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Datasheet for the decision of 2 December 2025

Case Number: T 1083/23 - 3.2.04

Application Number: 17194414.3

Publication Number: 3308658

IPC: A24F40/485

Language of the proceedings: EN

Title of invention:
AN AEROSOL GENERATING DEVICE WITH ADJUSTABLE AIRFLOW

Patent Proprietor:
Philip Morris Products S.A.

Opponent:
Nicoventures Trading Limited

Headword:

Relevant legal provisions:
EPC Art. 84, 83, 54(2), 56

Keyword:
Claims - clarity - main request (yes)
Sufficiency of disclosure - (yes)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
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Beschwerdekammern

Boards of Appeal

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Case Number: T 1083/23 - 3.2.04

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

Appellant: (Opponent)	Nicoventures Trading Limited Globe House 1 Water Street London WC2R 3LA (GB)
Representative:	D Young & Co LLP 3 Noble Street London EC2V 7BQ (GB)
Respondent: (Patent Proprietor)	Philip Morris Products S.A. Quai Jeanrenaud 3 2000 Neuchâtel (CH)
Representative:	Reddie & Grose LLP The White Chapel Building 10 Whitechapel High Street London E1 8QS (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 3 April 2023 concerning maintenance of the European Patent No. 3308658 in amended form.**

Composition of the Board:

Chairman	A. Pieracci
Members:	G. Martin Gonzalez
	C. Heath

Summary of Facts and Submissions

I. The opponent appeals the decision of the opposition division to maintain the patent in amended form.

II. The opposition division held that the patent as amended met the provisions of Rule 80 EPC, was clear, sufficiently disclosed, new and involved an inventive step.

III. The appellant opponent requests that the decision under appeal be set aside and the patent revoked in its entirety.

The respondent proprietor requests that the opponent's appeal be dismissed and the patent be maintained as upheld by the division, or that the decision under appeal be set aside and the patent be maintained according to one of auxiliary requests 1-23, all filed with their reply of 7 December 2023.

IV. In preparation for the oral proceedings, the Board issued a communication setting out its preliminary opinion on the relevant issues.

Oral proceedings before the Board, by videoconference, were held on 2 December 2025.

V. The independent claims of the main request (as maintained by the opposition division) read as follows:

1. "An aerosol generating system (101), comprising a reusable aerosol generating device (105) in cooperation with a disposable cartridge (103), the system (101) for

heating an aerosol-forming substrate in the cartridge (103) and comprising:
a vaporizer for heating the aerosol-forming substrate to form an aerosol;
at least one air inlet (123);
at least one air outlet (125), the air inlet (123) and the air outlet (125) being arranged to define an air flow route between the air inlet (123) and the air outlet (125); and
flow control means for adjusting the size of the at least one air inlet (123), so as to control the air flow speed in the air flow route,
wherein the flow control means comprises: a first member and a second member, the first and second members cooperating to define the at least one air inlet (123), wherein the first and second members are arranged to rotate relative to one another so as to vary the size of the at least one air inlet (123), and wherein both the first member and the second member are contained in the cartridge (103)."

7. "A disposable cartridge (103) comprising:
a storage portion (115) for storing an aerosol-forming substrate;
a vaporizer for heating the aerosol-forming substrate;
connection means (121) allowing the cartridge (103) to connect with an aerosol generating device (105);
at least one air inlet (123), in use the air inlet (123) being defined between the cartridge (103) and the aerosol generating device (105);
at least one air outlet (125), the air inlet (123) and the air outlet (125) being arranged to define an air flow route between the air inlet (123) and the air outlet 125); and

flow control means for adjusting the size of the at least one air inlet (123), so as to control the air flow speed in the air flow route,
wherein the flow control means comprises: a first member and a second member, the first and second members cooperating to define the at least one air inlet, wherein the first and second members are arranged to rotate relative to one another so as to vary the size of the at least one air inlet."

11. "A method for varying air flow speed in an aerosol generating system (101) comprising a reusable aerosol generating device (105) in cooperation with a disposable cartridge (103), the aerosol generating system (101) comprising a vaporizer for heating an aerosol-forming substrate in the cartridge (103) to form an aerosol, at least one air inlet (123) defined between the cartridge (103) and the aerosol generating device (105), and at least one air outlet (125), the air inlet (123) and the air outlet (125) being arranged to define an air flow route between the air inlet (123) and the air outlet (125), the method comprising:
rotating a first member of the cartridge (103) relative to a second member of the cartridge (103) to adjust the size of the at least one air inlet (123), so as to vary the air flow speed in the air flow route."

