BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 428/90 - 3.2.4

Application No.: 83 303 914.2

Publication No.: 0 101 173

Title of invention: A24D 3/04

Classification: Cigarette filter assembly

D E C I S I O N
of 15 January 1993

Patentee: LORILLARD, INC.

Opponent: 01) B.A.T. Cigarettenfabriken GmbH
02) Filtrona Limited

Headword:

EPC Article 56

Keyword: "Inventive step - yes"

Case Number : T 428/90 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 15 January 1993

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Decision under appeal :
Decision of the Opposition Division of the European Patent Office taken on 15 January 1990 and forwarded on 28 March 1990 revoking European patent No. 0 101 173 pursuant to Article 102(1) EPC.

Composition of the Board :

Chairman : C.A.J. Andries
Members : R.E. Gryc
J.-P.B. Seitz

Summary of Facts and Submissions

I. European patent No. 0 101 173 comprising five claims was granted to the Appellant on 22 April 1987 on the basis of European patent application No. 83 303 914.2 filed on 5 July 1983.

II. The patent was revoked by a decision of the Opposition Division taken at the oral proceedings of 15 January 1990 and notified by post on 28 March 1990. The ground for revocation was lack of inventive step in view of the following documents:

D1: CH-A- 332 794
D2: US-A-3 396 733
D3: US-A-4 273 141
D4: Filtrona promotional brochure (Dual filters)
D5: DE-U-1 794 665
D6: GB-A-1 371 794.

III. The Appellant lodged an appeal by telecopy on 23 May 1990 and simultaneously paid the relevant fee.

The Statement of Grounds was filed on 6 August 1990.

In his reply, Respondent 1 (Opponent 1) contended more particularly that neither the provision of a filter assembly according to D2 with a mixing chamber disclosed in D3 or D5 nor the provision of a filter assembly according to D1 with one of the mouthpieces described in D2 could be considered an inventive step. He also pointed out that the use of two filters made of different materials and therefore with different flow resistance values was already known from the Filtrona VCF dual filters of D4.

IV. Oral proceedings took place on 15 January 1993.

Respondent 2 (Opponent 2), although duly summoned, did not appear. He informed the Board with a letter dated 28 August 1992 that he did not intend to come to the oral proceedings. In accordance with the provisions of Rule 71(2) EPC the proceedings were continued without him.

At the hearing, the Appellant filed new Claims 1 to 3 and a description (columns 1 to 6) and drawings (Figures 1 and 2) amended accordingly.

Respondent 1 contended mainly that the subject-matter of new Claim 1 did not involve an inventive step in comparison with the state of the art represented in Figure 4 of:

D7: BE-A- 891 728 (cited in the search report).

He argued that it was immaterial whether the air stream entered the mixing chamber through perforations or through a porous wrapping, provided that an air stream was created, and asserted that the passage between the mixing chamber and the distal end was large enough to let the stream of gas pass substantially unimpeded.

Concerning new independent Claim 2, Respondent 1 argued also that its subject-matter was obvious in view of the state of the art disclosed either in Figures 6 and 9 of D3 or in D4 wherein the only difference resided in the use of a second filter made of a different filter material (Myria instead of cellulose acetate as according to the invention).

The Appellant contested this argumentation.

