Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 8 December 2022

Case Number: T 2325/18 - 3.4.01

Application Number: 12708930.8

Publication Number: 2684186

IPC: G10K9/122, G10K9/20, G01S7/521

Language of the proceedings: EN

Title of invention:
PROCESS FOR THE MANUFACTURE OF A SENSOR DEVICE USABLE IN PARKING-AID SYSTEMS FOR VEHICLES AND CORRESPONDING SENSOR DEVICE

Patent Proprietor:
Meta System S.p.A.

Opponent:
Valeo Schalter und Sensoren GmbH

Headword:
Ultrasonic sensor / META SYSTEM

Relevant legal provisions:
EPC Art. 56, 123(2)
RPBA Art. 12(4)
RPBA 2020 Art. 12(4)

Keyword:
Inventive step - (yes)
Amendments - extension beyond the content of the application as filed (no)

Decisions cited:
G 0007/93

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2325/18 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 8 December 2022

Appellant: (Opponent)	Valeo Schalter und Sensoren GmbH Laiernstrasse 12 74321 Bietigheim-Bissingen (DE)
Representative:	Valeo Schalter und Sensoren GmbH CDA-IP Laiernstrasse 12 74321 Bietigheim-Bissingen (DE)
Respondent: (Patent Proprietor)	Meta System S.p.A. Via Tancredi Galimberti, 5 42124 Reggio Emilia (IT)
Representative:	Brunacci, Marco BRUNACCI & PARTNERS S.r.l. Via Pietro Giardini, 625 41125 Modena (MO) (IT)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 19 July 2018 concerning maintenance of the European Patent No. 2684186 in amended form.**

Composition of the Board:

Chairman	P. Scriven
Members:	B. Noll
	C. Almberg

Summary of Facts and Submissions

I. The opposition against the patent was based on the grounds of lack of novelty and lack of an inventive step (Article 100(a) EPC), insufficiency of disclosure (Article 100(b) EPC) and added subject-matter (Article 100(c) EPC).

II. The Opposition Division found that the patent could not be maintained as granted, for lack of an inventive step; but, amended according to what was then the first auxiliary request, it met the requirements of the EPC. In reaching this decision, the Opposition Division declined to consider document E8, which the opponent submitted during oral proceedings.

III. The opponent appealed this decision.

IV. The following documents are mentioned in this decision:

E1: DE 198 35 782 A1;
D1: US 2006/241474 A;
E2: DE 102 21 303 A1;
E8: DE 10 2009 022 187 A1;
E9: DE 10 2006 028 214 A1; and
E10 DE 2005 009 620 A.

V. The opponent argued a lack of novelty based on D1, an objection that was new with the appeal; and a lack of inventive step starting from E1; from E2; from E8,

which the Opposition Division had declined to consider; and from E9 and E10, which were submitted with the statement of grounds of appeal. The main arguments were, however, that claims 1 and 10 related to subject matter extending beyond the content of the application as filed, and the lack of inventive step starting from E1.

VI. The proprietor, in its reply to the appeal, requested that the appeal be dismissed, or that the patent be maintained on the basis of one of six new auxiliary requests.

VII. The parties were informed of the Board's preliminary view, in a communication pursuant to Article 15(1) RPBA 2020.

VIII. In response, the proprietor submitted an amended text for the main request and for each of the six auxiliary requests ("the amended requests").

IX. At the start of oral proceedings before the Board, the proprietor submitted further auxiliary requests labelled "0" and "2B" and presented arguments on added subject-matter and on a lack of inventive step having regard to E1.

X. The proprietor's final formulation of its requests was that the appeal be dismissed, i.e. that the patent be maintained in amended form as found allowable by the Opposition Division (main request A); or that it be

maintained in one of the following forms, in the order given:
- the amended main request (main request B);
- auxiliary request 0;
- the amended first or second auxiliary request;
- auxiliary request 2B;
- the amended third to sixth auxiliary requests.

XI. The opponent requested that appealed decision be set aside and that the patent be revoked.

XII. Claims 1 and 10, as the Opposition Division found allowable (main request A), read (reference signs omitted):

1) Process for the manufacture of a sensor device usable in parking-aid systems for vehicles, comprising the steps of:
- manufacturing at least a support body made of polymer material, said support body being substantially hollow and having at least an opening;
- wherein said step of manufacturing the support body comprises making on said support body at least an electric connector suitable for being connected to an electronic unit for the parking aid of vehicles;
- manufacturing at least a metal element having at least a substantially plate-shaped portion;
- associating said metal element with said support body, with said substantially plate-shaped portion of the metal element

in correspondence to said opening of the support body;
- associating at least a transducer element with said substantially plate-shaped portion of the metal element;
- positioning inside said support body electronic interface means suitable for being connected to an electronic unit for the parking aid of vehicles;
- connecting electronically said transducer element to said electronic interface means;
- connecting electronically said electronic interface means to said electric connector;
- filling said support body with an insulating material adapted to encapsulate said transducer element and said electronic interface means.

