

(12) **United States Patent**  
**Williams, Jr. et al.**

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- (54) **METHOD AND APPARATUS FOR OPERATING A POWER LIFTGATE IN AN AUTOMOBILE**
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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.

This patent is subject to a terminal disclaimer.

- (21) Appl. No.: **09/413,843**  
(22) Filed: **Oct. 6, 1999**

**Related U.S. Application Data**

- (63) Continuation-in-part of application No. 09/166,029, filed on Oct. 5, 1998, now Pat. No. 6,091,162, and a continuation-in-part of application No. 09/163,147, filed on Sep. 29, 1998, now Pat. No. 6,075,460.
- (51) **Int. Cl.**<sup>7</sup> ..... **B60L 1/00**  
(52) **U.S. Cl.** ..... **307/10.1; 340/825.69; 709/245**  
(58) **Field of Search** ..... **307/10.1; 340/426, 340/825.69; 701/49**

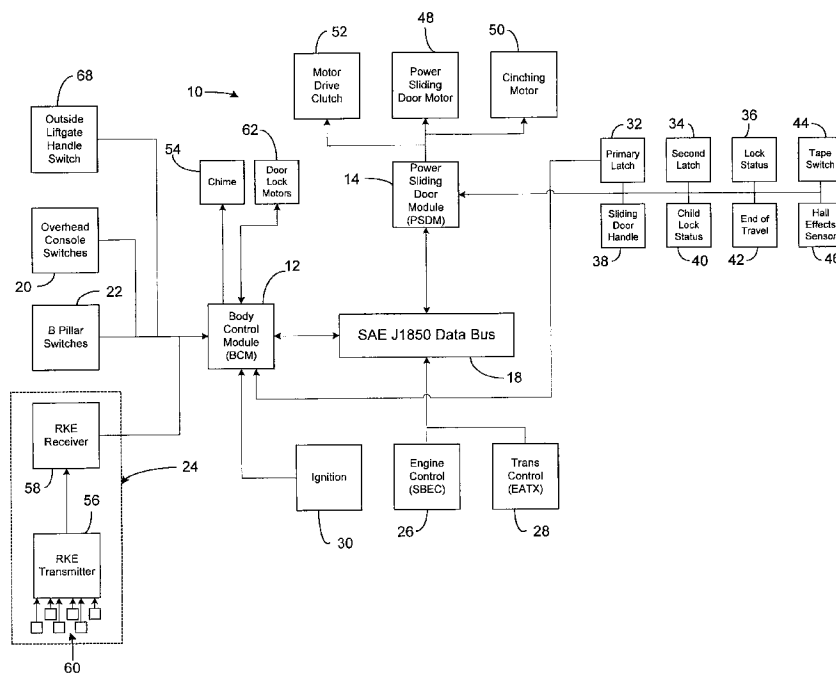
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(57) **ABSTRACT**

A method and apparatus for operating a power liftgate in an automobile, such as a minivan, is disclosed. The invention is comprised in a control system that includes a user input interface for receiving power liftgate actuation requests from a user. The actuation signals are carried to a body control module (BCM) where the request is broadcast to a power liftgate module (PLGM) over a serial data bus communications network meeting the SAE J1850 multiplex communications protocol standard. Upon receipt of the actuation message, the PLGM monitors several operating conditions of the automobile and makes a determination whether or not to carry out the power liftgate activation request. Power liftgate actuation is controlled by the PLGM via electric motors located at or near the liftgate. The user input interface includes interior switches as well as a RKE system.

