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Datasheet for the decision of 25 February 2013

Case Number: T 0017/11 - 3.2.01

Application Number: 01947854.4

Publication Number: 1300300

IPC: B60R 21/16, B60R 21/20

Language of the proceedings: EN

Title of invention:
Air bag device for knee protection

Patent Proprietor:
TOYODA GOSEI CO., LTD.

Opponent:
Autoliv Developement AB

Headword:
-

Relevant legal provisions:
RPBA Art. 13(1)

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"New line of arguments (admitted)"
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0017/11 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 25 February 2013

Appellant: (Opponent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 27 October 2010 rejecting the opposition filed against European patent No. 1300300 pursuant to Article 101(2) EPC.

Composition of the Board:

Chairman: G. Pricolo
Members: W. Marx
T. Karamanli

Summary of Facts and Submissions

I. On 20 December 2010 the appellant (opponent) lodged an appeal against the decision of the opposition division posted on 27 October 2010 on the rejection of the opposition against European patent No. 1 300 300 and paid the appeal fee. The statement setting out the grounds of appeal was received on 25 February 2011.

II. In its decision the opposition division held that the subject-matter of claim 1 as granted was inventive over the following prior art:

D1: US 378 42 23;

D2: US 551 38 77;

D3: DE 298 07 424 U1;

D9: US 3 618 978 A1.

Together with its statement setting out the grounds of appeal the appellant filed the following document to prove the knowledge of the person skilled in the art:

BM2: DE 41 37 691 A.

III. In the oral proceedings before the board, held on 25 February 2013, the appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patentee) requested that the appeal be dismissed or, in the alternative, that the patent be maintained in amended form in accordance with one of the auxiliary requests 1 to 4, all filed with its reply to the statement of grounds of appeal on 4 July 2011.

At the end of the oral proceedings, the chairman announced the board's decision that the appeal was dismissed.

IV. Claim 1 as granted according to the main request reads as follows (the numbering in bold of the features as granted was added by the board and corresponds to the numbering used by the appellant):

1. "A knee protecting airbag device (M4, M6, M7) to be mounted on a vehicle for protecting the knees (K) of a driver (D),
2. said vehicle including a steering column (3), a column cover (9) that covers the steering column (3), and an instrument panel (11) that covers the column cover (9),
3. said knee protecting airbag device (M4, M6, M7) including a folded airbag (129, 226, 326) to be expanded and inflated by an inflating gas (G) let in,
4. and a case (119, 142, 319) for housing the folded airbag (129, 226, 326), wherein:
5. the case (119, 142, 319) is to be housed in a lower panel (13) of said instrument panel (11) vertically below said column cover (9) and is opened on the vehicular rear side,
6. the airbag (129, 226, 326) is constructed
6.1 to be expanded and inflated while rising along a lower surface (9a) of said column cover (9) and
6.2 to take such a generally plate shape when having completed the expansion and inflation as covers at least the lower surface (9a) of said column cover (9),
7. the airbag (129, 226, 326) has a lower side as an upstream portion (130, 245, 331) of said inflating gas

(G) and an upper side as an downstream portion (131, 246, 332) of said inflating gas (G),

8. the airbag (129, 226, 326) includes a column cover side wall portion (133, 231, 327) arranged on the side of said column cover (9) when the airbag completes the expansion and inflation and a driver's side wall portion (134, 232, 328) arranged on the driver's side when the airbag (129, 226, 326) completes the expansion and inflation,

9. and is folded by rolling at an upper end (129a, 226a, 326a) thereof on said column cover side wall portion (133, 231, 327) while being housed in the case (119, 142, 319),

10. the airbag (129, 226, 326) further includes a first tether (135D, 233D, 329D) connecting said column cover side wall portion (133, 231, 327) and said driver's side wall portion (134, 232, 328) for regulating the thickness of the airbag (129, 226, 326) thereby to maintain said generally plate shape of the airbag (129, 226, 326) when having completed the expansion and inflation, and

