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File Number: T 334/91 - 3.2.1
Application No.: 83 303 515.7
Publication No.: 0 097 504
Title of invention: Core material for automobile bumpers

Classification: B60R 19/18

D E C I S I O N
of 9 February 1993

Proprietor of the patent: Japan Styrene Paper Corporation et al

Opponent: BASF AG

Headword:

EPC Articles 56, 100(b), 104, 111(1) and 114(2)

Keyword: "Sufficiency of disclosure (yes)" - "Inventive step (no)" -
"Remittal to first instance (no)" - "Apportionment of costs (no)"



Case Number : T 334/91 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 9 February 1993

Appellant :
(Opponent)

BASF AG, Ludwigshafen
-Patentabteilung - C6-
Carl-Bosch-Straße 38
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Respondent :
(Proprietor of the patent)

Japan Styrene Paper Corporation
1-1, 2-chome, Uchisaiwai-cho
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Tokyo (JP)

Nissan Motor Co. Ltd.
No. 2, Takara-cho, Kanagawa-ku
Yokohama-shi, Kanagawa-ken 221 (JP)

Representative :

Myerscough, Philip Boyd
J.A. Kemp & Co
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Decision under appeal :

Interlocutory decision of the Opposition Division
of the European Patent Office dated 22 January
1991, and issued in written form on 1 March 1991,
concerning maintenance of European patent
No. 0 097 504 in amended form.

Composition of the Board :

Chairman : F. Gumbel
Members : S. Crane
W.M. Schar

Summary of Facts and Submissions

- I. European patent No. 0 097 504 was granted on 7 January 1987 on the basis of European application No. 83 303 515.7 filed 17 June 1983.
- II. The patent was opposed by the Appellants on the grounds that its subject-matter lacked novelty and/or inventive step (Article 100(a) EPC) and of insufficiency of disclosure (Article 100(b) EPC).

In the notice of opposition the following documents were cited as relevant state of the art:

- (D1) DE-A-2 751 077
(D7) EP-A-0 053 333
(D8) DE-A-2 239 485.

In the course of the opposition proceedings two further prior art documents were referred to by the Appellants, viz:

- (D9) Plastic Age, March 1982, pages 92 to 95, Shohei Yoshimura: "Moulded polypropylene beads 'P-Block' and its properties" (translation from Japanese)
(D10) The Foam Times, 25 July 1981, page 29 (translation from Japanese).

- III. In a decision taken at oral proceedings on 22 January 1991 and issued in writing on 1 March 1991 the Opposition Division found that the patent was to be maintained in amended form on the basis of new Claims 1 to 4.

Claim 1 reads as follows:

"An automobile bumper comprising a core material enclosed within a surface covering material, said core material being composed of a molded article of a plastic foam, characterised in that molded article is of foamed particles of homo- or copolymer of propylene, said article having a density of 0.015 to 0.045 g/cm³, a compression stress at 50% compression of at least 1 kg/cm² (98 kPa), an energy absorption efficiency of at least 70% and a dimensional recovery of at least 90%."

Dependent Claims 2 and 3 relate to preferred features of the automobile bumper according to Claim 1.

Claim 4 reads as follows:

"Use of a core material as defined in any one of claims 1 to 3 in the manufacture of an automobile bumper."

The reasons given for the decision were that the original objections under the ground of insufficiency were in fact concerned merely with the clarity of granted Claim 1, that the subsequent objections under this ground were late filed and not of such relevance that they should be taken into account, that the late-filed documents D9 and D10 were also to be disregarded under Article 114(2) EPC and that it was not obvious for the person skilled in the art to choose the material defined in Claim 1 for an automobile bumper.

IV. An appeal against this decision was filed on 26 April 1991 and the appeal fee paid at the same time.

The Statement of Grounds of Appeal was filed on 4 July 1991.

The Appellants requested that the impugned decision be set aside and the patent revoked in its entirety.

V. In a counterstatement filed on 14 November 1991 the Respondents (Proprietors of the patent) requested that the appeal be dismissed and the patent maintained on the basis of the documents underlying the impugned decision.

