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**Datasheet for the decision
of 2 April 2025**

Case Number: T 0786/23 - 3.2.04

Application Number: 17732874.7

Publication Number: 3487325

IPC: A24F40/485

Language of the proceedings: EN

Title of invention:

CARTRIDGE FOR AN AEROSOL-GENERATING SYSTEM WITH HEATER
PROTECTION

Patent Proprietor:

Philip Morris Products S.A.

Opponent:

Nicoventures Trading Limited

Headword:

Relevant legal provisions:

EPC Art. 100(a), 56, 100(b), 84
RPBA 2020 Art. 12(3), 12(5), 12(6)

Keyword:

Inventive step - main request (no) - auxiliary request 1 (yes)
Late-filed objection - should have been submitted in first-
instance proceedings (yes)
Sufficiency of disclosure (yes)

Decisions cited:

Catchword:



Beschwerdekammern
Boards of Appeal
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Case Number: T 0786/23 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 2 April 2025

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
28 February 2023 concerning maintenance of the
European Patent No. 3487325 in amended form.**

Composition of the Board:

Chairman A. Pieracci
Members: S. Oechsner de Coninck
M. Millet

Summary of Facts and Submissions

I. The opponent and the proprietor both appeal against the decision of the Opposition Division of the European Patent Office concerning maintenance of the European Patent No. 3 487 325 in amended form.

II. The Opposition Division held that the patent and the invention to which it related according to auxiliary request 1 met the requirements of the EPC, having regard in particular to the following documents:

D5: WO 2015/043132 A1

D5a: US 2015/0090279 A1

III. The following documents are also referred to in the present decision:

D6: US 2015/0136156 A1

D7: WO 2014/037794 A2

D8: WO 2016/096745 A1

D9: WO 2015/066127 A1

D10: WO 2015/117702 A1

D10a: WO 2015/117700 A1

D10b: WO 2015/117705 A2

D11: US 2014/0305454 A1

D12: WO 2016/005533 A1

D13: WO 2016/092261 A1

D15: WO 2006/124757 A2

IV. In a communication in preparation for oral proceedings the Board gave a provisional opinion on the relevant issues.

- V. Oral proceedings were held on 2 April 2025 per videoconference.
- VI. The appellant-proprietor requests to set the decision aside and maintain the patent on the basis of the main request, as granted, alternatively to maintain the patent on the basis of one of the auxiliary requests 1 to 10.
- VII. The appellant-opponent requests that the decision under appeal be set aside and the patent be revoked.
- VIII. The independent claim 1 according to the relevant requests read as follows:

Main request:

"A cartridge (20) for an aerosol-generating system (10), the cartridge comprising: a storage container (24) containing a supply of aerosol-forming substrate (26); a fluid-permeable heating element positioned across an opening in the storage container; a protective cover (33) coupled to the storage container and covering the fluid-permeable heating element; at least one air inlet (37), at least one air outlet and an airflow path (54) from the at least one air inlet to the at least one air outlet; wherein the protective cover is configured such that a portion of the airflow path is between the protective cover and the fluid-permeable heating element."

Auxiliary request 1

Claim 1 adds to claim 1 as granted the following expression as its last feature:

"wherein the protective cover forms part of an external surface of the cartridge."

- IX. The appellant-opponent argued as follows:
- The subject-matter of claim 1 of the main request and of the auxiliary request 1 lacks an inventive step starting from D5 in view of the skilled person's common general knowledge.
 - The patent does not sufficiently disclose how the airflow of the cartridge depicted in figure 6 could be realized.
 - The description is not consistent with claim 1 amended according to auxiliary request 1.
- X. The appellant-proprietor argued as follows:
- The subject-matter of claim 1 of the main request and of the auxiliary request 1 involves an inventive step in view of the cited prior art.
 - The patent discloses how the airflow depicted in figure 6 is workable.
 - The description is consistent with claim 1 amended according to auxiliary request 1.

Reasons for the Decision

1. Interpretation of claim 1
- 1.1 The interpretation of terms and expressions in granted claim 1 plays a significant role in the present case. More particularly the term "cartridge", and the expressions "across an opening" and "between the protective cover and the fluid-permeable heating element" have to be interpreted in context of the present claim 1.