V. The independent Claims 1 and 2 as filed during the oral proceedings read as follows:

"1. A filter assembly (10) for a cigarette or other similar article for smoking, the filter assembly (10) being of the ventilated type consisting of a filter plug (14), wrapper means (18, 20) and a mouthpiece (26), the filter plug (14) being composed of cellulose acetate, the wrapper means (18, 20) surrounding the filter plug and, in use, attaching the filter assembly (10) to the cigarette or other article such that the filter plug (14) is retained in end-to-end relation thereto, the wrapper means including at least one substantially non-porous wrapping (18) and having a distal end (22) spaced from the filter plug (14) to provide the filter assembly (10) with an open mixing chamber (24) between the filter plug (14) and the distal end (22), and at least one perforation (28) in the wrapper means located to allow diluting air to be drawn from outside directly into the mixing chamber to mix with the mainstream smoke drawn into the mixing chamber (24) through the filter plug (14) when the cigarette or other article is smoked, the filter assembly (10) including a mouthpiece (26) disposed within the wrapper means (18, 20) and extending from the mixing chamber (24) to the distal end (22), said mouthpiece having an open cross-section formed by at least one longitudinal channel, the substantially non-porous wrapping (18) surrounding and directly engaging the filter plug (14) and the perforation (28) extending completely through the wrapper means (18, 20), and said mouthpiece having its longitudinal channel substantially co-extensive with the open cross-section of the mixing chamber such that the filter assembly will pass smoke and diluting air substantially unimpeded from the mixing chamber (24) to the distal end (22).

2. A filter assembly (10") for a cigarette or other similar article for smoking, the filter assembly (10") being of the ventilated type consisting of a filter plug (14"), wrapper means (18", 20") and a secondary filter (15), the filter plug (14") being composed of cellulose acetate, the wrapper means (18", 20") surrounding the filter plug and, in use, attaching the filter assembly to the cigarette or other article such that the filter plug is retained in end-to-end relation thereto, the wrapper means including at least one substantially non-porous wrapping (18") and having a distal end (22") spaced from the filter plug to provide the filter assembly with an open mixing chamber (24") between the filter plug and the distal end, at least one perforation (28") in the wrapper means located to allow diluting air to be drawn from outside directly into the mixing chamber to mix with the mainstream smoke drawn into the chamber through the filter plug when the cigarette or other article is smoked, the substantially non-porous wrapping (18") surrounding and directly engaging the filter plug (14") and the perforation (28") extending completely through the wrapper means (18", 20"), the secondary filter (15) being disposed within the wrapper means (18", 20") between the open mixing chamber (24") and the distal end (22") so that the mixing chamber (24") extends between the filter plug (14") and the secondary filter (15), and the secondary filter (15) having a flow resistance value substantially lower than the flow resistance value of the filter plug (14") such that smoke and diluting air are passed substantially unimpeded from the mixing chamber (24") to the distal end (22"), the filter plug (14") and the secondary filter (15) being constructed such that at least 80% of the filtration is effected by the filter plug (14")."

VI. The Appellant requested that the decision under appeal be set aside and the patent be maintained with the new Claims 1 to 3, description (columns 1 to 6) and drawings (Figures 1 and 3) filed during the oral proceedings.

Respondent 1 requested that the appeal be dismissed.

No request was filed by Respondent 2.

Reasons for the Decision

1. Admissibility of the appeal

The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC; it is therefore admissible.

2. Amendments to the claims after grant (Article 123)

New Claims 1 and 2 filed at the oral proceedings differ from the granted claims as follows:

2.1 Claim 1

2.1.1 The expression "filter mass" has been replaced throughout the claim by the expression "filter plug". Since these expressions have been presented as equivalent in the application as originally filed (see page 7, lines 17 to 24), this amendment does not contravene the requirements of Article 123 EPC.

2.1.2 The sentence: "comprising a filter mass (14) ..." has been replaced by the following text: "consisting of a filter plug (14), wrapper means (18, 20) and a mouthpiece (26), the filter plug (14) being composed of cellulose acetate ...". Since this text not only gives a more precise and

restrictive definition of the composition of the filter assembly, but is also supported by the description as originally filed, there is no objection to this modification.

2.1.3 The expression **"characterised in that"** has been deleted and the text that follows modified accordingly. With this amendment, the form of the claims appears to be more appropriate with regard to the state of the art in conformity with Rule 29(1) EPC.

2.2 Claim 2

The contents of Claim 2 correspond to those of granted Claims 3 and 4 combined and modified as follows:

2.2.1 The expression **"filter mass"** has been replaced by the expression **"filter plug"** throughout the claim. This amendment does not give rise to any objection for the same reasons as already given under section 2.1.1.

