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. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GERHARD F. WESSELS, SHYAM V. POTTI,
and JOSEPH THOMAS DALUM

Appeal No. 2003-1153
Application 09/349,214[1]

ON BRIEF

Before GROSS, FLEMING, and GROSS, ***Administrative Patent Judges.***

FLEMING, ***Administrative Patent Judge***.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-10.

[1] Application for patent filed on July 6, 1999.

INVENTION

Appellants' invention involves an improved method and apparatus using multiple point crash sensing and multiple sensor occupant position sensing for classifying a crash event and determining which restraint should be deployed. Appellants' Specification, page 1, line 24 to page 2, line 1.

Appellants disclose a central controller which collects crash data from multiple distributed crash sensors, either in the form of raw data or pre-characterized indications of severity, and combines severity characterization data from each of the multiple sensors to construct a characterization table or matrix for the entire system. Specification, page 2, lines 2-5. Each possible crash event classification is represented by a characterization value mask, and the various masks are sequentially applied to the system characterization table until a match is found, with a match identifying the appropriate crash event classification. The classification decision, in turn, is used to determine which, if any, of the restraint devices should be deployed based upon the crash severity. Similarly, the controller collects data from various occupant position sensors to construct a characterization table or matrix for the occupant position detection system. Each possible occupant position

sensor classification is represented by a characterization value mask, and various masks are sequentially applied to the table until a match is found, with a match identifying the appropriate occupant position status. The occupant position status, in turn, is used to determine which, if any, of the restraints may be deployed. The outputs of both the crash classification function and the occupant position are combined in a logical AND function to determine which restraints should ultimately be deployed. Specification, page 2, lines 5-20.

Appellants' system also includes a centrally located crash sensor, and the controller computes a displacement and/or velocity difference between the central crash sensor and some or all of the distributed crash sensors, and characterizes the differences to construct an intrusion table, which may be part of the characterization matrix, or a separate matrix. The intrusion classification is determined and combined with the crash classification to determine which restraints should ultimately be deployed. Specification, page 2, lines 21-27.

Claim 1 is representative of the claimed invention and is reproduced as follows:

1. In a vehicle supplemental restraint system including a plurality of remote crash sensors for providing localized crash severity measurements to a central controller, and a plurality of restraints selectively deployed by the central controller for

protection of the vehicle occupants, the improvement wherein said central controller processes the localized crash severity measurements provided by said plurality of remote crash sensors and determines which of said plurality of restraints to deploy by:

(a) storing a crash classification mask for each of a plurality of crash classifications, each such mask comprising a set of predetermined remote crash sensor values characteristic of the respective crash classification and a restraint deployment code identifying which of the restraints should be deployed for the respective crash classification;

(b) collecting crash severity measurements from the remote crash sensors in the course of a crash event, and storing such measurements in a crash characterization table;

(c) consecutively applying said crash classification masks to said crash characterization table, and in the event of a match between the predetermined values of a given crash classification mask and the sensor measurements stored in said crash characterization table, identifying a restraint deployment code from such given crash classification mask; and

(d) analyzing the identified restraint deployment code to determine which of said plurality of restraints to deploy.

REFERENCES

The references relied on by Examiner are as follows:

Iyoda	5,899,946	May 4, 1999 (filed Oct. 4, 1996)
Kincaid	5,899,949	May 4, 1999 (filed Jan. 26, 1998)
Hermann et al. (Hermann)	6,113,138	Sep. 5, 2000 (filed Dec. 9, 1997)

REJECTIONS AT ISSUE

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(e) over Hermann. Claims 3 and 4 stand rejected under 35 U.S.C. § 103(a)

over Hermann in view of Kincaid. Claims 5-10 stand rejected under 35 U.S.C. § 103(a) over Hermann in view of Kincaid and further in view of Iyoda.

Throughout our opinion, we make references to the briefs[2] and the answer for the respective details thereof.

OPINION

With full consideration being given to the subject matter on appeal, Examiner's rejections and the arguments of Appellants and Examiner, for the reasons stated ***infra***, we reverse the Examiner's rejection of claims 1 and 2 under 35 U.S.C. § 102(e) and claims 3-10 under 35 U.S.C. § 103(a).

We first turn to the 35 U.S.C. § 102(e) rejections.