- 1.2 Claim 1 is directed to a "cartridge" for an aerosol-generating system understood as "a case or container that holds a substance, device, or material which is difficult, troublesome, or awkward to handle and that usually can be easily changed: such as an often cylindrical container for insertion into a larger mechanism or apparatus", (e.g. Merriam Webster online dictionary, definition c). Thus a changeable container holding several components should be identified within an aerosol generating system.
- 1.3 Contextual reading of claim 1 further requires to identify a fluid-permeable heating element across an opening of a storage container for aerosol forming substrate. Using a common definition of the term "across", the heating element should thus be positioned from one side to the opposite side, (e.g. Merriam Webster online dictionary, definition 1a), of an opening in the storage container. In the context of a position across an opening made in a container, the claim wording does not impose any specific limitation as concerns the location close or adjacent the open area of the opening. For a fluid-permeable heating element that should receive fluid from an opening formed in the container, the location across may merely be interpreted as a full or partial coverage of the opening aligned and thus capable of receiving fluids passing through such opening. Likewise the term across does not require the fluid-permeable heating element to abut or contact either side of the opening or be within the cross section of said opening. Further located within a cartridge, both the opening in the container and the heating element are expected to be close enough from each other.

- 1.4 Further reading the claim, a protective cover is coupled to the same storage container and also covers the fluid-permeable heating element. The last feature of claim 1 further specifies how the protective cover should be configured to channel a portion of the airflow path that has entered through the air inlet.
- 1.5 This configuration should be such that a portion of the airflow path is -located- between the protective cover and the fluid-permeable heating element. Thus in the context of a path for an airflow: "The course along which a person or thing moves or passes" (e.g. OED Oxford English Dictionary Online, definition II.5.A), the technically meaningful reading of the requirement that a portion of the airflow path is between the protective cover and heater would be understood such that the protective cover and heating element form boundaries along which the airflow passes, therefore also in line with the appellant-proprietor's view.
2. Main request - inventive step
 - 2.1 D5/D5a as starting point
D5a is the published US application in the national phase of the PCT application D5. In the following, as in opposition proceedings, it will be referred to the disclosure of D5a.
 - 2.2 D5a discloses in Figure 1 an embodiment of an electronic cigarette with a housing 110 receiving various components, including a liquid reservoir 120, an atomizing assembly 130 and a power supply, paragraph 034,035. The liquid reservoir 120 defines an outlet orifice 122 allowing the liquid 160 to flow out to the atomizer assembly, paragraph 036. The atomizer assembly is further disclosed in paragraphs 037 to 040 and

includes a porous heater 132. An insulating supporter 136 covers the porous heater 132, paragraph 045, this supporter corresponds to the protective cover defined in claim 1.

- 2.3 The Board is unconvinced by the appellant-proprietor's argument that D5a fails to disclose that the porous heater may be across the opening of the reservoir and that the supporter 136 may be considered as a protective cover.
- 2.4 Contrary to the appellant-proprietor's opinion, portions of the porous heater 132 that are located in alignment with the openings 122,124 provided at the lower end of the reservoir are considered to be necessarily provided across these openings in order to catch the liquid 160 flowing out, paragraph 036. The Board considers that according to the above definition of the term across, an element extending from one side to the other of an opening does not impose any limitation on the distance at which it is located. If this was the case in figure 1 of the patent itself, the heater 30 underneath the assembly 28 would under certain circumstances be spaced by the capillary material 31 from the opening in the container to qualify as being across. For the Board it would not make technical sense to consider that the heater 132 of D1 located at a closer distance to the opening 122 would at a certain distance suddenly qualify as being "across". Again using the same technical consideration, the different viewpoints of the observer to state different relative locations of the heater as referred to by the appellant-proprietor also fail to convince. The skilled person gathering technical information from a figure rather considers the structure and operation of a complete device as visible on the schematic

representation. The skilled person would not convincingly project itself at a particular location within the device such as the element 144 or the opening 122 itself thereby considering only a partial and possibly irrelevant part of this device. Therefore the Board remains unconvinced by the argumentation of the appellant-proprietor that the heater 132 is not across because it would be too far and not directly connected to either side of the opening.

