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THE EUROPEAN PATENT  
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**D E C I S I O N**  
**of 23 February 1998**

**Case Number:** T 0170/97 - 3.2.4

**Application Number:** 92309637.4

**Publication Number:** 0539191

**IPC:** A24D 3/06

**Language of the proceedings:** EN

**Title of invention:**

Lightweight cigarette filter and cigarettes incorporating such filters

**Patentee:**

Rothmans International Services Limited

**Opponent:**

H.F. & Ph.F. Reemtsma GmbH & Co.

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 56

**Keyword:**

"Novelty (yes)"  
"Inventive step (yes)"

**Decisions cited:**

T 0013/84, T 0002/83, T 0005/81

**Catchword:**

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Case Number: T 0170/97 - 3.2.4

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.4  
of 23 February 1998

**Appellant:**  
(Opponent)

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**Representative:**

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**Respondent:**  
(Proprietor of the patent)

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**Representative:**

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**Decision under appeal:**

Decision of the Opposition Division of the  
European Patent Office posted 14 January 1997  
rejecting the opposition filed against European  
patent No. 0 539 191 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** C. A. J. Andries  
**Members:** R. E. Gryc  
M. Lewenton

## Summary of Facts and Submissions

- I. The appellant (opponent) lodged an appeal, received at the EPO on 6 February 1997 against the decision of the Opposition Division, dispatched on 14 January 1997, on the rejection of the opposition against the European patent EP-B-0 539 191.

The appeal fee was paid simultaneously and the statement setting out the grounds of appeal was received at the EPO on 12 May 1997.

- II. The appellant filed an opposition against the patent as a whole on the grounds of lack of inventive step (Article 100(a) EPC) of the subject-matter of Claim 1 mainly in view of the following prior art documents:

D1: DE-A-2 849 904 (corresponding to GB-A-2 012 554)  
and

D6: Ullmanns Encyklopädie der Technischen Chemie,  
4. Auflage, Band 8, Seite 330.

The opposition division held that these grounds for opposition did not prejudice the maintenance of the patent unamended and rejected the opposition .

- III. In his statement setting out the grounds of appeal, the appellant stated that D1 discloses a cigarette filter including a filter element made of a cellulose acetate tow having a total Denier of less than 35.000 which should correspond approximately to a bulk density of less than 0,12 g/cm<sup>3</sup> and a plug made of a closed cell foamed plastic.

He pointed out that the skilled person could learn from D6 that the closed-cell foams densities are in the range claimed in Claim 1.

Moreover, he tried to demonstrate that, if the skilled person wants to reduce significantly the weight of the cigarette filter by replacing the core of the filter by a filler material, the density of the material should be in the range indicated in Claim 1. Therefore, according to the appellant, no inventive step can be seen in the subject-matter of Claim 1.

In reply, the respondent (patentee) pointed out that nothing in the prior art shows that a lightweight cigarette was known to be desirable and that, even if this was true, D1 and D6 do not render the claimed solution obvious.

He contended also that Claim 1 has a double requirement regarding the density of the foam and that, faced with this, the appellant makes an ex post facto reconstruction of the invention.

IV. With his letter dated 9 February 1998, the respondent filed three auxiliary requests each comprising a set of amended claims.

V. Oral proceedings took place on 23 February 1998.

During the oral proceedings, the appellant filed the following new documents:

D7: Ullmann's Encyclopedia of Industrial Chemistry - VCH Verlagsgesellschaft mbH - 1988 - Volume All-front pages and pages 435 to 442 and 444 and,

D8: Auskunft der Bundesstelle für Aussenhandelsinformation comprising two pages of the Australian customs tariff - schedule 3 - operative 7/8/97.

The appellant did not dispute the novelty of the subject-matter of Claim 1 and considered that D1 disclosed the state of the art closest to the invention.

The appellant was of the opinion that, in order to lighten the cigarette of D1 without modifying the taste provided to the smoker by this cigarette, the skilled person has no other possibility than to play with the characteristics of the filler component. According to him, the skilled person would be the specialist of plastic foams who knew the densities of such foams and would only have to choose the lowest range. The appellant considered that the skilled person would be placed in a one-way-street situation which led him quite automatically to the invention. Moreover, he contended also that, for the person skilled in the art, the taxation of cigarettes by weight in some countries was a strong incentive to lighten the cigarettes.

