Internal distribution code:

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

Datasheet for the decision of 15 March 2019

Case Number: T 0473/15 - 3.3.05

Application Number: 06720823.1

Publication Number: 1858617

IPC: B01D39/16

Language of the proceedings: EN

Title of invention:
REDUCED SOLIDITY WEB COMPRISING FIBER AND FIBER SPACER

Patent Proprietor:
Donaldson Company, Inc.

Opponents:
MAHLE International GmbH
MANN + HUMMEL GmbH

Headword:
Filter media comprising a web and a support layer/Donaldson

Relevant legal provisions:
RPBA Art. 12(4)
EPC Art. 83, 54, 56

Keyword:
Sufficiency of disclosure - (yes)
Novelty - multiple selection - selection from a range - (yes)
Inventive step - closest prior art from a different field - (yes)

Decisions cited:
G 0007/93, T 0225/93, T 2001/12, T 1068/06, T 0355/97, R 0012/09, R 0011/08, R 0022/10

Catchword:

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 0473/15 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 15 March 2019

Appellant: (Opponent 1)	MAHLE International GmbH Pragstrasse 26-46 70376 Stuttgart (DE)
Representative:	BRP Renaud & Partner mbB Rechtsanwälte Patentanwälte Steuerberater Königstraße 28 70173 Stuttgart (DE)
Appellant: (Opponent 2)	MANN + HUMMEL GmbH Hindenburgstr. 45 71638 Ludwigsburg (DE)
Respondent: (Patent Proprietor)	Donaldson Company, Inc. 1400 West 94th Street P.O. Box 1299 Minneapolis, MN 55431 (US)
Representative:	Potter Clarkson The Belgrave Centre Talbot Street Nottingham NG1 5GG (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 23 January 2015 concerning maintenance of the European Patent No. 1858617 in amended form.**

Composition of the Board:

Chairman	E. Bendl
Members:	T. Burkhardt
	R. Winkelhofer

Summary of Facts and Submissions

I. The appeals lie from the opposition division's interlocutory decision to maintain European patent EP 1 858 617 in amended form on the basis of the then fourth auxiliary request.

II. In the proceedings before the opposition division the following documents were among those discussed:

D4 T Grafe, K Graham, "Polymeric Nanofibers and Nanofiber Webs: A New Class of Nonwovens", INTC 2002: International Nonwovens Technical Conference, Atlanta, Georgia, September 2002

D5 WO 93/06924 A1

On the other hand, the opposition division did not admit document D9.

D9 US 2004/0038014 A1

III. Both opponents (appellant 1 and appellant 2 respectively) lodged appeals against this decision. With the grounds of appeal, appellant 2 filed review article D10.

D10 Huang *et al.*,"A review on polymer nanofibers by electrospinning and their applications in nanocomposites", Composites Science and Technology, 63, 2003, 2223

IV. With its reply to the grounds of appeal, the proprietor (respondent) *inter alia* upheld the main request underlying the impugned decision and submitted seven auxiliary requests.

V. Independent claim 1 of the main request reads as follows:

"1. A filter media comprising a web and a support layer of fibrous filter media substrate, the web comprising a substantially continuous fine fiber layer having a layer thickness of 0.5 to 500 microns, the layer comprising a spacer means comprising an inert particulate with a particle size of 0.05 to 200 microns dispersed throughout the fiber in the layer, the particulate present in an amount of 0.5 to 40 vol%; the fiber having a diameter of about 0.001 to about 1 micron, and the layer having a fine fiber solidity of about 0.5 to 30%."

Claims 2 to 27 refer directly or indirectly to claim 1.

VI. The arguments of the appellants, as far as relevant for the present decision, are summarised as follows:

The invention is not sufficiently disclosed and the subject-matter of the independent claim of the main request is not novel, let alone inventive, in view of D5.

VII. The arguments of the respondent, as far as relevant for the present decision, are summarised as follows:

The requests on file fulfill the requirements of the EPC.

VIII. The appellants request that the decision under appeal be set aside and that the patent be revoked.

The respondent requests that the appeals be dismissed or that the patent be maintained on the basis of one of seven auxiliary requests submitted with the reply to the grounds of appeal.

Reasons for the Decision

1. Consideration of documents

1.1 D9 was submitted by appellant 2 one month before the oral proceedings at first instance. It was not admitted by the opposition division, on the grounds that it had been filed late and *prima facie* was irrelevant. The parties have not brought forward evidence, either in writing or during the oral proceedings, that the opposition division had not exercised its discretion in accordance with the correct principles, or that it had exercised it in an unreasonable way, and had thus exceeded the proper limits of its discretion (G 7/93, OJ EJO 1994, 775, Reasons 2.6). Consequently, D9 is disregarded in the present proceedings.