2.5 The Board furthermore concurs with the appellant-opponent's opinion that the supporter 136 indeed covers the heater assembly thereby protecting it from the outside in the broadest sense of the term. Indeed the provision of the air passage 138 is clearly depicted in figure 1 to be centrally located within the bottom of the supporter 136 as derivable from the provision of cross-hatched portions on either side of the air passage. The fact that the schematic drawing omits the passages for the wires 144 has little bearing on the clearly derivable core features of the central air passage with lateral hatched portions. Any open surface of the supporter behind the wires would not be hatched according to technical drawing conventions. The Board thus agrees with the appellant-opponent's view that the supporter has a solid annular disc portion. This is also independent on possible configurations of the spoke like structure also depicted. In either case this structure projects from the the bottom portion of the supporter which is clearly solid.

2.6 The Board thus agrees with the opposition division that the sole difference between the subject-matter of claim 1 and D5a is a clear and unambiguous configuration as a cartridge. Indeed D5a is unspecific as concerns the

cooperation with the battery which is not shown, paragraph 044. Thus the housing 110 at least holds the container 120, heater 132 and the power supply 140 and does not allow any conclusive information on the battery itself. Therefore using the definition of a cartridge under point 1.2 above, the housing cannot be clearly identified as a changeable container holding several components within the electronic cigarette disclosed in D5a.

- 2.7 The technical effect of having a portion holding several components which is detachable from another holding the power supply allows to replace the part holding depletable liquids while reusing other components. Based on these effects the problem proposed in item 21.1.4 of the appealed decision has not been disputed. This technical problem may be seen accordingly as to modify the device disclosed in D5a in order to optimize the operational economics of said device.
- 2.8 As further concluded in item 21.1.5 and as submitted by the appellant-opponent in item 30 of their reply of 9 November 2023 to the proprietor's grounds, it appears that the skilled person is faced with only two main options for implementing the battery disclosed in paragraph 044 of D5a. Either an integrated battery, or a releasable and changeable one.
- 2.9 The appellant-proprietor submits that substantial modification of the electrical connection between the heating plate 132 and power supply 140 would be required to comprise a battery and a cartridge portion, and that assuming this is done the modification would not necessarily result in a cartridge comprising the components recited in claim 1.

2.10 The Board however is unconvinced. Indeed claim 1 does not limit the cartridge to accommodate only the components defined in claim 1, that is the storage container, heater and protective cover. Rather the cartridge may include further components such as the wires, electrodes and supporter depicted in figure 1 and held within the same housing 110. For that reason the skilled person does not necessarily need to select which part of the power supply assembly would be located on the portion holding the undisclosed battery or instead in the cartridge, as submitted by the appellant-proprietor.

In any case the Board concurs with the appellant-opponent that any modification foreseen by the skilled person for the power supply assembly 140 would merely imply basic rewiring. Indeed in order to carry out the full power supply required for operating the E-cigarette, all the skilled person needs to figure out, is how the electrodes 142 located below the insulating supporter 136 would be connected to a detachable battery system, no need to alter the configuration of the other components disclosed in figure 1 would be necessary, as also assessed in item 21.3.2 of the decision.

2.11 Therefore the Board confirms the negative conclusion drawn by the opposition division on inventive step starting from D5a.

3. Auxiliary request 1 - inventive step

3.1 Claim 1 of this request adds to granted claim 1 the features of granted claim 2 as follows: "wherein the protective cover forms part of an external surface of the cartridge."

3.2 Additional partial technical problem

3.2.1 The appellant-proprietor considers that the technical effect provided by this additional difference with respect to D5/D5a combines with the cartridge to achieve a synergetic effect on compactness while ensuring vulnerable components to be protected. The Board however observes that such a combined effect on operational economics, compactness and protection is not derivable from the patent, that does not offer any particular further effect or advantage related to this cover forming part of the bottom surface of the cartridge in the relevant passage of paragraph 007.

3.2.2 However the Board disagrees with the appellant-opponent that the skilled person is unable to derive any technical effect when the cartridge ends up at the outer surface of this cover as last outer component: this saves space because any further non defined component may not be provided beyond this outermost surface. Thus an effect on compactness of the cartridge is expected by the skilled person.

