United States Patent [19]

Suga

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[54] **APPARATUS FOR TESTING POWER PERFORMANCE OF ELECTRIC MOTOR FOR ELECTRIC VEHICLE**

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[30] **Foreign Application Priority Data**

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[51] **Int. Cl.^{6}** **G01L 3/00**

[52] **U.S. Cl.** **73/862.18**; 73/862.17; 73/117

[58] **Field of Search** 73/862.18, 862.17, 73/862.09, 117, 117.1; 364/551.01

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Primary Examiner—Richard Chilcot
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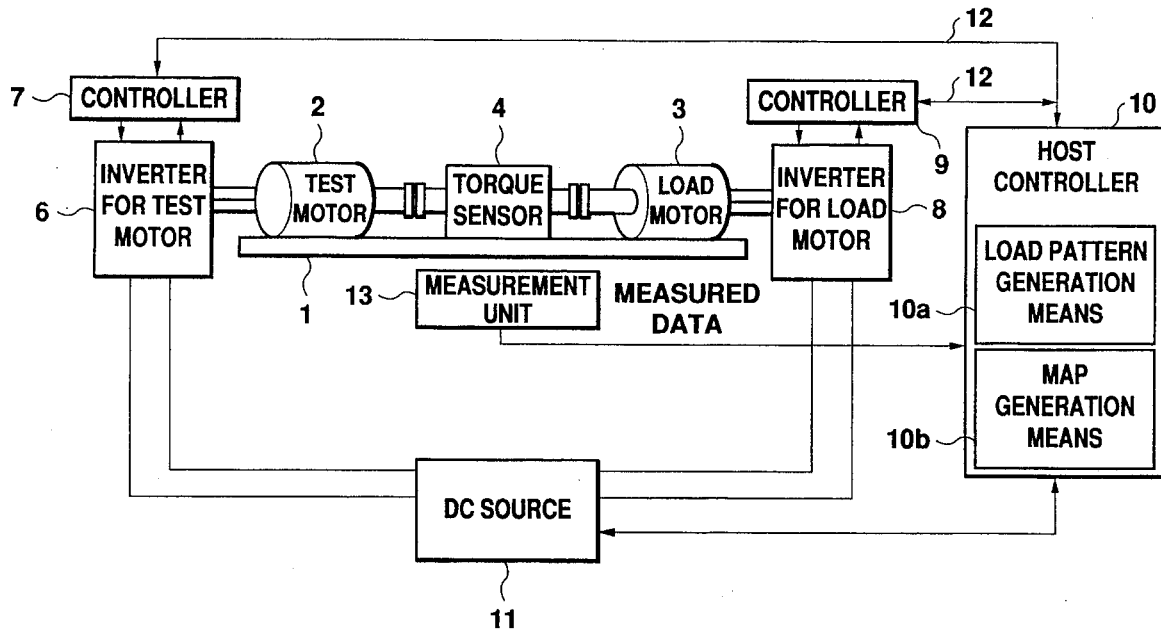*Attorney, Agent, or Firm*—Oblon, Spivak, McClelland, Maier & Neustadt, P.C.

[57] **ABSTRACT**

A test motor **2** is controlled by a controller **7** in accordance with travelling pattern (i.e. vehicle speed) data of an electric vehicle. A load motor **3** is controlled by a controller **9** in accordance with a load pattern. A host controller **10** generates the load pattern based on the vehicle speed pattern and factors of the electric vehicle, and synchronously outputs the vehicle speed pattern and the load pattern to the controller **7** and **9**, respectively. Data detected by a torque sensor **4** or other measuring element are input to the host controller **10** to generate a two-dimensional map showing the relationship between the motor efficiency and motor output, or between the motor efficiency and revolution speed. Since the load pattern is generated and input in advance without using feedback control, test results can be obtained with high accuracy.

