UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte RALF OESTREICHER et al.

Appeal No. 2006-0022
Application No. 09/810,943

ON BRIEF

Before FRANKFORT, NASE, and CRAWFORD, Administrative Patent Judges.
NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 36 to 55, 61 to 64 and 69 to 72. Claims 56 and 57 have been allowed. Claims 58 to 60, 65 to 68 and 73, which are all of the other claims pending in this application, have been objected to as depending from a non-allowed claim.

We AFFIRM-IN-PART.

BACKGROUND

The appellants' invention relates to vehicle safety restraint systems and more particularly to a method and system for controlling the reaction of safety restraint systems in response to weight and position of a vehicle occupant (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellants' brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Harris	3,661,220	May 9, 1972
Gagnon	5,810,392	Sep. 22, 1998
Mazur et al. (Mazur)	5,906,393	May 25, 1999
Research Disclosure	39916	July 1997

Claims 36 to 55 stand rejected under 35 U.S.C. § 103 as being unpatentable over Research Disclosure in view of Gagnon and Harris.

Claims 61 to 64 and 69 to 72 stand rejected under 35 U.S.C. § 103 as being unpatentable over Research Disclosure in view of Gagnon, Harris and Mazur.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the answer

(mailed July 13, 2004) for the examiner's complete reasoning in support of the rejections, and to the brief (filed May 7, 2004) and reply brief (filed September 13, 2004) for the appellants' arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

Most if not all inventions arise from a combination of old elements. See In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. See id. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See id. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the appellants. See In re Dance, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). In addition, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. See WMS Gaming, Inc. v. International Game Tech., 184 F.3d 1339, 1355, 51 USPQ2d 1385, 1397 (Fed. Cir. 1999). The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981) (and cases cited therein).

With this as background, we analyze the prior art applied by the examiner in the rejection of the claims on appeal.

Research Disclosure

Research Disclosure is directed to weight sensing for an occupant resistant system utilizing load cell technologies. Vehicle occupant weight information can be used to tailor the deployment characteristics of an airbag or other restraint device. The weight information can be used to switch airbags completely off for empty seats or

occupants where deployment of the airbag would be inappropriate (e.g., a rear facing infant seat).

As shown in Figure 1, four load cells are attached between the seat frame and the seat track. The output of the four load cells are processed by a weight sensing module (see Figure 2) to obtain a total weight reading for the occupant of the seat. In addition, the load cell outputs can be used to calculate the center of mass for the occupant of the seat, which information is useful for determining the position of the occupant on the seat. Lastly, Research Disclosure teaches (last sentence) that "this design can be used with various load cell designs."

Gagnon

Gagnon's invention relates to an apparatus for sensing the presence and weight of an occupant of a vehicle seat. In the background of the invention section of the patent, Gagnon teaches that:

> Many vehicles are equipped with safety devices such as airbags, seat belt pretensioners and so forth to protect persons occupying various seats in the vehicle. If a seat is unoccupied or is occupied by a person of a particular size, it may not be necessary to activate a safety device associated with that seat. Furthermore, if a seat is occupied by a person of a particular size the manner in which a safety device is employed may be varied accordingly. One indicator of the size of a seat occupant is his or her weight. In the case of an infant, the combined weight of the infant and an infant safety seat is useful as an indicator of occupant size.

In the first paragraph of the summary of the invention , Gagnon teaches that:

> There is provided in accordance with one aspect of the present invention a seat occupant sensing system comprising: (a) a seat pan; (b) a rigid member disposed vertically above said seat pan in a spaced apart vertically juxtaposed relationship with said seat pan, said rigid member underlying a portion of a seat cushion; and (c) at least two sensors interposed between the rigid member and the seat pan such that all of the force transferred from the rigid member to the seat pan is transferred via said sensors which sense the magnitude of the force transferred therethrough and send signals to a device which processes said signals to determine the weight that said portion of the seat cushion is bearing.

As shown in Figure 3, the seat occupant sensing system has a seat pan 18 with a rigid member 19 disposed vertically above the seat pan in a spaced apart vertically juxtaposed relationship with the seat pan. Referring next to Figures 7A and 7B there are shown perspective views of the top side and bottom side, respectively, of a rigid member or frame 19 with sensors 20 mounted thereon. In the embodiment illustrated in Figures 3, 7A and 7B, the rigid member 19 is a frame having a generally rectangular shape and a sensor 20 located in the vicinity of each corner of the frame.

