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**Datasheet for the decision
of 8 May 2007**

Case Number: T 0119/05 - 3.2.03
Application Number: 93918113.7
Publication Number: 0769129
IPC: F41H 5/04, C08G 73/08,
C08G 73/22
Language of the proceedings: EN

Title of invention:

Ballistic-resistant article and process for making the same

Patentee:

TOYOBO CO., LTD.

Opponent:

Honeywell International, Inc.

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 123(3), 84

Keyword:

"Amendments - undisclosed - combination of features (no)"
"Broadening of scope of protection (no)"
"Claims - clarity (yes)"

Decisions cited:

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Catchword:

-



Case Number: T 0119/05 - 3.2.03

D E C I S I O N
of the Technical Board of Appeal 3.2.03
of 8 May 2007

Appellant:
(Patent Proprietor)

TOYOBO CO., LTD.
2-8, Dojimahama 2 Chome
Kita-ku
Osaka 530 (JP)

Representative:

polypatent
Postfach 40 02 43
D-51410 Bergisch Gladbach (DE)

Respondents:
(Opponent)

Honeywell International, Inc.
101 Columbia Road
Morristown
NJ 07962-2245 (US)

Representative:

Hucker, Charlotte Jane
Gill Jennings & Every LLP
Broadgate House
7 Eldon Street
London EC2M 7LH (GB)

Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 23 November 2004
revoking European patent No. 0769129 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: U. Krause
Members: G. Ashley
K. Garnett

Summary of Facts and Submissions

- I. The grant of European patent EP-B1-0 769 129 was opposed on the grounds that it lacked novelty or inventive step (Article 100(a) EPC) and contained additional subject-matter (Article 100(c) EPC).
- II. The opposition division decided to revoke the patent, since it considered that claim 1 of the main request, as amended during the opposition proceedings, did not to meet the requirements of Article 123(2) EPC, and amended claims 1 of auxiliary requests 1 to 3 were not clear (Article 84 EPC). The decision was posted on 23 November 2004 and the appellant (patentee) filed notice of appeal on 19 January 2005, paying the appeal fee at the same time. A statement containing the grounds of appeal was filed on 1 April 2005, together with sets of claims as the main request and five auxiliary requests; the sixth auxiliary request was to maintain the patent as granted.

In a communication dated 14 December 2006, the Board issued, together with a summons to attend oral proceedings, a preliminary opinion pursuant to Article 11(1) of the Rules of Procedure of the Boards of Appeal. In response to this communication, the respondent (opponent) filed additional arguments and the appellant, with the letter of 30 March 2007, filed amended auxiliary requests one to four, with the fifth auxiliary request being the maintenance of the patent as granted. Oral proceedings were held on 8 May 2007, during which the appellant filed a set of amended claims according to a new main request and withdrew the fourth and fifth auxiliary requests.

III. Claims Relevant for this Decision

(a) Claim 1 of the patent application as originally filed (WO-A-93/20400) reads:

"1. A ballistic-resistant article comprising a plurality of polybenzoxazole or polybenzothiazole polymer fibres."

(b) Claim 1 of the granted patent is as follows:

"1. A ballistic-resistant article comprising an untwisted, continuous filament-based yarn of polybenzoxazole polymer."

(c) Claim 1 of the main request (also corresponding to claim 1 of the main request before the opposition division) reads:

"1. A bullet proof vest comprising an untwisted, continuous filament-based yarn of 150-500 denier polybenzoxazole polymer, whereby each fiber has an average diameter of no more than 50 μm ."

Dependent claims 2 to 7 of the main request relate to preferred embodiments of the subject-matter of claim 1.

IV. Summary of the Submissions of the Parties

(a) Article 123(2) EPC

The respondent essentially adopted the line of argument followed by the opposition division that claim 1

relates to an undisclosed combination of preferred and non-preferred features taken from a plurality of lists.

It was argued that Article 123(2) EPC requires that the subject-matter of an amendment is directly and unambiguously derivable from the application as originally filed. It must be evident to the skilled reader and not pieced together in hindsight with knowledge of the claim. The subject-matter of claim 1 is derived from selections taken from independent lists and ignores the teaching of the sole example given in the description.