2.2.2 The sentence: **"comprising a filter mass (14") ..."** has been replaced by the following text: **"consisting of a filter plug (14"), wrapper means (18", 20") and a secondary filter (15), the filter plug (14") being composed of cellulose acetate ..."**. These new features added to the content of the granted Claim 3 were originally described and limit the scope of the claim.

2.2.3 The two-part form of the claim has also been abandoned for the reason given under 2.1.3.

2.3 For the foregoing reasons the Board is satisfied that neither of the above-mentioned amendments contravene Article 123 EPC.

3. Interpretation of the claims

In the context of the description, the following expressions should be interpreted thus:

3.1 **"open mixing chamber"** (see Claims 1 and 2): In the application as originally filed, this expression was used to describe not only the embodiments having open access to the mixing chamber from the distal end as shown in Figures 1 and 2 but also the embodiment having a secondary filter between the mixing chamber and the distal end shown in Figure 3. The expression is therefore not to be interpreted as meaning that the chamber is **"unconfined"** at least towards the distal end, but rather that it is **"internally free of obstacles"**.

3.2 **"said mouthpiece having its longitudinal channel substantially co-extensive with the open cross-section of the mixing chamber"** (see Claim 1): This sentence means that the cross-section of the channel is essentially the same as that of the chamber.

3.3 **"substantially unimpeded"** (see Claims 1 and 2): In relation to the mouthpiece of Claim 1 this expression means that **"little or no resistance to the flow of smoke"** is offered and in relation to the secondary filter of Claim 2 that **"an extremely low pressure drop and therefore minimal filtration"** are ensured (see page 5, lines 2 to 7 and page 10, lines 16 to 19 (respectively) of the application as filed). As a consequence, essentially the whole pressure drop resulting from the suction caused by the smoker serves to generate both air jets through the perforations of the wrapper means and a straight flow of mixed air and smoke towards the mouth of the smoker.

4. Novelty (Article 54 EPC)

4.1 In comparison with the subject-matter of new Claims 1 and 2, which each define a specific separate entity, namely a filter assembly, a more relevant state of the art is to be found merely in **Figure 4 of D7 or in D4 (VCF dual filter) and in Figure 9 of D3** respectively.

4.2 In the filter assembly according to Claim 1, the non-porous wrapping that surrounds the filter plug directly engages the same, the perforations extend completely through the wrapper means and the cross-section of the channel of the mouthpiece is about the same as the cross-section of the mixing chamber whereas, in the assembly represented in **Figure 4 of D7**, the air-impermeable tipping overwrap 8 is isolated from the filter plug by a porous wrap 14, the perforations 16 through the external envelope 8 do not extend through said porous wrap 14 and the longitudinal channel of the mouthpiece formed by the tubular wall 12 is not co-extensive with the cross-section of the mixing chamber within the meaning of the invention (see section 3.2). In comparison with this state of the art, the filter assembly according to Claim 1 is therefore novel.

4.3 The assembly claimed in Claim 2 comprises in particular a filter plug composed of cellulose acetate instead of pure cellulose (Myria) like those in the **VCF dual filters of D4** and also differs from these known filters in many other features (i.e. the non-porous wrapping directly engages the filter plug, the perforations extend through both wrappings, etc).

In comparison with the embodiment represented in **Figure 9 of D3**, the assembly claimed in Claim 2 differs in particular in that its secondary filter has a flow

resistance value such that the flow of smoke can pass through it substantially unimpeded, whereas in the known assembly, channels are asymmetrically distributed over the cross-section of the filter in order to disturb the flow and to create turbulence. In Figure 6 of D3, and the corresponding description, no information is given on the filtration ratio between the filter plug (I) and the secondary filter (II).

Therefore, in view of the above-mentioned state of the art, the subject-matter of Claim 2 is novel within the meaning of Article 54 EPC.

