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United States Patent [19]

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Farrall

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[54] CONTROL OF A VEHICLE POWERTRAIN

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[73] Assignee: **Rover Group Limited**, Birmingham, England

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[21] Appl. No.: **443,583**

[22] Filed: **May 17, 1995**

[30] Foreign Application Priority Data

May 24, 1994 [GB] United Kingdom 9410389

[51] Int. Cl.⁶ **H02P 9/04**

[52] U.S. Cl. **322/40; 322/9; 322/38; 180/65.2**

[58] Field of Search 322/9; 180/65.2, 180/165; 290/16; 60/716, 718

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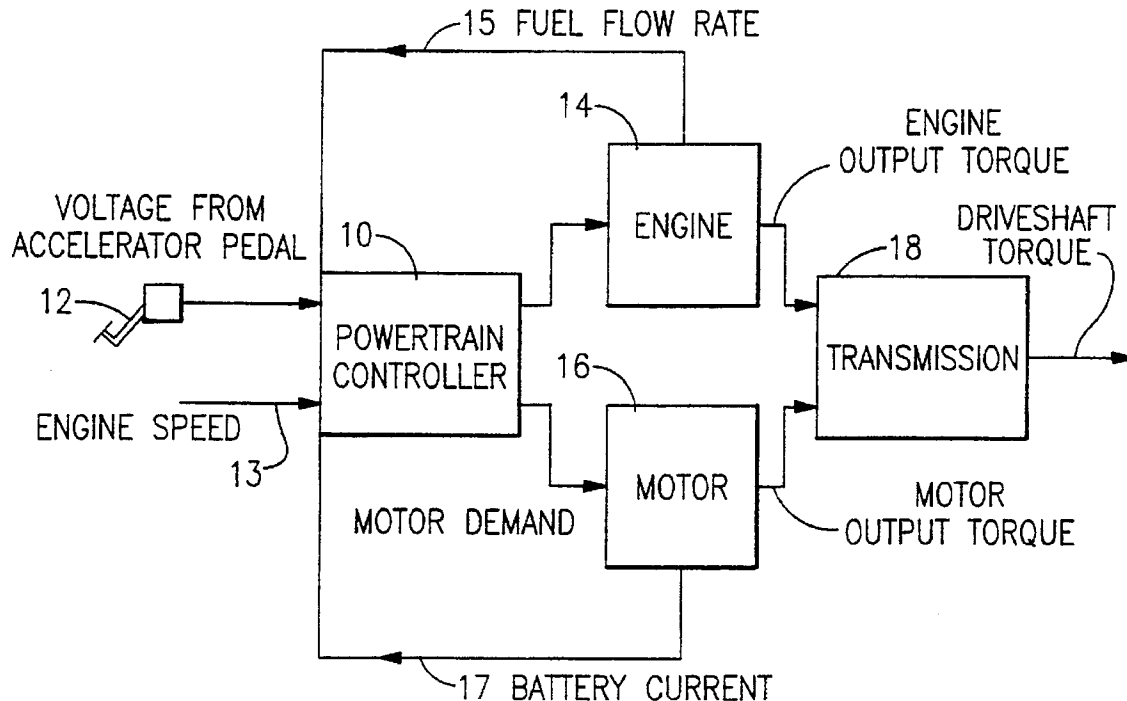
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Assistant Examiner—Nicholas Ponomarenko
Attorney, Agent, or Firm—Davis and Bujold

[57] ABSTRACT

A controller **20** for a vehicle powertrain, the powertrain comprising an electric motor **16** powered by a battery and an engine **14** powered by fossil fuel. The engine **14** is typically an internal combustion petrol engine. The controller **20** is operative to use maps stored in memory to control the torque contributions from the engine and the motor so as to maintain a desired relationship between the contributions of the electric motor **16** and the engine **14** towards the powering of the vehicle, and the controller is adaptive in that it is arranged to adapt said maps by altering one or more values stored therein to obtain a desired relationship.