The original application and the granted patent were directed to ballistic-resistant articles, of which a bullet-proof vest is only 1 out of 14 applications listed in the description (see page 1, lines 6 to 11); there is no teaching that there is anything special about bullet-proof vests that would single them out from the group.

The application discloses fibres of polybenzoxazole (PBO) or polybenzothiazole (PBT) polymers or copolymers, so the selection of PBO in claim 1 is made from three possibilities.

The diameter of the fibres is disclosed as being not more than about 50 μm , preferably not more than 25 μm (page 5, lines 23 to 24). Thus, two ranges are disclosed, and given the teaching of the preferred size, the skilled person would tend to limit the fibres to 25 μm , rather than 50 μm as defined in claim 1.

The fibres are defined as being grouped together to form twisted or untwisted yarn or existing as random fibres in a composite; the yarns themselves may be made either from staple or continuous fibres (see page 5, lines 34 to 36). According to the only example in the application, a twisted yarn is employed, and hence would be the preferred choice of the skilled person. The only clear disclosure of untwisted, continuous yarn, as defined in claim 1, is on page 6 at lines 4 to 5, where it is said that the continuous filaments are held together without twisting by lightly sizing them. Since there is no mention of untwisted, continuous yarn without the use of a size, the definition in claim 1 amounts to an undisclosed generalisation.

The range of 150 to 500 denier is disclosed as a preferred range for soft armour applications, but is also said to be suitable for hard armour (page 6, lines 10 to 12). The claim is not directed to soft armour, and there is no indication that a bullet proof vest falls under the scope of "soft armour", especially as a bullet proof vest can be flexible yet have rigid armour inserts. Consequently, the range of 150 to 500 denier disclosed on page 6 cannot be linked to bullet proof vests.

In response, the appellant noted that the opposition division, in arriving at their conclusion that the subject-matter of claim 1 results from an arbitrary selection from different lists, applied the novelty test as mentioned in the case law of the boards of appeal. He submitted, however, that the true test of whether subject-matter meets the requirements of Article 123(2) EPC is whether or not it is clearly and

unambiguously disclosed in the application as originally filed.

The application as originally filed relates to ballistic-resistant articles, examples of which are given on page 1, lines 6 to 11; claim 1 is now limited to one of the listed articles, namely a bullet proof vest.

The application then teaches how the ballistic-resistant articles of the invention can be achieved. Firstly, the chemistry of the polymer needed to make the fibre is disclosed, and then the technique for making the fibres themselves; appropriate diameters for the fibres are given, the making of yarn from the fibres is also described, and a preferred range for the denier of the yarn is disclosed. Each of these steps applies to all of the previous steps in the process. Claim 1 defines preferred features from the stages needed to make a bullet proof vest according to the invention. Consequently, it is artificial to consider the different production stages as separate lists, and the skilled person would not read the application this way.

The appellant pointed out that there is no case law to support the conclusion of the opposition division that only preferred embodiments can be combined, and submitted that it is irrelevant whether or not a feature is disclosed as preferred or not preferred. The range of 150 to 500 denier, although preferred for soft armour applications, is also disclosed for hard armour; the higher range of denier is preferred for hard armour not for technical but for economic reasons. Thus, it is

not decisive whether or not the armour in question is termed soft or hard. Notwithstanding this submission, the appellant maintained that a bullet proof vest falls under the category of soft armour and hence is linked to the range of 150 to 500 denier; it is clear to the skilled person that the expression refers to the article as a whole and not merely to parts of it.

(b) Article 123(3) EPC

The respondent argued that claim 1 is not restricted to the PBO yarn being something which provides ballistic protection and it can be, instead, in a flexible part of the vest which is constructed so as to give substantially no ballistic resistance.

The appellant maintained that there is no extension in the scope of protection, since the extra features defined in claim 1 of the main request limit it with respect to claim 1 of the granted patent.

(c) Article 84 EPC

The respondent argued that the amendment of "ballistic resistant article" in granted claim 1 to "bullet proof vest" in claim 1 of the main request gives rise to a lack of clarity.