3.2.3 Therefore the formulation of the additional partial problem of improved compactness stated in item 24.1.3 of the appealed decision appears to be appropriate.

3.3 Reasoning on obviousness - not convincing

3.3.1 The Board is not convinced by the appellant-opponent that the skilled person would obviously have arrived to the solution based on the two different alternative routes allegedly suggested in D5a and on the corresponding reasoning. For both routes it has been overlooked that the skilled person starts from a

specific disclosure including its structural and functional features. Here the starting point is shown in Figure 1 of D5a and includes not only the atomizer assembly but also a portion of the battery assembly that includes the power supply assembly 140 and its component that all are received within the same housing 110. Thus for each reasoning a certain level of modification of this starting configuration should have been convincingly suggested.

3.3.2 Suggesting as a first line of reasoning that the skilled person would obviously have provided a separation just at the level of the atomizer assembly because paragraph 003 mentions that an electronic cigarette is mainly composed of an atomizer and a battery assembly appears as a purely theoretical consideration that disregards the particular electrical connection disclosed in Figure 1 as starting point. While it is undisputed that an E-cigarette can be composed of such two basic sub-assemblies, in order to put into practise this general knowledge of E-cigarettes, the skilled person still needs to consider modifications of the configuration depicted in Figure 1 of D5a. In particular the configuration of the electric interface comprising at least the electrode 142, the wires 144 and the electrode supporter 146 shown in D5a and electrically connected to the heater as well as the mechanical connection of the electrode supporter within the housing 110 would at least require to redesign a mechanical and electrical interface. As convincingly observed by the appellant-proprietor the flexible wires 144 cannot be left without such interface to be releasably connected to an opposite battery assembly. The appellant-opponent did not offer any convincing argument why and how the skilled person would simply have relocated the whole power supply assembly 140 on

the opposite side of the undisclosed battery by way of obviousness. In considering such an alternative interface the skilled person would not have any obvious reason to choose a solution that leaves the insulating supporter 136 as external surface. Without any suggestion of such a reason by the appellant-opponent, this first route or reasoning rather appears to be based on previous knowledge of the solution.

3.3.3 As a further second line of reasoning the appellant-opponent relies on the last sentence of paragraph 044 as a hint to omit the electrode supporter 146. Removing the supporter from the depicted assembly would automatically leave the insulating supporter exposed at the bottom of the cartridge.

3.3.4 The Board rather considers the broad generalising statement of paragraph 044 as an option to connect the wires directly to a battery as convincingly argued by the appellant-proprietor. However in such a case the atomizer assembly would then lose its removable character and thus depart from a configuration as a cartridge.

3.3.5 Nevertheless assuming the skilled person would still strive to retain a releasable connection, such consideration being an ex post one according to the Board, attempting to omit such an essential component as an electrode supporter would still require to ensure a suitable electric connection between the heater and the battery. As for the first reasoning route such modification would require to design an alternative solution involving another type of interface than the flexible wires 144 and the rigid electrodes 142. However trivial rewiring such modification would imply, such as attaching the rigid electrodes 142 behind the

supporter 136, as suggested by the appellant-opponent, the Board holds any alternative interface would not leave the insulating supporter 136 as external surface without bias towards the solution defined in claim 1.

3.4 Further attacks on inventive step

3.4.1 In its communication pursuant to article 15(1) RPBA, the Board gave the following provisional opinion regarding these further attacks in point 7, starting from page 14, second paragraph:

"The opponent (see the statement of grounds of appeal, items 144 to 151) also objects lack of inventive step starting from D5 in combination with either of D6, D7, D8, D9, D13 and D15. These objections do not appear to have been raised in opposition proceedings (see appealed decision, point 24.2 and the minutes, page 4, last three paragraphs) and the Board foresees not to admit them pursuant to Article 12(6) RPBA.

The appellant-opponent also submits other objections of lack of inventive step starting from other starting points D10/D10a/D10b, D11 or D12, points 153-154 of the appellant-opponent's grounds. However, these objections which represent an amendment to the appellant opponent's appeal case, lack any further substantiation and shall be disregarded in the present appeal proceeding, pursuant Art 12(3), (5) and (6) RPBA.

