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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte MASAAKI UCHIYAMA, TARO UYAMA,
YOSHIKO MATSUMURA and NOBUYUKI ICHIMARU

_____

Appeal No. 1997-2478
Application 08/361,554[1]

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ON BRIEF

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Before FRANKFORT, STAAB and GONZALES, Administrative Patent Judges.

STAAB, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's final rejection of claims 18-39, all the claims in the application.

Appellants' invention pertains to a suspension control

[1] Application for patent filed December 22, 1994.

apparatus for an automotive vehicle, and in particular to a suspension control apparatus that utilizes road roughness in determining how to adjust the vehicle's suspension. In appellants' apparatus, a processing means judges the roughness of the road surface based on an upward and downward acceleration signal of the vehicle. Claim 18, a copy of which is found in an appendix to appellants' brief, is illustrative of the appealed subject matter.[2]

The references of record relied upon by the examiner in support of a rejection under 35 U.S.C. § 103 are:

Kawagoe et al (Kawagoe)	4,827,416	May 2, 1989
Akatsu et al (Akatsu)	4,872,701	Oct. 10, 1989
Hiwatashi et al (Hiwatashi)	4,934,731	Jun. 19, 1990

Claims 18-39 are rejected under 35 U.S.C. § 103 as being

[2] Each of the independent claims on appeal calls for processing means for "detecting" an upward absolute velocity and a downward absolute velocity. It is clear from a reading of appellants' specification, however, that upward and downward absolute velocity are not directed detected, but rather derived from a signal from acceleration sensor 5 that is representative of upward and downward acceleration, which signal is integrated by integrator circuit 41 to provide the upward and downward absolute velocity called for in the claims. Accordingly, we understand each of the independent claims on appeal as calling for processing means for *deriving* an upward absolute velocity and a downward absolute velocity from a signal representative of upward and downward acceleration. This claim ambiguity is worthy of correction in the event of further prosecution.

unpatentable over Akatsu in view of Kawagoe and further in view of Hiwatashi.

The last paragraph of each of independent claims 18, 23 and 26 requires that the processing means judge roughness of the road based on an evaluation of an upward and downward acceleration signal. The last paragraph of each of independent claims 29, 34 and 37 requires that the processing means judge roughness of the road based on an evaluation of an upward and downward velocity obtained by integrating upward and downward acceleration. The examiner concedes (answer, page 4) that Akatsu does not disclose such processing means. Nevertheless, the examiner has taken the position that "from the teachings of Akatsu et al., Kawagoe et al., and Hiwatashi et al., one of ordinary skill in the art at the time the invention was made would have been recognized [sic, would have recognized] the use of vertical acceleration for judging the road condition where the vehicle is traveling, thereby reducing the use of an extra device for determining the road

roughness" (answer, sentence spanning pages 7 and 8).

We do not agree.

Akatsu, the examiner's primary reference, discloses a suspension control system for an automotive vehicle designed to effectively reduce pitching motion. To this end, a variable

hydraulic damper is provided at each wheel. With reference to Figure 6, and considering the control of the left front wheel, which is exemplary of each vehicle wheel, a vertical acceleration sensor 114_{FL} generates a signal G_{ZFL} that is integrated by integrator circuit 122_{FL} and then passed through fixed-gain amplifier 124_{FL} to provide a signal S_{ZFL}. This signal is modified in a manner described below to derive a signal S_{FL} that controls the pressure control valve 18 of the hydraulic damper 15A of the wheel.

Akatsu's control system also includes gain-controlled amplifiers 116 and 120 whose levels of gain are set, in part, in accordance with signals derived from sensors 110 and 112,

respectively. Sensor 110 is a lateral acceleration sensor for monitoring *lateral* acceleration exerted on the vehicle, and sensor 112 is a longitudinal acceleration sensor for monitoring *longitudinal* acceleration exerted on the vehicle (column 9, lines 36-43). The gain of gain-controlled amplifiers 116 and 120 is also dependent on a signal derived from sensor 108 for providing a signal representative of vehicle speed. The signals S_X and S_Y provided by amplifiers 120 and 116, respectively, are added to or

subtracted from the signals S_{ZFL}-S_{ZRR} provided by the respective fixed-gain amplifiers 124_{FL}-124_{RR} in a manner described at column 10, line 29 through column 11, line 60. The end result is a set of coordinated signals S_{FL}-S_{RR} that effectively control vehicle pitch.

