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**Datasheet for the decision
of 6 April 2022**

Case Number: T 2880/19 - 3.2.01

Application Number: 13736592.0

Publication Number: 2871983

IPC: A24F47/00

Language of the proceedings: EN

Title of invention:
ELECTRONIC VAPOUR PROVISION DEVICE

Patent Proprietor:
Nicoventures Trading Limited

Opponent:
JT International S.A.

Headword:

Relevant legal provisions:
EPC Art. 54, 56, 123(2), 83
RPBA Art. 12(4)

Keyword:

Novelty - main request, auxiliary request 1 (no)
Sufficiency of disclosure - (yes)
Late-filed evidence - submitted with the statement of grounds of appeal - admitted (yes)
Late-filed facts - submitted with the statement of grounds of appeal - admitted (no) - objection could have been raised in first instance proceedings (yes)
Inventive step - auxiliary request 2 (no) - obvious combination of known features
Amendments - intermediate generalisation - auxiliary request 5 (yes)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2880/19 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 6 April 2022

Appellant: Nicoventures Trading Limited
(Patent Proprietor) Globe House
1 Water Street
London WC2R 3LA (GB)

Representative: D Young & Co LLP
120 Holborn
London EC1N 2DY (GB)

Appellant: JT International S.A.
(Opponent) 8 rue Kazem Radjavi
1202 Geneva (CH)

Representative: Gill Jennings & Every LLP
The Broadgate Tower
20 Primrose Street
London EC2A 2ES (GB)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
7 August 2019 concerning maintenance of the
European Patent No. 2871983 in amended form.**

Composition of the Board:

Chairman G. Pricolo
Members: A. Wagner
A. Jimenez

Summary of Facts and Submissions

- I. The appeals by the patent proprietor and the opponent are directed against the decision of the opposition division to maintain the European patent No. 2871983 in amended form on the basis of auxiliary request 2 filed during the oral proceedings.
- II. In its decision, the Opposition Division held among others that the invention as set out in claim 1 of the patent as granted (main request) is sufficiently disclosed, but that the subject-matter of claim 1 of the patent as granted and of the first auxiliary request contravenes the requirement of Article 54 EPC in view of D3. The claims in accordance with auxiliary request 2 were found to meet the requirements of the EPC.
- III. In order to come to these conclusions the opposition division considered, among others, the following documents:
- D1:** WO 2012/085207 A1
D3: EP 2 022 349 A
D5: Ceramic foams: Inspiring new sold breeder materials
D7: excerpt from E-Cigarette Forum efc, heading "latty", post #181 to #200
D11: Processing of cellular ceramics by foaming and in situ polymerisation of organic monomers, 1999
- IV. Together with their statement of grounds of appeal the appellant (opponent) submitted further evidence, among others D7A-D7D, D13A and D13B.

D7A: excerpt from E-Cigarette Forum efc, heading "latty", post #1 to #20

D7B: excerpt from E-Cigarette Forum efc, heading "latty", post #441 to #460

D7C: excerpt from E-Cigarette Forum efc, heading "latty", post #721 to #740

D7D: excerpt from E-Cigarette Forum efc, heading "latty", post #461 to #480

D13A: Internet archive on 20 June 2012 at the following URL: <https://web.archive.org/web/20120620110525/http://www.wires.co.uk/>

D13B: Internet archive on 20 June 2012 at the following URL: https://web.archive.org/web/20120620110118/http://wires.co.uk:80/acatalog/nc_bare.html

Together with their reply to the opponent's statement of grounds of appeal the appellant (patent proprietor) filed document D14.

D14: excerpt from E-Cigarette Forum efc, heading "Nichrome or Kanthal specs for purchasing", post #1 to #19.

V. Oral proceedings by videoconference were held before the Board on 6 April 2022.

VI. The final requests of the parties were the following:

The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or in the

alternative, on the basis of one of the auxiliary requests 1, 2 and 5-12 filed with the statement of grounds of appeal, corresponding to the auxiliary requests filed during the opposition proceedings.