**18 Claims, 7 Drawing Sheets**



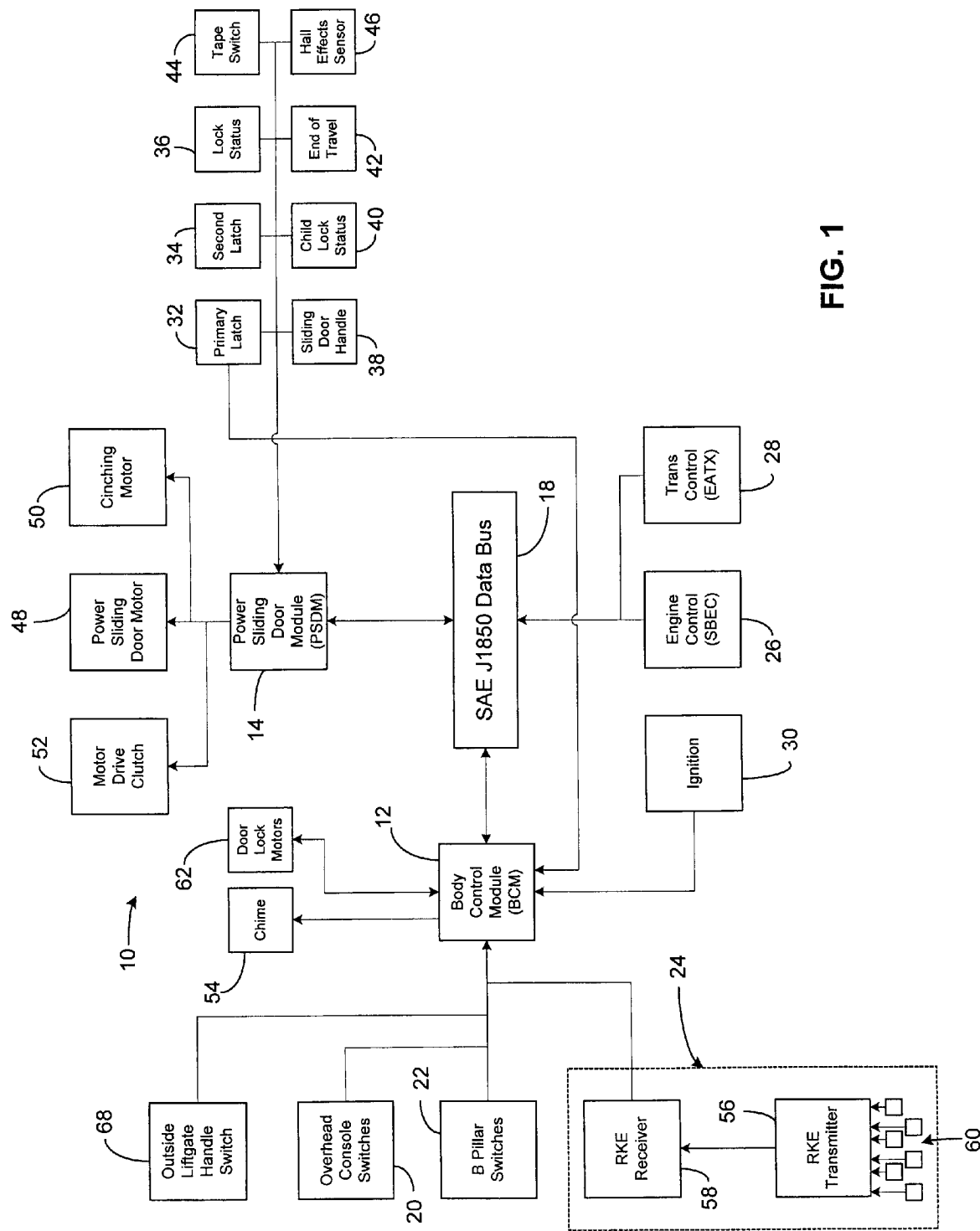


FIG. 1

