UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* JAMES HENRY DEVORE, ROBERT ANTHONY SAYMAN, CHARLES E. ALLEN, JR., WINFRIED STURMER, KARL-FRITZ HEINZELMANN, LUDGER RONGE, LOREN CHRISTOPHER DREIER, RONALD PETER MUETZEL, and MUNEER ABUSAMRA

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Appeal 2008-1306
Application 10/721,647
Technology Center 3600

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Decided: August 29, 2008

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*Before* WILLIAM F. PATE, III, MURRIEL E. CRAWFORD, and MICHAEL W. O'NEILL, *Administrative Patent Judges*.

CRAWFORD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 (2002) from a final rejection of claims 1 to 4, 6, 13, and 17 to 20. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

Appellants invented a vehicle transmission system which includes a controller in communication with first and second sensors which is operable to determine the relative movement between a first rotational component and a second rotational component indicative of approximately zero torque condition (Specification 1, and 3 to 4).

Claim 1 under appeal reads as follows:

> 1. A vehicle transmission system comprising:
> an automated mechanical transmission shiftable between a first and a second gear ratio;
> a first rotational component;
> a second rotational component which rotates relative to said first component;
> a first sensor adjacent said first rotational component;
> a second sensor adjacent said second rotational component;
> a controller in communication with said first sensor and said second sensor, said controller operable to determine a relative movement between said first rotational component and said second rotational component indicative of an approximately zero torque condition to initiate a shift between said first and said second gear ratio.

The Examiner rejected claims 1 to 4, 6, 13, and 17 to 20 under 35 U.S.C. § 102(b) as being anticipated by Huber '978.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

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| Huber (Huber '978) | US 6,151,978 | Nov. 28, 2000 |
| Huber (Huber '996) | US 6,167,996 B1 | Jan. 2, 2001 |

Appellants contend that Huber '978 does not disclose a controller operable to determine a relative movement between a first rotational component and a second rotational component indicative of approximately zero torque.

## ISSUE

The issue is whether the Appellants have shown that the Examiner erred in finding that Huber '978 discloses a controller operable to determine a relative movement between a first rotational component and a second rotational component indicative of approximately zero torque.

## FINDINGS OF FACT

Appellants disclose an automatic mechanical transmission system. In discussing the prior art, the Appellants state that prior art transmission systems measure or model the absolute value of the external forces present to identify the zero torque value in terms of absolute torque at the engine and/or other power path points within a vehicle driveline (Specification 1). Appellants state that sensing the absolute torque may be relatively complicated and subject the sensing members to significant stress and thereby reduce their longevity. Therefore, to overcome these disadvantages, the Appellants determine when zero torque is achieved by measuring the relative movement between two vehicle components which are separated by a gear interface (Specification 2). Appellants disclose that two sensors 58 and 60 sense the relative movement of shafts 52 and 54 and when a controller identifies a relative movement signature indicative of zero relative

torque between shafts 52 and 54 shifting of the gear interface 56 is initiated (Specification 4). Specifically, Appellants disclose:

> Referring to Figure 2, the shift controller 46 relates a relative movement signature to a zero relative torque condition between a first shaft 52 and a second shaft 54 which have a gear interface 56 therebetween. When the torque changes from "pull" to "push" or from "push" to "pull," the gear clearance leads to relative movement of the shafts 52, 54 which indicates a zero torque condition between shafts 52 and 54.

(Specification 3-4, ¶ [23]).

Huber '978 discloses a vehicle transmission system that includes two sensors 40 and 42. Sensors 40 and 42 provide speed information about shafts 16 and 20 (col. 3, ll. 24 to 26). A controller 32 communicates with the engine control 34 to cause the engine 12 to be driven in a known manner to a speed that results in zero torque between the shafts 16 and 20 (col. 2, ll. 61 to 64). Once zero torque is achieved, the shift actuator 36 causes the shifting into the chosen gear (col. 2, l. 65 to col. 3, l. 7). Huber '978 states that the therein disclosed invention includes the method of Huber '996 (col. 3, ll. 27 to 31).

Huber '996 discloses a method for determining clutch status that includes two sensors 40 and 42. Sensors 40 and 42 provide speed information about shafts 16 and 20 (col. 3, ll. 31 to 33). Huber '996 teaches that in some transmission systems, a dedicated clutch sensor is provided to determine whether the clutch is open or closed but that the Huber '996 system simplifies the design by eliminating this dedicated clutch sensor (col.

3, ll. 19 to 25). The Huber '996 system determines the condition of the clutch by comparing the speeds of the input and output shaft (col. 3, ll. 42 to 43). Huber '996 does not determine a relative movement between the shafts 16 and 20 indicative of approximately a zero torque condition.

## ANALYSIS

We will not sustain the Examiner's rejection because we agree with the Appellants that the cited prior art does not disclose a controller which determines a relative movement between a first and second rotational component indicative of approximately zero torque. Huber '978 discloses that the controller 32 drives the engine to a speed that results in zero torque rather than comparing the relative movement of the shafts to determine when zero torque is reached. While Huber '996 does compare the speeds of two shafts, this comparison is to determine whether the clutch is open not to determine whether zero torque has been reached.

In view of the foregoing, the decision of the Examiner is reversed.

## REVERSED

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