The appellant (opponent) requested that the decision under appeal be set aside and that the patent be revoked.

VII. Claim 1 of the **patent as granted** (main request) reads as follows:

An electronic vapour provision device (1) comprising a power cell (5) and a vaporiser, (6) where the vaporiser comprises a heating element (17) and a heating element support (20), wherein one or more gaps are provided between the heating element and the heating element support; wherein:

the heating element is on a support outer surface of the heating element support; and

the one or more gaps are provided between the heating element and the support outer surface.

Claim 15 of the patent as granted reads as follows:

A vaporiser, configured for use with an electric vapour provision device according to any preceding claim, comprising:

a heating element and a heating element support;

wherein:

one or more gaps are provided between the heating element and the heating element support;

the heating element is on a support outer surface of the heating element support; and the one or more gaps are provided between the heating element and the support outer surface.

In **auxiliary request 1**, the features of granted claims 3 and 4 were added to claim 1 and 15 as follows:

"further wherein the heating element support is a rigid support comprising a porous ceramic material."

Auxiliary request 2 is based on auxiliary request 1, wherein additionally the following feature is added to claim 1 and 15 as granted:

"and the heating element is a coil wire having a diameter of 0.05 mm to 0.2 mm."

Claim 1 of **auxiliary request 5** reads as follows (amendments to claim 1 as granted underlined by the board):

An electronic vapour provision device (1) comprising a power cell (5) and a vaporiser, (6) where the vaporiser comprises a heating element (17) and a heating element support (20), wherein one or more gaps are provided between the heating element and the heating element support; wherein:

the heating element is on a support circumferential outer surface of the heating element support; and the one or more gaps are provided between the heating element and the support circumferential outer surface, further wherein the heating element support is a rigid support comprising a porous ceramic material, and the support circumferential outer surface of the heating element support is pitted to form depressions that provide the gaps.

Claim 9 of auxiliary request 5 reads as follows (amendments to claim 15 as granted underlined by the

board):

A vaporiser, configured for use with an electric vapour provision device according to any preceding claim, comprising:

a heating element and a heating element support;

wherein:

one or more gaps are provided between the heating element and the heating element support; the heating element is on a support circumferential outer surface of the heating element support; and the one or more gaps are provided between the heating element and the support circumferential outer surface, further wherein the heating element support is a rigid support comprising a porous ceramic material, and the support circumferential outer surface of the heating element support is pitted to form depressions that provide the gaps.

Claim 1 and claim 9 of **auxiliary request 6** combine the features of auxiliary requests 2 and 5.

VIII. The appellant's (patentee's) arguments relevant to the present decision may be summarized as follows:

Patent as granted and auxiliary request 1 - novelty over D3

The opposition division erred in concluding that when the heating wire 83 of D3 (figures 17, 18) was wound on the porous component 81 which is considered as heating support element (paragraph [0055]), gaps between the heating wire and the outer surface of the support element 81 were formed by the pores of the porous component 81. Not all pore sizes of all porous components could be considered as gaps. The opposition

division referred to D5, page 13, and to D11, page 3, to support the fact that the pores of the porous material of D3 had a size as mentioned in paragraphs [0075] and [0088] of the patent in suit. Therein a range of 10 to 500 micrometers was disclosed which should be taken as a starting point for the interpretation of the feature "gap". However D5 referred to a very specific type of ceramic material, and D11 disclosed pore sizes that could be as low as 2nm (D11, page 4, second paragraph). Such a pore size did not fit with the interpretation of what a gap was. A skilled person would not commonly read the feature "gap" as extending to a nano-sized spacing. D3 did not directly and unambiguously disclose a gap size in a suitable range.

Additionally, D3 did neither describe the porous member 81 as having a storage function for the liquid nor as having a supporting function for the heating element. Paragraph [0043], last sentence, of D3 only disclosed the ability to absorb the liquid stored in the cigarette bottle assembly.

Auxiliary request 2 - Sufficiency of disclosure

The opponent failed to specify why the opposition division was wrong to find that the granted patent complied with Article 83 EPC. As the submissions of the opponent were not responsive to the decision under appeal, they were inadmissible.

