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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Patent Application of   :

Severinsky et al   :   Examiner: N/A

Serial No.: 10/382,577   :   Group Art Unit: 3616

Filed: March 7, 2003   :   Att. Dkt.: PAICE201.DIV

For: Hybrid Vehicles

Hon. Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

As discussed in the Preliminary Amendment dated August 11, 2003 in this application, applicants have performed additional searching for new patents possibly relevant to the subject matter of this application as amended, and other new patents and other documents have also come recently to applicants' attention. A number of patents and other documents thus located are listed on attached PTO-1449 forms, and are discussed below. Citation of a document herein should not be considered an admission that the disclosure thereof is indeed relevant to the invention defined by the claims, nor that the document thus made of record is indeed effective as prior art under 35 USC '102.

A correction is also desirable with respect to a statement made in an earlier Information Disclosure Statement (IDS). In the IDS filed on November 18, 1999 in grandparent application Ser. No. 09/264,817, which has been incorporated by reference to form part of the IDS for the present application, Taniguchi patent 5,846,155 was described as showing "a parallel hybrid of generally conventional topology, that is, comprising an ICE [internal combustion engine] and an electric motor connected to

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the road wheels of the vehicle through a continuously-variable
transmission, but discloses a relatively sophisticated
operational scheme, wherein the source of propulsive torque
varies in accordance with the road load and the state of charge
of the battery bank ('SOC')".

This could be misunderstood to suggest that Taniguchi
suggests control of the hybrid vehicle's operating mode
responsive to the road load and SOC. In fact, Taniguchi does not
teach selection of the source of vehicle propulsive torque, much
less the operating mode, in accordance with the road load and
SOC, but in response to vehicle speed and accelerator pedal
position. See col. 8, lines 13 - 40:

Moreover, the individual engagement means, as shown in FIGS.
4 and 5, are operated as shown in the operation diagram of FIG.
6. *In the power split mode, the split drive unit 9 functions at
the start and at a low/medium speed.* The output of the engine 2
is transmitted to the ring gear R through the input clutch Ci. On
the other hand, the rotor 5a of the motor-generator 5 is
connected to the sun gear S to charge the engine output partially
or to output it as the motor so that the composed force is output
from the carrier CR to the CVT input shaft 7a.
On the other hand, *the parallel hybrid mode functions in a
medium/high speed range*. In this state, the rotary elements of
the planetary gear 6 are rotated together, and the output of the
engine 2 is fed as it is to the CVT input shaft 7a. At the same
time, the motor-generator 5 is connected to the input shaft 7a to
assist the engine output or to charge the output partially.
*The motor mode is in the state in which the accelerator
opening is small and in which the revolution number is small,
e.g., in which the engine 2 need not be used, such as in a
traffic jam. Then, the motor-generator 5 is used as the motor to
drive the vehicle*. In this state, the input clutch Ci is released
to disconnect the engine 2 and the CVT input shaft 7a, and the
direct-coupled clutch Cd is applied to output the revolution of
the motor-generator rotor 5a directly to the input shaft 7a.
*On the other hand, the engine mode functions during high
speed cruising, and the vehicle is driven exclusively by the
engine output without any participation of the motor-generator 5.*
[Emphasis added].

The Examiner is respectfully requested to review the
Taniguchi reference and confirm that in fact the road load is not
used to determine the operating mode; in fact, Taniguchi controls
the operation of the CVT, and the source of propulsive torque, in
response to the vehicle speed and accelerator pedal position.

Turning now to new documents made of record hereby:

Abe 6,281,660 shows a battery charger for an electric
vehicle.

Adler et al patent 5,515,937 claims a series hybrid where
the power required by traction motors is drawn from either the
batteries or directly from the engine/generator unit directly,
depending on evaluation of their respective efficiencies and the
batteries' state of charge, with respect to each new demand for
power.