10) Sensor device, usable in parking-aid systems for vehicles, and comprising:
- at least a support body made of polymer material substantially hollow and having at least an opening;
- at least a metal element having at least a substantially plate-shaped portion arranged in correspondence to said opening of the support body;
- at least a transducer element, arranged inside said support body and in correspondence to said substantially plate-shaped portion of the metal element;
- electronic interface means, arranged inside said support body connected to said transducer element and suitable for being connected to an electronic unit for the

parking aid of vehicles;
- wherein said support body comprises at least an electric connector connected to said electronic circuit and suitable for being connected to an electronic unit for the parking aid of vehicles;
- insulating material for filling the inside of said support body, adapted to encapsulate said transducer element and said electronic interface means.

XIII. The parties' submissions, insofar as they are relevant for the decision, are dealt with in the Reasons for the Decision, below.

Reasons for the Decision

The patent in suit

1. The patent relates to a sensor device for a parking assistance system in the automotive sector. As set out in the description (paragraphs [0002] - [0007]), parking aid sensors were available before the filing date of the application. Such sensors were commonly based on an acoustic transducer element, placed in a housing which was to be integrated into the bumper of a car. Manufacturing a sensor and preparing it for insertion into a vehicle were complex. The object of the invention was to reduce costs and the time for manufacture and preparation. It addressed, in particular, the fitting of the sensor inside the

housing, before installation in the vehicle (paragraphs [0008] and [0010]).

Added subject-matter

2. The opponent's objection of added subject-matter concerns the wording of the last integer of claims 1 and 10. In the opponent's view, the application as filed only disclosed that the shell was filled with insulating material (synthetic resin or silicone), but not that the transducer element and the electronic interface means were encapsulated by this filling. The opponent argued that it was conceivable that the silicone or resin filling the shell was in a granular form which filled the shell but would not encapsulate components in its interior. Therefore, the insulating material being adapted for encapsulating the transducer element and the electronic interface means extended beyond the content of the application as filed.

3. The Board does not agree. The application as filed discloses that the material for filling the shell is silicone or synthetic resin (page 7, lines 6-8 of the published application). Figure 6 shows that the transducer 12 and the interface 14 are separated from the outside environment at one side by the metal element 9 and that the residual open space of the metal element is closed by filling the shell 3 with the insulating material. The skilled person, having a sound background in the design and manufacture of automotive sensor devices, would have directly and unambiguously understood this as meaning that the synthetic resin or silicone is brought into the shell as a more or less viscous mass, which encapsulates the interior of the

shell after curing. The opponent's argument that the silicone might be in the form of granules is, at least as the field of manufacturing sensors for the automotive sector is concerned, no more than speculation.

4. Claims 1 and 10 do not, therefore, relate to subject-matter which extends beyond the content of the application as filed. The main request thus meets the requirement of Article 123(2) EPC.

Inventive step (Article 56 EPC) having regard to E1

5. E1 discloses the fabrication of an ultrasonic transducer, to be used in a distance warning system in a motor vehicle (column 1, lines 3-12), according to two different designs as shown in Figures 1 and 8:

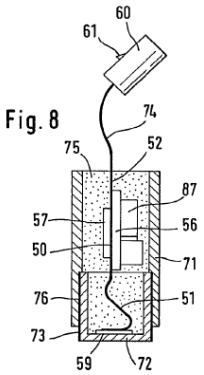

Fig. 8

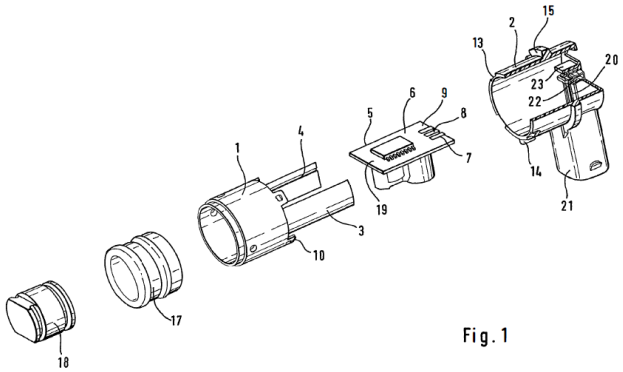

Fig. 1

6. The design shown in figure 8 is for a sensor having some flexibility for connecting it to the vehicle, by configuring the connecting cable 74 such that its end, carrying a plug, extends out of the casing and is movable in relation to the casing. The design shown in figure 1 has a two-piece housing. One piece 1 has a pair of guide grooves 4 for receiving an electronic circuit board, the other has a connector and fixes and

connects the circuit board inside the housing when it is assembled with the first.