10.1 the first tether (135D, 233D, 329D) is arranged transversely within the airbag (129, 226, 326) to partition the airbag (129, 226, 326) into said upstream portion (130, 245, 331) and said downstream portion (131, 246, 332)

10.2 while forming gas communication holes (136, 227e, 333) between the left and right ends of the first tether (135D, 233D, 329D) and the left and right sides of the airbag (129, 226, 326),

10.3 such that said inflating gas (G) is caused to flow to both the left and right sides in said upstream portion (130, 245, 331) and then to flow through said gas communication holes toward the upper side of the

airbag (129, 226, 326) as said downstream portion (131, 246, 332)."

V. The appellant argued essentially as follows:

In accordance with the contested decision, D1 was considered as the closest prior art document, disclosing features 1 to 3 and 6 to 8 of claim 1 as granted. As regards feature group 6, the skilled person could gather from Figure 3 in D1 that the airbag device expanded and inflated while rising along the lower surface of the column cover as required by feature 6.1 (which did not define the time period of rising any further), and also feature 6.2 was known from Figure 3 or Figure 10.

Feature 5 was linked to feature 4, which defined a case for housing the folded airbag. According to feature 5, the case was housed in a lower panel of the instrument panel, vertically below the column cover, and was opened on the vehicular rear side. Such functional configuration could be found in document D1, which showed an airbag housed in a cavity of the lower portion of the instrument panel which was opened at the vehicular rear side (see break line 76 in Figure 3). It was admitted, however, that D1 did not show a separate case for housing the folded airbag housed within the lower panel of the instrument panel as defined by feature 4 in combination with feature 5, and the skilled person would not implicitly understand a separate case for the folded airbag in D1.

Since features 5, 9 and 10 had no corresponding or synergistic effects, claim 1 as granted defined a mere aggregation of features that justified, starting from D1

as the closest prior art, combining three documents when assessing inventive step. By providing a separate case for housing the folded airbag as required by features 4 and 5, the airbag could be mounted in an appropriate - not further defined - manner in a lower portion of the instrument panel. The technical background of linked features 4 and 5 was a facilitated assembly of the airbag device within the instrument panel, which did not show any technical relationship with the expansion of the folded knee airbag, which adopted a generally plate shape (see feature 6 onwards). Therefore, feature 4 in combination with feature 5 solved the partial problem of facilitating assembly of the airbag device.

Since the airbag was provided as a separate assembly unit or airbag module to the car manufacturer or to the supplier of the instrument panel, it was necessary to house the airbag in a separate case for delivery and handling purposes and therefore the latter feature would be self-evident for the skilled person (see BM2 showing an airbag housed in a plastic sheath). The skilled person would consider document D2, which showed (Figure 4 and column 2, lines 42 to 47) a lower surface 44 of instrument panel 40 and an airbag 50 contained in a separate housing 48, and would apply the mounting as known from D2 to D1, i.e. providing a separate case, thus arriving at an embodiment as depicted in Figure 1 of the contested patent. Irrespective of whether feature 4 or feature 5 was considered to be the distinguishing feature over D1, the interaction of both features was important and known from D2. Since D2 related to a passenger airbag, the case was not positioned "vertically below said column cover" as claimed; however, there was no incompatibility or

technical restriction that would not allow the mounting of the case known from D2 on the driver's side below the steering column, in particular since claim 1 did not specify any size for the airbag's case.

The new line of argument with respect to D2 was occasioned by the preliminary assessment of the board that three partial problems could be formulated based on the distinguishing features when starting from document D1. Therefore, it had to be assessed whether feature group 4 and 5 on its own lacked an inventive step, and it was found that said feature group was known from D2.

