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# United States Patent [19]

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Blackburn et al.

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## [54] OCCUPANT SENSING APPARATUS

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[51] Int. Cl.<sup>5</sup> ..... **B60R 21/32**

[52] U.S. Cl. .... **280/732; 280/735;**  
180/273

[58] Field of Search ..... 280/728, 730, 731, 732,  
280/735; 180/273

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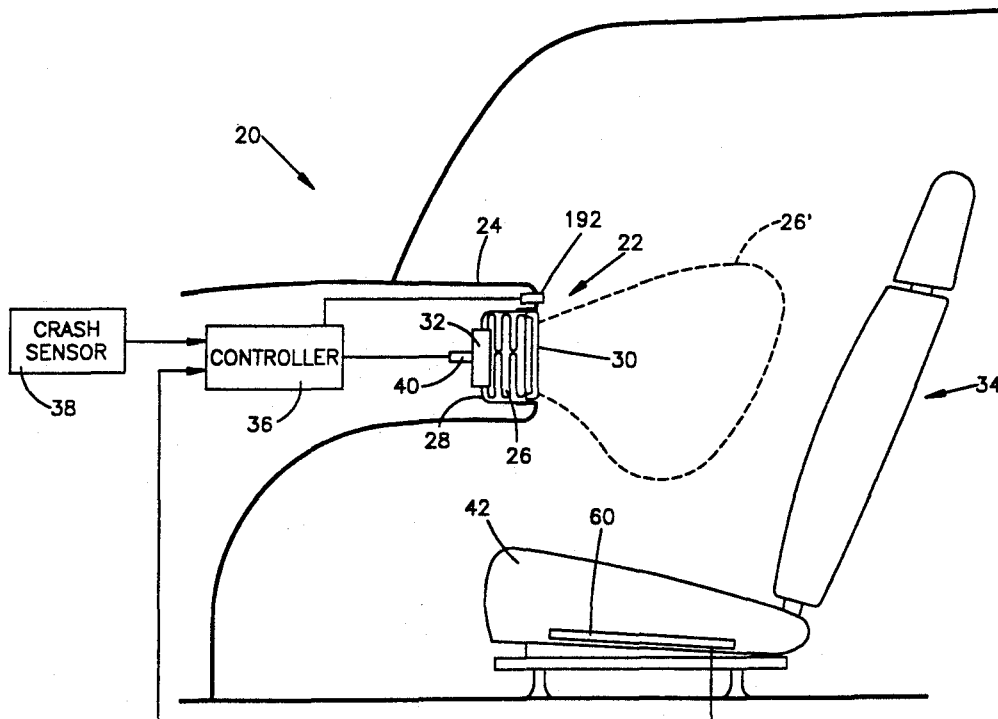
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*Attorney, Agent, or Firm*—Tarolli, Sundheim & Covell

## [57] ABSTRACT

An occupant sensing apparatus for use in an occupant restraint system comprises a film having an electrical characteristic with changeable states and a contact member. When an occupant sits in a vehicle seat, the contact member pushes on the film and changes the state of the electrical characteristic. An electric circuit is connected to the film for providing a first signal when the film indicates an occupant is not present, a second signal when an occupant is present, and a third signal if the film and the circuit become disconnected. The occupant restraint system is enabled when either an occupant is present or an electrical fault condition occurs. In accordance with another embodiment of the invention, an array of sensors located in the seat determines the occupant's position and weight and controls deployment of the occupant restraint system in response to the determined position and weight.