VI. In the present decision reference is made to the following documents:

(D1) WO 2011/034723 A1
(D2) US 6,089,857 A
(D3) WO 2009/132793 A1
(D4) US 4,532,943
(D5) EP 0 845 220 A1
(D6) EP 2 368 448 A1

VII. The parties' arguments relevant to the decision are discussed in detail in the Reasons for the Decision.

Reasons for the Decision

1. Background

The invention relates to an aerosol generating system to produce inhalable aerosol, see patent specification para 0001. The system includes an aerosol-generating device in cooperation with a cartridge containing the aerosol-forming substrate. The system includes flow control means that allow the user to adjust the size of the air inlets, see para 0005. This adjustment controls the airflow speed, which influences the droplet size and distribution in the aerosol. This feature enhances user experience by allowing customization of aerosol properties, see para 0077.

2. Main request - Clarity

2.1 The appellant-opponent submits that the terms "reusable" and "disposable", added to the independent claims 1, 7 and 11, lack clarity, arguing that they merely express intended use and do not impose any physical limitation.

2.2 The Board does not share this view. As outlined by the proprietor, the expressions "reusable device" and "disposable cartridge" are clear to the skilled person in the field of aerosol-generating devices, who reads the claims with a mind willing to understand and attributes to the terms their established meaning in the art. While these expressions do indeed reflect an intended use, they also imply physical properties

compatible with that use. In the technical context of the patent, a "disposable cartridge" denotes a unit containing the aerosol-forming substrate that is intended to be discarded after a short period of use and is separable from the reusable part of the apparatus, namely the long-term "reusable aerosol generating device".

For the skilled person, these functional roles necessarily imply corresponding structural limitations. A disposable cartridge is expected to be of comparatively simple and cost-effective construction, using materials and components suitable for short-lived operation and straightforward replacement. By contrast, a reusable device is expected to comprise more durable materials, robust heating and control structures, and components designed for repeated handling and long-term operation. These distinctions in lifespan, material selection, mechanical robustness, and integration of components represent a clear and technically meaningful difference for the skilled person in the field of electronic cigarettes.

2.3 The same reasoning applies to independent claim 7, which is directed to a disposable cartridge alone. The appellant argues that, unlike claims 1 and 11, claim 7 does not contain the reusable/disposable combination and that the term "disposable" is therefore unclear when used in isolation. The Board is not persuaded. The skilled person is familiar, from customary practice in the field, with the differing expected lifespans and the correspondingly different structural characteristics of disposable components as compared to the reusable devices with which they are intended to cooperate. The term "disposable cartridge" thus

retains, also on its own, a clear technical meaning for the skilled person.

2.4 Accordingly, the Board considers that the terms "reusable" and "disposable" define clear technical features for the skilled person and do not give rise to a lack of clarity.

3. Main request - Sufficiency of disclosure

3.1 The Board set out its preliminary view on this issue in section 5 of its written communication:

"5 Main request – Sufficiency of disclosure

As outlined by the opposition division in sections 26-28 of the appealed decision and by the proprietor in section 1.2 of their reply, the patent appears to provide adequate detail – particularly in paragraphs 0010, 0011, and 0017 – regarding the structure and arrangement of the flow control means, including its possible integration in the cartridge. This disclosure, in combination with the skilled person's common general knowledge, is sufficient to enable the skilled person to carry out the claimed invention without undue burden, even though, as argued by the appellant opponent (see page 3 of the statement of grounds of appeal), the patent does not describe a detailed embodiment in which the flow control means is implemented in the cartridge."

3.2 During the oral proceedings, the appellant opponent refrained from further comments on this issue. Absent further comment and after reviewing its preliminary assessment, the Board sees no reason to change its finding. It therefore confirms the conclusions of the

opposition division that claimed invention is sufficiently disclosed, Art 100(b) EPC.

4. Main request - Novelty

4.1 The appellant challenges the findings of the opposition division that claims 1, 7 and 11 are new over D1. The Board set out its preliminary opinion on this issue in sections 6.1 and 6.3 of its written communication as follows:

"6.1 Regarding D1, contrary to the appellant's interpretation of the contested claim 1, feature 1.2 reciting "the system for heating an aerosol-forming substrate in the cartridge" makes clear that the claimed disposable cartridge comprises the aerosol-forming substrate, which in D1 is cartridge 50 (see Fig. 4). The filter element 80 and second housing 100, the elements that contain the flow control means 90, 110, 140 (see para 0401) in D1, constitute the reusable portion and are not a disposable cartridge in the sense of the contested claim.

...

6.3 Similar reasoning, with respect to both documents D1 and D2, applies equally to independent claims 7 and 11."

4.2 The appellant opponent refrained from further comments on this issue and during the oral proceedings before the Board merely referred to their written submissions. Absent any further submissions from the appellant opponent and after reviewing its preliminary opinion the Board sees no reason to change its finding. It thus holds that the claimed subject-matter is new over D1.