VI. The respondent's arguments relevant to the present decision can be summarized as follows:

Acknowledging that an airbag module was delivered to a vehicle's assembly line and that it was common use to deliver airbag units enclosed in a rupturable plastic sheath (see BM2), such a sheath could not be considered as a case which was opened on the vehicular rear side as defined by features 4 and 5. D1 at best showed a wrapping film which was also mentioned in the contested patent (column 20, lines 5 to 6) and which had to be distinguished from a case for housing the folded airbag. To summarise, D1 showed an airbag housed in housing portion 74 forming part of the instrument panel but not a **separate case** for housing the folded airbag, and the housing of the driver knee airbag in D1 - which (when comparing the sectional views of Figure 3 and 4) also laterally joined the steering column - was only partially situated below the steering column, whereas feature 5 required a case **vertically below the column cover**. Besides, D1 did not disclose the whole of feature

group 6 because (see Figure 3) the airbag - pressed downward by the steering column - detached itself from the lower surface of the steering column and was cast against the driver's knees.

Above all, the distinguishing features 4 to 6, 9 and 10 of claim 1 did not solve independent partial problems but were interrelated, and interacted to produce a combined technical and synergistic effect, namely utilizing the narrow space between the column cover and the driver's knees in a most efficient way. In particular, features 4 to 6 caused the airbag to be expanded and inflated in a stable protruding direction such that it started rising along the lower surface of the column cover (see para. [0013] of the patent in suit), features 9 and 6 (in particular 6.1) caused the airbag to unfold while coming closest to the side of the column cover (see para. [0014]), and features 10 and 6 (in particular 6.2) suppressed the protrusion of the airbag to the driver side (para. [0015] and [0016]).

Providing a separate case for housing the airbag (that could be mounted separately) allowed the axial direction of the peripheral wall portions of the case - guiding the airbag when expanding - to be directed along the axial direction of the steering column so that the airbag protruded from the case along the lower surface of the column cover (see para. [0066] of the contested patent). The instrument panel or housing 71 in D1, when shaped accordingly, also guided the airbag but - after breaking into two parts - was not capable of providing a stable protruding direction. Thus, the problem to be solved was to mount the airbag in a defined orientation

in order to allow expansion of the airbag in a defined direction.

Starting from D1 as the closest prior art, there was nothing that could lead the skilled person to provide a separate case, in particular because the instrument panel in D1 was already designed for housing the airbag, i.e. showed a dedicated shape on which the airbag supplier and the vehicle manufacturer had to agree beforehand. Moreover, assembly work would not be facilitated by providing a separate case in D1.

The appellant's argument that D2 showed a separate case was presented for the first time during the oral proceedings and had not been substantiated before. In particular, the statement setting out the grounds of appeal referred to D2 only with respect to feature group 10 (see page 2) and explicitly mentioned (see page 6) that D2 did not show a separate case. Therefore it was requested that the new argument presented late in the proceedings should not be admitted.

However, D2 did not jeopardise the inventiveness of the claimed subject-matter. D2 showed in Figure 2 a case for housing an airbag on the passenger side of the vehicle in the area of the glove compartment, mounted (see Figure 4) behind the instrument panel. However, the situation on the driver's side was quite different due to the steering column and the cushion provided below. Since D1 already showed an instrument panel having the appropriate shape for housing the airbag, the skilled person - applying the "could/would approach" - was not prompted to apply the teaching of D2, i.e. no separate case was needed. Moreover, since the driver knee airbag

in D1 (see Figure 5) was not only housed below the steering column but extended laterally to both sides, the skilled person could not simply fit the case known from D2 into the instrument panel of D1 without having to modify the instrument panel of D1 completely. Besides, taking into consideration the mounting situation in D1 compared to D2, D1 did not provide sufficient space below the steering column for placing the big metal case known from D2. Therefore, providing a separate case for housing the folded airbag as defined by features 4 and 5 was already sufficient to establish inventiveness.