1.2 The review article D10 was submitted by appellant 2 with its grounds of appeal. It corresponds to the skilled person's common general knowledge and is thus admitted into the proceedings (Article 12(4) RPBA).

2. Main request: Articles 100(b) and 83 EPC

For the following reasons, the requirements of Article 83 EPC are fulfilled:

2.1 The appellants firstly contested that it was possible to produce fibers with a diameter in the lower part of

the claimed range of 1 to 1000 nm and referred to paragraph [29] of the patent in suit where a lower limit of as high as 40 nm is disclosed.

However, according to the review article D10 (page 2225, column 2, line 6) it is possible to produce fibers having a diameter of less than 3 nm. In view of this disclosure, the appellants' allegation that fibers approaching 1 nm cannot be produced is not considered plausible. At any rate, no proof has been submitted by the appellants in this respect.

2.2 Appellant 2 held that there were at least three possible definitions of the parameter fiber diameter in claim 1: the mean value, the median value and the diameter of every fiber. However, the contested patent did not contain any pointer as to which of these definitions should be used. As a consequence, an undue burden was placed on the skilled person to find a value for the fiber diameter. In this respect, reference was made to T 225/93.

While it is true that the description does not indicate how the fiber diameter should be determined, the board does not share the appellant's view: firstly, the fiber diameter *can* be measured, for instance by means of a scanning electron microscope (paragraph [22] of the contested patent). This was acknowledged by appellant 2 during the oral proceedings.

Moreover, the conclusions of T 225/93 cannot be applied to the present case since in that case the principles underlying the possible methods of measurement were completely different from each other (permeability, photometry and adsorption; Reasons 2.1), contrary to the present case, and in that case the parties agreed

that the different methods yielded different results (Reasons 2). On the contrary, in the present case the appellants did not provide evidence for the presence of major deviations between the different definitions for fiber diameter.

Additionally, the possibility that different methods of measurement yield different results is in these circumstances rather an issue under Article 84 EPC, which is not at stake here since the parameter "fiber diameter" was already part of the claims as granted.

2.3 In its communication under Article 15(1) RPBA the board had already pointed out that the term "fiber solidity" in claim 1 appeared to be a common parameter in the field of filters designating the volume fraction of fibers in a given volume of the web. The difference between the parameters "overall solidity" and "fine fiber solidity" (in paragraph [18] and claim 1 of the contested patent respectively) moreover makes it clear that the spacer particulates are not to be accounted for when determining the "fine fiber solidity" in claim 1.

The appellants failed to provide evidence to the contrary and consequently no reason can be seen why the use of this parameter should contravene Article 83 EPC.

2.4 The appellants considered it an undue burden to test whether a particulate is "inert".

While the claims of the contested patent do not specify with regard to which compound the spacer particulates have to be "inert", as required in claim 1, the description indicates that "inert" means that the spacer particulate "does not either substantially

chemically react with the fluid or particulate loading or substantially physically adsorb or absorb a portion of the fluid or the particulate loading onto the particulate in any substantial quantity" (paragraph [20]).

Hence, for a given application, the skilled person is able to find spacer particulate that is inert in the sense that it does not substantially interact with the compounds of the fluid to be treated and that the requirements of Article 83 EPC are consequently fulfilled.

In this context it is noted that nylon and the other polymers that are given as examples in paragraph [42] of the contested patent are known to have an adsorptive capacity for specific adsorbates. However, in the present context any ambiguities as to which compounds should be considered "inert" merely relate to considerations under Article 84 EPC and are of no relevance in the present proceedings since this term already appeared in the claims as granted.

2.5 Appellant 1 furthermore held that not every combination among the five parameters was possible and/or solved the problems as defined in paragraph [11] of the contested patent, e.g. combinations where the particle diameter exceeded the layer thickness. In this respect reference was made to T 1068/06 (Reasons 5).

The board considers that the skilled person would not contemplate non-feasible and illogical parameter combinations. An objection under Article 83 EPC cannot be based on an argument that a non-claimed technical effect is not achieved (see T 2001/12, for example). Consequently, the fact that certain combinations in the

present case allegedly do not solve the posed problem relates instead to the requirements of Article 56 EPC.

The situation in T 1068/06 was somewhat different: the fact that a ratio resistance/cross-sectional area of a conducting element was within the claimed range did not necessarily solve the posed problem, namely the problem of reducing power losses, because another essential parameter, i.e. the length of the conducing element, was missing in the claim. In the present case however, the appellants have not explained which essential parameter was missing in the claim. Consequently, the conclusions of T 1068/06 cannot be transposed to the present case.