9 Claims, 14 Drawing Sheets



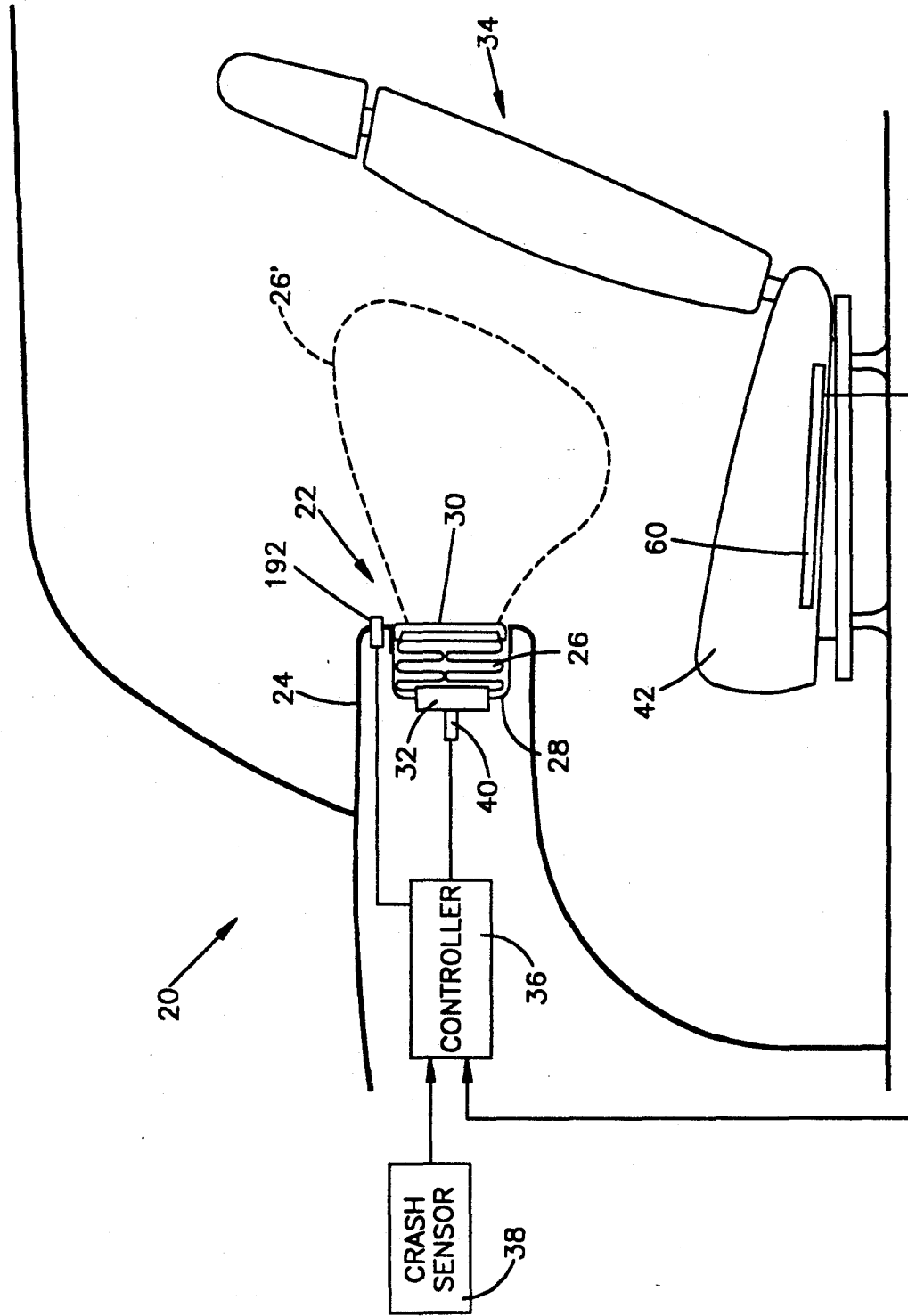


Fig.1