5. Main request - Inventive step

5.1 The appellant opponent challenges the inventive step conclusions of the opposition division with respect to the subject-matter of claim 1, starting from D2 (embodiment of Figs. 6,7), D5 or D3 and argued that analogous considerations apply to the subject-matter of claim 7 and 11.

5.2 **Starting from D2**, this document discloses, in the embodiment of Figures 6 and 7, an aerosol-generating system comprising a heater 42 (common to all embodiments) and a flavour-generating piece 110 with a cylindrical pipe casing 112, which is insertable into the heater at holder 44. The heater burns a combustible gas at combustion portions 52, 56, thereby heating the formed body 132 - made of a solid flavour-generating material to be inhaled by the user - located within pipe casing 112. The formed body 132 is detachably stored within the heat-conduction tube 114, which forms part of casing 112 (col. 5, lines 42-63). The casing 112 includes flow-control means: the heat-insulating tube 116 is provided with a plurality of additional inlet holes 144, and an adjusting ring 146 regulates the flow rate through these holes. This additional airflow adjusts the amount of flavour and/or the temperature of the gas reaching suction port 126 (col. 6, lines 3-9).

The appellant opponent argues that flavour-generating piece 110 is separable from heater 42 and can therefore be discarded after use, making it a "disposable cartridge" within the meaning of the independent claims. However, flavour-generating piece 110 is composed of multiple components - heat-conduction tube

114 made of e.g. metal or ceramic, heat-insulating tube 116, and mouthpiece 118 - connected by screws or fitting pairs (col. 5, lines 29–33). The formed body 132 made of the aerosol-forming substrate is itself detachable and replaceable (col. 5, lines 43–45). This construction clearly indicates that flavour-generating piece 110 is intended for long service-life repeated use, whereas only the formed body 132 functions as the consumable element. As the appealed decision already noted (see section 38 and the clarity discussion above), D2 does not disclose a disposable cartridge. Novelty requires a direct and unambiguous disclosure, which is absent here.

5.3 The subject-matter of the independent claims thus differs from D2 at least in that the cartridge containing both the aerosol-forming substrate and the flow-control means is a disposable cartridge.

5.4 According to the appellant opponent, this distinguishing feature improves user convenience and cleanliness, avoiding the unhygienic task of manually replacing the solid formed body 132 within piece 110 of D2. The proposed objective technical problem is therefore to provide more convenient continued use or improved cleanliness.

5.5 The appellant opponent argues that making flavour-generating piece 110 disposable - i.e. replacing the entire piece 110 including formed body 132 after each use - is an obvious measure drawn from common general knowledge. The appellant opponent submits that economic considerations (such as the relative cost of reusing versus replacing casing 112) are not technical. The appellant also refers to D3, particularly page 2, lines

4-8, as allegedly suggesting that replacing the mouthpiece reduces cross-contamination.

5.6 The Board is not convinced.

In D3, the cross-contamination teaching is specific to liquid-based aerosol-generating systems. This teaching is not readily applicable to D2, which employs a solid flavour-generating material. The appellant has not shown, nor does D3 suggest, that cross-contamination of the nature or magnitude addressed in liquid systems would arise, or would be a recognised concern, in devices using solid materials.

Moreover, even if it is accepted - in the sense of a general, abstract idea - that any part of a device could be made disposable, the skilled person would not assume, as a matter of routine, that any detachable or replaceable component is automatically a candidate for short-lived disposal. In order to be obvious to the skilled person, suitability for disposable use must be technically plausible in view of function, materials, structure, and interaction within the system.

As established above, the consumable element in D2 is the formed body 132, not the pipe casing 112. Nothing in the common general knowledge or in D3 provides an incentive to convert a structurally complex, multi-material assembly such as casing 112 into a disposable unit. The casing comprises parts exposed to combustion heat (heat-conducting tube 114) and parts intended for handling by the user (heat-insulating tube 116, mouthpiece 118), made from durable heat-resistant materials (metal, ceramic, synthetic resin) and connected by screws or fitted joints. Such a structure is not one the skilled person would regard, as a matter

of routine, as suitable for short-lived disposal or as an obvious candidate for replacement after only a few uses.

The appellant opponent's assertion that economic considerations are not technical is considered incorrect by the Board at least to the extent that economic considerations imply technically different solutions. Whether the skilled person would modify a robust, heat-resistant, multi-component assembly into a low-cost disposable unit necessarily depends on technical feasibility, material constraints, safety, and the structural adaptations required to achieve such cost reduction. Economic feasibility is inseparable from these technical considerations. Here, neither D2 nor D3 gives any indication that casing 112 could be redesigned in a simplified or low-cost form suitable for disposability, nor that such a redesign would be straightforward.

5.7 Accordingly, the appellant opponent has not convinced the Board that the skilled person, starting from D2 and faced with the stated problem, would have made flavour-generating piece 110 disposable. The modification is neither suggested by D2 nor by common general knowledge or D3.