5. The state of the art closest to the invention

The cigarette filter assembly (with a filter of the ventilated type) according to Figure 4 of document D7 is considered by the Board as being the closest prior art, for the following reasons:

- like the assembly according to Claim 1, it comprises a filter plug (10) made of cellulose acetate, a mixing chamber (22), wrapper means (14, 8) having an air-permeable wrap (14), a tipping overwrap (8) of substantially air-impermeable paper joining the filter assembly with the cigarette and perforations (16) in the tipping overwrap (8) and the air-permeable wrap (14) through which air can be drawn into the cavity (space 22) during smoking,

- moreover, it is suggested in the description (page 3, lines 31 to 37; page 4, lines 14 to 18 and page 8, last four lines) that the filter plug (10) may provide virtually all of the filter pressure drop, and

- the aim stated in document D7 is to obtain a ventilated cigarette filter entity which in combination with a cigarette allows the required smoking properties and sufficient taste to be obtained (see the paragraph bridging pages 3 and 4 and page 4 of D7).

6. The problem and its solution

6.1 Starting from the above-mentioned closest prior art, the problem to be solved appears to be to further improve this known ventilated filter assembly, particularly with regard to smoking taste characteristics (see from line 29 of page 3 to line 3 of page 4 of the application as filed).

6.2 The solution as stated in both Claims 1 and 2 resides mainly in the combined effects of direct access of the diluting air into the mixing chamber and direct and unimpeded exit of the mixed gases out of the filter assembly. Direct access permits the formation of air jets which ensure that smoke and air are thoroughly mixed together, while unimpeded exit avoids a pressure drop at the distal end of the assembly so that the whole suction created by the smoker is available to suck air into and the mixed gases out of the mixing chamber (see page 5, last paragraph and page 6, first paragraph of the application as filed).

7. Inventive step

7.1 The invention described in the contested European patent relates to a filter assembly which is claimed as a unit in independent Claims 1 and 2, said unit comprising means (tipping paper 20) for, in use, attaching the assembly in end-to-end relation to an article for smoking such as a tobacco rod.

With the aim of improving the known assemblies, particularly with regard to the taste characteristics of the smoked article, the assembly according to the invention is structurally designed in order to ensure direct access of the diluting air to the inside of and free exit of the diluted gas mixture out of the mixing chamber, the intended result being obtained by the synergetic effect of these measures.

7.2 The causal relationship between such a combination of measures and the improvement of the taste characteristics of a smoking article is not brought out in either of the documents cited during the proceedings.

7.2.1 The disclosure of D1 does not relate to a filter assembly embodied as an independent unit but a complete filter-tipped cigarette having superior smoking characteristics to the conventional filter-tipped cigarettes.

The teaching of D1 does not give the skilled person any more information than he can already learn from the above-mentioned closest state of the art, i.e. the combination of a filter tip with orifices in order to admit sufficient air to dilute the smoke. Furthermore, the teaching of D1 does not differentiate between the location of these orifices, either in the area of the tobacco/rod (Figure 1), or in the area of the filter plug (Figure 3), or in the area of the mouthpiece downstream of the filter plug (Figure 2). No indication is given that the embodiment according to Figure 2 could provide improved smoking characteristics when compared to the characteristics obtained by other orifice locations in the other embodiments.

Consequently, when trying to improve the filter assembly shown on Figure 4 of D7, the skilled person would have a

priori no reason for consulting such an old publication as D1, the content of which does not concern per se a filter unit but a tipped cigarette and which only relates to the now commonly known teaching of diluting smoke with air. Even if he were to do so, he would not find any hint for replacing the tubular wall 12 of the assembly shown in Figure 4 of D7 by a mouthpiece or a filter with negligible flow resistance in order to improve the smoking taste characteristics.