Reasons for the Decision

1. The appeal is admissible.

2. *New line of argument in respect of inventive step*

The appellant argued for the first time during oral proceedings that, starting from D1 as the closest prior art and considering document D2, which showed a separate case for an airbag, it was obvious to provide a separate case for housing the airbag. In its statement setting out the grounds of appeal, the appellant referred to D2 only with respect to feature group 10 (see page 2) and explicitly mentioned (see page 6) that D2 did not show a separate case.

However, it has always been a matter of discussion whether it was implicitly known from D1 to provide a separate case for housing the folded airbag as specified by the combination of features 4 and 5, because it was generally known to the skilled person to

house the airbag module in a separate case for delivery purposes, as the appellant sought to prove by filing document BM2, or whether, on the other hand, said features were to be considered when assessing inventive step. Therefore, the appellant did not introduce a completely new line of argument into the proceedings but provided a further argument based on document D2, which formed part of the proceedings right from the beginning. It is acknowledged that the appellant did not rely on D2 when discussing features 4 and 5 in its statement setting out the grounds of appeal and even stated that a separate case was not known from D2. Thus, adopting a different position might still amount to an amendment of the appellant's case. However, in its statement setting out the grounds of appeal (see page 5) the appellant mentioned that providing a case - which could be of solid material such as metal or a wrapping plastic film - for housing the folded airbag was considered self-evident for the skilled person without having to refer to any patent disclosure. Therefore, the appellant even presented the basic argument already with the grounds of appeal, and the respondent had to be prepared to refute this argument, no matter whether D2 was cited as further evidence or not. Besides, from just a look at Figure 4 in D2 and the corresponding passage in the description of this short document, an airbag housing 48 could immediately be identified in D2.

In exercising its discretion under Article 13(1) RPBA (Rules of Procedure of the Boards of Appeal, OJ EPO 2007, 536), the board therefore admitted and considered the arguments relating to lack of inventive step over document D1 in combination with document D2, submitted

for the first time during the oral proceedings. Moreover, the subject-matter involved was not complex and did not affect procedural economy or require adjournment of the oral proceedings.

3. *Main request (patent as granted) - inventive step*

3.1 Document D1 represents the closest prior art and discloses a knee protecting airbag device as defined by features 1 to 3 and features 7 and 8. This was not disputed by the parties. Moreover, in the board's view and contrary to the respondent's allegation, feature group 6 is also known from D1. Feature 6.1 specifies that the airbag rises along the lower surface of the column cover when expanding and inflating. However, it is not ruled out that the airbag might detach from the lower surface of the column cover at a later stage of expansion (as can be seen in Figure 13 of the contested patent). Such an expansion characteristic is shown in Figure 3 of D1 at least for an initial period of expansion. The final shape of the expanded airbag as specified by feature 6.2, adopting a generally plate shape when completing the expansion and inflation and covering at least the lower surface of the column cover, is also known from D1, showing in Figure 5 (see also Figure 10) a top view of the expanded knee airbag 16 on the driver's side having a generally rectangular shape and in Figure 3 a thickness of the expanded knee airbag in the vertical direction which is smaller than its length in the longitudinal direction of the vehicle.

The knee protecting airbag as known from Figure 3 in D1 is housed in a housing 71 formed by a lower portion of the instrument panel of the vehicle (see also column 7,

lines 54 to 56). Therefore, following the appellant's view that features 4 and 5 were linked to each other, D1 does not show a **separate case** for housing the folded airbag, which case in turn has to be housed within a lower panel of the instrument panel vertically below the column cover, as required by the combination of features 4 and 5. In fact, this was acknowledged by the appellant during the oral proceedings. It can be left open in the following whether the folded airbag in D1 is housed in a lower panel of the instrument panel "vertically below the column cover", i.e. whether a further difference exists between the claimed subject-matter according to features 4 and 5 and document D1.