The respondent acknowledged that the state of the art disclosed in D1 was structurally the closest. Nevertheless, he contended that the disclosure of D1 was conceptually far away from the invention. He emphasized that the problem of weight is missing in D1 and that it is irrelevant whether or not the cigarettes are taxed by weight. He contended also that to lighten the cigarettes provides a general advantage for example in shipping, that there was no prior art discussing this problem and that the aim of D1 would lead the skilled person in another direction i.e. to balance gas phase (GP) and total particulate matter (TPM) contents and resistance-to-draw (RTD). Moreover, the respondent pointed out that D6 deals with building materials having nothing to do with cigarette filters and that the closed cells foam considered in that document had no supporting capacity.

VI. At the end of the oral proceedings, the following requests were made:

The appellant requested that the decision under appeal be set aside and that the European patent N° 539 191 be revoked.

The respondent requested that the appeal be dismissed and the patent be maintained as granted (main request); subsidiarily, he requested the cancellation of the decision under appeal and the maintenance of the patent on the basis of one of the three auxiliary requests filed with letter dated 9 February 1998.

VII. The wording of Claim 1 as granted reads as follows:

"A lightweight cigarette filter including a filter element containing filter material having a total Denier of less than 35,000 or a bulk density of less than 0.12 g/cm<sup>3</sup> in which part of the volume of the filter is occupied by a space filler component impervious to smoke flow therethrough the bulk density of which is 0.01 to 0.05 g/cm<sup>3</sup> and is less than the bulk density of the equivalent amount of filter material which it replaces."

## **Reasons for the Decision**

### *1. Admissibility of the appeal*

The appeal is admissible.

### *2. Main request*

#### *2.1 Novelty (Article 54 EPC)*

The board is satisfied that none of the cited documents discloses a lightweight cigarette filter and cigarettes incorporating such filters comprising in combination all the features described in Claim 1.

Since this has not been disputed by the respondent, there is no need for further detailed substantiation and the subject-matter as set forth in Claim 1 is to be considered as novel within the meaning of Article 54 EPC.

## 2.2 The closest state of the art

In accordance with the respondent, the Board considers that D1 discloses a state of the art which, structurally, is the closest to the invention since this document discloses cigarette filters including a filter element containing filter material having a total Denier of less than 35,000 (see D1: Table I) and in which part of the volume of the filter is occupied by a space filler component impervious to smoke flow therethrough (see D1: page 8, lines 6 to 21 and Figure 4).

The subject-matter of Claim 1 differs from this closest state of the art in that the bulk density of the space filler component is specified to be in the range of 0.01 to 0.05 g/cm<sup>3</sup> and less than the bulk density of the equivalent amount of filter material which it replaces.

## 2.3 Problem and solution

Starting from the aforementioned closest state of the art and taking into account the above-mentioned differences between said prior art and the subject-matter of Claim 1, the Board sees the problem as objectively determined (see in particular decision

T 13/84, OJ EPO 1986, 253) as being to reduce the weight of the cigarette filter system according to D1 whilst retaining acceptable characteristics of the cigarette (see the patent specification: page 2, lines 5 to 7). The Board is satisfied that the invention as claimed in Claim 1 brings effectively a solution to this problem.

2.4 Inventive step (Article 56 EPC)

2.4.1 The questions to be answered as regards the inventive step in relation to the modification of a cigarette filter system according to Figure 4 of D1 are whether the state of the art seen in the light of the general common knowledge of the skilled person would provide him with enough information about the essential means of the invention and whether, in the state of the art, he would find clues to applying this teaching to said known filter in expectation of the result he was seeking (see decision T 2/83, OJ EPO 1984, 265).

It should also be kept in mind that the assessment of inventive step must consider solely the limited teaching of the prior art documents. An interpretation of the documents as influenced by the problem solved by the invention while the problem was neither mentioned or even suggested must be avoided, such an approach being merely the result of an a posteriori analysis (see decision T 5/81, OJ EPO 1982, 249).

2.4.2 D1 is concerned with the problem of balancing the resistance to draw with the flavour retention of a filter (see D1: page 5, lines 11 to 14), i.e. a problem having nothing to do with the problem solved by the invention.