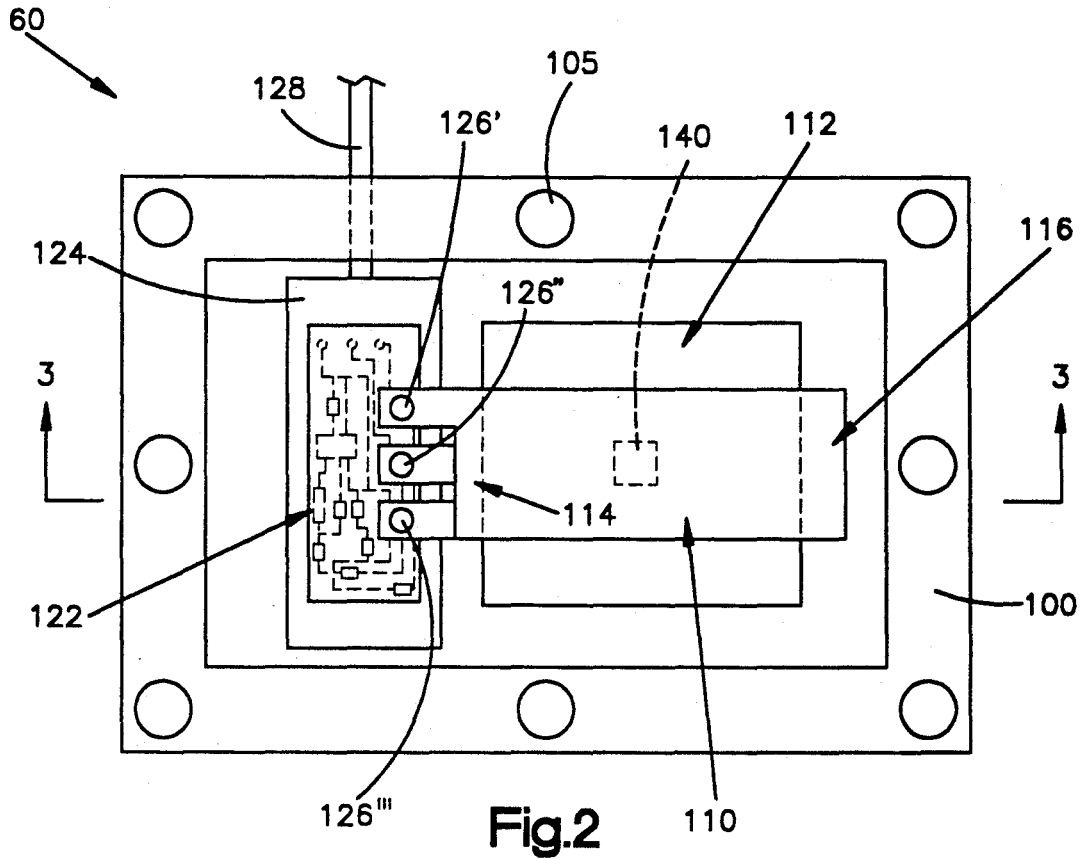


Fig.2

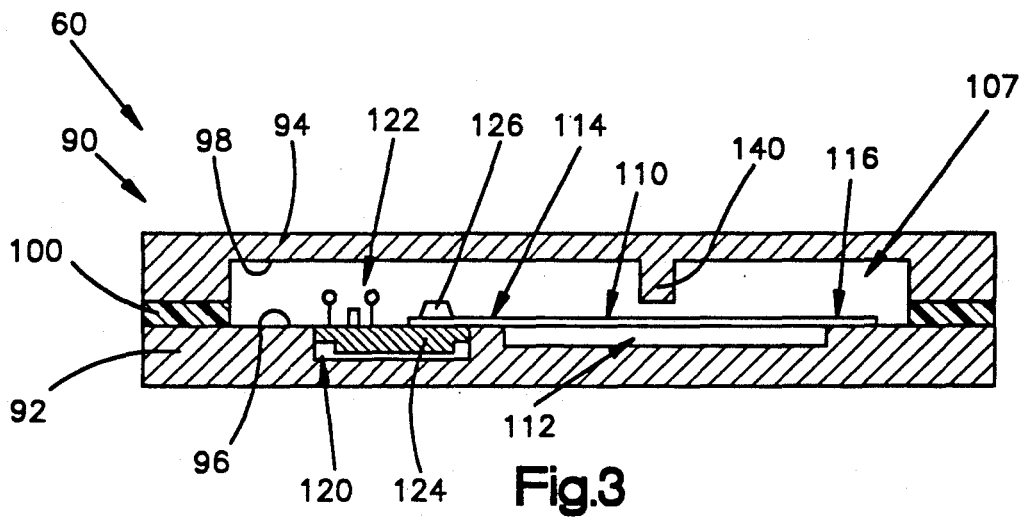