They also requested that documents D9 and D10 should not be admitted into the proceedings, that if they were considered admissible the case should be remitted to the Opposition Division for further examination, that the Board should not admit the late-filed arguments on insufficiency or refer the question of their admissibility to the Enlarged Board of Appeal, and that in the event of a favourable decision on admissibility of the arguments the case should be remitted to the Opposition Division for a full investigation of the matter.

VI. In a communication of the Board dated 18 August 1982 pursuant to Article 11(2) RPBA the following provisional views were expressed:

- (a) In the circumstances the Opposition Division had properly applied the discretion given to it under Article 114(2) EPC in dealing with the attack of insufficiency.
- (b) The documents D9 and D10 were of potential relevance to the evaluation of inventive step so that the Board did not intend to disregard them. Since the Opposition Division had already considered these documents the Board could see no proper reason for remitting the case back as requested by the Respondents.

VII. Oral proceedings were held on 9 February 1993.

At the oral proceedings the requests of the parties as set out above were maintained. In addition the Respondents requested apportionment of the additional costs incurred by them as a result of the late submission of new arguments on insufficiency by the Appellants.

VIII. The arguments of the Appellants in support of their request can be summarised as follows:

Now that the Respondents had expressly confirmed that foamed materials produced according to the teachings of document D7 could have the properties stated in Claim 1 the issue of inventive step resolved to the question of whether it would have been obvious for the skilled person to use such a material as the core for an automobile bumper.

Having regard to the teachings of documents D9 and D10 this question had to be answered in the affirmative. Thus, in the second paragraph of page 5 of the translation of document D10 it was stated that "Nippon Styrene Paper" (one of the Respondents) had recently developed a moulding technique for polypropylene beads and automobile applications were intended. The paragraph then went on to say that Toyota had decided to adopt polypropylene bumpers. It was clear to the skilled person that what was meant here was the use of foamed polypropylene to produce the bumper core. The subsequent reference to Toyota's purchase of large injection moulding machines for production of the bumpers was not inconsistent with that interpretation since it could only refer to injection moulding of the surface covering material for the bumper. The skilled person therefore had a clear incentive to investigate the bead moulding technique and its applicability to the formation of an automobile bumper, especially as the properties of the foamed material

produced in this manner, as disclosed in document D9, suggested its eminent suitability for that purpose. His investigations would lead him very quickly to document D7, an earlier application of the Respondents which was published a short time before the publication of document D10.

The mechanical properties specified in Claim 1 were merely those desired of an acceptable core material for a bumper. There was nothing of any inventive significance in the reducing these desiderata to numerical form. The range of densities was merely that in which these mechanical properties could be obtained simultaneously and could be determined by routine experimentation. There was no suggestion that within the claimed density range any one of the individually listed mechanical properties was surprisingly higher than outside the range. Each of these properties showed a smooth progression throughout the range, either becoming better or worse with increasing density, so that the end points of the range were effectively determined by their required minimum values. The fact that none of the three commercialised materials described in document D9 possessed simultaneously all of the required mechanical properties was irrelevant since the skilled person could, on the basis of the teachings of document D7, readily achieve this goal.

In view of the above the question of sufficiency of disclosure was no longer of essential significance. The request for apportionment of costs in this context was wholly unjustified as the filing of evidence by the Appellants in this respect was as the result of a challenge by the Respondents to do so.

IX. In reply the Respondents argued essentially as follows:

The Opposition Division had only considered the relevance of the documents D9 and D10 in the context of the question of insufficiency and had disregarded them on that basis. If they were now admitted into the proceedings as being relevant to the question of inventive step the case should be remitted to the Opposition Division so as to enable the Respondents to argue this point before two instances.

In any case, neither of the documents D9 and D10 included any indication of the suitability of a material comprised of foamed polypropylene beads as the core of an automobile bumper. The relevant passage in document D10 referred merely to use in automobiles. There were however many such possible uses, such as internal padding and the like, which would not require the properties necessary for a bumper core, which was a critical safety component. The subsequent passage dealing with the production of polypropylene bumpers by Toyota was irrelevant since it clearly referred to the use of injection moulding machines and could have nothing to do with foamed polypropylene beads. Again, in document D9 there was no mention of automobile bumpers but merely of "protective materials" for automobiles so that the same comments applied. Furthermore, none of the products disclosed in document D9 exhibited in combination the properties of the core material specified in Claim 1, which the Appellants had established were critical in the context of an automobile bumper. In fact, document D9 led away from the claimed invention since it taught that densities greater than those claimed were essential for structural or protective materials for automobiles.

