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Datasheet for the decision of 6 March 2008

Case Number: T 0344/06 - 3.2.05

Application Number: 99112282.1

Publication Number: 0967066

IPC: B29C 59/00

Language of the proceedings: EN

Title of invention:
Process for manufacturing an automotive trim piece preweakened to form an air bag deployment opening

Patentee:
TIP ENGINEERING GROUP, INC.

Opponent:
Peguform GmbH & Co. KG
Jenoptik Automatisierungstechnik GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step (main request, yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0344/06 **-** 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 6 March 2008

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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 28 December 2005 rejecting the opposition filed against European patent No. 0967066 pursuant to Article 102(2) EPC 1973.

Composition of the Board:

Chairman: W. Zellhuber
Members: P. Michel
E. Lachacinski

Summary of Facts and Submissions

I. The appellant (opponent 02) lodged an appeal against the decision of the Opposition Division rejecting the oppositions filed against European Patent No. 0 967 066.

The Opposition Division held that the subject-matter of claim 1 as granted was new and involved an inventive step.

II. Oral proceedings were held before the Board of Appeal on 6 March 2008.

The party as of right (opponent 01) informed the Board in a letter dated 7 February 2008 that they would not attend the oral proceedings.

III. The appellant requested that the decision under appeal be set aside and that the European Patent No. 0 967 066 be revoked.

The respondent (patentee) requested as main request that the appeal be dismissed, or, as an auxiliary measure, that the decision under appeal be set aside and the patent be maintained on the basis of claim 1 according to auxiliary requests 1 to 6 submitted on 8 February 2008.

IV. The following documents are referred to in this decision:

E1: DE-A-19 651 758
E5: JP-U-6-25059, together with a translation thereof
E6: DE-A-44 09 405

E8: US-A-5,484,561

E9: US-A-5,738,367

V. Claim 1 as granted (main request) reads as follows:

"1. A process for constructing a trim piece (10) having a section preweakened in a pattern to allow formation of one or more deployment doors (14, 14A, 14B; 32) for an air bag installation to be covered by said trim piece preweakened section, the process comprising the steps of:
forming a stiff substrate panel (12, 12A) having one or more integral door panels (14, 14A, 14B; 32) with a predetermined gap (18) between adjacent portions of said one or more door panels and said substrate panel (12, 12A), said gap (18) formed concurrently with said substrate panel (12, 12A), said gap (18) extending completely through said substrate panel (12, 12A), said forming step including the step of forming said one or more door panels (14, 14A, 14B) joined along one side to said substrate panel (12, 12A) to form a hinge (16); thereafter overlaying said substrate panel (12, 12A) and said door panels with one or more cover layers (20, 22) extending across said substrate panel and said one or more door panels and said gap (18) therebetween, **characterized by** the step of preweakening at least one of said overlaying one or more covering layers (20, 22) by cutting into the inside of said cover layers (20, 22) through said preformed gap (18) in said substrate panel (12, 12A)."

VI. The appellant has argued substantially as follows in the written and oral proceedings:

Document E6 is the closest prior art and discloses a process for constructing a trim piece having a section preweakened in a pattern to allow formation of a deployment door for an airbag, in which a recess is provided in the substrate at the preweakened section, so as to reduce the energy requirement for a subsequent cutting step. As disclosed at column 2, lines 4 to 15, it would be possible to provide a gap ("eine wahre Lücke") in the substrate across which transverse ribs extend. However, this would permit foam from the cover layer to penetrate the gap during the overlaying step, so that the result is not satisfactory.

The object of the invention is to further improve the energy efficiency of the process. The person skilled in that art would inevitably solve this problem by completely eliminating the section of reduced thickness, so that it is only necessary to cut the covering layer, thus arriving at the subject-matter of claim 1 of the main request.

In the event that the cover layer is a foam layer, it would in any case be necessary to provide a temporary sealing of the gap to prevent foam from entering the gap.

Alternatively, document E8 could be regarded as being the closest state of the art. The process disclosed in this document relies, however, on the cover layer being a mouldable material such as a foam. If a cover layer of, for example, leather or a textile were to be used, it would be necessary to cut into the material, thus arriving at the subject-matter of claim 1.

In general, the weakened line can be produced by moulding, cutting, or a combination thereof. None of the cited prior art documents gives an indication that any of these alternatives gives rise to an advantage. Thus, document E8 suggests moulding or cutting as equally usable alternatives.

Document E5 discloses a process involving cutting into the inside of the covering layer through a gap in the substrate. The purpose of the gap is irrelevant. The method of manufacture is only relevant.

Document E1 also discloses forming a weakening channel in the cover layer by cutting.

The subject-matter of claim 1 according to the main request of the respondent thus does not involve an inventive step, in particular in view of the disclosure of either document E6 or E8 taken alone, or in view of a combination of document E8 with any of documents E1, E5, E6 or E9.

VII. The respondent has argued substantially as follows in the written and oral proceedings:

In the process disclosed in document E6, a cut is formed simultaneously in the substrate and in the foam covering layer. There is no incentive in the prior art to provide a gap in the substrate as specified in claim 1. In addition, there is no intention to cut into the foam layer, but merely to ensure that the substrate is severed completely.

Document E8 discloses a complete process and there is also no incentive in the prior art, in particular documents E1, E5, E6 and E9, to modify the process disclosed in this document.

The subject-matter of claim 1 according to the main request thus involves an inventive step.