Furthermore, D1 describes a mouthpiece (11) comprising a filter and a smoke-impervious plug the bulk density of which is not disclosed. D1 does not even suggest that this bulk density could be less than the bulk density of the filter material. About said plug, D1 teaches mainly that it could be made of a closed-cell foamed plastic which should be of sufficient strength to retain its shape under a smoker's bite (see D1: page 8, lines 6 to 8 and 17 to 21 and Figure 4).

The purpose of lightening the filter of a cigarette is taught or even suggested neither in D1, nor in the other documents illustrating the state of the art.

The Board considers also that the appellant's argument based on document D8, i.e. that the taxation of the cigarettes according to their weight was for the skilled person a strong incentive for reducing the weight of the cigarettes, is not convincing because the appellant did not succeed to prove that it was already in force before the priority date of the patent (see D8, end of pages 2 and 3: "operative 7/8/97"). Also, it could be reasonably assumed that such a taxation would concern the weight of the tobacco alone and not the weight of the whole cigarette including the filter.

For the aforementioned reasons, the Board has some doubt that the need for lightening cigarette filters and the resulting problem solved by the invention could have been initiated by the taxation of cigarettes.

Therefore, neither a clear indication that the problem solved by the invention was already known at the priority date nor a clue or hint for the skilled person to pay attention to such a problem can be found in the prior art.

2.4.3 If nevertheless, without any expected reason, the skilled person would contemplate reducing the weight of the filter system of D1, the teaching of D1 would probably dissuade him from modifying the preselected density of the filtering medium because a modification of its density could involve the loss of the desired level of filtration for which said medium has been densified (see D1, from the last three lines of page 5 to line 4 of page 6). Therefore, it seems reasonable to consider that the skilled person, as contended by the appellant, would play only with the bulk density of the plug (13) and try to reduce it by selecting a material the density of which is less than that of the plug known from D1. The skilled person would however find in D1 absolutely no teaching that the density of said material to be selected should be less than the bulk density of the filtering material of the filter, the only indication given by D1 being that the plug should be made of a solid or closed-cell foamed plastic having sufficient strength to resist to a smoker's bite (see D1: page 8, lines 17 to 21).

Therefore, the skilled person would have a priori no reason for selecting for the plug a foamed plastic having a density lower than that of the filtering material of the filter, particularly since D1 not only teaches that the filter can be composed of any known filtering medium or combination thereof (see D1: page 7, first lines of the 4th paragraph), but also suggests a range of densities for the filter material which is very wide, especially including very low values (see table I on page 10: for example a total Denier of 6.000 or 8.000). This information cannot be considered to give a clear teaching leading the skilled person to the narrow range (0,01 to 0,05 g/cm<sup>3</sup>) cited in Claim 1.

The Board agrees with the appellant's contention that, at the priority date, the skilled person knew that the highly cellular foams, i.e. the lightest plastic foams, could have densities between 0,01 and 0,04 g/cm<sup>3</sup> (see D6: page 330, left column, line 4), however since these foams are used as building materials, the Board doubts that the skilled person would think to use them for cigarette filters. Moreover, he would be dissuaded by the teaching of D6 and D7 from using very light plastic foams for the plug of D1 requiring sufficient strength to resist to a bite because both documents (see D6: page 330, lines 4 and 5 and D7: page 438, left column, lines 1 and 2 and right column, lines 1 to 3) teach that the mechanical behaviour of the foamed plastic is affected by the density and that the compressive strength of highly cellular foams is low. The skilled person would thus not be inclined to use a foam having a density counting among the lowest as claimed in Claim 1.

2.4.4 For the aforementioned reasons, the Board considers that the posing of a problem which has not been recognised earlier (i.e. to reduce the weight of the cigarette filter) and to solve it according to the teaching of claim 1 does not follow plainly and logically either from the prior art or from the general knowledge of a skilled person and implies an inventive step within the meaning of Article 56 EPC.

2.5 Therefore the invention as described and claimed in European Patent N° 539 191 meets the requirements of the EPC and said patent can be maintained as granted.

### 3. *Auxiliary requests*

Since the board has acknowledged the main request as allowable, there is no need to consider the respondent's auxiliary requests.

**Order**

**For these reasons it is decided that:**

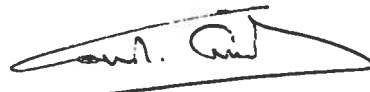
The appeal is dismissed.

The Registrar:



N. Maslin

The Chairman:



C. Andries

R.G.  
P