Auxiliary request 2 - Article 84 EPC

The clarity objection against claim 1 was a new line of attack and should not be admitted.
The objection appeared to be based on an alleged

inconsistency between the description and the upheld claims. However the minutes of the oral proceedings before the opposition division showed that the opponent explicitly agreed that no other parts of the description needed to be amended (point 5.2 of the minutes).

Auxiliary request 2 - Article 123(2) EPC

The added feature "the heating element is a coil wire having a diameter of 0.05 mm to 0.2 mm" was based on page 17, line 21 of the application as filed (see the A-publication WO 2010/012894). On page 4, lines 20 to 24 of the application as filed, it was disclosed that forming the coil wire around the heating element support was only one of various options ("*may be coiled around the heating element support*"). This arrangement of the heating element was thus not inextricably linked to the feature "coil wire".

Admission of D7A to D7D, D13A, D13B, D14

D7A to D7D, D13A and D13B, submitted with the opponent's statement of grounds of appeal, could have been filed during the first instance proceedings and therefore should not be admitted.

The documents were filed in view of the inventive step discussion with regard to auxiliary request 2 that took place during the opposition hearing. However the subject-matter of auxiliary request 2, in particular the feature "*the heating element is a coil wire having a diameter of 0.05 mm to 0.2 mm*", had been on file long before the oral proceedings. The appellant (opponent) decided to only file selected parts of the original thread (D7). The new documents were not relevant and did not remedy any of the arguments of the opposition

division why a skilled person would not combine D3 with D7.

Should D7A to D7D, D13A and D13B be admitted then also D14 filed as a direct reaction to the new documents of the opponent had to be admitted into the appeal proceedings.

Auxiliary request 2 - Inventive step

The conclusion of the opposition division that the subject-matter of claim 1 as granted involved an inventive step starting from D3 combined with D7 was correct.

The invention lay in the combination of the rigid support and the thin wire, see paragraph [0012] of the patent in suit. The problem to be solved was how to increase efficiency while maintaining robustness of the device. While it might be possible that coil wire diameters within the claimed range were available, the appellant's (opponent's) attacks ignored that diameters outside the claimed range, e.g. 0.25mm, were available and taught as being suitable for use in electrically heated smoking articles, see D14, post #10. The skilled person would not be motivated to apply the diameters mentioned in D7 to the device of D3, in particular as wires with thin diameters were fragile (D7 #188, D7D #475). D3 itself provided an embodiment that solved the problem posed, namely in paragraph [0045], wherein the wire was replaced by a electrically conductive ceramic PTC material.

Auxiliary request 5 - Article 123(2) EPC

Claim 1 was amended to incorporate the features of granted claims 3 and 4 and comprised amendments in

which the support "circumferential" outer surface was defined as being "pitted to form depressions that provide the gaps". Basis for this amendments could be found on page 14, lines 19 to 21 and lines 23 to 24 of the A-publication WO 2010/012894, page 5, lines 19, 20 and granted claim 10. Features mentioned in these passages but not added to claim 1 were either not inextricably linked to the depressions (the heating element being a helical coil wire) or disclosed as being optional (substantially cylindrical support). Furthermore the technical information the skilled person retrieved from the wording of claim 1 was the same as disclosed on page 14, lines 23 to 24 ("*where the wire of the coil 23 passes over a depression 70 in the surface 28, a gap 80 is provided between the wire and the area of the surface 28 immediately under the wire*".)

Auxiliary request 5 - Novelty

Pitted depressions were not the same as the surface of a porous component. D3 and D1 (figure 1, capillary wick 117 with page 6, line 22 to page 7, line 2) disclosed only foamed ceramics that had a structure with interconnected pores as could be seen in e.g. D5, slide 8. Pits to form depressions meant something more than just an open pore and should be discernible on such a foamed ceramic surface.