7.2.2 The cigarette tip according to D2 is of a different design to the one according to the invention. In particular, no mixing chamber is provided between the filter plug and the mouthpiece. The skilled person cannot therefore expect to find a solution to his problem in this document and, without hindsight, he has no reason for replacing the tubular wall 12 of D7 by a mouthpiece according to D2. Moreover, even if he were to do so, the air-admitting orifices would still not provide direct access.

7.2.3 D3 generally addresses the same problem as the invention namely improving the taste characteristics of a ventilated filter assembly but, instead of providing the same with an end tip which passes smoke and diluting air substantially unimpeded from the mixing chamber to the distal end, different measures are taken to promote turbulence in the mixing cavity. For example, in the embodiment according to Figure 9, a substantial constriction is made in the downstream section of the filter which disturbs the flow to create turbulence.

This teaching will thus not lead the skilled person to modify the closest state of the art according to the invention. Furthermore, not a single indication can be found in D3 relating to a specific ratio for filtration

effected by the upstream and downstream portions of the filter, let alone a filtration of at least 80% by the upstream filter portion.

A person skilled in the art is even led away from an embodiment according to Figure 6 which, according to the description, is considered in D3 (column 6, lines 4 to 30) as giving a much inferior taste and having a much lower tar removal rate than the other embodiments described in this document.

7.2.4 D4 and D5 both relate to dual filter assemblies having a secondary filter which is supposed to make an effective contribution towards filtering the smoke. There is no suggestion in these documents that this secondary filter should pass the fluids without resistance or pressure drop. The skilled person will thus not find any hint for modifying the assembly known from Figure 4 of D7 in order to arrive at a filter assembly according to either Claim 1 or 2 of the contested patent.

7.2.5 As far as D6 is concerned, the fact that it concerns a filter assembly where the pressure drop increases with the amount of smoke that has passed through the filter previously (blocking filter) and that instead of a conventional-type filter of cellulose acetate a special filtering layer of particles is used render this document less relevant than all the above-mentioned disclosures. The skilled person would therefore not normally consult this document and even if he were to do so, its teaching would lead him away from the invention.

7.3 When examining obviousness in this particular case, the Board held that the proper question to be answered was not whether the skilled person could have searched and found in the aforementioned state of the art all the means of

the invention either separately or in combination but whether he would have done so in expectation of the improvement he was searching for.

7.3.1 The different teachings of the above-mentioned disclosures each follow their own logic in order to solve a particular problem and put forward an appropriate solution usually composed of a specific combination of several measures to be considered as a whole by the skilled person.

7.3.2 Moreover, on the priority date of the contested patent, the filter assembly according to D7 seemed to give the most recent and satisfactory answer to the problem of achieving low CO/tar yields without unduly affecting the taste, while the solutions or the types of filter assemblies described in the above-mentioned disclosures appeared either much older than (see D1, D2, D5 and D6) or quite different from (see D2, D3 and D6) the one disclosed in D7.

7.3.3 Consequently, the Board is convinced that without any clear hint the skilled person would not spontaneously have modified the embodiment shown in Figure 4 of D7 according to the dissimilar indications scattered in the other cited documents in order to arrive at the invention.

Only an ex post facto analysis could result in such a combination of features according to Claim 1 or Claim 2 as filed.

7.4 Conclusion

For the aforementioned reasons the Board concludes that the teachings of both Claims 1 and 2 do not follow plainly and logically from the prior art, but imply an inventive step within the meaning of Article 56 EPC.

8. The patent can therefore be maintained on the basis of the independent Claims 1 and 2 (Article 102(3) EPC).

9. Opportunity to comment (Article 113 and Rule 58 EPC)

At the oral proceedings, the Respondent had an opportunity to present his comments on the amended text of the patent submitted by the Appellant. It is therefore not necessary to issue a communication pursuant to Rule 58(4) EPC.

Order

For these reasons, it is decided that:

1. The contested decision is set aside.

2. The case is remitted to the first instance with the order to maintain the patent with the documents filed during the oral proceedings (cf. section VI above).

The Registrar: The Chairman:

N. Maslin C. Andries

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