6 Claims, 10 Drawing Sheets

Fig. 1

START

| INPUT VEHICLE SPEED DATA BASED ON TRAVELLING PATTERN DATA | S101 |

| CALUCULATE ACCELERATION DATA FROM MOMENT TO MOMENT | S102 |

| CALUCULATE TORQUE FOR LOAD MOTOR BASED ON RUNNING RESISTANCE, TIRE DIAMETER, VEHICLE WEIGHT, GEAR RATIO, ETC. | S103 |

| GENERATE REVOLUTION SPEED PATTERN FOR TEST MOTOR | S104 |

| GENERATE TORQUE PATTERN FOR LOAD MOTOR SYNCHRONIZED WITH THE REVOLUTION SPEED PATTERN FOR TEST MOTOR | S105 |

| SYNCHRONOUSLY CONTROL BOTH TEST MOTOR AND LOAD MOTOR | S106 |

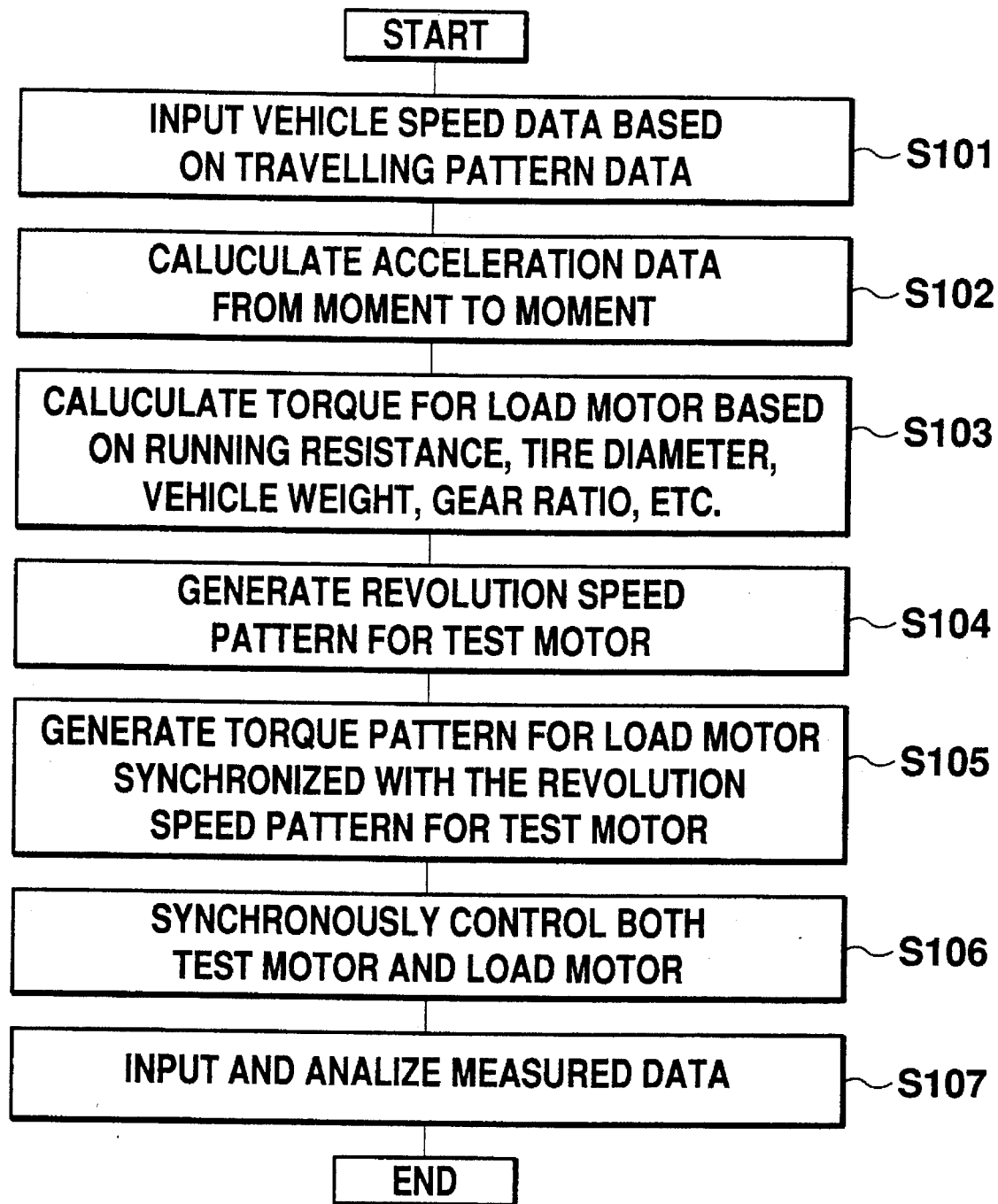| INPUT AND ANALIZE MEASURED DATA | S107 |