7. The sensor of Figure 8 has a support body in the form of a hollow housing 71. The housing has an opening for assembling a resonator element 73. The resonator element has a flat portion 72 arranged in correspondence to the opening of and assembled within the opening of the housing. Figure 8 further shows the ultrasonic transducer element 59 arranged in the resonator element and interface electronics 57, placed on a printed circuit board 56 and suitable for being connected to an electronic unit for the parking aid, positioned inside the housing 71. A connector 60 is attached to the interface electronics at the free end 74 of the connecting line 52 which protrudes out of the insulating material 75, so that the connector is freely movable relative to the transducer housing. The space inside the housing 71 and the resonator element 73 are filled by a pouring compound, thereby enclosing the ultrasonic element and the interface electronics.

8. The sensor device of figure 8 does not have a support body comprising an electric connector connected to the electronic circuit. E1 does not describe what materials the resonator element and the housing are made of.

9. The features of the claimed invention that are not disclosed by the sensor of Figure 8 (a support body having a connector; the use of metal for the resonator element, and of a polymer material for the housing) do not combine to produce a common effect. For the assessment of inventive step, the contributions of the respective features are, therefore, to be considered separately.

10. The choices of material for the sound transducer and the housing (metal and polymer, respectively) were common practice in the field of automotive sensor technology. These features do not make a contribution to inventive step.

11. The claimed feature that the electric connector is made with the support body has the technical effect, that all electrical parts of the sensor are enclosed within the body and thus protected by its shell from mechanical impact that may occur in a harsh environment. Therefore, the partial technical problem solved by this feature is to provide a transducer device which is mechanically robust.

12. The Board agrees with the opponent, that the skilled person, starting from figure 8 of E1 and considering the above problem, would have considered Figure 1 of E1, which shows a transducer device having a connector as a part of a piece of the housing.

13. The skilled person, faced with the above problem, would have considered modifying the device such that the printed circuit board is inserted into the housing without being encapsulated by a synthetic resin, so that contact can be made with it, when attaching the second housing part having a connector as shown in Figure 1. The skilled person would, therefore, have been confronted with the additional problem of, firstly, how to join the two parts 1 and 2 shown in Figure 1 to form a closed housing and make contact with the electronic components; and, secondly, how to encapsulate electronic components with the synthetic resin. As submitted by the opponent, E1, Figure 1, shows an opening in the part of the housing having the connector, which provides access to the interior of the

housing; however, the interior of the housing is divided by the circuit board into two compartments, and only one compartment is accessible via this opening. Consequently, the electronic components cannot be entirely encapsulated by injecting synthetic resin through this opening. The skilled person would, therefore, have had to make further considerations, not suggested by E1, in order to reconcile the two requirements of providing a support body with a connector and encapsulating the electronic components by synthetic resin. The skilled person would not, therefore, have arrived at a sensor device as in claim 10 by considering E1.

14. In summary, the skilled person would not have arrived at the subject-matter of claim 10 on the basis of E1. For these reasons, the Board concurs with the finding in the impugned decision, that the sensor device of claim 10 involves an inventive step.

15. The above considerations apply equally to the method of claim 1, which involves an inventive step for the same reasons.

Inventive step, E1 in combination with E2 or D1

16. The Board arrives at the same conclusion, that the skilled person, considering E1 in combination with E2 or with D1, would have had to make further considerations to arrive at the claimed method or device, which were not suggested in any of E1, E2, D1 or by common general knowledge. Therefore, the skilled person would not have arrived at the claimed subject-matter when considering E1 in combination with E2 or D1.

Novelty, D1, admission of objection

17. The objection of lack of novelty based on D1 was raised in the statement of grounds of appeal for the first time. The Board considers that there was no good reason for this. In exercise of its discretion pursuant to Article 12(4) RPBA 2007, the Board did not consider this objection.

E8 review of discretionary decision not to admit

18. The Opposition Division decided not to admit E8 into the proceedings (appealed decision, points 11.3.3 and 12.4). On appeal, the opponent used E8 as a basis for attacking novelty and inventive step, and requested its admission (statement of grounds of appeal, pages 15-17). The proprietor argued that E8 should be disregarded (reply to appeal, page 13).

19. The Board may hold inadmissible evidence which was not admitted in the first instance proceedings (Article 12(4) RPBA 2020). Since the Board did not see anything, in principal, wrong or unreasonable in the Opposition Division's discretionary decision, the Board was not minded to admit this document into the appeal proceedings (cf. G 7/93 *Late amendments, OJ EPO 1994, 775*, reason 2.6).

E9 and E10 - consideration in the procedure

20. The opponent introduced documents E9 and E10 with the statement of grounds of appeal.

21. Each concerns a further variant of an ultrasonic transducer, the housing of which has a connector extending sidewards from the housing; but, at first glance, they do not seem more relevant than the documents already in the proceedings.

22. Moreover, the opponent is the applicant for these patent applications. It can, therefore, be presumed that the opponent was aware of these documents and could - and should - have submitted them with the notice of opposition (Article 12(4) RPBA 2007).

23. Therefore, the Board did not consider E9 or E10 in the appeal proceedings.

Conclusion

24. Since the objections raised by the opponent do not prejudice the maintenance of the patent in the version of main request A, the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

D. Meyfarth P. Scriven

Decision electronically authenticated