5.8 Starting from D5, the first portion 12a (Fig. 1) containing the aerosol-generating substrate would - similarly to the situation in D2 - not be identified by the skilled person as a disposable cartridge. D5 expressly teaches that the consumable element is the material container 32, which stores the liquid material to be replenished or exchanged (col. 5, lines 51–58). The independent claims therefore differ from D5 in that

they require flow-adjustment means disposed in a disposable cartridge.

The appellant argues, by analogy with the objection starting from D2, that in view of D3's cross-contamination teaching, the skilled person would modify first portion 12a of D5 to make it disposable. Such cross-contamination considerations apply also to D5 since D5 is also based on liquid aerosol-generating substrates.

5.9 The Board is not persuaded.

First portion 12a houses a structurally complex discharge and gasification assembly, comprising: a discharge head 34 with multiple discharge ports and a piezo-driven liquid-discharge mechanism (Fig. 1; col. 4–5); a ceramic heater 42 formed from a ceramic plate with a coated resistance heater; a liquid-absorbing porous layer 46, such as an activated-carbon layer, applied on the heater (col. 5, lines 39–55); and associated throttle structures in the gas-flow path.

These components are materially robust, functionally complex, and designed for durability. Converting this assembly into a short-lived disposable unit cannot be considered an obvious step in view of its function, materials, structure, and integration within the system as a whole. Nothing in the common general knowledge, in D5, or in D3 provides an incentive to redesign such a complex and durable first portion 12a into a disposable cartridge. The appellant's reasoning therefore fails for similar underlying reasons as the objection starting from D2, without the skilled person receiving any additional prompt from D5 or D3 that would make such a modification obvious.

5.10 The appellant also relies on D4 and D6. These documents belong to the neighbouring but technically distinct field of combustible cigarettes. While their teachings may be considered in principle, their applicability is limited: D5 concerns an electrically heated, liquid-based aerosol system, whereas D4 and D6 relate to cigarettes that produce smoke by combustion rather than forming an aerosol by vaporisation. The Board therefore considers that the skilled person would not, as a matter of obviousness, apply the downstream air-flow control structures of D4 or D6 to the aerosol-generation system of D5.

5.11 D3 is a document that discloses a reusable device 101 (Fig. 1) used together with a disposable cartridge or mouthpiece 201 (Fig. 2) containing a liquid aerosol-generating substance 205. D3 generally describes embodiments in which the mouthpiece is provided with air inlets, but without any flow-adjustment mechanism (see D3, p. 4, lines 8–9). The subject-matter of the independent claims therefore differs from the device and method of D3 in that the disposable cartridge comprises flow-control means and is constructed from first and second rotatable members.

5.12 It is common ground that this structure enables accurate adjustment of the air inlet dimensions, which can be tailored to specific aerosol-forming substrates (see patent specification, para 0007), thereby improving user experience.

When starting from D3, an objective technical problem may therefore be formulated as how to provide the user with the ability to customise their experience.

5.13 The appellant refers to D2, D4 and D6, which teach adjustable airflow to modify user experience.

5.14 However, in D2 the system is designed for solid aerosol-generating substances operated at higher temperatures. The solid formed body 132 is heated by combustion at chambers 54 and 56. The adjustable air-inlet holes 144 in D2 are located downstream of the aerosol-generating system and serve not only to regulate flavour concentration but also to adjust the gas temperature at the user's suction port 126 (D2, col. 6, lines 3–9). Similar teachings can be derived from D4 and D6, which pertain to combustible cigarettes and employ controllable inlets at the filter or mouthpiece.

By contrast, D3 concerns a liquid aerosol-forming substrate. D3 provides several other methods - suited specifically to liquid systems - for customising user experience, including control of aerosol particle concentration, size and distribution via adjustments to energy transfer at the heating element or the operating temperature (see D3, p. 9, ln. 8-16). In D3, the position of the air inlets 115 upstream of aerosol formation ensures that airflow is directed around the second end 207b of the wick to optimise aerosol formation in chamber 213 (see D3, p. 8, lines 4–6). Introducing additional downstream air inlets in the mouthpiece would alter this airflow pattern and be incompatible with this optimisation.

In the Board's view, the skilled person would not consider implementing downstream adjustable inlets in the mouthpiece of D3 as a matter of obviousness, disrupting the airflow optimisation of D3 while importing solutions that are not suited to liquid-substrate systems but rather to solid-substance devices operating at higher temperatures.

5.15 In sum, the appellant opponent's arguments and objections against the positive conclusions of the opposition division - namely that claims 1, 7 and 11 of the main request involve an inventive step - have not convinced the Board. The Board therefore upholds the opposition division's conclusions.

6. As all the objections raised by the appellant opponent fail, the Board confirms the findings of the Opposition Division.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Magouliotis A. Pieracci

Decision electronically authenticated