Fig.3

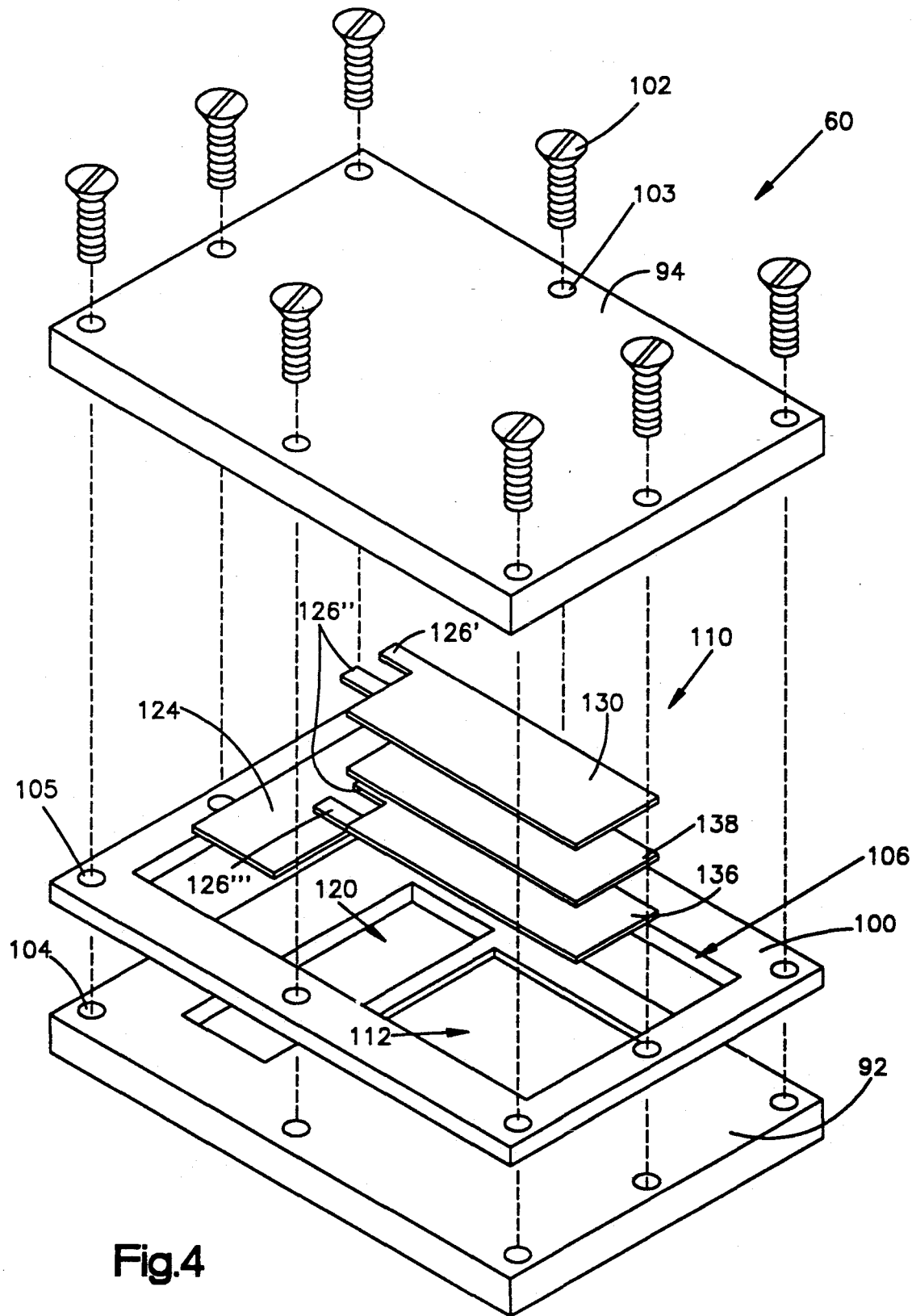


Fig.4