Barske patent 5,336,932 ties the operation of a generator
used to charge a battery to specific fuel-consumption curves
stored in ROM.

Bullock patent 6,170,587 shows a hybrid drive, all claims of
which require at least three different types of energy storage,
e.g., combustible fuel, battery, flywheel, or hydraulic
accumulator.

Fattic et al patent 5,637,987 shows a hybrid vehicle in
which an internal combustion engine and motor are coupled by
controllable friction or electrical loading devices to control
ratios.

Gray, Jr. patent 5,887,674 relates to a vehicle driven by a
"fluidic motor", that is, having a hydraulic motor driving the
wheels, in turn driven by a pump driven by an internal combustion
engine.

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Patent 4,762,191 to Hagin discloses a hybrid power train for a bus wherein multiple axles are driven via a driveshaft. Some of the dependent claims of the present application, recite connection of the combination of engine and first electric motor to a first set of wheels and connection of the second electric motor to a second set of wheels, which is quite different.

Hoshiya patent 6,315,068 shows a hybrid in which control of the torque provided by the motor is responsive to the torque provided by the engine, so that the engine can be operated at a target speed.

Ibaraki patent 5,856,709, discloses and claims a hybrid topology wherein an engine and a motor/generator are connected to different elements of a "synthesizing/distributing mechanism". A large number (nine or more) of operating modes are provided. The determination of the amount of torque required to propel the vehicle is apparently made in response to the position of the acclerator pedal; see col. 15, lines 59 - 61.

Patent 6,225,784 of Kinoshita claims a battery charge controller for a vehicle, wherein the level of charge above which further charging is permitted is varied based on the battery temperature. Patent 6,232,748 to the same inventor and assignee allows only discharge when the battery is above a specified temperature, and patent 6,204,636, again to the same inventor and assignee, controls the charging and discharge rate of the battery responsive to sensing of the "memory effect" of the battery. None of these expedients are claimed in the present application.

Four Lawrie and Lawrie et al patents, 5,993,350, 6,019,698, 5,979,257, and 6,006,620, and Reed et al 5,943,918 (et al here including Lawrie) are directed to transmissions for hybrids that combine the efficiency of manual transmissions with the convenience of automatic transmissions. Motors are used to operate the conventional "H"-pattern shifter, and a clutch, while

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the motor/generator present in a hybrid is employed to match the
speeds of input and output shafts, to ensure smooth shifting.
Finally, Reed, Jr. et al 6,332,257 claims a method of converting
a manual transmission to automated operation.

Lovatt et al patent 6,291,953 shows an "electrical drive
system", in some cases applied to a hybrid vehicle, requiring a
lock-up torque converter.

Minowa et al patent 6,142,907 (Hitachi) claims a hybrid
wherein either an engine or a motor is used to propel the
vehicle. A generator is selectively connected to the wheels
through a two-speed transmission. Patent 6,328,670 is a
continuation.

Morisawa et al 5,984,034 discloses a hybrid wherein
regenerative braking is used to oppose engine torque when idling
to keep the vehicle stopped. Morisawa et al 6,119,799 issued on
a continuation and discloses a hybrid offering control of braking
responsive to "obstruction [e.g., a car ahead] detection".
Another patent based on the same underlying document, no.
6,334,498, claims supplying power from a motor during upshifts of
an automatic transmission being driven by an engine. None of
these is a feature of the claimed invention.

Another Morisawa patent, no. 5,895,333, is limited to
packaging details for a planetary gearbox for a hybrid vehicle.
Still another Morisawa patent, no. 6,306,057, claims a complex
planetary gearbox arranged so that the internal combustion engine
is used to power the vehicle when reversing.

Nagano et al 6,344,008 discloses a hybrid wherein a
transmission is coupled between an engine and a torque
synthesizing device, which also accepts torque from a single
motor.

Nakajima et al 6,090,007 shows a control scheme for a hybrid
vehicle including a continuously variable transmission. Patent

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