It was not denied that some of the moulded foamed polypropylene articles disclosed in document D7 would intrinsically have the properties of the core specified in Claim 1. However, this document did not disclose that fact

so that the skilled person would have no reason to suppose that the relevant materials would be capable of meeting the stringent requirements necessary to make them suitable as the core material for an automobile bumper. The choice of the relevant material was therefore not an obvious one. It belonged to the established jurisprudence of the Boards of Appeal that the application for a particular purpose of the intrinsic but unknown properties of a known product could be inventive.

The late filing by the Appellants of new evidence on the question of insufficiency had unnecessarily involved the Respondents in additional costs which should be borne by the Appellants.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.
2. Procedural matters
 - 2.1 Remittal to the first instance

Document D10 was first mentioned by the Appellants in a letter dated 27 September 1989 which clearly and unambiguously indicated its relevance to the issue of inventive step. This letter also mentioned document D9, apparently in the same context, even though it had previously been referred to in a letter dated 31 August 1989 in connection with the issue of sufficiency of disclosure. Furthermore, the relevance of document D10 to the issue of inventive step was dealt with by the Respondents in their letter of 12 March 1990. There can

therefore be no suggestion that the Respondents were in some way deprived of their right to be heard on these matters (Article 113(1) EPC). In any case, it is clear both from the minutes of the oral proceedings before the Opposition Division and the impugned decision itself that the Opposition Division considered the issues of the admissibility of the arguments on insufficiency and of the documents D9 and D10 as relevant state of the art separately from each other.

The Opposition Division has already clearly expressed its view on the relevance of the documents D9 and D10 by not admitting them to the proceedings. The Board takes a different view on this matter, see point 5 below. However, neither that, nor the fact that as the Respondents put it, they have only had one opportunity to submit oral arguments against the documents D9 and D10, can be adequate justification for remitting the case to the Opposition Division.

2.2 Apportionment of costs

As the Appellants have correctly pointed out, their launching in the opposition proceedings of an attack of insufficiency on the basis that the patent specification did not disclose how a moulded core with the properties specified in Claim 1 could be manufactured resulted at least indirectly from the challenge of the Respondents to the Appellants to provide evidence for their initial allegation that moulded articles manufactured according to the teachings of document D7 would exhibit such properties, with the consequence that the subject-matter of granted Claim 1 would lack novelty. In these circumstances the Board can see no reasons of equity in the sense of Article 104(1) EPC for departing from the

general principle that the parties to the proceedings should meet their own costs.

3. Sufficiency of disclosure

In the course of the proceedings before the Opposition Division the parties filed conflicting results of measurements of the energy absorption efficiency of materials obtained according to Examples 2 and 4 of EP-A-71 981. According to the Appellants these materials did not exhibit the 70% energy absorption efficiency demanded by the claimed invention. The Japanese equivalent JP-A-23 834/1983 of EP-A-71 981 (both documents being published after the priority date of the contested patent) is mentioned in the contested patent as describing a method of production suitable for the purpose of making the core material required by the claims of the patent, this method being very similar to that described in the example given in the patent specification itself. On the basis of this the Appellants argued that the invention has been insufficiently disclosed. According to the results presented by the Respondents, however, the energy absorption efficiency does indeed lie above 70%. In a situation such as this, where the parties make conflicting assertions relating to technical facts and where the European Patent Office is unable to establish the facts of its own motion, it belongs to the established jurisprudence of the Boards of Appeal (cf. e.g. T 219/83, OJ EPO 1986, 211) that the party who has the burden of proof has to bear the consequences. In the present case therefore the benefit of the doubt was to be given to the Patentees.

The Opposition Division, in deciding to disregard the arguments and evidence submitted by the Respondents in this respect, clearly must have had these considerations

in mind, and correctly applied the discretion given to it under Article 114(2) EPC.