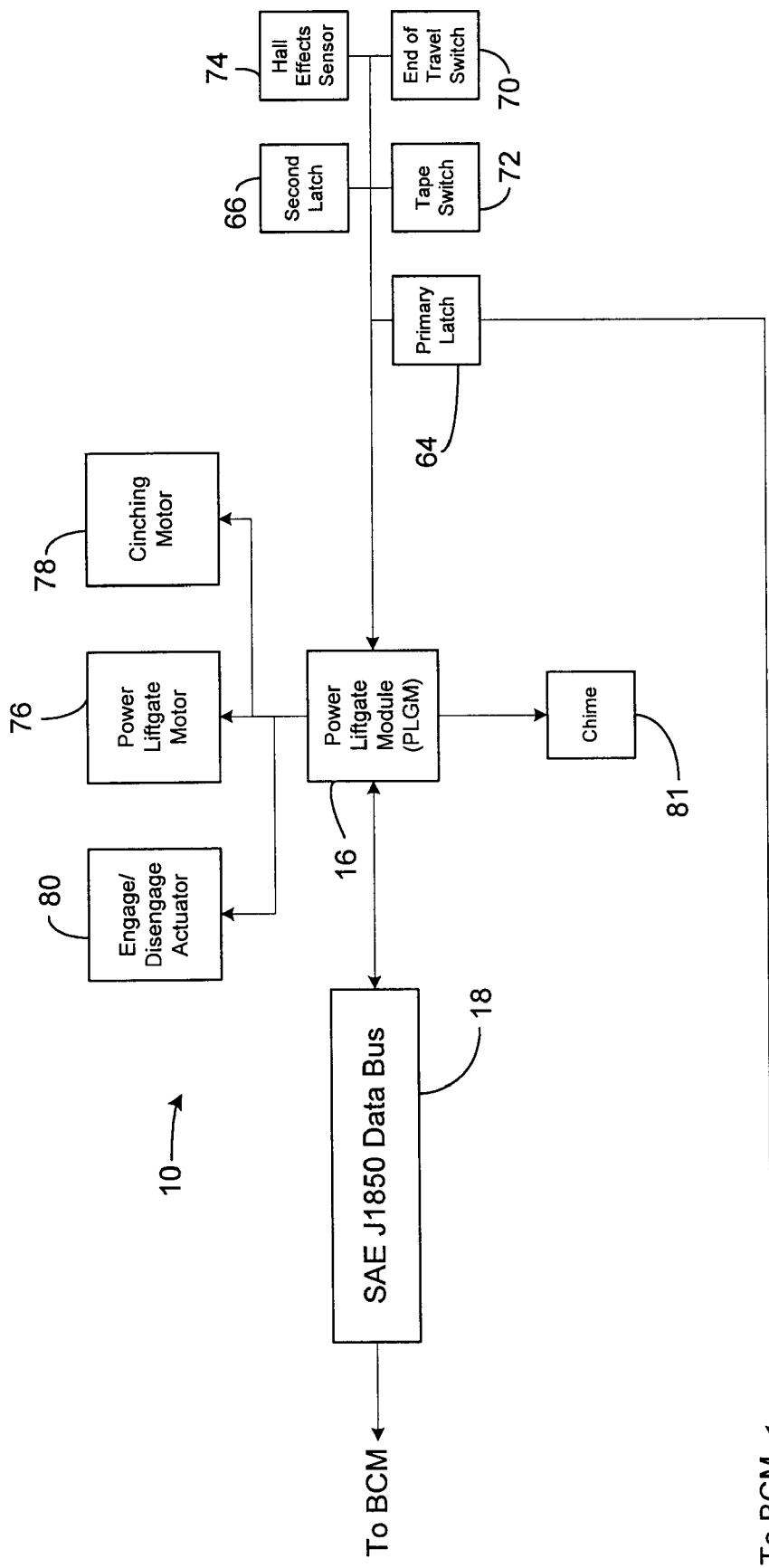


FIG. 2

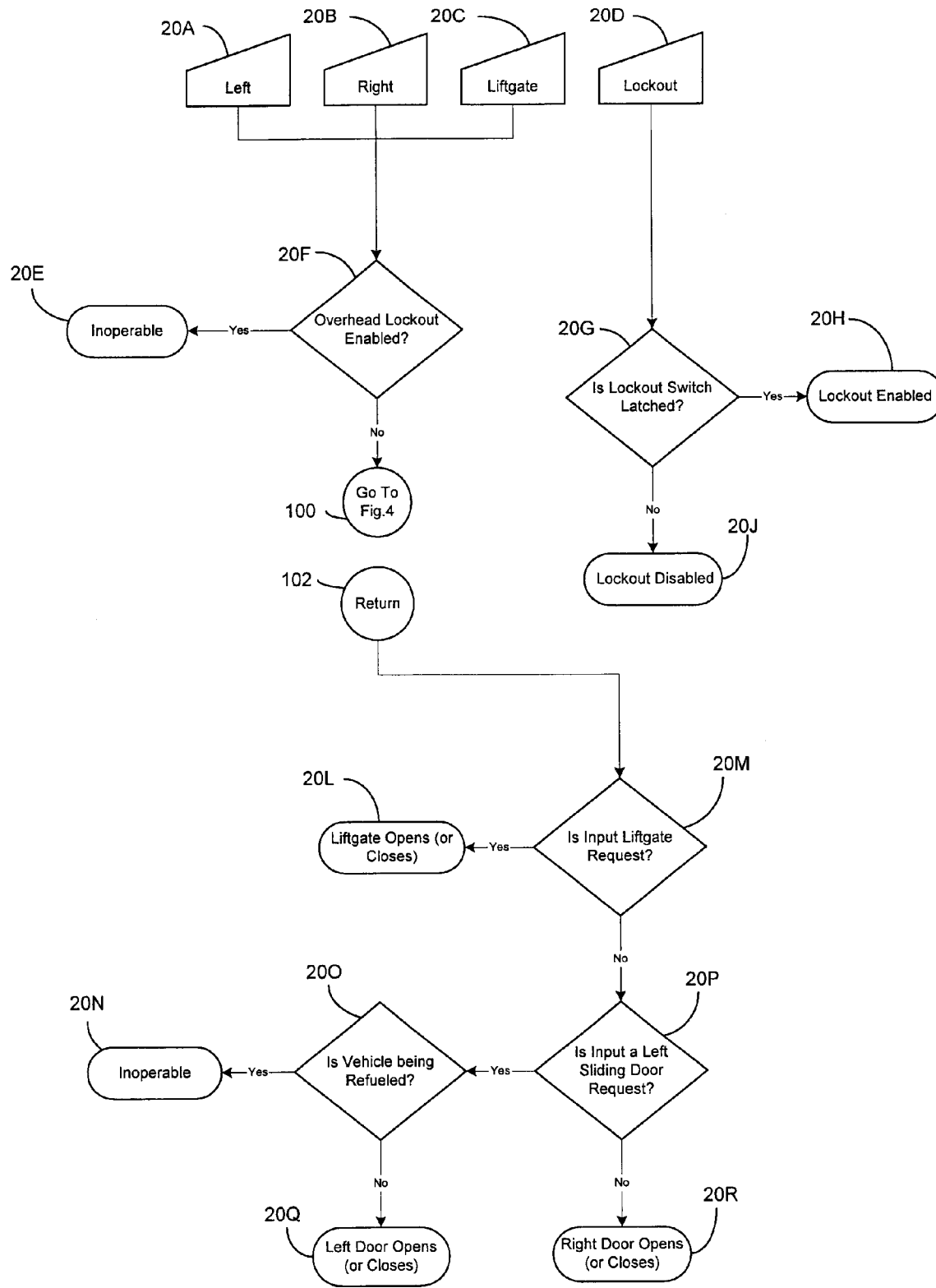


FIG. 3A