Auxiliary request 6 - Inventive step

D3 did not provide any hint to modify the porous material 81. The idea of additional areas provided by the depressions at the surface was not mentioned at all in D3 or any other cited document. Paragraph [0076] of the patent in suit described the advantages of the

depressions: *"The depressions 70 in the circumferential surface 28 provide areas in which liquid can gather on the surface 28 of the support 20 prior to vaporisation, and thereby provide areas for liquid to be stored prior to vaporisation. The depressions 70 also increase the surface area of the support 20, thus increasing the additional surface area for exposing liquid to the coil 23 for vaporisation provided by the support 20. The depressions 70 also expose more of the coil 23 for increased vaporisation in these areas."*

- IX. The appellant's (opponent's) arguments relevant to the present decision may be summarised as follows:

Patent as granted and auxiliary request 1 - novelty over D3

The findings of the opposition division were correct. The porous component according to D3 which was made of e.g. foamed ceramics, that absorbed liquid necessarily also stored the absorbed liquid. The open pores on the surface of the porous component constituted the claimed gaps. Also in the patent in suit a gap was nothing else than a space between said porous component and the heating wire, see paragraphs [0021] and [0074] to [0076] of the patent in suit.

Contrary to the appellant's (patent proprietor's) argumentation, claim 1 did not define any gap size. Furthermore, the patent in suit did not define a limitation to the gap size at all. Paragraph [0088] disclosed a range of 10 to 500 micrometers but also mentioned that other gap sizes were possible.

Auxiliary request 2 - Sufficiency of disclosure

The invention of claim 1 could not be put into effect across its full range. The wicking element was essential to the function that liquid was gathered and stored in the gaps, but was not provided in claim 1. Only in claim 14 as granted a wicking element was claimed, demonstrating that claim 1 was broader and thus had to embrace other mechanisms not disclosed in the patent.

Auxiliary request 2 - Article 84 EPC

Claim 1 did not clearly define the matter for which protection was sought. Considering paragraph [0026] of the patent together with the embodiments of figure 23 and 24 being presented as embodiments of the invention, the skilled person would be confused about the scope of claim 1 since it was unclear as to whether the claimed coil wire of the specific diameter provided on one surface of a flat planar heating element support was within the scope of the invention or not.

Auxiliary request 2 - Article 123(2) EPC

The feature "*the heating element is a coil wire having a diameter of 0.05 mm to 0.2 mm*" was originally only disclosed in combination with a coil wire being wound around the heating element support or having a helical form around the support, see e.g. page 4, lines 26 to 27, page 8, line 31 to page 9, line 5, page 15, lines 24 to 28 and the figures of the original application (A-publication WO 2010/012894). Claim 1 allowed other arrangements which were not supported by the description, in particular a coil wire arranged on one surface of a flat planar heating element support shown

in figures 23, 24 of the patent in suit.

Admission of D7A to D7D, D13A, D13B

D7A-D7D, D13A and D13B, filed with the statement of grounds of appeal, were representative of common general knowledge available to the skilled person. The wire diameter was discussed for the first time at the oral proceedings before the opposition division. Diameters, in particular 0.13mm and 0.16mm, were disclosed in D7. The opposition division erred in its conclusion that because no information could be inferred from D7 as to the kind of electronic cigarette the individuals in the forum referred to, the skilled person could not find any pointer to apply the teaching of D7 to the device of D3. The additional evidence was a direct reaction to this decision of the opposition division and served to prove the commercial availability of commonly used coil wires with diameters between 0.05 and 0.2mm according to claim 1 of auxiliary request 2.

Auxiliary request 2 - Inventive step

Claim 1 only differed from D3 in that a range for the coil wire diameter was specified. Contrary to the opposition division's opinion (decision, point 20.2), the technical problem was how to put the device of D3 into practice. The claimed range of the diameter of the coil wire was an arbitrary choice of commonly available wires on the market. D13A and D13B, excerpts of the online catalogue of an online supplier for heating wires which was mentioned in post #1 of D7A, showed that diameters of 0.132mm, 0.15mm, 0.16mm, 0.17mm and 0.2mm were "*popular with people mending electric cigarettes*". The skilled person had a free choice among

several options. The patent did not disclose any specific effect or technical advantage of the selected range. The fact that thinner wires heated up more quickly or broke more easily was generally known. The prior art did not give any reason why the skilled person would be inhibited to use a diameter within the claimed range.