END

Fig. 2

Fig. 3

Fig. 4

DOCKET ALARM
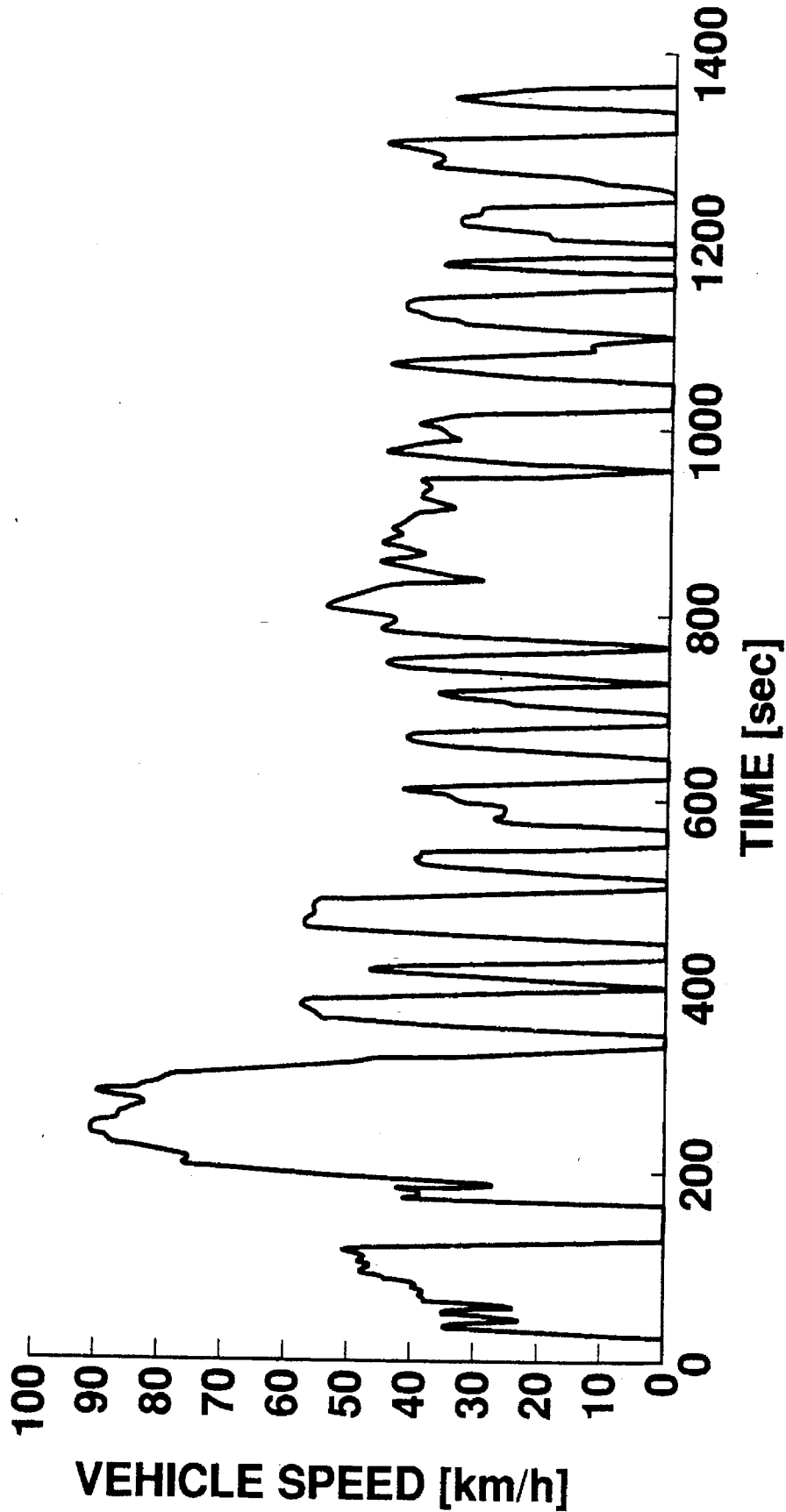