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D E C I S I O N
of 22 February 1999

Case Number: T 0107/98 - 3.2.4

Application Number: 90313555.6

Publication Number: 0474940

IPC: A24D 3/04

Language of the proceedings: EN

Title of invention:

Concentric smoking filter having discrete tow and web filter media

Patentee:

Philip Morris Products Inc.

Opponent:

H.F. & Ph.F. Reemtsma GmbH & Co.
British-American Tobacco (Germany) GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 123, 54, 56

Keyword:

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

Decisions cited:

-

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0107/98 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 22 February 1999

Appellant: Philip Morris Products Inc.
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Representative: Marx, Lothar, Dr.
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Decision under appeal: Decision of the Opposition Division of the European Patent Office posted 4 December 1997 revoking European patent No. 0 474 940 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: C. A. J. Andries

Members: R. E. Gryc
M. Lewenton

Summary of Facts and Submissions

- I. The appellant (patent proprietor) lodged an appeal on 28 January 1998 against the opposition division's decision notified by post on 4 December 1997 revoking European patent No. 0 474 940.

The appeal fee was paid on 29 January 1998 and the statement setting out the grounds of appeal was filed on 14 April 1998.

- II. Oppositions were filed requesting revocation of the patent as a whole on the basis of Article 100(a) and (b) EPC. The opposition division held that lack of inventive step (Article 56 EPC) of the subject-matter of Claim 1 as granted prejudiced the maintenance of the patent having regard to the general knowledge of the person skilled in the art in the technical field of the cigarette industry combined with the teaching of document US-A-3 396 061 (D1).

Document DE-A-32 46 898 (D8) corresponding to FR-A-2 518 374 cited in the search report was also referred to during the opposition procedure.

- III. In the statement of the grounds of appeal, the appellant contended that the object of D1 was different from the object of the present invention.

He pointed out that the actual filters described in D1 were of short length and low RTD and that D1 was entirely deficient as regards ventilation and interpermeability between the filter regions.

He emphasized that the achievement by the invention of an unexpectedly high degree of taste associated with very low delivery depends in particular on the RTD of the filter and its distribution between the regions thereof as well as on the presence of ventilation and interpermeability between the regions of the filter.

In reply, the respondents (opponents) contended that D1 discloses a concentric ventilated tobacco smoke filter having a central core and a surrounding layer interfacially cohered, which, in their opinion, implicitly means that smoke and air can flow radially between the central core and the peripheral layer. They consider that D8 implicitly acknowledges that, in the case of a low permeability core, a radial flow of smoke between the core and the layer of filtering material surrounding the core is possible.

The respondents contended also that D8 discloses a ventilated filter made of the same materials as the filter according to the invention and that the range from 130 mm W.G. to 195 mm W.G. described in Claim 1 should be considered as anticipated by D8 since, after having described a RTD of 126 mm WG for a specific embodiment, D8 specifies that the pressure drop can be remarkably higher.

They argued further that, a linear relationship existing between the length of a filter tip and its resistance-to-draw, the extrapolation of the values given in D8 for a tipping length of 25 mm to a tipping length of 32 mm described in the opposed patent would lead the skilled person to envisage a pressure drop of

about 161 mm W.G. i.e. a value comprised in the range claimed in Claim 1.

They contended also that the specific values of 1.6 denier per filament and a total denier of 70,000 disclosed in D8 for the material of the central core result in a RTD which is within the range specified in Claim 1 of the opposed patent.

IV. Oral proceedings took place on 22 February 1999.

The appellant filed a new Claim 1 as a basis for a new main request and maintained his auxiliary request filed with letter of 22 January 1999.

In reply to an objection of the respondents concerning clarity of the new Claim 1 as regards the permeability of the outer plug wrap (22, 42), the appellant pointed out that the provision of holes in the tipping implies necessarily that any plug wrap be permeable to air to allow admission of air into the peripheral layer.

Respondent 02 considered the disclosure of D8 as the closest to the invention. In his opinion, the RTD value of 120 mm WG disclosed in D8 should be considered as being "about 130 mm WG" as claimed in Claim 1.

Respondent 02 argued also that, by describing that a radial flow of smoke or air between the core and the surrounding layer "may be prevented" (see D8: page 7, 2nd paragraph) and that the core may have a smoke-impermeable wrapper "if desired" (see D8: page 9, lines 22 to 34), D8 teaches the skilled person two

alternatives i.e. filter plugs with or without an impermeable separation between the core and the peripheral layer.

Respondent 02 was therefore of the opinion that the subject-matter of the new Claim 1 was completely anticipated by the disclosure of D8.

Respondents 01 and 02 considered respectively the state of the art described in D1 and in D8 as the closest to the invention.

Respondent 01 argued in particular that, since the RTD of a filter plug depends on the tipping length, it was obvious for the skilled person to arrive at the invention when starting from D1.

Respondent 02 also pointed out that in page 7, lines 1 to 12 and page 10, lines 1 to 20, D8 gives the skilled person the instruction of using a "Transorb" rod of bonded cellulose acetate filaments as core material, said "Transorb" material having, according to respondent 02, the same properties as the core material of the plug claimed in Claim 1.