Anticipation of a claim under 35 U.S.C. § 102(e) requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." ***In re Robertson***, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) citing ***Verdegaal Bros., Inc. v. Union Oil***

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[2] Appellants filed an appeal brief on September 3, 2002. We will refer to this brief as the brief. Appellants filed a reply brief on January 10, 2003. We will refer to Appellants' reply brief as the reply brief. The Examiner mailed an Office communication on April 8, 2003 stating that the reply brief has been entered.

Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The first step of an anticipation analysis is claim construction. ***Helifix Ltd. v. Blok-Lok Ltd.***, 208 F.3d 1339, 1346, 54 USPQ2d 1299, 1303 (Fed. Cir. 2000). It is well settled that claim construction includes a review of the claim language and the specification. ***See Vitronics Corp. v. Conceptronic, Inc.***, 90 F.3d 1576, 1582-83, 39 USPQ2d 1573, 1576-77 (Fed. Cir. 1996). Ordinary principles of claim construction require that "claim language be given ordinary and accustomed meaning except where a different meaning is clearly set forth in the specification or where the accustomed meaning would deprive the claim of clarity." ***Northern Telecom Ltd. v. Samsung Electronics Co.***, **Ltd.,** 215 F.3d 1281, 1287, 55 USPQ2d 1065, 1069.

We now consider the arguments presented for independent claim 1.

Appellants first argue that "there is no basis for the examiner's statement that Hermann et al. disclose storing a crash classification mask for each of a plurality of crash classifications, each such mask comprising a set of predetermined sensor values characteristic of the respective crash classification and a restraint deployment code identifying which of the restraints should be deployed." Brief at page 5, lines

14-18. Appellants further state that "there is no basis for the examiner's statement that Hermann et al. disclose collecting and storing crash severity measurements in a crash classification table." Brief at page 5, lines 20 and 21. Appellants further argue that "there is no basis for the examiner's statement that Hermann et al. disclose consecutively applying crash classification masks to the crash characterization table, and in the event of a match between a given crash classification mask and the stored sensor measurements, and identifying a restraint deployment code from the given crash classification mask and analyzing the identified restraint deployment code to determine which of said plurality of restraints to deploy." Brief at page 5, lines 23-28. Appellants compare their invention to Hermann and state at page 6 of the brief, lines 17-25:

> Hermann et al. disclose a convention ad hoc approach in which specified deployment conditions are evaluated for each restraint, while Appellants disclose a novel approach in which the sensor measurements are used to characterize the crash, and once the type of crash is determined, a set of deployment actions peculiar to that type of crash are carried out. With Hermann's approach, the evaluation unit must repeatedly check whether the deployment conditions for each of the various restraints have been met, whereas with Appellants' approach the crash classification masks are only applied to the crash characterization table until a match is found, and then the various restraints relevant to the identified type of crash are deployed.

The Examiner responds that Hermann actually discloses three different crash classifications on lines 35-48, column 7. The first classification is a head on collision where the driver's air bag and belt retractor would be activated. The second classification is a side impact where the side impact air bags and head air bags are activated. The third classification is a roll over where a roll over bar and head air bags are activated. The Examiner continues

> If the system operated as the appellant asserts, the evaluation device would go through a sequence of checking whether the driver's airbag should be operated, then check if the belt retractor should be activated, then the side airbag and so on. But from the disclosure of Hermann it is very clear that the sensors are examined to determine a type of crash, such as a roll over or front impact, and then when this type or 'class' of crash is determined, the appropriate devices are activated. Examiner's Answer at pages 3 and 4.

The Examiner concludes that "when Hermann is sampling the acceleration signals they must be put into memory in the evaluation device in order to make a comparison to the thresholds that define the types or 'classes' of crashes previously mentioned. The appellant seems to be relying on the terminology of 'characterization table,' but that is simply a space in memory to store the sensor measurements." Examiner's Answer at page 4.

We note that claim 1 requires the following steps:

(a) storing a crash classification mask for each of a plurality of crash classifications, each such mask comprising a set of predetermined remote crash sensor values characteristic of the respective crash classification and a restraint deployment code identifying which of the restraints should be deployed for the respective crash classification;

(b) collecting crash severity measurements from the remote crash sensors in the course of a crash event, and storing such measurements in a crash characterization table;

(c) consecutively applying said crash classification masks to said crash characterization table, and in the event of a match between the predetermined values of a given crash classification mask and the sensor measurements stored in said crash characterization table, identifying a restraint deployment code from such given crash classification mask; and

(d) analyzing the identified restraint deployment code to determine which of said plurality of restraints to deploy.