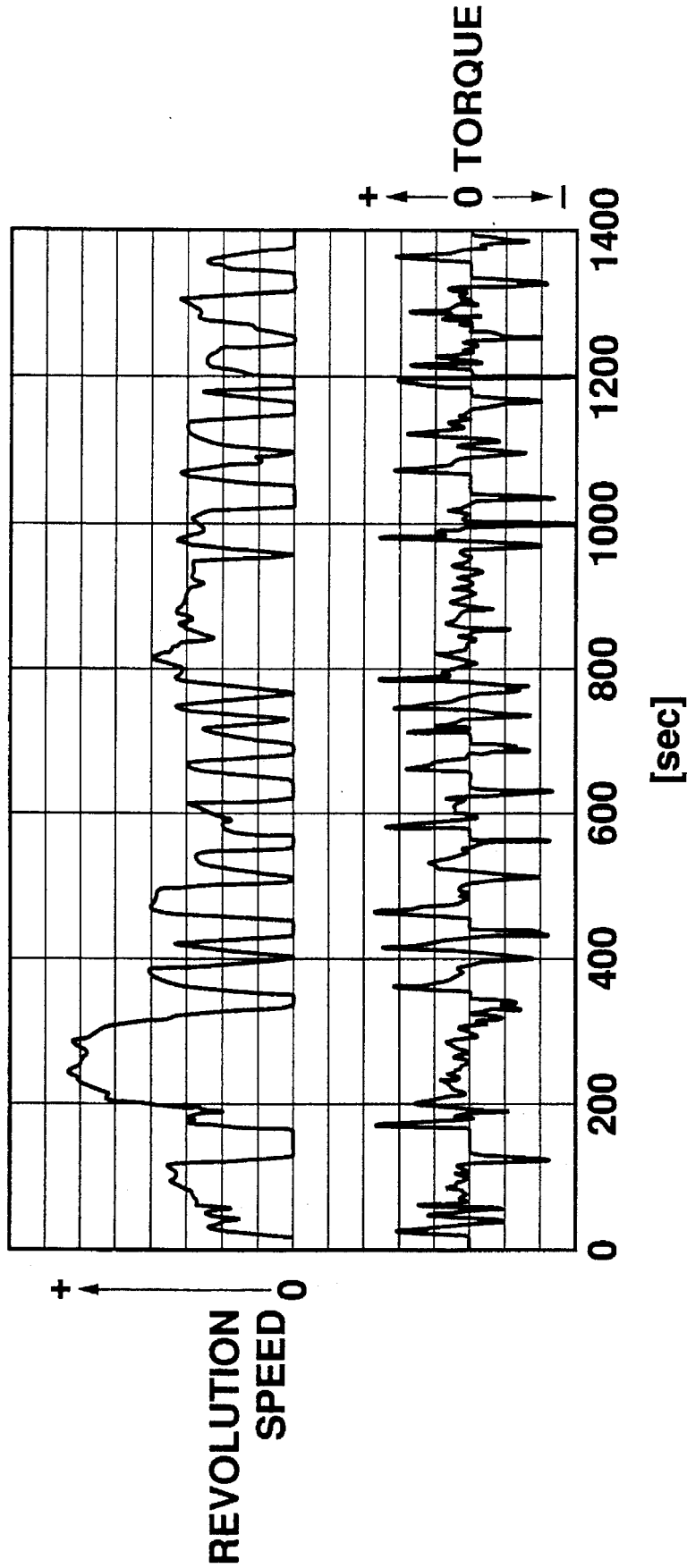
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