From the above, it is apparent that not only does Akatsu fail to teach a processing means for judging road roughness based on an evaluation of upward and downward acceleration, or upward and downward velocity derived therefrom, it also fails

to teach using road roughness for any purpose whatsoever.

Turning to Kawagoe, this reference pertains to a control system for suppressing nose-dive of an automotive vehicle by changing the suspension system between “hard” and “soft” suspension characteristics in accordance with road surface conditions. In particular, the control system monitors a preselected suspension control parameter (e.g., steering angle displacement or engine acceleration/deceleration) and switches the characteristic of the suspension system when the preselected parameter surpasses a threshold value (column 5, lines 4-16;

column 7, lines 45-61). In order to make the system more precisely suited to vehicle driving conditions, the control system also monitors road roughness or smoothness and adjusts said threshold value based on road conditions. A determination of road roughness or smoothness is made based on a measurement of the *vehicle height* relative to the road

surface (column 5, line 66 through column 6, line 9). According to Kawagoe, “by adjusting the control characteristics depending upon the road surface conditions, erroneous detection of suspension control criteria requiring harder suspension characteristics can be satisfactorily and successfully avoided” (column 4, lines 43-47).

Therefore, while Kawagoe certainly teaches the use of road roughness or smoothness to adjust the threshold value of the preselected control parameter to make the control system more precisely suited to vehicle driving conditions, it does not teach, suggest or infer that road roughness or smoothness should be determined in the way now called for in the claims, namely, by evaluating upward and downward acceleration, or upward and downward velocity derived therefrom.

As to Hiwatashi, this reference is directed to a control means for controlling an automotive vehicle suspension system comprising air suspension units 1 connected between the

vehicle body and each of the vehicle wheels. With respect to Figure 2, the control means includes an acceleration sensor 5 and a displacement sensor 4 for each wheel. Acceleration sensor 5 generates an acceleration signal representative of vertical acceleration of the vehicle and displacement sensor 4 generates a displacement signal representative of the relative vertical displacement between the wheel and the vehicle body. In addition, the signal representative of the relative vertical displacement is directed to differentiator circuit 4a to provide a value representative of vertical velocity. These three signals are individually processed by dead band filters F1, F2 and F3 and gain control circuits G1, G2 and G3. The resulting signals Q1, Q2 and Q3 are added in adder circuit 14 to derive a signal Q representing the net amount of air to be introduced into or withdrawn from the associated suspension unit 1. Of particular interest to Hiwatashi is the provision of variable width dead band filters at F1, F2 and F3, whose width is set in accordance

with a vehicle speed sensor signal sensed by sensor 16. According to Hiwatashi, the use of variable width dead band filters set in accordance with vehicle speed optimizes suspension control. See column 2, lines 11-29.

Accordingly, while Hiwatashi teaches the use of an upward and downward acceleration and upward and downward velocity as control parameters for controlling the condition of the suspension system, it does not teach the use of road roughness or smoothness to adjust the threshold value of the preselected control parameter, much less the use of upward and downward acceleration, or upward and downward velocity derived therefrom, to judge road roughness.

To summarize:

(1) Akatsu does not teach using road roughness for any purpose whatsoever,

(2) Kawagoe teaches using road roughness or smoothness to adjust the threshold value of the control parameter, but does not teach or suggest determining road roughness in the way called for in the claims on appeal, and

(3) Hiwatashi uses upward and downward acceleration and upward and downward velocity as control parameters, but does not
teach the use of these parameters, or any other parameters, to determine road roughness.

While we recognize that the claimed control apparatus and the control systems of Akatsu, Kawagoe and Hiwatashi have certain elements and operating principles in common, we are unable to agree with the examiner that these common elements and operating principles would have suggested a processing means that determines road conditions in the manner called for in the last paragraph of each of the independent claims on appeal. As our court of review indicated in *In re Fritch*, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992), it is impermissible to use the claimed invention as an instruction manual or "template" to piece together isolated disclosures and teachings of the prior art so that the claimed invention is rendered obvious. In our opinion, this is exactly what the examiner has done in arriving at the subject matter of the

appealed claims. We are therefore unable to agree with the examiner that one of ordinary skill in the art would have arrived at the subject matter of the appealed claims based on the teachings of Akatsu, Kawagoe and Hiwatashi.

The decision of the examiner is reversed.

REVERSED

CHARLES E. FRANKFORT Administrative Patent Judge	)	
LAWRENCE J. STAAB Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOHN F. GONZALES Administrative Patent Judge	)	

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