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**Datasheet for the decision
of 25 March 2014**

Case Number: T 0734/10 - 3.4.02

Application Number: 07075727.3

Publication Number: 1897744

IPC: G01B7/00, G08B21/06, B60K28/06

Language of the proceedings: EN

Title of invention:
Method and apparatus for detecting the head pose of a vehicle occupant

Applicant:
Delphi Technologies, Inc.

Headword:

Relevant legal provisions:
EPC Art. 84, 123(2)

Keyword:

Decisions cited:

Catchword:



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Case Number: T 0734/10 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 25 March 2014

Appellant: Delphi Technologies, Inc.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted on 28 December 2009 refusing European patent application No. 07075727.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: A. Klein
Members: F. Maaswinkel
L. Bühler

Summary of Facts and Submissions

- I. This appeal is against the decision of the examining division dispatched on 28 December 2009, refusing the European patent application 07075727.3.
- II. The appellant (applicant) lodged an appeal on 11 February 2010 and paid the appeal fee on the same day. The statement setting out the grounds of appeal was received on 24 March 2010.
- III. The examining division found that claim 4 had been amended in a manner contrary to the provisions of Article 123(2) EPC. Furthermore the amendments of the description pages 2 and 4 introduced subject-matter extending beyond the contents of the patent application as originally filed (Article 123(2) EPC).
- IV. With the grounds of appeal the appellant filed new pages 2 and 4, replacing the previous pages, in order to overcome the objections against these. The previous set of claims was maintained, arguing why the objection against claim 4 was unfounded. The appellant pointed out that no objections to a lack of patentability had been raised and that it was presumed that the requirements of novelty and inventive step were met.

The appellant requested the grant of a patent with these application documents, furthermore oral proceedings.

- V. In a communication pursuant to Article 100(2) EPC the board expressed its provisional opinion to concur with the arguments of the appellant. However, since the examining division had not addressed the issue of patentability of the claims on file, the board

envisaged to remit the case to the first instance for resuming the examining procedure.

VI. In its response dated 28 November 2013 the appellant agreed with the remittance to the first instance for further prosecution.

VII. The appeal procedure is based on the following documents:

Claims: 1 - 17, as filed with the letter of 10 November 2009;

Description:

pages 3 and 5 to 7, as originally filed;

pages 1 and 8, as filed with the letter of 29 June 2009;

page 1a ("insert Page 1, line 32"), as filed with the letter of 10 November 2009; according to this letter, the last paragraph starting at "Summary of Invention" should be deleted;

pages 2 and 4, filed with the letter of 24 March 2010;

Drawings: sheets 1/8 to 8/8, as originally filed.

VIII. The wording of independent claim 1 reads as follows:

" Apparatus for detecting a pose of a human subject's head (24), comprising:

 a symmetrically arranged array of electrodes including at least first and second electrodes (16, 18) disposed in relation to the subject's head (24);

 an AC voltage source (40);

 switch means (46a-46d) for selectively coupling said AC voltage source (40) to said first electrode (16) to generate an electric field (26) that interacts with the subject's head (24); and

means (46a-46d, 60, 64, 66) for determining a capacitive coupling between said first and second electrodes (16, 18) while said AC voltage source (40) is coupled to said first electrode (16), and detecting the pose of the subject's head (24) based on the determined capacitive coupling; characterized by

means for setting (66) an amplitude of said AC voltage source (40) to a default value;

means for determining (66) a proximity of the subject's head (24) to said electrodes (16, 18); and

means for adjusting (66) the amplitude of said AC voltage source (40) based on the determined proximity".

The wording of independent claim 10 reads as follows:

" A method of detecting a pose of a human subject's head (24), comprising the steps of:

providing a symmetrically arranged array of electrodes in relation to the subject's head (24), including at least first and second electrodes (16, 18);

selectively coupling an AC voltage source (40) to said first electrode (16) to generate an electric field that interacts with the subject's head (24);

determining a capacitive coupling (48a-48d, 60, 64) between said first and second electrodes (16, 18) while said AC voltage source (40) is coupled to said first electrode (16); and

detecting a pose of the subject's head (24) based on the determined capacitive coupling (66); characterized by the steps of

setting (66) an amplitude of said AC voltage source (40) to a default value;

determining (66) a proximity of the subject's head (24) to said electrodes (16, 18); and

adjusting (66) the amplitude of said AC voltage source (40) based on the determined proximity ".