As shown in Figures 5, 6 and 8, the rigid member 19 underlies a portion of the seat cushion 10 and may be made of any suitable material such as steel or aluminum. The sensors 20 are interposed between the rigid member 19, or frame, and the seat pan 18 such that all of the force transferred from the rigid member to the seat pan is transferred via the sensors. The sensors sense the magnitude of the force transferred

therethrough and send signals to a device (not shown) which processes the signals to determine the weight that the portion of the seat cushion which the rigid member 19 underlies is bearing. Gagnon teaches (column 5, lines 51-53) that "[e]ach sensor 20 may be for example a strain gauge, a load cell or a variable resistance pressure sensor."

Figure 11 shows a schematic view of the occupant sensing apparatus wherein a signal from each sensor is passed through an amplifier to a device, such as a microprocessor which processes the signal, or signals, to determine the weight that the rigid seat pan member is bearing. Algorithms to translate a signal to a weight are well known and are used for example in electronic bathroom scales. The algorithm must take into account the weight of the seat cushion and the rigid seat pan member in determining the weight of the seat occupant. Of course if the weight of the seat occupant is determined to be zero, the seat is unoccupied. Gagnon goes on to teach (column 7, lines 1-20) that:

> There is a need in the field of inflatable vehicle occupant restraints, such as airbags, to determine if the occupant of the front passenger seat of a motor vehicle equipped with a front passenger side airbag is an infant in an infant seat or a small child weighing less than a preselected amount. The device, such as a microprocessor which determines the weight that the rigid seat pan is bearing is preferably a controller which controls the activation of at least one safety device for an occupant of the seat based upon said weight. The controller controls, for example, the activation of an inflatable vehicle occupant restraint or a seat belt pretensioner. Additionally the controller may control the manner in which an

> activated safety device operates, for example controlling the speed at which an airbag is inflated or the amount of seat belt slack which is to be taken up by a pretensioner. Thus, the seat occupant sensing system disclosed herein may determine the presence or absence of an object or person on a seat cushion, and the weight of the person or object on a seat cushion and based upon those determinations may activate one or more safety devices, and/or the manner in which an activated safety device should operate.

Harris

Harris' invention is directed to a weighing device for logging trucks or the like. Figure 1 shows a logging truck 10 provided with four separate sensors or strain gage assemblies 20, 21, 22 and 23. As shown in Figure 6, the output electrical leads from the four strain gage assemblies are connected to a sensitivity and zero adjust circuit 25 whose output leads to an indicator 26 which can provide to the driver an indication of the total weight on all four strain gage assemblies.

Each strain gage assembly is mounted between a bolster assembly 30 and the main frame 32. Each strain gage assembly includes a bolster plate 30A, a support plate 33A and a resilient block 40 positioned between the bolster plate 30A and the support plate 33A. The bolster plate 30A is connected to the bolster assembly 30 and the support plate 33A is connected to the main frame 32. The resilient material allows the block 40 "to flex freely so that the beams thereof always bend in the same way with applied force, thereby improving system accuracy." Strain gages 60, 61, 62 and 63 are

located on the block as illustrated in Figures 3 and 4 and are connected together as shown in Figure 7.

Mazur

Mazur's invention is directed to a vehicle occupant restraint system and is particularly directed to control of variable aspects within the system. The system includes an actuatable occupant restraint device. First sensor means senses a first occupant condition at a sense rate and provides a sensed signal indicative of the sensed occupant condition. Means samples the sensed signal at a sample rate. Determination means makes determinations regarding control of the restraint device at a determination rate using the signal samples. Second sensor means senses a second occupant condition. Variation means varies at least one of the signal rate, the sample rate, and the determination rate in response to the second sensed occupant condition.

One of the occupant characteristics used in the vehicle occupant restraint system is the weight of an occupant 12 upon a seat 14, which is determined by a weight sensor 56 (Figure 1). In one example, the weight sensor 56 includes a strain gauge. The resistivity of the strain gauge varies dependent upon the amount of force applied to the strain gauge because of the occupant's weight on the seat. In the illustrated embodiment, the weight sensor 56 is preferably located within a bottom seat portion of

the seat 14. The weight sensor 56 provides a signal 66 indicative of the weight of the occupant 12 to a controller 26.

As shown in Figure 2, the controller 26 includes a weight signal sampler function 72 which samples the signal 66 from the weight sensor 56. Each time the signal 66 is sampled, a weight indicative value of the signal 66 is "read." Preferably, the weight signal sampler is an internal analog-to-digital ("A/D") converter having a controllable sample or conversion rate. Sampling of the signal 66 by the weight signal sampler function 72 occurs at a fixed sample rate. The sample rates for the signal 66 are preset to be relatively low. Accordingly, the process of sensing occupant weight to control other rates within the system is not itself a burden on the processing system of controller 26.

Claims 36 to 40

We sustain the rejection of claims 36 to 40 under 35 U.S.C. § 103.