At the end of the oral proceedings, the appellant requested that the decision under appeal be set aside and that the patent be maintained either on the basis of the documents filed during the oral proceedings (main request) or, auxiliary, on the basis of Claim 1 filed with letter dated 22 January 1999.

Both respondents requested that the appeal be

dismissed.

V. Claim 1 of the main request reads as follows:

"A smoking filter comprising a filter plug (12, 31, 52, 62) having a central core (21, 40, 54, 64) of a first filter material and a peripheral layer (20, 41, 55, 65) of a second filter material surrounding the said central core and a tipping (14) around the peripheral layer, one of the said first and second materials being a fibrous tow and the other of said first and second materials being a gathered corrugated web material, the tipping having holes (15) therethrough for the admission of air into the peripheral layer, the said filter plug having a resistance-to-draw of between about 130mm W.G. and about 195mm W.G., the said central core having a resistance-to-draw of between about 285mm W.G. and about 450mm W.G. and the central core being wrapped in a porous plug wrap (23, 43) to permit passage of smoke between the peripheral layer and the central core."

Reasons for the Decision

1. *Admissibility*

The appeal is admissible.

2. *Main request*

2.1 Modifications of Claim 1 (Article 123 EPC).

Compared to Claim 1 as granted (see page 5 of the patent specification), new Claim 1 on file differs therefrom according to the following:

- the following phrase: "and a tipping (14) around the peripheral layer" has been incorporated between the words "core" and "one" of respectively lines 48 and 49 of Claim 1 as granted,
- the following phrase: "the tipping having holes (15) therethrough for the admission of air into the peripheral layer" has been incorporated in line 50 of Claim 1 as granted between the word "material" and the expression "characterised in that" which has been deleted,

A support for these additional characteristics can be found in the application as originally filed, in page 5, line 5; page 6, line 18; page 7, lines 16, 17; page 8, line 15, 16; in Claim 28 and in Figures 1, 3, 5 and 6).

- the ambiguous term "filter" in line 50 of Claim 1 as granted has been replaced by the more explicit expression: "filter plug". This specifies clearly that, when the smoking filter is a dual filter made up of two abutting filter segments (see the third embodiment represented on Figure 5), the claimed RTD range of between 130 mm WG and about 195 mm WG concerns the RTD concentric filter segment alone and not the complete smoking filter composed of the two filter segments.

- also at the end of Claim 1 as granted the following passage has been added:

and the central core being wrapped in a porous plug wrap (23, 43) to permit passage of smoke between the peripheral layer and the central core."

A counterpart can also be found in the application as originally filed in page 5, from line 13 to 26; page 6, lines 27, 28; in Claims 12 and 13 and in Figures 2 and 4.

Since all these amendments contribute to clarify Claim 1 and reduce the protection conferred, no objection can be made in application of Article 123 EPC.

2.2 Interpretation of Claim 1

In the light of the description of the originally filed application, the following phrase:

"passage of smoke between the peripheral layer and the central core"

newly incorporated at the end of Claim 1 should be interpreted as referring to the transfer of smoke in the radial direction of the filter plug i.e. from the layer to the core and vice-versa (see the application as filed: page 5, lines 25, 26) and not in the longitudinal direction along the interface between peripheral layer 20 and the core since, according to

the invention, "channelling" should be prevented (see the application as filed: page 5, lines 26 to 29).

2.3 Novelty (Article 54 EPC)

When examining novelty it should be borne in mind that a claimed subject-matter would lack novelty only if it were derivable as a whole directly and unambiguously from one document and that it is not justified arbitrarily to isolate parts of a prior art document from their context in order to derive therefrom a technical information which would be distinct from the integral teaching of the document.

Although D1 does not mention a tipping for the disclosed smoking filter, the provision of such a tipping is considered as implicit. However, no indication can be found in D1 that said tipping should permit admission of air into the peripheral layer. Moreover, in D1, no RTD is specified for the central core of the filter plug and the only pressure drop values (90 and 36 mm W.G.) given respectively in column 1, line 43 and in column 5, lines 36, 53 and 54, concern the plug as a whole and are clearly outside the RTD range claimed in Claim 1.

Also D1 does not teach the skilled person to wrap the central core in a porous wrap and nothing suggests to allow the passage of smoke between the peripheral layer and the central core, all the more since it is contemplated to plasticize or to apply an adhesive on the surfaces in contact of the concentric tow and web of the filter plug (see D1: from column 2, line 72 to

column 3, line 20).

Regarding now the smoke filter plug of D8, the filtering material is concentrated in a peripheral layer (22) surrounding a core (20) which is made of a flow-obstructing material (see D8: from page 4, line 22 to page 5, line 4 and page 7, line 1 to 6).

The core of the filter plug according to D8 therefore cannot be considered as being made of a "filter material or medium" in the meaning of the invention, i.e. a material permeable to smoke and having filtering properties.

Also, the highest RTD value of 126mm WG disclosed in D8 (see Table 4) for the filter tip alone lies under the lower limit (130mm WG) of the range claimed in Claim 1 and nothing indicates without any doubt that such a value can be considered as being "about 130 mm WG" as claimed.