Claims 2 to 9 and claims 11 to 17 are dependent claims.

IX. The appellant's arguments may be summarised as follows:

The decision under appeal is based on objections under Article 123(2) EPC against current claim 4, and against amendments made to pages 2 and 4 of the description.

With respect to claim 4, the examining division's objection is that the failure to insert the word "circular" with the word "array" broadens the scope of protection beyond the content of the application as originally filed. Paragraph [0003] of the original application mentions a "symmetrical array of sensor electrodes". Claims 1 and 10 of the original application mention "a symmetrically arranged array of electrodes". Claims 2, 5, 8 and 9 of the original application mention "said array of electrodes". Claim 4 of the original application mentions "said symmetrically arranged array of electrodes". Claim 5 of the original application mentions "said array of electrodes". There is no mention, in any of the above examples, of the array having to be "circular". As a consequence, it is clear that the original application is not restricted to a circular array. The objection that the scope has been broadened has no factual basis, especially when it is noted that original claim 4 provides the basis for present claim 4, and that original claim 4 was not restricted to "circular". Furthermore, it would be virtually impossible to have a circular array for the alternative embodiment described

in paragraph [0024]. Secondly, a circular array is not essential for putting the invention into effect.

With respect to the objections against the amendments of pages 2 and 4, these are based on the allegation that these amendments do not exclude a parallel arrangement. However, while acknowledging the original unclear wording, the appellant cannot understand how the original wording could exclude a parallel arrangement. New pages 2 and 4 are submitted to replace pages 2 and 4 presently on file. These pages have been amended such that the wording corresponds to the wording used in claim 4. It is noted that in the decision under appeal no objections to this wording have been raised, and so it is presumed that the amendments made to pages 2 and 4 are acceptable.

Finally it is noted that the appellant submitted a new set of claims with its response dated 10 November 2009, and that (aside from the Art. 123(2) EPC objection to claim 4) the examining division has made no comment on the patentability issue for the current claims. It can only be presumed, therefore, that the claims satisfy the requirements for novelty and inventive step.

Reasons for the Decision

1. The appeal is admissible.
2. Amendments
 - 2.1 Claim 4
 - 2.1.1 Claim 4 of the patent application as originally filed included the expression "The apparatus of claim 1, where said symmetrically arranged array of electrodes

includes multiple pairs of electrodes (A/E, B/F, C/G, D/H) disposed along varying axes of rotation (30-36) with respect to a forward-facing direction of said subject (10)..." (*emphasis by the board*). In the European Search Opinion annexed to the European Search Report it was objected under Article 84 EPC that these axes were obviously no axes of rotation, since, for reasons of symmetry, the only possible axis of rotation was the axis perpendicular to the plane of drawing (*Figure 2a*) and through the point of intersection of axes 30, 32, 34 and 36. In a proposal for the independent claims overcoming this objection the following wording of the objected feature was suggested by the examining division: "... said symmetrically arranged array of electrodes (16, 18) is a circular array of electrodes which includes multiple pairs of opposed first and second electrodes (A/E, B/F, C/G, D/H) disposed on axes with different angular offsets with respect to a forward facing direction of said subject (10)" (*emphasis by the board*). According to the examining division, this wording was based on the description at page 4, line 30 to page 5, line 1; page 6, lines 26 to 32; and Figures 2a and 3.

2.1.2 With its reply the applicant filed independent claims amended substantially along the lines suggested by the examiner but with the exception of the restriction to a circular array.