Claim 36 reads as follows:

> Apparatus comprising:
> a vehicle seat frame;
> a plurality of deflectable mounting structures which together bear the entire weight of said frame;

> a plurality of vehicle occupant weight sensor assemblies, each of said weight sensor assemblies comprising a strain gauge mounted on a corresponding one of said deflectable mounting structures; and
>
> a vehicle occupant protection device responsive to said weight sensor assemblies.

In the rejection of claim 36 (answer, pp. 3-4), the examiner (1) ascertained that Research Disclosure does not explicitly disclose the use of weight sensor assemblies in the form of a strain gauge and a plurality of deflectable mounting structures which together bear the entire weight of the frame; and (2) concluded that in view of Gagnon's teachings it would have been obvious to one of ordinary skill in the art at the time the invention was made to use strain gauges as the vehicle occupant weight sensor assemblies and that in view of Harris' teachings it would have been further obvious to have implemented the use of strain gauges mounted on a deflectable mounting structure for sensing more accuracy occupant weight.

The appellants argue (brief, pp. 8-15; reply brief, pp. 3-5) that the rejection of claim 36 is improper because (1) Harris is non-analogous art; and (2) there clearly is no suggestion or motivation to modify the Research Disclosure in the manner set forth by the examiner so as to arrive at the claimed invention. We find the appellants argument unpersuasive for the reasons which follow.

First, Harris is analogous art. Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. In re Clay, 966 F.2d 656, 658-59, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992). See also In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986); In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979). A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it logically would have commended itself to an inventor's attention in considering his problem because of the matter with which it deals. In re Clay, 966 F.2d at 659, 23 USPQ2d at 1061. Harris is clearly not from the same field of endeavor (i.e., a method and system for controlling the reaction of safety restraint system in a vehicle in response to weight and position of a vehicle occupant). However, in the present instance, we are informed by the appellants' originally filed specification that the invention is particularly directed to a method and system for more accurately determining weight. Harris teaches a weighing device that improves system accuracy and thus falls into category (2) of the analogous art test, and logically would have commended itself to an artisan's attention in considering the appellants' problem. Thus, we conclude that Harris is analogous art.

Second, there is clearly ample suggestion or motivation in the applied prior art to have modified Research Disclosure so as to arrive at the claimed invention. In that regard, the motivation to modify Research Disclosure comes from the following teachings of the applied prior art: (1) Research Disclosure teaching (last sentence) that "this design can be used with various load cell designs;" (2) Gagnon teaching (column 5, lines 51-53) that the weight sensors may be either a strain gauge, a load cell or a variable resistance pressure sensor; and (3) Harris teaching that each of his load cells include a strain gage assembly having a resilient block that flexes freely, thereby improving system accuracy. From these teachings, we conclude that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have modified the four load cells of Research Disclosure as suggested and taught by Harris' load cells having strain gauges mounted on a deflectable resilient block to thereby improve accuracy. In our view, such a modification of Research Disclosure clearly arrives at the subject matter of claim 36. While the appellants have pointed out the deficiencies of each applied reference on an individual basis, the appellants have not particularly pointed out how claim 36 distinguishes over the above-noted modification of Research Disclosure. It is well-established that nonobviousness cannot be established by attacking the references individually when the rejection is predicated upon a combination of prior art disclosures. See In re Merck & Co. Inc., 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986).

For the reasons set forth above, the decision of the examiner to reject claim 36 under 35 U.S.C. § 103 is affirmed.

The appellants have grouped claims 36 to 40 as standing or falling together.[1] Thereby, claims 37 to 40 fall with claim 36. Thus, it follows that the decision of the examiner to reject claims 37 to 40 under 35 U.S.C. § 103 is also affirmed.

Claims 41 to 44, 46, 47, 49, 50, 54 and 55

We sustain the rejection of claims 41 to 44, 46, 47, 49, 50, 54 and 55 under 35 U.S.C. § 103 for the reasons set forth above with respect to claim 36.

Claim 45

We sustain the rejection of claim 45 under 35 U.S.C. § 103.

Appellants argue (brief, pp. 17-18; reply brief, p. 6) that the applied prior art does not teach or suggest that each of the sensors includes a support portion mounted to a

[1] See page 7 of the appellants' brief.

vehicle seat track member such that the deflectable portion is positioned between the mounting and support portions. We do not agree. Clearly, when Research Disclosure is modified in the manner set forth above with respect to claim 36, each of the sensors would include a support portion mounted to a vehicle seat track member such that the deflectable portion is positioned between the mounting and support portions.

For the reasons set forth above, the decision of the examiner to reject claim 45 under 35 U.S.C. § 103 is affirmed.

Claims 48 and 51

We sustain the rejection of claims 48 and 51 under 35 U.S.C. § 103.