Reasons for the Decision

1. *Inventive step of claim 1 of the Main Request*

1.1 Closest Prior Art

Document E8 discloses a process for constructing a trim piece having all the features of the pre-characterising portion of claim 1. This was not contested by the parties. However, instead of cutting into the inside of the cover layer as specified in the characterising portion of claim 1, the tear lines in the cover layer are produced by blades of a lifter core 88, as shown for example in Figure 4, where blades 144 and 146 extend through slots 44, 46 in the substrate 40 into the foam of the covering layer, so that the tear lines are produced by moulding.

Document E6, with particular reference to the embodiment of figure 3, discloses a process for constructing a trim piece, in which a stiff substrate panel 3 has a door panel integrally formed therewith, defined by a channel of reduced thickness 16. From this channel is formed a breaking groove 7, which extends into the foam cover layer, by cutting, for example with

a laser. There is thus no gap formed in the substrate panel concurrently therewith, through which cutting into the inside of the cover layer takes place.

Document E8 is thus regarded as being the closest prior art document, since it discloses a process having more features in common with that specified in claim 1 of the patent in suit than document E6.

As indicated above, the subject-matter of claim 1 of the main request is distinguished over the disclosure of document E8 by the features of the characterising portion of the claim.

1.2 Object of the Invention

Whilst the patent in suit refers at paragraph [0011] to a simplification of the method of manufacture, cutting into the inside of the cover layer as opposed to forming a preweakening by moulding necessarily results in such a simplification. The problem to be solved can thus be regarded as being to provide an alternative method of manufacture.

1.3 Solution

The gist of the solution as defined in claim 1 is that, in a first step, a gap extending completely through the substrate panel is formed concurrently with the substrate panel, and, in a second step, the cover layers are preweakened by cutting into the inside of the cover layers through the preformed gap in the substrate panel.

It was suggested on behalf of the appellant that the subject-matter of claim 1 lacks an inventive step in view of the disclosure of document E8 alone, if the cover layer was of such a material that formation of a tear line therein by moulding was not feasible. The disclosure of this document is, however, entirely concerned with the manufacture of trim pieces having a urethane foam cover integral with the substrate. No information can be drawn from the disclosure of this document which would be applicable to trim pieces not having such a urethane foam layer.

In addition, none of the remaining cited prior art documents suggests the solution to the above problem as specified in claim 1, that is, the step of preweakening the cover layer by cutting into the inside thereof through a preformed gap in the substrate panel.

Document E1 discloses a method of manufacture in which a concave groove 14a is formed in the substrate during moulding. Subsequently, a notch 14b, which extends through the remainder of the thickness of the substrate and into the cover layer 17, is formed by cutting (see column 4, lines 54 to 61 and Figure 3).

The disclosure of document E1 does not, however, provide any encouragement to the person skilled in the art to modify the process for constructing a trim piece disclosed in document E8 so that the process involves forming a gap concurrently with the substrate panel and subsequently cutting into the cover layer through the gap. In particular, document E1 is concerned with a process in which, rather than the cover layer being formed on a prefabricated substrate, a preformed cover

layer is arranged in a mould in which the substrate is formed (column 5, lines 1 to 5).

Document E5 discloses a method of manufacture in which a gap 29 is formed in the substrate during moulding of the substrate, which enables a foam cover layer 23 to be preweakened by cutting, as illustrated in Figures 4 and 5.

However, the purpose of the gap in the substrate is simply to enable cutting of the foam layer to prevent torn pieces of the cover layer flying around upon activation of the air bag, without such cutting being visible from the interior of the car, and not to separate the door from the remainder of the substrate, since the door is formed by a cover 26, which is not secured to the substrate. Document E5 thus does not provide any teaching concerning the formation of a preweakening between the substrate and a door panel formed integrally therewith.

Document E6 discloses a method in which zone of reduced thickness 16 defined by a concave groove is formed in the substrate during moulding. Subsequently, a cut 7, which extends through the remainder of the thickness of the substrate and into the cover layer 4, is formed by cutting. It is pointed out in document E6 that forming such a cut requires less energy than cutting through the full thickness of the substrate (see column 5, lines 27 to 31 and Figure 3).

It is, however, noted that, as stated at column 4, lines 31 to 36, of document E6, the reason for the cut extending into the cover layer is merely to ensure that

the substrate is completely severed. There is thus no suggestion to the person skilled in the art, that cutting into the cover layer through a gap in the substrate would provide an alternative method of manufacture to that proposed in document E8.

Document E9 discloses that a preweakening groove may be formed either by cutting, for example by a laser (column 4, lines 10 to 12), or by moulding, although cutting is preferred (column 4, lines 16 and 17). The person skilled in the art would thus be led to form the preweakening groove entirely by cutting or, alternatively entirely by moulding. There is no suggestion that any combination of moulding and cutting could be used.

1.4 Document E6 as closest prior art

It was also suggested on behalf of the appellant that the subject-matter of claim 1 lacks an inventive step in view of the disclosure of document E6 alone. However, as mentioned above, document E6 states at column 4, lines 31 to 36, that the reason for the cut extending into the cover layer of foam of less density is merely to ensure that the substrate is completely severed. Thus, if the process disclosed in this document were to be modified so that a gap was formed in the substrate concurrently therewith, for example, during formation of the substrate by moulding, following the teaching of document E6, there would be no need to cut into the layer of foam of less density, since the purpose of the cutting step would already be fulfilled.

1.5 The subject-matter of claim 1 thus involves an inventive step within the meaning of Article 56 EPC.

2. Claims 2 to 7 are directly or indirectly dependent from claim 1 and relate to preferred features of the process, so that the subject-matter of these claims similarly involves an inventive step.

3. In view of the fact that the main request of the respondent is allowable, it is not necessary to consider the auxiliary requests.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Meyfarth W. Zellhuber