2.1.3 In the next official communication these claims were found objectionable under Article 123(2) EPC. In a subsequent reply the applicant filed new claims in which the independent claims 1 and 10 were based on combinations of the original independent claims 1 and 10 and the features of original claim 17, against which no objections had been brought forward. Claim 4 was

amended in order to overcome the objection under Article 84 EPC with respect to the term "axes of rotation", but without the restriction to a circular array. As the next official action the patent application was refused, arguing that the features added to this claim 4 were only disclosed in combination with a "generally circular array" of electrodes and that suppressing this feature would broaden the scope of protection beyond the content of the application as originally filed, thereby infringing the requirements of Article 123(2) EPC.

2.1.4 The wording of claim 4 objected to in the decision reads: "The apparatus of claim 1, where said symmetrically arranged array of electrodes includes multiple pairs of first and second electrodes (A/E, B/F, C/G, D/H), each pair being disposed on an axis of the array, and each axis having a different angular offset with respect to a forward-facing direction of said subject(10), and said switch means (46a-46d) successively couples said AC voltage source (40) to an electrode (A, B, C, D) of each such pair of electrodes (A/E, B/F, C/G, D/H) for detecting the pose of said subject's head (24) based on a capacitive coupling between the electrodes of each such pair of electrodes". Basically, the emphasised expressions have been added in order to overcome the prior objection under Article 84 EPC against the expression in original claim 4 "... disposed along varying axes of rotation".

2.1.5 In the board's opinion, this expression in original claim 4 "... disposed along varying axes of rotation with respect to a forward-facing direction of said subject" was indeed obscure and, in order to meet the requirements of Article 84 EPC, the expression must be corrected and the orientation of the axes with respect

to each other must be defined properly. As is disclosed in para [0016], also referred to in the decision, "*The electrodes B and F lie on an axis 30 corresponding to the forward direction (0°) of vehicle circular coordinates; the electrodes A and E lie an axis 32 offset from axis 30 by -45° ; the electrodes C and G lie an axis 34 offset from axis 30 by +45° ; and the electrodes D and H lie an axis 36 offset from axis 30 by +90° "* (emphasis by the board). Hence, from this passage it is clear that the axes have respective different angular offsets with respect to the forward-facing direction of the subject. This is correctly defined in present claim 4. Therefore this claim 1 is not objectionable under Article 84 EPC.

2.1.6 The board does not concur with the assessment in the decision, that from this passage in the description addressing the embodiment in Figure 2A (as well as the one in the context of Fig.3) it compulsory follows that the array must be circular. Firstly, the sentence that "the circuit board 20 supports a generally circular array of eight spaced electrodes labeled A-H" describes a preferred property of shape of the array, and is not related at all to the angular orientation of the axes formed by the pairs of electrodes (*which was the feature to be clarified*). Secondly, from the description as a whole, and in particular from para [0024] it follows that a "generally circular" arrangement does not describe all preferred embodiments and - in any case - is not essential for the functioning of the device. Finally, this feature had not been included in any of the original claims and the skilled person, reading the original patent application in an objective way, would therefore have no reason at all to assume that a circular arrangement of the

electrode array was a relevant, or even essential, feature of the invention.

2.1.7 Therefore the reasoning in the decision appears to be overly formalistic and must be rejected.

2.2 With respect to the further objection in the decision relating to the amendments of pages 2 and 3, this needs not to be addressed anymore, since with the grounds of appeal the appellant has filed new description pages. The board is satisfied that these amended description pages conform to the provision of Article 123(2) EPC.

2.3 Therefore, having regard to the application documents on file, the board is satisfied that the formal requirements of Article 84 EPC and Article 123(2) EPC are met.

3. Further prosecution

3.1 In the letter of 24 March 2010 the appellant pointed out that no other objections as to patentability had been raised against the set of claims on file, and that it should therefore be presumed that the claims satisfy the requirements for novelty and inventive step. Therefore a patent should be granted on the basis of these application documents.

3.2 In this respect the board observes that, except for independent claims 1 and 10 proposed in the communication of 10 July 2009, the examining division has not addressed the issue of patentability.

3.3 Therefore the board considers it appropriate to remit the case to the first instance for further prosecution

(Article 111(1) EPC), as was agreed by the appellant in its letter of 28 November 2013.

Order

For these reasons it is decided that:

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar:

The Chairman:



M. Kiehl

A. G. Klein

Decision electronically authenticated