24 Claims, 4 Drawing Sheets



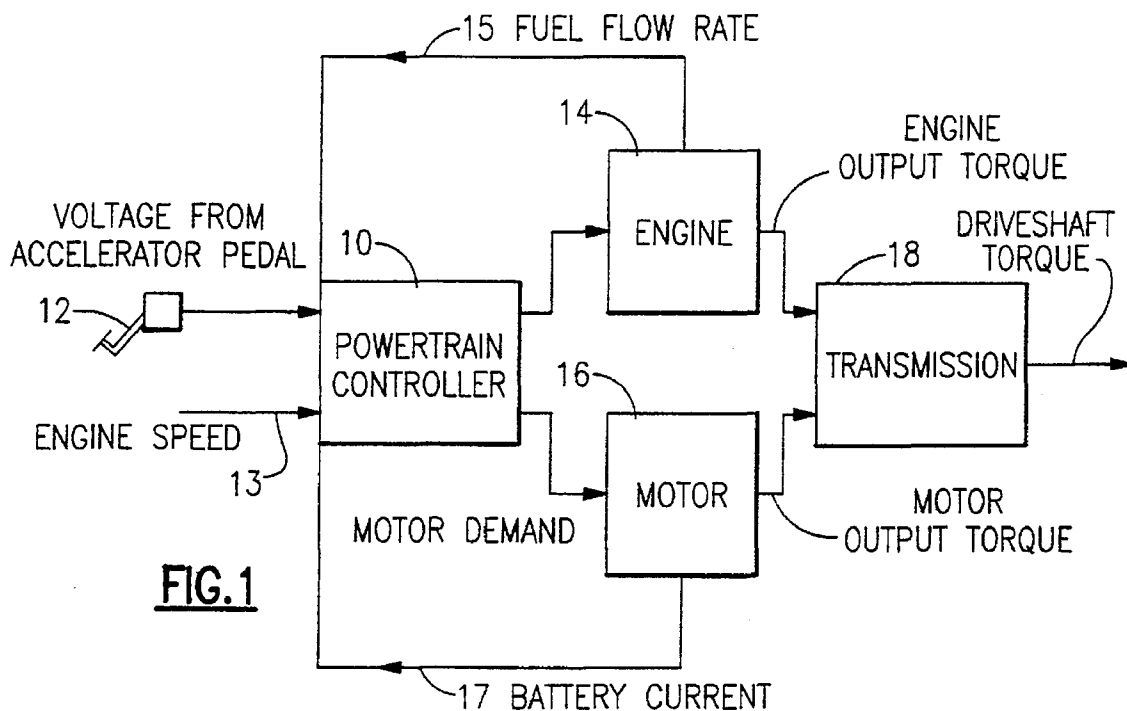


FIG. 1

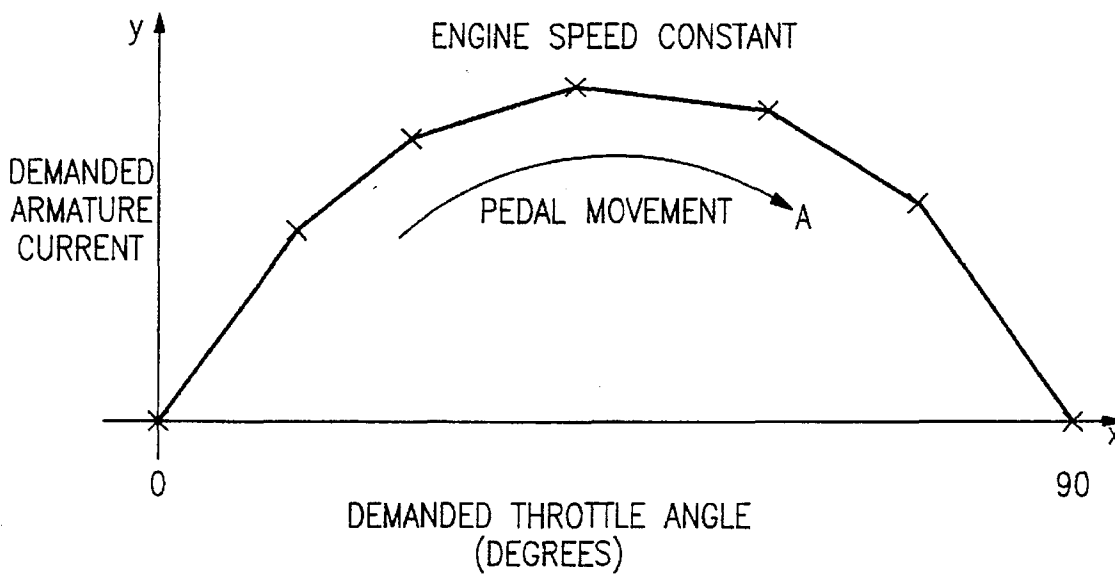