We find that Hermann does not expressly teach Appellants' claimed steps. Our reviewing court states: "[I]f the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is 'inherent' in its disclosure." ***In re Robertson, supra***, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 citing ***Continental Can Co. v. Monsanto Co***., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). Therefore, the question presented to us is whether Hermann inherently discloses each and every step in claim 1. We note that step (a) of Appellants' claim 1 requires the limitation

"a crash classification mask" and "a restraint deployment code." Therefore, our first step is to determine the meaning of the terms "crash classification mask” and "restraint deployment code."

Upon review of Appellants' application in entirety, we find that Appellants do not provide a special meaning for the term "mask." Therefore, the term "mask" in the claim is accorded its ordinary and customary meaning. We rely on the attached definition of the term "mask" in ***Computer Dictionary, Microsoft Press, Second Edition 1994***, for its ordinary meaning:

> A binary value used to selectively screen out or let through certain bits in a data value. Masking is performed by using a logical operator (AND, OR, XOR, NOT) to combine the mask and the data value. For example, the mask 00111111, when used with the AND operator, removes (mask off) the two uppermost bits in a data value but does not affect the rest of the value. This is shown in the figure, which uses the data value 11010101. See *also* logic operator, mask bit.
>
> 11010101 Data value
> AND 00111111 Mask
> 00010101 Resulting value
>
> *Mask*
> *An example of a masking operation using the logical operator AND*

Returning to Appellants' specification, at page 5, Appellants disclose:

> [T]he present invention is directed to a control

> methodology by which the central controller analyzes the crash data developed by the CAS and the satellite acceleration sensors 24-35, and the occupant position data developed by the occupant sensors 36-41, for purposes of determining which, if any, of the restraints 12, 14, 16, 18, 19, 20 should be deployed. In general, this is achieved according to this invention by using the sensor data to construct characterization tables for the vehicle, and by applying various masks to the tables for the purpose of classifying the crash event and restraint status, and deciding whether one or more of the restraints 12, 14, 16, 18, 19, 20 should be deployed based on the determined classification status. Three tables are described: a crash classification table based on sensed crash severity, an intrusion table based on sensed intrusion in a crash event, and an occupant classification table based on occupant sensor data. In a preferred embodiment, the classifications determined from the crash classification and intrusion tables are combined in a logical OR function, and the result is combined with a restraint status determined from the occupant classification table in a logical AND function to determine which restraints should be deployed.

Thus, Appellants' crash classification mask is a unique binary number which is used in a logical operation to combine with the sensor data to arrive at a restraint deployment code.

Returning to Hermann, we note that Hermann teaches "all of the acceleration signals or signals derived from them are evaluated in the evaluation device, for example by being compared with a threshold value or processed algorithmically. When the threshold is exceeded or a triggering criterion is fulfilled during the algorithmic processing, the respective protection device is triggered." See Hermann, column 7, lines 50-56. In

other words, Hermann's central controller 3 processes the signals provided by the sensors by comparing them with a predetermined value below which the protection device cannot be triggered. We find that Hermann teaches three different crash classifications and a threshold value with which the acceleration signals or signals derived from the sensors is compared. Thus, when Hermann is sampling the acceleration signals, the signals must be put into memory in the evaluation device in order to make a comparison with the thresholds that define the types or "classes" of crashes previously mentioned. However, we fail to find that the claimed features "crash classification *mask* for each of the crash classifications" and the "restraint deployment *code* identifying which of the restraints should be deployed" are necessarily present in the things described by Hermann, and that it would be so recognized by persons of ordinary skill. In fact, Hermann is totally silent about the classification masks and restraint deployment codes. Hermann only teaches the signals and the comparison of the signals with the threshold value. The portions of column 7, lines 35-48 that the Examiner relies on for rejecting claim 1 merely address the problem of identifying which of the restraints should be deployed by comparison of the signals with the threshold value. Hermann's control device does not

concern the crash classification mask used in a logical operation to combine with the sensor data to arrive at a restraint deployment code. Simply put, Hermann's approach to solving the problem of which restraint(s) should be deployed is different from Appellants' approach.

The Examiner apparently relies on inherency in maintaining that Hermann teaches the crash classification masks and restraint deployment codes. See page 2 of the final Office action on May 7, 2002. "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." ***In re Robertson, supra,*** 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-1951 citing ***Continental Can Co. v. Monsanto Co***., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." ***In re Robertson, supra,*** 169 F.3d 743, 745, 49 USPQ2d 1949, 1951.