The respondent explained that some bullet proof vests are formed entirely from flexible ballistic resistant material, and some from either partially ballistic resistant material or conventional textile fibres, these having rigid armour inserts. The objection under Article 84 EPC arises as "bullet proof vest" is a

colloquial and generic term which has different meanings, and the patent provides no indication of the intended meaning. Granted claim 1 refers to a "ballistic resistant article", which the respondent interpreted as requiring that the defined yarn is part of the ballistic resistant part of the article. Present amended claim 1 merely requires a bullet proof vest comprising a defined yarn. Given the generic nature of the expression "bullet proof vest", a lack of clarity arises, as the claim does not specify the relationship between the part or parts of the vest that are bullet proof and the presence of the yarn.

The appellant submitted that all of the features defined in claim 1 are clear to the skilled person, and the claim is based on a combination of granted claims 1 and 12. Should there be any question of clarity, which the appellant denied, it was already present in the granted patent and does not arise from the amendments.

V. Requests

The appellant requests that the decision under appeal be set aside and the case be remitted to the Opposition Division for further prosecution on the basis of the claims of the main request filed during the oral proceedings, alternatively on the basis of one of the first to third auxiliary requests filed with the letter dated 30 March 2007.

The respondent requests that the appeal be dismissed, or, in the event of the appeal being allowed, the case be remitted to the Opposition Division for further prosecution.

Reasons for the Decision

1. The appeal is admissible.
2. *Article 123(2) EPC*

Article 123(2) EPC requires that a European patent application or patent may not be amended in such a way that it contains subject-matter that extends beyond the content of the application as filed. The Board considers that the subject-matter of claim 1 of the main request meets this requirement for the following reasons.

Claim 1 of the application as filed is directed to a ballistic-resistant article comprising a plurality of PBO or PBA polymer fibres. Claim 1 of the main request before the Board is restricted to a particular ballistic-resistant article, namely a bullet proof vest, which comprises an untwisted, continuous filament-based yarn of PBO polymer fibres; the diameter of the fibres and the denier of the yarn are also defined. The question to be answered is therefore whether this combination of features is disclosed in the original application, and in particular in relation to bullet proof vests.

The application as originally filed relates to ballistic-resistant articles made from high-strength fibres, examples of such articles being listed on page 1, lines 6 to 11 of the application. As well as vehicle armour, shelters and cable protection, the list includes articles of clothing such as bullet proof

vests, helmets, raincoats and boots. The list is also set out in the original application in dependent claim 14, which defines preferred embodiments of the ballistic-resistant article of claim 1. The introduction to the patent application identifies a problem in that articles made from such fibres are generally heavy and uncomfortable to wear; the invention thus sets out to make the articles lighter and more comfortable to wear as well as improving the ballistic properties (see page 1, lines 15 to 18). Given that the problem underlying the invention relates to clothing, of which bullet proof vests are explicitly mentioned as an example, there is no doubt that the limitation of the claim to a bullet proof vest finds support in the description.

Part of the solution to the posed problem is to make the articles from PBO or PBT polymer fibres (see page 1, lines 20 to 21 and 26 to 27). A bullet proof vest made from PBO fibres is therefore disclosed.

The description then goes on to describe the manner in which the material is made. A dope of PBO polymers is spun into fibres, each fibre preferably having an average diameter of no more than about 50 μm (page 5, lines 18 to 24). The claimed range for fibre diameter is thus disclosed, even though a more preferred range of not more than 25 μm is also mentioned. The respondent argued that the skilled person would only choose the preferred range. However, the mere fact that a preferred range is defined cannot negate the disclosure of the broader range.

According to the next stage of the process described in the application (see page 5, line 34 to page 6, line 5), polymer fibres in the form of either staple or continuous filaments are grouped together to form a yarn. It is clear that staple fibres must be twisted together to form the yarn, but in the case of continuous filaments, they can also be held together without twisting by entanglement or with a sizing agent (page 5, lines 34 to 35 and page 6, lines 1 to 3). The feature of an untwisted, continuous filament based yarn is thus disclosed. The respondent argues that a yarn made from continuous filaments without twisting is only disclosed by holding the fibres together by sizing them. However, this is only a preferred means (see page 6, lines 4 to 5), with entanglement being an alternative option (page 6, line 2). Since untwisted continuous filament based yarn is not inextricably linked to sizing the filaments, the feature as defined in claim 1 is disclosed.