FIG. 3

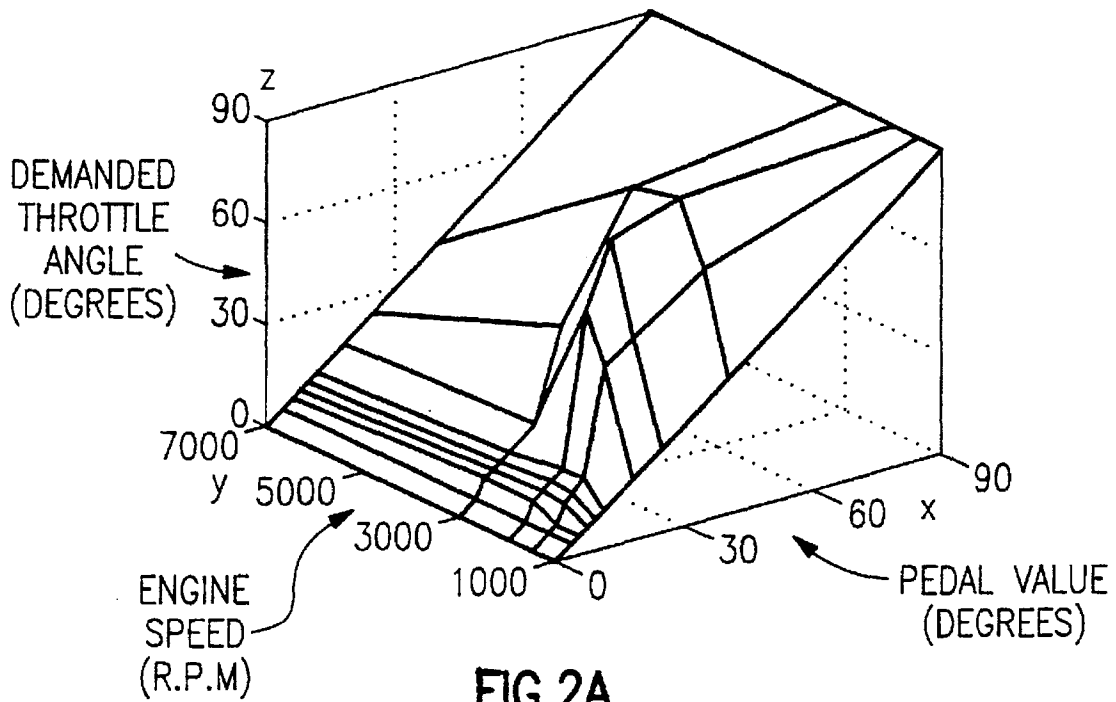


FIG.2A

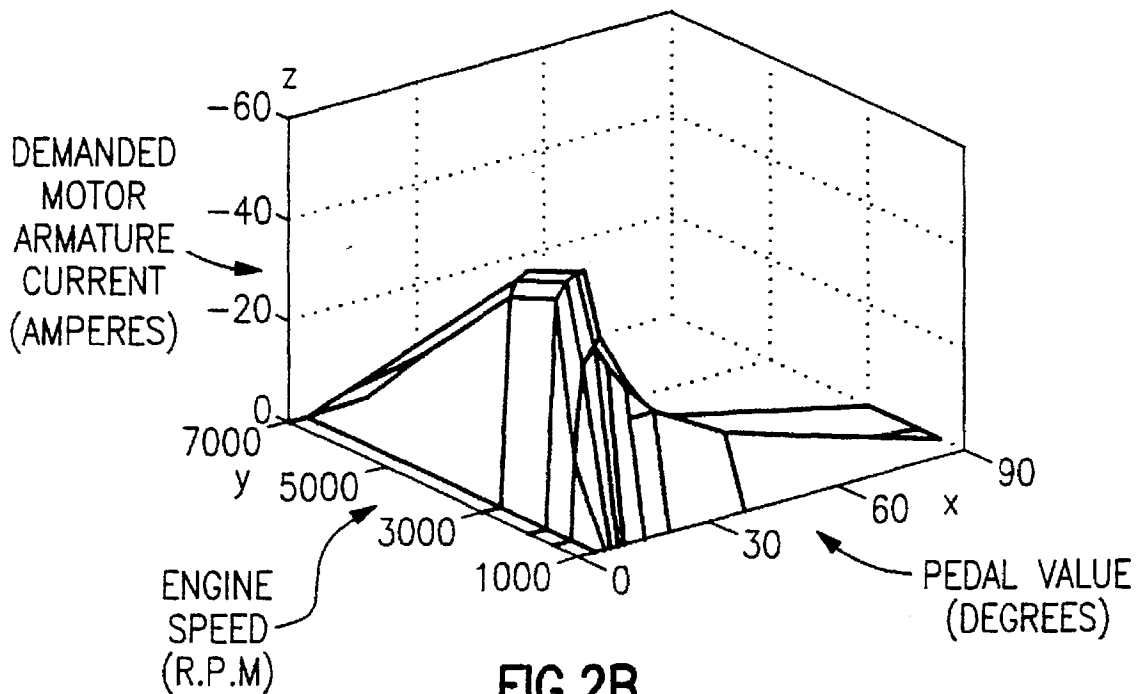