3.2 It is acknowledged that feature 9 and feature group 10 might promote a better deployment of the airbag in the space between the knees and the steering column, as argued by the opposition division, by utilizing the narrow space between the column cover and the driver's knees in a most efficient way, as pointed out by the respondent. However, the board takes the view that providing a separate case for housing the folded airbag as specified by the combination of features 4 and 5 does not contribute to the airbag's deployment or expansion, but facilitates handling and assembly of the airbag, which has to be delivered by the airbag supplier to the assembly line of the supplier of the instrument panel or to the car manufacturer. Although para. [0013] of the contested patent states, with respect to the airbag "housed in a case opened on the vehicular rear side", that the airbag is expanded and inflated in a stable protruding direction, said effect relates to the fact that the case is "opened on the vehicular rear side" and not to the fact that a

separate case for housing the folded airbag within the lower portion of the instrument panel is foreseen. A similar effect is already realized in D1 by the break line 76 provided on the rear side of the housing 71 which is formed by the lower portion of the instrument panel. Moreover, since the separate case is not specified further in claim 1 (with respect to its shape and the arrangement of the axial direction of its peripheral wall portions providing guidance, as argued by the respondent based on para. [0066] of the contested patent), the mere fact of providing a separate case for housing the airbag does not provide further advantages over the housing already provided in D1, except for a facilitated handling and assembly of the airbag. This cannot be considered as being related to the effects of the airbag's deployment or expansion associated with distinguishing feature 9 and feature group 10. In particular, merely providing a separate case does not cause the airbag to expand in a stable protruding direction, nor does it allow mounting of the airbag in a defined orientation, as argued by the respondent. Therefore, when starting from document D1 as the closest prior art, a separate partial problem may be formulated based on distinguishing features 4 and 5, which is to facilitate assembly of the knee protecting airbag device.

The board concurs with the appellant that, when looking for a solution to the problem of facilitating assembly of the knee protecting airbag device delivered by the airbag supplier to e.g. the car manufacturer, it might be obvious to the skilled person to provide an airbag module enclosed in a rupturable plastic sheath or wrapping film as known e.g. from BM2 or as perhaps

implicitly foreseen in D1, but then there would be no further need to house the airbag in a separate case to facilitate assembly. In the board's view, such a plastic sheath or wrapping film has to be distinguished from a case "to be housed in a lower panel of said instrument panel" as specified in feature 5 of claim 1.

Moreover, starting from D1 as the closest prior art, D1 shows an instrument panel specifically designed to house a knee airbag on the driver's side in the area below the steering column with its spatial constraints, on which both the airbag supplier and the vehicle manufacturer have had to agree. Therefore, this specific mounting situation of the driver's knee airbag device in D1 already prevents the skilled person from providing a separate case for housing the folded airbag. In particular, it would require a re-design of the instrument panel in D1 to provide the space needed to incorporate an additional case below the steering column.

Even if the skilled person were to consider document D2, which shows a case for housing an airbag provided within the instrument panel on the passenger's side, the spatial constraints are quite different on the passenger's side compared to the specific mounting situation of the knee airbag device on the driver's side of D1. Since the instrument panel of D1 already shows a dedicated shape for housing the airbag in the area below the steering column, the board takes the view that the skilled person would not be prompted to provide a separate case for housing the folded airbag within the lower panel of the instrument panel as claimed, as taught by D2 for an airbag on the passenger's side or as might be known for airbags in general, because it would require a complete modification of the instrument panel

of D1 to fit a separate case within it. Moreover, the board questions whether, due to the restricted mounting space in the area vertically below the steering column in D1, the skilled person would at all consider incorporating an additional case within the lower panel of the instrument panel of D1.

As a consequence, there was nothing in the prior art that could lead the skilled person to provide a separate case for housing the folded airbag when starting from D1. Therefore, without further considering features 9 and 10 and their contribution over the prior art (additionally comprising documents D3 and D9), the separate case as specified by the combination of features 4 and 5 already demonstrates the presence of an inventive step (Article 56 EPC 1973).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Vottner G. Pricolo