The appellant-opponent also attempt to amend their case by explaining why in their view D9 was prima facie relevant for novelty and inventive step, and request to admit this new objection of lack of inventive step starting from D9 in appeal because D9 had always been

present in opposition proceedings, its content known and thereby adding only little complexity to the case.

The Board fails to recognise any justification for adding such objection at appeal stage starting from a document already present in the proceedings and the content of which should already have been analysed by the opponent during opposition procedure. No new circumstances, such as a change of interpretation of the claims by the opposition division appears to justify this new attack that should have been raised already in opposition pursuant Art 12(6) RPBA. As concerns the wrong prima facie assessment of relevance, the Board observes that such assessment is made on the face of it, per definition without thorough examination of the disclosure content. By contrast the explanation proposed by the appellant-opponent under points 66 to 78 of their grounds ranges 5 pages of detailed analysis of D9 content which is does not correspond to a prima facie assessment.

The Board thus does not intend to admit such a further attempt to object lack of inventive step at appeal stage that should have been presented in opposition pursuant to Article 12(6) RPBA."

3.4.2 At the oral proceedings the appellant-opponent expressly referred to their written submissions. Absent any further comment, the Board, after having reconsidered all the relevant legal and factual aspects of the case, sees no reason to change its provisional view that these amendments of the appellant-opponent's case should not be admitted into the proceedings.

3.5 In view of the above, the Board thus confirms the conclusion made by the opposition division, that the

subject-matter of claim 1 according to the auxiliary request 1 involves an inventive step.

4. Sufficiency

4.1 In relation to sufficiency the Board has expressed its preliminary opinion under point 3. of its communication pursuant to article 15(1) RPBA as follows:

"Sufficiency is challenged on the fact that the airflow depicted in figure 6 would not be workable as it would flow against the overwhelming pressure drop caused by the user's inhalation on the mouthpiece portion 23 of the cartridge 20.

The airflow through the cartridge shown in figure 6 is explained in details in paragraph 065 of the patent in a consistent manner with the airflow flowing from the inlets 60 flowing in part into the cartridge through air inlet holes 37 on the front wall of the protective cover 33 as well as through dilution air inlets 50. The appellant-opponent in particular contests the possibility for the airflow to pass towards the heater assembly through the holes 37: the "downward" portion of the flow depicted in figure 6.

However depending on the different design parameters, the relative passage sections and the amount of heat generating depression such a flow of fluids, air and vapour consistently depicted and disclosed in paragraph 065 does not give rise to serious doubts on the disclosed airflow paths.

The purely qualitative analysis submitted by the appellant-opponent based solely on the depression created at the mouthpiece 23 does not raise serious doubts supported by verifiable facts that the

"downward" flow after the inlets 60 would be impossible to carry out (see CLBA, 10th edition, 2022, II.C.9.1). Thus the positive finding on sufficiency made by the opposition division appears correct. "

4.2 At the oral proceedings the appellant-opponent also referred to their arguments in writing. Absent any further submission, after having reconsidered all the relevant issues of the case, the Board sees no reason to change its provisional view that the objection on sufficiency fails to convince.

5. Adaptation of the description (Article 84 EPC)

5.1 In relation to this issue the Board has expressed its preliminary opinion under point 8. of its communication pursuant to article 15(1) RPBA as follows:

"The appellant-opponent considers Figures 1 and 6 to lack any disclosure of coupling means between the protective cover and the storage container in contradiction of what is claimed. As submitted by the appellant-proprietor the assembly of these two components may be found in several passages of the description, for example in paragraph 063, where the protective cover is said to be fitted to the housing to retain all components including the storage container. The fact Figures 1 and 6 do not clearly depict any connection between these two items does not contradict the clear indication of their coupling, especially considering that these figures only show sectional views of the device."

5.2 The appellant-opponent at the oral proceedings relied on their written submissions. Absent any further comment, after having reconsidered all the relevant

issues of the case, the Board sees no reason to change its provisional view that the decision's findings on the adaptation of the description is correct.

6. It follows from the above that none of the appellants' challenges to the decision's findings for granted claim 1 and for claim 1 according to auxiliary request 1 succeed. Their respective appeals against the appealed decision therefore both fail.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar:

The Chairman:



A. Chavinier

A. Pieracci

Decision electronically authenticated