FIG.2B

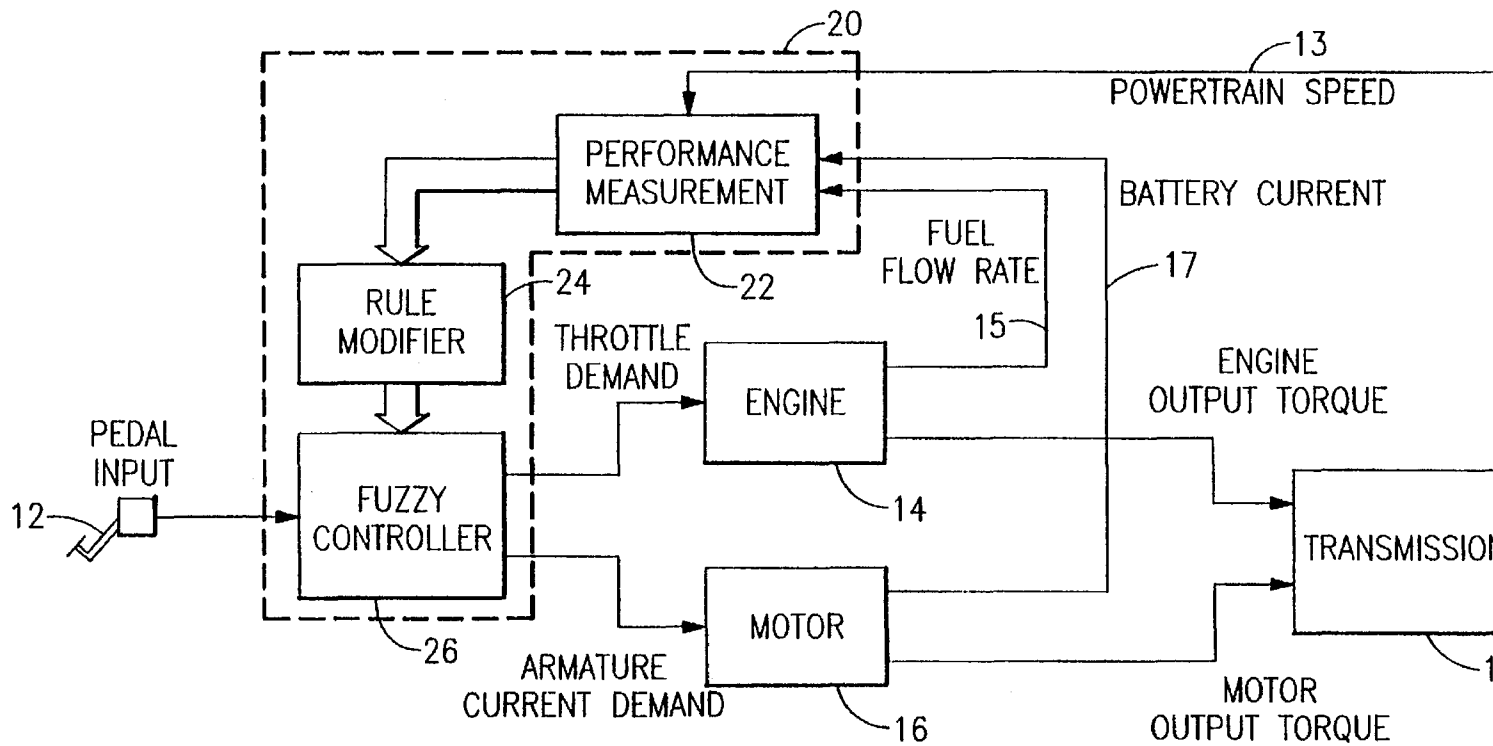
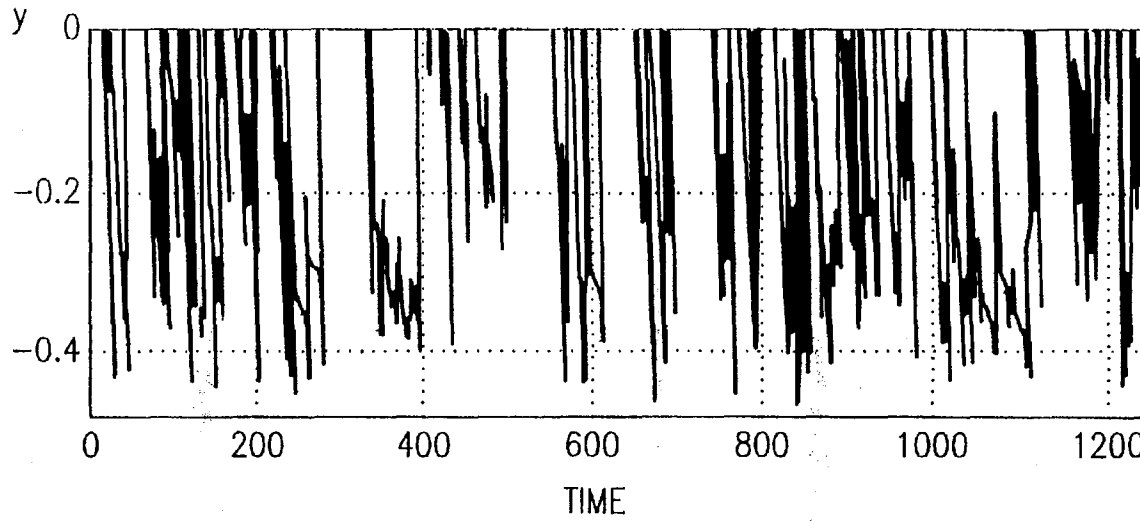