The application teaches that the optimum denier of the yarn depends on the desired use, with the preferred range for soft armour applications being from 150 to 500 denier; this range can also be used for hard armour, although higher denier yarns are preferred for economic reasons (page 6, lines 6 to 13). The range 150 to 500 denier is therefore disclosed as being technically suitable for both hard and soft applications, and in this sense, as argued by the appellant, it is irrelevant whether or not a bullet proof vest is classified as being soft armour, hard armour, or a mixture of the two.

The respondent argues that the skilled person would not associate the statement that the preferred range of denier for soft armour applications is from 150 to 500 as being linked to bullet proof vests, since such vests may incorporate rigid inserts which require higher denier yarns. The Board, however, tends to agree with the respondent that the terms "soft" and "hard" refer to a ballistic-resistant article as a whole and as such a bullet proof vest would fall into the "soft" category, even if such vests may include some rigid panels for extra protection; notwithstanding this view, the claimed range is disclosed as being suitable for both soft and hard applications. On reading page 6 of the application the skilled person interested in bullet proof vests would clearly associate the range 150 to 500 denier with such clothing.

The respondent and the opposition division argued that the subject-matter of claim 1 is a random selection of features cited in the patent application from "lists" of equal possibilities, the respondent concluding that the claimed combination is merely one out of 2160 possibilities. The Board does not concur with this view; the features are not presented in the application as equal members of lists, so it is not simply a case of a random permutation. Rather, the application guides the skilled person in particular directions in order to produce ballistic resistant articles for various applications. As argued by the appellant, claim 1 relates to features required for achieving the bullet proof vest of the invention, starting with the choice of polymer for the fibres, then progressing to the size of the fibres and the nature of the yarn made from the fibres. The claimed combination is derived from

features which the skilled person would contemplate in the context of producing material for bullet proof vests. The respondent also argued that the subject-matter of claim 1 ignores the teaching of the sole example in the application. However, as stated at page 7, lines 20 to 22, the example is only there as an illustration of the invention; it is clear that the claimed invention is not limited to the features of the example.

The opposition division was of the opinion that the features of claim 1 are a combination of preferred and non-preferred features, and the skilled person would not make such a combination. The expression "non-preferred" tends to give the impression that the feature in question would not be taken into consideration by the skilled person. On the contrary, all the features in question are identified in the application as capable of achieving the required effect, but preferred features and ranges are identified as being particularly appropriate. This should be distinguished from features in the application that are indicated as not being suitable - it is clear that the skilled person would not consider using such features; however, in the present case all the features of claim 1 are identified in the description as being suitable for the invention.

3. *Article 123(3) EPC*

Compared with granted claim 1, claim 1 of the main request is limited to a particular ballistic-resistant article, namely a bullet proof vest, comprising a particular yarn made of particular polymer fibres; the

diameter of the fibres and the denier of the yarn is also restricted. The result is a narrower scope of protection, and thus no contravention of Article 123(3) EPC.

4. *Article 84 EPC*

The respondent alleges that a lack of clarity arises from the amendment of a "ballistic resistant article" to a "bullet proof vest", because it is not clear in which parts of the vest the fibres are situated. This is significant as a bullet proof vest may contain both flexible and rigid parts.

The bullet proof vest of claim 1 is defined as comprising particular fibres in a particular form. The claim thus only requires that such fibres are present in the garment, and this teaching is itself clear.

The claim makes no mention of flexible or rigid parts, and there is no restriction as to where the fibres are located in the vest; this is left to the skilled person, who in exercising average knowledge, would be perfectly capable of determining suitable places for reinforcement. Given that the remaining features in claim 1 are also clearly defined, a lack of clarity under Article 84 EPC does not arise.

5. *Final Remarks*

- 5.1 Since claim 1 of the main request is considered to meet the requirements of Articles 123(2)&(3) EPC and Article 84 EPC, it is not necessary to consider the claims of the auxiliary requests.

5.2 In the notice of opposition, the respondent raised the grounds of lack of novelty or inventive step (Article 100(a) EPC). These have yet to be considered by the opposition division, and for this reason and in accordance with the requests of both parties, the case must be remitted to the opposition division.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division for further prosecution.

The Registrar:

The Chairman:

A. Counillon

U. Krause