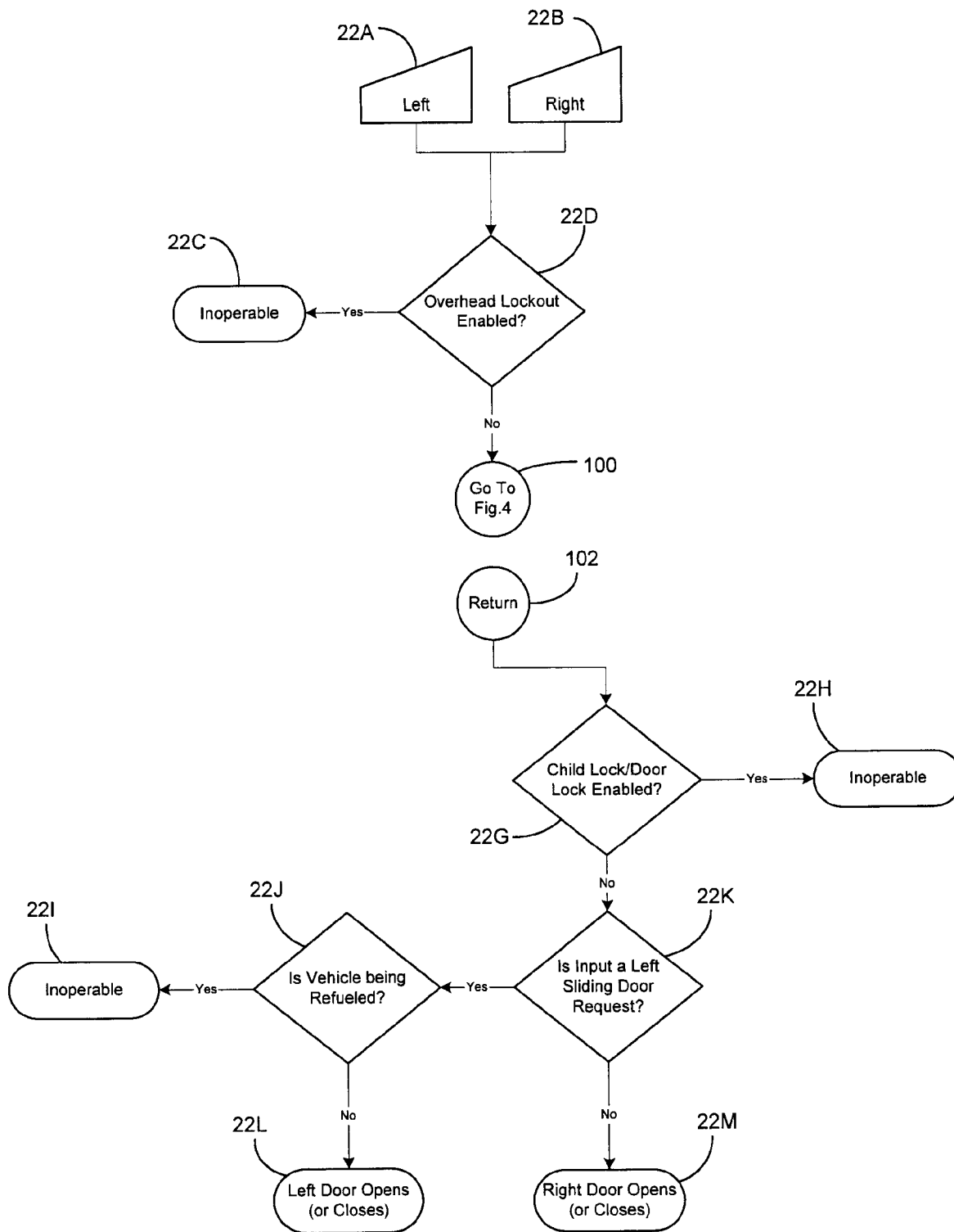


FIG. 3B

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