2.6 Finally, appellants also put forward the objection that none of the examples on file fell within the scope of claim 1. This, however, is not an absolute requirement that is necessary to fulfil the requirement of sufficiency of disclosure (Case Law of the Boards of Appeal, 8th ed., II C.4.3).

3. Main request: Articles 100(a) and 54 EPC

The appellants contested novelty in view of D5 but, for the following reasons, the board does not share this view:

3.1 D5 discloses a filter medium comprising a web with a fiber layer and spacer particles (claim 1).

A "support layer" is required by claim 1 of the patent in suit, whereas D5 discloses the possibility of a stacked arrangement of layers with the same or different compositions (page 13 lines 22 to 27).

However, even if it was acknowledged, *arguendo*, that in the event of there being at least two layers one of them could be construed as the support layer of claim 1, such an article has not been disclosed directly and unambiguously in combination with the remaining features of present claim 1.

In view of the various parameter ranges required by claim 1, D5 discloses a number of overlapping ranges:

- Claim 1 of the contested patent requires a layer thickness between 0.5 and 500 µm, while D5 discloses an overlapping range of 100 to 10 000 µm (page 18, lines 13 ff).

- The amount of particles according to claim 1 is between 0.5 and 40 *volume*%, while D5 discloses an open-ended range of at least 20 *weight*% (page 11, lines 8 ff). Because of the different units of measurement, a comparison of these ranges is difficult.

- Claim 1 requires a fiber diameter between about 0.001 and about 1 µm, whereas in D5 the fiber diameter is to be chosen between microfibers with up to 10 µm and larger-diameter fibers between 10 and 100 µm (page 8 lines 21 to 26 or page 9 lines 24 to 35).

Moreover, D5 indicates that the microfibers are produced by the melt blowing technique (page 8, line 17), electrospinning not being mentioned. However, according to D4 (Table 1), the minimum diameter of meltblown fibers is 2 µm and the electrospinning technique should be used to obtain smaller diameters. This is confirmed by the contested patent, which indicates that electrospinning is preferentially used

(e.g. paragraph [13, 16, 28]) and by D10 (page 2225, column 2, lines 5 to 6).

In order to arrive at the claimed fiber diameter range it is hence necessary first to select the microfiber alternative and, second, to select, from within this alternative, a narrow sub-range of fiber diameters, which moreover requires a change of the method of producing the fiber.

- Claim 1 of the contested patent specifies a fiber solidity between 0.5 and 30%, while the web of D5 comprises between 30 and 70% of fibers *and particulate* (page 9 lines 7 to 14). When the non-zero contribution of the particulate is taken out of the range disclosed in D5 there must be some overlap with the range of claim 1.

Consequently, in order to arrive at the claimed subject-matter, multiple selections have to be carried out: the sub-alternative of a plurality of layers has to be selected, a layer thickness in the region of the overlap between 100 and 500 µm, a fiber diameter in the sub-range between 0,001 and 1 µm, and a fiber solidity in the range of overlap. Yet, in D5 these alternatives and parameter ranges are disclosed in different parts of the description and there is no pointer towards applying them *in combination*.

It is established case law that novelty within the meaning of Article 54(1) and (2) EPC in such a case is acknowledged. This is even reflected in the Guidelines for Examination (G-VI.8 (i)).

3.2 Appellant 2 held that the parameter ranges in claim 1 were barely restricting because of the frequent use of

the word "comprising". As a consequence, no real selection would be necessary.

This view cannot be shared. Indeed, claim 1 mentions several times the word "comprising": claim 1 is directed to a filter medium comprising a web that in turn comprises a fine fiber layer. It is also acknowledged that the presence of further fiber layers or of further inert particulate with a different diameter is not excluded. Yet, the use of the definite article in claim 1 in relation to the fiber diameter makes it clear that the diameter of *all of the* fiber in the layer must have the claimed diameter. A situation in which only a first set of fibers present in the layer has the claimed diameter and a second set present in the same layer has a diameter outside this range does not fall under claim 1.

4. Main request: Articles 100(a) and 56 EPC

For the following reasons the main request fulfills the requirements of Article 56 EPC:

4.1 Invention

The invention relates to a filter media that comprises a support layer and a web with a fine fiber layer. The fine fiber layer in turn comprises fibers and spacer means comprising inert particles.

4.2 Closest prior art

In the appellants' view, D5 should be considered as the closest prior art. The board sees no reason to depart from this choice.

4.3 Problem to be solved

According to the patent in suit, one of the problems to be solved is the provision of a filter medium with improved filtration properties (paragraph [39] of the patent).

