

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 24

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte KARL-HEINZ EBELING  
and GERD KRAEMER

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Appeal No. 2003-1869  
Application 09/622,092

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HEARD: December 9, 2003

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Before COHEN, STAAB, and MCQUADE, Administrative Patent Judges.  
MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Karl-Heinz Ebeling et al. appeal from the final rejection of claims 3 through 5, all of the claims pending in the application.

THE INVENTION

The invention relates to a method for determining a motor vehicle operating variable using a mathematically invertible characteristic diagram stored in an X,Y,Z cartesian coordinate system in an electronic control unit. Representative claim 3 reads as follows:

3. A method for determining a motor vehicle operating variable to be determined as a function of a first known

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operating variable and a second known operating variable, the method comprising the acts of:

accessing a mathematically invertible characteristic diagram for motor vehicle functions stored via support points in a cartesian coordinate system in an electronic control unit, by which mathematically invertible characteristic diagram an operating variable to be determined for a first motor vehicle function is entered on a Z-axis of the cartesian coordinate system;

reverse interpolating said mathematically invertible characteristic diagram such that an operating variable allocated to the Y- or X-axis becomes an operating variable to be determined for a second motor vehicle function, said operating variable allocated to the Z-axis becoming one of the first or second known operating variables for determining the second motor vehicle function;

wherein one and the same characteristic diagram is stored in the electronic control unit for determining the operating variable for the first and second motor vehicle functions.

#### THE REJECTION

Claims 3 through 5 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,122,577 to Mergenthaler et al. (Mergenthaler).

Attention is directed to the main and reply briefs (Paper Nos. 16 and 19) and to the final rejection and answer (Paper Nos. 13 and 17) for the respective positions of the appellants and the examiner regarding the merits of this rejection.

#### DISCUSSION

Mergenthaler discloses a method for monitoring sensors in a motor vehicle wherein a reference variable used to perform a

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monitoring operation on a sensor is determined using inverse mathematical models.

Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984).

The examiner's finding that the subject matter recited in the appealed claims is anticipated by Mergenthaler rests on the following analysis:

Mergenthaler et al. recognizes that most vehicle functions are found by using other measured vehicle operating variables and through the equations relating them, the inverse mathematical models, can calculate operating variables along with directly measuring them to provide a validity test. . . . Mergenthaler et al. does not mention using characteristic diagrams, but equations relating different variables [are] equivalent to the actual diagrams since the diagram is just a map of specific values plugged into the original equation, i.e. a graph of the equation [final rejection, page 3].

In response to the appellants' position that Mergenthaler does not disclose the use of characteristic diagrams, the examiner submits that "[t]he issue in this application can be summarized as a question of whether an equation and the characteristic diagram that represents that equation are

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equivalent, and one and the same" (answer, page 3). According to the examiner:

Appellant's [sic, Appellants'] assertion that the characteristic diagram [recited in the appealed claims] and the invertible mathematical function of the prior art are separate and distinct is just not convincing. If a motor vehicle controller contains a characteristic diagram it is actually the mathematical description of the diagram, i.e. the mathematical function or equation. You can't actually store a diagram in a controller, per se, it needs to be described by mathematical terms [answer, page 5].

Arguably, the examiner's contention that characteristic diagrams of the sort recited in the appealed claims are stored in a mathematical context is, in a general sense, well taken. The examiner has not provided any evidence, however, to support the rather dubious proposition that all stored mathematical models involving three variables represent to characteristic diagrams stored in an X,Y,Z cartesian coordinate system. While Mergenthaler does disclose the use of stored inverse mathematical models to obtain a vehicle sensor reference variable which is a function of two other variables, the examiner has failed to cogently explain, and it is not apparent, how or why this reference teaches that such mathematical models embody mathematically invertible characteristic diagrams stored via support points in an X,Y,Z cartesian coordinate system and used in a reverse interpolation step as recited in independent claims

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3 and 5. Hence, the examiner's determination that the subject matter recited in these claims is anticipated by Mergenthaler cannot stand.

Accordingly, we shall not sustain the standing 35 U.S.C. § 102(e) rejection of independent claims 3 and 5, and dependent claim 4, as being anticipated by Mergenthaler.

SUMMARY

The decision of the examiner to reject claims 3 through 5 is reversed.

REVERSED

IRWIN CHARLES COHEN	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
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	)	APPEALS AND
LAWRENCE J. STAAB	)	
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JOHN P. MCQUADE	)	
Administrative Patent Judge	)	

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