As regards the RTD of the central core itself, D8 does not give any indication since the pressure drops referred to from page 15, line 26 to page 16, line 5 of D8 and which can be much higher than 120 mm WG are the overall pressure drops of the complete cigarette (tobacco rod and filter tip) and not of the central core of concentric filter plugs.

It should also be noted that when, in D8, it is envisaged to wrap the core in a wrap or sleeve, said wrap or sleeve should be non-porous or impermeable in order to prevent a radial flow of smoke between the

core and the filtering material (see D8: page 7, lines 14 to 20), contrarily to the last feature of Claim 1.

Therefore, all the abovementioned differences show clearly that the subject-matter of Claim 1 is not derivable as a whole directly and unambiguously from either D1 or D8 and that it must be considered as new in the meaning of Article 54 EPC.

2.4 The closest state of the art

Among the two most relevant prior art documents D1 and D8 cited by the respondents, the Board considers that the teaching of D1 is the closest to the invention because the approach of filtering according to D1 appears to be almost the same as according to the invention, i.e. to balance the mechanical efficiency between the core and the peripheral layer to provide simultaneously a high efficiency as well as acceptable taste and RTD.

On the contrary to the invention, the function of the core of the filter according to D8 is not to participate to filtering but contrarily to restrict the cross-sectional area of the filtering material in order to reduce the mechanical efficiency of the filter (see D8: for example page 6, lines 8 to 13).

As already stated above in section 2.3, the subject-matter of Claim 1 differs from the state of the art according to D1 in that a perforated tipping is provided, the lowest limit (130 mm WG) of the claimed

range is far above the described values of RTD of the concentric filter plug (36 and 90 mm WG), a RTD value is indicated for the core, a wrap is provided around said core and the transfer of smoke between the peripheral layer and the core is contemplated.

2.5 Problem and solution

When taking into account the aforementioned differences (see section 2.4, last paragraph), the problem as determined objectively appears to be to improve the efficiency and taste of the filter according to D1, as well as its other aesthetic impacts (see for example the opposed patent: page 2, lines 46 and 47 and page 5, lines 42 and 43).

The Board is satisfied that the combined effects of ventilation of the peripheral layer, the transfer of smoke between said layer and the core together with the preselected RTD values for the plug and the core as described in Claim 1 bring effectively a solution to said problem.

2.6 Inventive step (Article 56 EPC)

2.6.1 The object of D1 is mainly to avoid the disadvantage of the multiple assembling operation of components required for usual non-ventilated filter tips having a relatively high smoke efficiency and an acceptable taste (see D1, column 1, lines 44 to 52) whereas the object of D8 is mainly to increase the importance of the effect of air dilution with respect to mechanical filtration in the efficiency of a filter, i.e. a completely different purpose. Moreover, compared to the teaching of D1, D8 teaches a completely different approach of filtering as already stated above in the two first paragraphs of section 2.4.

2.6.2 Therefore, when the skilled person starts from the filter plug of D1 which is not ventilated with the aim of improving its efficiency, taste and other aesthetics, he has a priori no reason to consult D8 the teaching of which is mainly orientated towards increasing air dilution to the prejudice of filtration.

Assuming nevertheless that the skilled person would apply the teaching of D8 to the filter plug of D1, he would be inclined to increase the density and the RTD of the core so that it would be impermeable or of a very low permeability to smoke i.e. to a level much higher than the upper limit (450 mm WG) of the RTD range claimed in Claim 1. Also, when deciding to wrap the core of the filter plug of D1 in a wrap or sleeve or skin according to the teaching of D8 (see D8: page 7, lines 14 to 20), the skilled person would use an impermeable envelope and not a porous wrapper

allowing the passage of smoke between the outer layer and the core as claimed in Claim 1.

2.6.3 The calculations suggested by the respondents, which are supposed to lead the skilled person in an obvious manner to the claimed subject-matter, cannot change the above reasoning since they appear to be based on an ex-post facto analysis. Not only was there prima facie no reason for the skilled person to increase the pressure drop of 90 mm WG considered in D1 as a commercially acceptable pressure drop, but also such an increase in a cigarette according to D1 would lead to an inappropriate smoke removal efficiency due to the linear relationship between pressure drop and smoke removal efficiency suggested in D1. Furthermore, even if these calculations could suggest a pressure drop for the whole filter, they do not lead the skilled person to the other differences between the subject-matter of Claim 1 and the state of the art according to D1.

2.6.4 For the foregoing reasons, the Board considers that to improve the filter plug of D1 according to the teaching of Claim 1 does not follow plainly and logically from the cited prior art and that the reasons stated by the respondents did not prejudice the maintenance of the patent in the amended version of the main request filed at the oral proceedings.

3. *Auxiliary request*

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

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent in the following version:

Claims: 1 to 21,

Description: pages 2 to 5,

Figures: 1 to 6,

all documents filed during the oral proceedings.

The Registrar:

The Chairman:

N. Maslin

C. Andries