4.4 Solution

As a solution, the filter medium of claim 1 is proposed, characterised by a layer of fine fibers with a small diameter, spacer particulate and a specific fine fiber solidity, i.e. volume fraction taken by the fibers.

4.5 Success of the solution

It is plausible that fibers with a smaller diameter facilitate the capture of solid particulate matter. This is confirmed by Figure 19 of D10, in which it is stated that "[t]he efficiency of a filter increases with decrease in fiber diameter". It is consequently accepted that the problem is successfully solved.

Appellant 2 referred to T 355/97, which reiterates the principle that each party carries the burden of proof for the facts that it alleges. However, in the present case, the board considers that the effect is plausible and that this is confirmed by D10. Hence, no questions of burden of proof arise.

4.6 Obviousness

Although the positive influence of a decrease in the fiber diameter on the particulate capture efficiency is

known from D10, as explained above, an inventive step within the meaning of Article 56 EPC is acknowledged:

While the medium of D5 is certainly *suitable* for capturing particulate from a fluid stream, it actually deals with the *chromatographic separation* of contaminants. This is illustrated on multiple occasions: see page 10, lines 13 to 31, as well as page 8, line 6, page 13, line 18 and page 14, lines 1 to 10. Consistently, dye is separated from water in the examples in D5 (page 22 lines 21, 22 and 28; Table 2, column "Percent Recovery (Disperse Red 1)").

Admittedly, D5 mentions the term "filtration", e.g. on page 13, line 14 and page 19, line 14). However, on page 10, lines 13 to 31 it is explained that the term "filtering" in D5 is to be understood in the sense of chromatographic separation: "... in which the particles can interact with (for example, chemically or physically react with, or physically contact and modify or to be modified by) a medium or a component thereof to which the particles are exposed".

Apart from page 1, line 12, which refers to the use of fiber fabrics in the prior art only, the term "particle" in D5 refers to the particles enmeshed in the web and not to fine particles to be captured from a fluid stream. page 11, lines 4 to 7 is to be understood in this sense, too.

In other words, D5 relates to a different technical field than that of the patent in suit. However, a closest prior art that is not directed to the same purpose or effect as the invention cannot, according to established case law, lead the skilled person in an obvious way to the claimed invention (see the

introductory remarks to Case Law of the Boards of Appeal, 8th ed., I.D.3.2).

Applied to the present case, this means that the skilled person would not, without hindsight, try to improve the particulate capture efficiency of the medium of D5, which is meant for chromatographic separation. Hence, the skilled person would not, when starting from D5, apply D4's, D10's or any other document's teaching, since these documents do not deal with chromatographic separation.

For these reasons, an inventive step within the meaning of Article 56 EPC is acknowledged.

4.7 Appellant 1 held that it was common to combine an adsorbing or absorbing function and the capturing of particulates in the same filter. The board notes, however, that D5 does not disclose such a combination and that the appellants failed to refer to such a document when presenting their problem/solution approach.

4.8 Appellant 2 also argued that,when starting from D5, the skilled person would reduce the fiber diameter in order to increase the residence time of the fluid and thereby improve the adsorption performance. However, this argument is not convincing either, since the problem to be solved in the problem/solution approach is not a better adsorption performance but an improved particulate capture.

5. Further requests

At the end of the approximately 90-minute discussion of inventive step during the oral proceedings, appellant 2 requested that the board indicate the distinguishing features between claim 1 of the contested patent and document D5. The board declined to meet this request.

It had already been stated in the communication under Article 15(1) RPBA (first three paragraphs on page 6) that there "appear[ed] to be several overlapping ranges" but that "a combination ... does not appear to be disclosed" and that "the subject-matter of the claims appear[ed] novel". Furthermore, during the oral proceedings the parties were asked, from the beginning of the discussion of novelty, to indicate where in D5 the parameters of claim 1 were shown *in combination*, for instance the claimed fiber diameter and the support layer. During the discussion of novelty the respondent stated that the claimed parameter ranges were not disclosed *in combination* in D5.

Moreover, the appellants *did* comment several times during the inventive step discussion on the claimed parameter ranges, e.g. on the effect of a reduced fiber diameter and each developed a problem/solution approach starting from the features differing from the prior art. To restart discussion at the end of exchange of arguments by questioning the board cannot be in the interests of a fair and balanced efficient procedure.

In addition, it is well-established case law that there is no obligation for the board to indicate the reasons for its decision during the oral proceedings, as this may run counter to its neutrality (see, for example,

R 12/09, Reasons 11; R 11/08, Reasons 14; R 22/10, Reasons 7).

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar: The Chairman:

C. Vodz E. Bendl

Decision electronically authenticated