

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK A. ROSS

Appeal No. 95-4350
Application No. 08/212,082¹

ON BRIEF

Before THOMAS, HAIRSTON and BARRETT, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 19.

The disclosed invention relates to a sensing device for use in a passenger restraint system in a vehicle that comprises a low frequency sensing circuit for sensing low frequency signals generated as a result of deceleration of the vehicle during a crash event, a high frequency sensing circuit for sensing high

¹ Application for patent filed March 14, 1994.

Appeal No. 95-4350
Application No. 08/212,082

frequency signals generated as a result of deformation of structural members of the vehicle during the crash event, and an analyzing means for combining and analyzing the signals from the two sensing circuits so as to provide an indication of whether to activate a passenger restraint device.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A sensing device for use in a passenger restraint system that restrains a passenger within a vehicle during a crash event, said sensing device comprising:

a low frequency sensing circuit providing a signal of the crash event, said low frequency sensing circuit being responsive to low frequency signals generated as a result of deceleration of the vehicle during the crash event;

a high frequency sensing circuit providing a signal of the crash event, said high frequency sensing circuit being responsive to high frequency signals generated as a result of deformation of structural members of the vehicle during the crash event;

analyzing means for combining and analyzing the signal from the low frequency sensing circuit and the signal from the high frequency sensing circuit so as to provide an indication of whether to activate a passenger restraint device.

The references relied on by the examiner are:

Feldmaier	4,842,301	June 27, 1989
Diller	4,994,972	Feb. 19, 1991
Blackburn et al. (Blackburn)	5,036,467	July 30, 1991

Claims 1 through 4, 6 through 12, 14 through 16, 18 and 19 stand rejected under 35 U.S.C. § 103 as being unpatentable over Diller in view of Feldmaier.

Appeal No. 95-4350
Application No. 08/212,082

Claims 5, 13 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Diller in view of Feldmaier and Blackburn.

Reference is made to the brief and the answer for the respective positions of the appellant and the examiner.

OPINION

According to the examiner (Answer, pages 3 and 4), Diller discloses (Figure 1) a single sensor 14 that senses deceleration of a vehicle during a crash event, and a plurality of crash evaluation circuits EV-1, EV-2 and EV-3 for analyzing the deceleration signal, but "does not explicitly disclose a high frequency sensing circuit for sensing [a] high frequency signal due to the deformation of components associated with the vehicle during the crash event." The examiner concludes (Answer, page 4) that:

Feldmaier suggests a crash sensing and occupant restraint activating apparatus which has a welded unit body structure including a side rail extending back from the front of the vehicle on each side, an acoustic sensor generating a signal in response to acoustic vibrations due to metal deformation in a frontal crash (see at least the Abstract). The suggestion of the Feldmaier patent in at least the Abstract would have motivated one of ordinary skill in the art to combine the teaching of Feldmaier with the system of Diller by

using the acoustic sensor as taught in Feldmaier² for sensing high frequency signals due to the deformation of components associated with the vehicle during the crash event and providing a high frequency signal indicative of the deformation in order to combine a low frequency accelerometer and a high frequency sensor to provide a sensing system capable of giving early indication of crash severity with addition of reliable indication of crash direction and initial velocity change. Thus, because of the motivation set forth above, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Feldmaier and Diller.

Even if we assume for the sake of argument that it would have been obvious to one of ordinary skill in the art "to combine a low frequency accelerometer³ [Diller] and a high frequency sensor [Feldmaier] to provide a sensing system capable of giving early indication of crash severity with addition of reliable indication of crash direction and initial velocity change," we find that the examiner still has not come to grips with the "analyzing means" (claims 1 through 13) or the "microprocessor" (claims 14 through 19) for combining and analyzing the low frequency and the high frequency signals. For this reason, we

² Feldmaier makes clear (column 3, lines 38 through 43 and column 4, lines 11 through 18) that low frequency signals should be excluded because they interfere with the sensor readings of high frequency sensors.

³ Blackburn discloses (Figure 1) an A/D converter 102 for converting a low frequency accelerometer signal into a digital signal for processing by the microcomputer 104.

Appeal No. 95-4350
Application No. 08/212,082

agree with appellant (Brief, page 17) that "[t]he Examiner's statement that more than one sensor type gives a more accurate determination of whether the passenger restraint should be activated is knowledge gained from Appellant's specification, and therefore is impermissible hindsight." Thus, the obviousness rejection of claims 1 through 19 is reversed.

DECISION

The decision of the examiner rejecting claims 1 through 19 under 35 U.S.C. § 103 is reversed.

REVERSED

JAMES D. THOMAS)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
KENNETH W. HAIRSTON)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
LEE E. BARRETT)	
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Appeal No. 95-4350
Application No. 08/212,082

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JENINE GILLIS

Appeal No. 95-4350
Serial No. 08/212,082

Judge HAIRSTON

Judge THOMAS

Judge BARRETT

Received: 01 Jul 98

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DECISION: REVERSED

Send Reference(s): Yes No
or Translation(s)

Panel Change: Yes No

3-Person Conf. Yes No

Heard: Yes No

Remanded: Yes No

Index Sheet-2901 Rejection(s): _____

Acts 2: _____

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