We fail to find that the Examiner has established that Hermann's control device must employ "crash classification mask" used in a logical operation to combine with the sensor data to

arrive at a restraint deployment code as recited in steps a-d of claim 1. Therefore, we will not sustain the Examiner's rejection of claim 1.

With respect to claim 2, we note that claim 2 recites the above limitations "crash classification mask" and "restraint deployment code" due to its dependency on claim 1. Accordingly, we will not sustain the Examiner's rejection of claim 2 for the same reasons as above.

We now address the rejection of claims 3 and 4 under 35 U.S.C. § 103(a) as being obvious by Hermann in view of Kincaid.

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a ***prima facie*** case of obviousness. ***In re Oetiker***, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). See also ***In are Piasecki***, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The Examiner can satisfy this burden by showing that some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art suggests the claimed subject matter. ***In re Fine***, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Only if this initial burden is met, does the burden of coming

forward with evidence or argument shift to Appellants. ***Oetiker***, 977 F.2d at 1445, 24 USPQ2d at 1444. See also **Piasecki,** 745 F.2d at 1472, 223 USPQ at 788. An obviousness analysis commences with a review and consideration of all pertinent evidence and arguments. "In reviewing the [E]xaminer's decision on appeal, the Board must necessarily weigh all of the evidence and argument." ***In re Oetiker***, 977 F.2d at 1445, 24 USPQ2d at 1444. "[T]he board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." ***In re Lee***, 277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002).

We note that claims 3 and 4 recite limitations "crash classification mask" and "restraint deployment code" discussed above due to their dependency. We further note that claim 3 recites additional limitations "an occupant classification mask" and "restraint status code" in steps (a), (c), and (d).

We note that Kincaid teaches "[T]he predetermined criteria include correct occupant position, collision verification or safing, and collision severity" in column 2, lines 37-39. However, we fail to find that Kincaid provides the missing descriptive matter "crash classification mask" and "restraint

deployment code" in claim 1. Therefore, a combination of Hermann and Kincaid still does not provide the missing piece "crash classification mask" used in a logical operation to combine with the sensor data to arrive at "a restraint deployment code." Without an objective teaching or suggestion of the crash classification mask and restraint deployment code in the prior art, the Examiner cannot satisfy the initial burden of establishing a ***prima facie*** case of obviousness. Therefore, we will not sustain the Examiner's rejection of claims 3 and 4 as obvious over Hermann in view of Kincaid.

Finally, we consider now the rejection of claims 5-10 under 35 U.S.C. § 103(a) as being obvious by Hermann and Kincaid and further in view of Iyoda.

We note that claim 5 recites the limitations "crash classification mask" and "restraint deployment code" discussed above due to their dependency. We further note that claim 5 recites additional limitations "an intrusion classification mask" and "an intrusion deployment code" in steps (b) - (d).

We find that Iyoda also does not provide the missing descriptive matter "crash classification mask" used in a logical operation to combine with the sensor data to arrive at "a restraint deployment code" in claim 1. Instead, Iyoda provides

for a method of computing of an intrusion indication for each of the remote crash sensors. Iyoda is similar to Hermann because Iyoda also teaches a method including "the steps of: (a) determining an amount of deformation of the vehicle based on a state of said vehicle, which crashes into the collision object; and (b) activating the passive restraint when the amount of deformation determined in the step (a) exceeds a specified threshold value." See Iyoda, col. 4, lines 31-40. Therefore, a combination of Hermann, Kincaid, and Iyoda does not provide the mentioned missing piece "crash classification mask" used in a logical operation to combine with the sensor data to arrive at "a restraint deployment code." Without an objective teaching or suggestion of the crash classification mask and restraint deployment code in the prior art, the Examiner cannot satisfy the initial burden of establishing a ***prima facie*** case of obviousness. Therefore, we will not sustain the Examiner's rejections of claims 5-10 as obvious over Hermann in view of Kincaid and further in view of Iyoda.

SUMMARY

In view of the foregoing discussion, we have not sustained the rejections of claims 1 and 2 under 35 U.S.C. § 102(e) and claims 3-10 under 35 U.S.C. § 103(a).

REVERSED

MICHAEL R. FLEMING Administrative Patent Judge	)	
JOSEPH F. RUGGIERO Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)	

MRF/lbg

JIMMY L. FUNKE
DELPHI LEGAL STAFF
MAIL CODE A 107
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