Appellants argue (brief, pp. 18-19; reply brief, p. 6) that the applied prior art does not teach or suggest that the safety restraint device is not deployed if seat occupant weight is below a predetermined weight. We do not agree. Research Disclosure teaches that the weight information can be used to switch airbags completely off for empty seats or occupants where deployment of the airbag would be inappropriate (e.g., a rear facing infant seat). In addition, Gagnon teaches that if a seat is unoccupied or is occupied by a person of a particular size, it may not be necessary to activate a safety device associated with that seat and that in the case of an infant, the combined weight

of the infant and an infant safety seat is useful as an indicator of occupant size. From these teachings we conclude that it would have been further obvious at the time the invention was made to a person having ordinary skill in the art to not deploy the modified Research Disclosure safety restraint device if seat occupant weight is below a predetermined weight.

For the reasons set forth above, the decision of the examiner to reject claims 48 and 51 under 35 U.S.C. § 103 is affirmed.

Claim 52

We sustain the rejection of claim 52 under 35 U.S.C. § 103.

Appellants argue (brief, pp. 19-20) that the applied prior art does not teach or suggest the step of determining a center of gravity of the seat occupant from the signals. We do not agree. Clearly, such is taught when Research Disclosure is modified in the manner set forth above with respect to claim 36. In that regard, Research Disclosure teaches that the load cell outputs can be used to calculate the center of mass for the occupant of the seat, which information is useful for determining the position of the occupant on the seat.

For the reasons set forth above, the decision of the examiner to reject claim 52 under 35 U.S.C. § 103 is affirmed.

Claim 53

We sustain the rejection of claim 53 under 35 U.S.C. § 103.

Appellants argue (brief, p. 20) that the applied prior art does not teach or suggest the step of controlling a safety restraint device based on the seat occupant weight and center of gravity. We do not agree for the reasons set forth above with respect to claim 52.

For the reasons set forth above, the decision of the examiner to reject claim 53 under 35 U.S.C. § 103 is affirmed.

Claims 61 and 69

We sustain the rejection of claims 61 and 69 under 35 U.S.C. § 103.

Appellants argue (brief, pp. 21-22) that the applied prior art does not teach or suggest the controller calculating weight of an occupant by sampling the response of each of the sensors to a weight applied to the vehicle seat structure. We do not agree. In our view, when Research Disclosure is modified in the manner set forth above with

respect to claim 36, the controller must inherently calculate the weight of an occupant by sampling the response of each of the sensors to a weight applied to the vehicle seat structure. In addition, the above-noted teachings of Mazur would have made it obvious at the time the invention was made to a person having ordinary skill in the art to have further modified Research Disclosure so that the controller calculates the weight of an occupant by sampling the response of each of the sensors to a weight applied to the vehicle seat structure.

For the reasons set forth above, the decision of the examiner to reject claims 61 and 69 under 35 U.S.C. § 103 is affirmed.

Claims 62, 64 and 70

We will not sustain the rejection of claims 62, 64 and 70.

Appellants argue (brief, pp. 22-23) that the applied prior art does not teach or suggest a controller which samples the sensors approximately every thirty milliseconds. We agree. The examiner's reliance (answer, p. 5) on Mazur as suggesting this limitation is misplaced. The sample rates taught by Mazur in column 7 are not sample rates for the weight sensor 56 but sample rates for other sensors. Mazur teaches that

the sample rates for the weight sensor is preset to be relatively low. In our view, this teaching is not suggestive of approximately every thirty milliseconds.

For the reasons set forth above, the decision of the examiner to reject claims 62, 64 and 70 under 35 U.S.C. § 103 is reversed.

Claims 63, 71 and 72

We will not sustain the rejection of claims 63, 71 and 72.

Appellants argue (brief, pp. 23-24) that the applied prior art does not teach or suggest a controller which determines the weight by computing a biased average of each of the sensors over time and summing all of the biased averages together to obtain a total weight. We agree. The applied prior art does not teach or suggest computing a **biased** average of each of the sensors as set forth in these claims.

For the reasons set forth above, the decision of the examiner to reject claims 63, 71 and 72 under 35 U.S.C. § 103 is reversed.

CONCLUSION

To summarize, the decision of the examiner to reject claims 36 to 55, 61 to 64 and 69 to 72 under 35 U.S.C. § 103 is affirmed with respect to claims 36 to 55, 61 and 69 and reversed with respect to claims 62 to 64 and 70 to 72.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

CHARLES E. FRANKFORT Administrative Patent Judge	)
JEFFREY V. NASE Administrative Patent Judge	) BOARD OF PATENT) APPEALS) AND) INTERFERENCES
MURRIEL E. CRAWFORD Administrative Patent Judge	)

SIEMENS CORPORATION
INTELLECTUAL PROPERTY LAW DEPARTMENT
170 WOOD AVENUE SOUTH
ISELIN, NJ 08830

JVN/