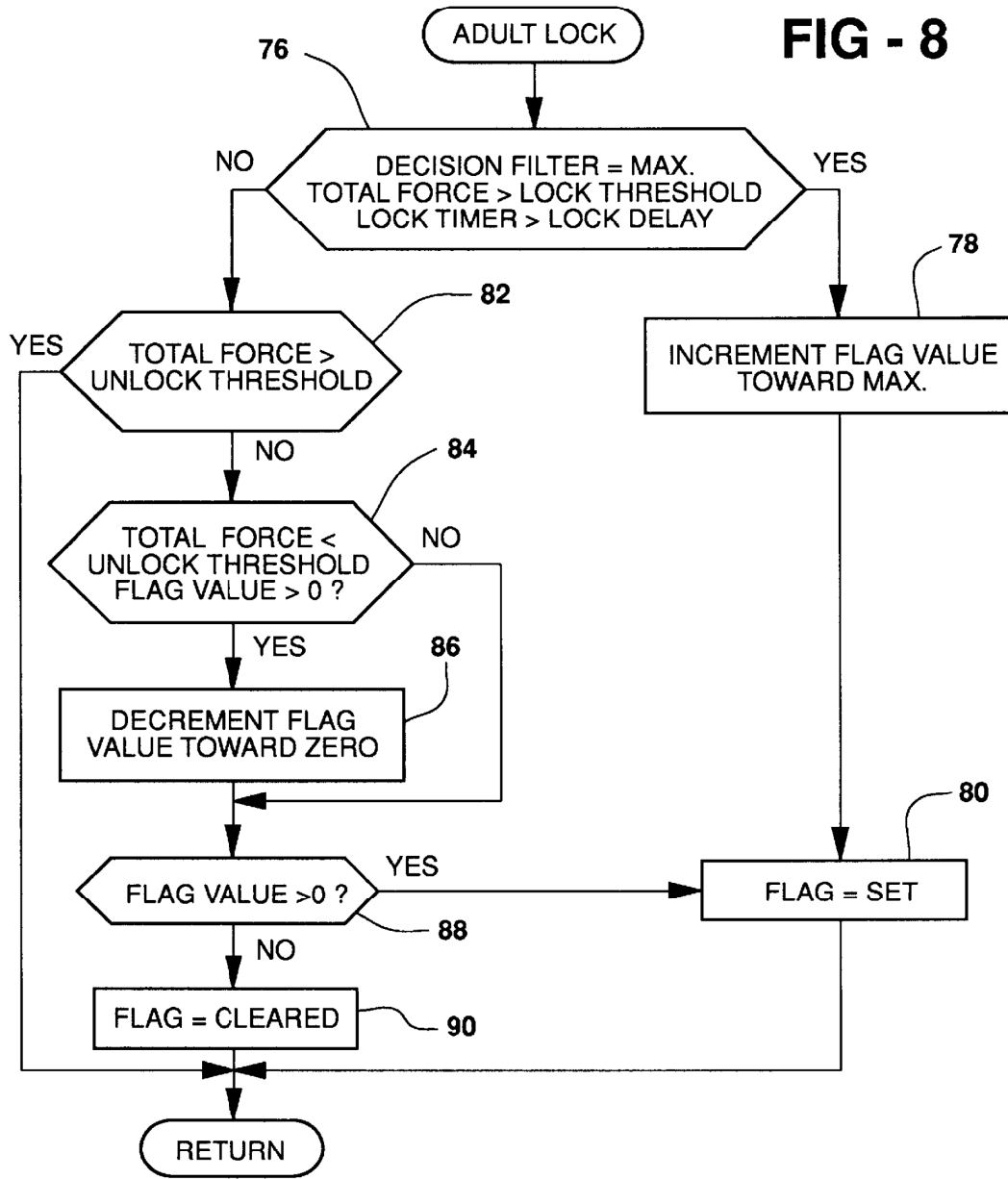


FIG - 7





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