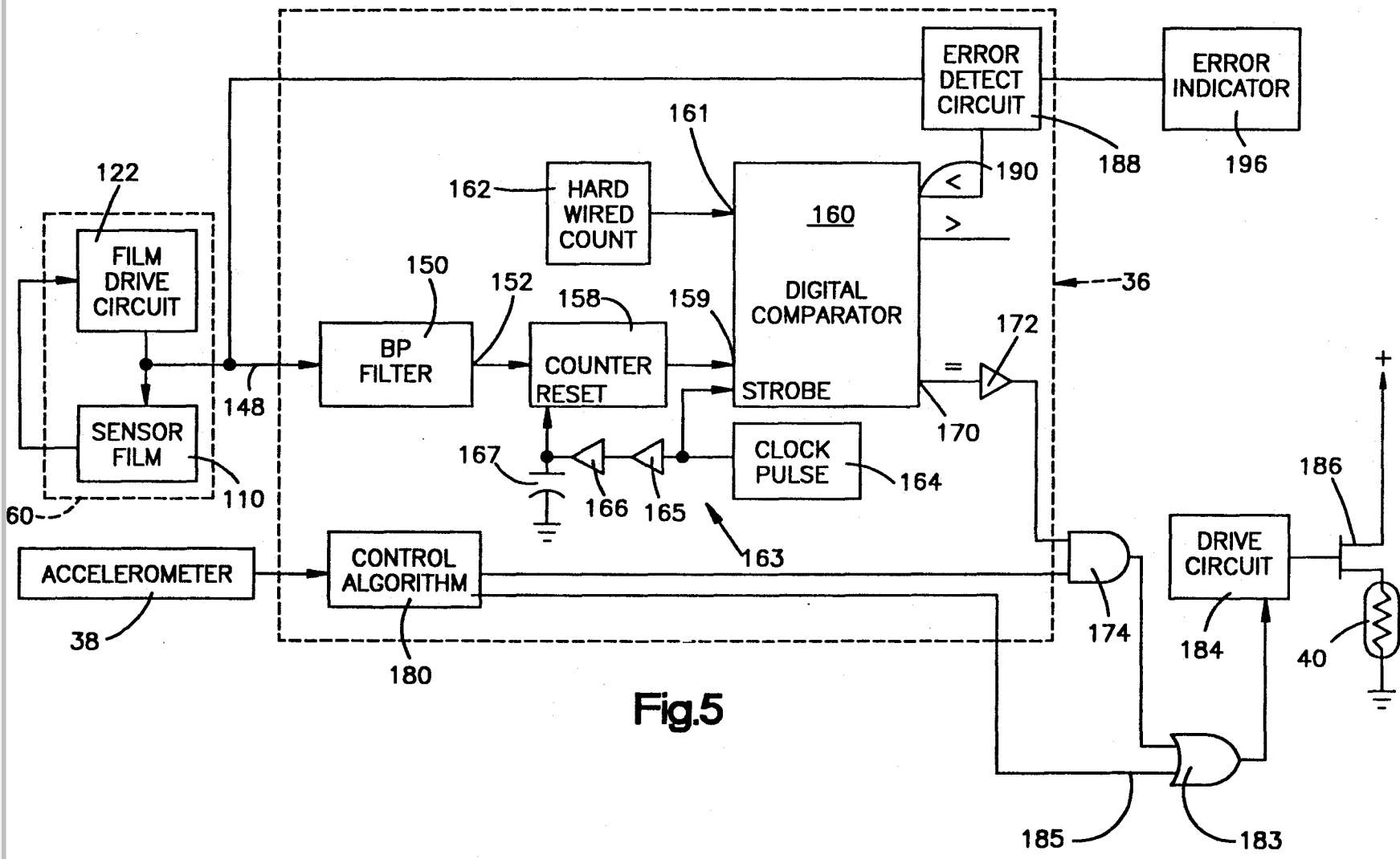


Fig.5

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