4. Novelty

It is common ground that none of the cited prior art documents discloses an automobile bumper having a core material as defined in present Claim 1. The subject-matter of this claim, and by analogy that of Claim 4, is therefore novel.

5. Inventive step

At the relevant priority date various proposals had been made to reduce the weight of automobiles, and hence save energy, by replacing the conventional metallic bumpers with bumpers made of plastics and comprising a moulded foamed core material with a suitable surface covering. A satisfactory core material should have a low density and hence light weight, good energy absorbing properties and good dimensional recovery. According to the introductory description of the present patent specification the materials proposed in the prior art did not satisfactorily combine all of these properties and the object of the claimed invention is therefore to be seen in the provision of a material which does.

The title of document D10 is "Foamed materials for automobiles and their trends" and this title is followed by the statement "Polypropylene bumpers to appear this fall". On page 3 of the translation, following the sub-title "Foamed plastic parts" is the statement that "Most foamed plastic parts are made of polyurethane; its largest application is the interior. Other important uses include the bumper and bumper cover". Under the sub-title "Polyurethane as the mainstream?" there appears on page 5

of the translation the statement that "Nippon Styrene Paper (i.e. one of the Respondents) has recently developed a molding technique for polypropylene beads and application to automobiles is intended". This is then immediately followed by the statement that "The most remarkable event in the use of polypropylene is Toyota's decision to adopt polypropylene bumpers". The next two paragraphs deal with details of Toyota's plans and include a reference to the purchase of large injection moulding machines.

The Board accepts the proposition of the Respondents that the reference to injection moulding machines precludes the suggestion that Toyota were planning to use a bead moulding technique to form the bumpers and that the reference to the application of this technique to automobiles cannot in itself be seen as being directed to bumpers. On the other hand, the Board is satisfied, given the various statements quoted above and the general tenor of document D10 that the skilled person would have had a clear incentive to investigate whether the technique could be used to form a foamed polypropylene material that satisfied the requirements for use as a bumper core. This incentive could only have been further encouraged by the information contained in document D9, which also stems from the Appellants, and describes the physical and mechanical properties of articles made from moulded foamed polypropylene beads in considerable detail, comparing them favourably with those of other materials. In the course of his investigation the skilled person would be led inevitably to document D7, which describes the formation of the foamed beads and their subsequent moulding into a foamed article, and by following the teachings of this document would, as now expressly conceded by the Respondents, arrive at foamed articles having the properties of the core material specified in present

Claim 1. That these articles had these properties and were therefore eminently suitable for use as the core material for an automobile bumper would become apparent to the skilled person as the result of routine and standardised test procedures, so that such use must be seen as being obvious for the skilled person.

The Board cannot accept that document D9 teaches away from the claimed invention in that, as asserted by the Respondents, it would encourage the skilled person to choose a foam density lying outside the claimed range. This assertion is based on paragraph 6, page 6, of the translation where it is stated that "high density grades" should be used for structural materials whereas the density range specified in the claim is at the lower end of the total range of 0.015 to 0.2 g/cm³ which is stated to be achievable. However, in the same passage of document D9 referred to by the Respondents it is made clear that "low density grades" are those with foaming ratios greater than 40 so that the exemplified "30P Type" product, with a foaming ratio of 30 and as can be seen from the table on page 8 a density of 0.030 g/cm³, lying in the middle of the claimed range, must by corollary be seen as belonging to the "high density grades" mentioned.

The Board therefore comes to the conclusion that the subject-matter of present Claim 1 does not involve an inventive step. The same applies by analogy to the subject-matter of present Claim 4.

Order

For these reasons, it is decided that:

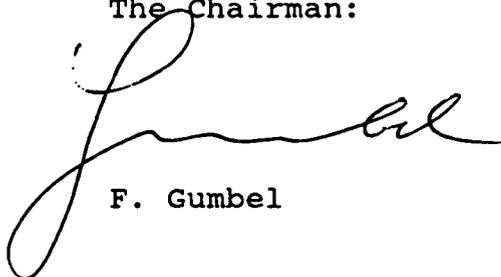
1. The contested decision is set aside.
2. The patent is revoked.
3. The request for apportionment of costs is rejected.

The Rapporteur:



S. Fabiani

The Chairman:



F. Gumbel

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Mr. H.