FIG.4

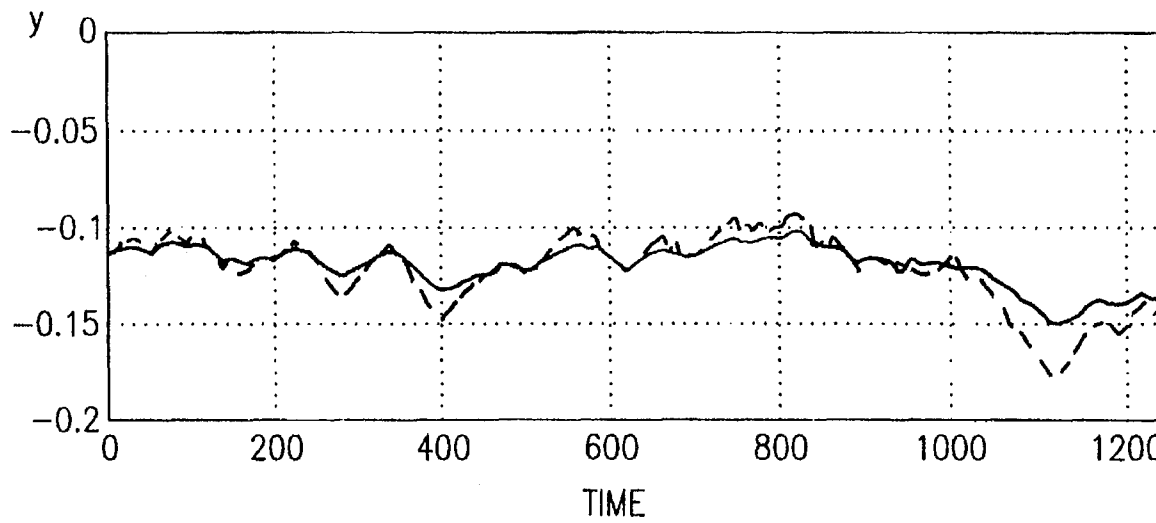
INSTANTANEOUS
PERFORMANCE
MEASURE

FIG.5A



MOVING
AVERAGE OF
INSTANTANEOUS
PERFORMANCE
MEASURE

FIG.5B



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