Auxiliary request 5 - Article 123(2) EPC

The added feature "*the support circumferential surface of the heating element support is pitted to form depressions that provide the gaps*" was only disclosed within the context of (page 14, lines 19 to 24, of the A-publication WO 2010/012894)

- a coil wire,
- the coil wire being helical,
- a substantially cylindrical support and
- gaps provided between the wire and the area of the surface immediately under the wire.

As these features were not added to claim 1, the amendment did not comply with Article 123(2) EPC.

Auxiliary request 6 - Novelty

Claim 1 was not new over D3 as the term "pits" had a broad meaning and the claim language did not make a difference between pitted depressions and open pores at the surface of the support. Pitted depressions were the direct consequence of the porous material.

The same was argued for D1. D1 disclosed in figure 1 with page 6, lines 26-34 a heating element support (capillary wick 117) that "*may comprise a sponge-like or foam-like material formed into a rod shape*". As examples for a sponge or foam material ceramic-based materials were mentioned. Such a heating element

support had likewise open bores at the surface. The surface was thus "pitted to form depressions that provide the gaps" according to claim 1.

Auxiliary request 6 - Inventive step

Should the feature "pitted to form depressions" considered as not being disclosed in D3, it should be noted that the feature did not make any technical contribution over D3. The inevitable presence of open pores on the surface of the support 81 of D3 had exactly the same function as the claimed depressions, namely to increase the area in which liquid could be diffused. The claimed device might have structural differences, but these were only alternatives for the same function provided by the pores of D3.

Reasons for the Decision

1. Patent as granted/ auxiliary request 1 - Article 54 EPC

- 1.1 The board confirms the decision of the opposition division that the subject-matter of claim 1 of the patent as granted (main request) and of auxiliary request 1 is not novel over D3.
- 1.2 Claim 1 of auxiliary request 1 differs from claim 1 as granted in that the heating element support is further specified as being "*a rigid support comprising a porous ceramic material*". The disclosure of this feature in D3 is not disputed. Indeed D3 discloses in paragraph [0055] with reference to figures 17 and 18, that the porous component 81 on which the heating wire 83 is wound, is made e.g. of foamed ceramics.

- 1.3 The disputed feature in both requests is whether the pores of the porous component 81, being the heating element support (D3, figures 17, 18), constitute the "one or more gaps" as defined in claim 1.
- 1.4 Claim 1 only specifies the gaps as being provided between the heating element and the outer surface of the heating element support.
In D3, the porous component 81 provides the capability to absorb and to diffuse liquid (paragraph [0043], last sentence). The skilled person knows that a porous element to be able to absorb liquid necessarily has a structure of open pores (contrary to a structure of closed pores e.g. for thermal insulation, see D11, page 4, first paragraph). The open pores at the outer surface allow to form a gap between the heating element 83 and the heating element support 81 when the heating wire 83 of D3 is wound on the porous component 81 as disclosed in paragraph [0055] and figures 17, 18.
- 1.5 As claim 1 does not define any further information about the gaps, neither about their function nor about their size, the arguments of the appellant (patent proprietor), that the pores of D3 did not have the function of storing the liquid as described in paragraph [0010] of the patent in suit or that the pores of a foamed ceramic might be too small to provide a gap, are not convincing.
- 1.6 In particular the appellant (patent proprietor) referred to paragraph [0088] of the patent in suit wherein it was defined that the size of the gap was in the range of 10 to 500 micrometers and argued that this gap size was important to guarantee the intended functions of the gaps as described in paragraph [0010] of the patent in suit ("*Providing a gap between the*

heating element and the heating element support allows liquid to be gathered and stored in the gap region for vaporisation. The gap can also act to wick liquid onto the heating element."). The skilled person would also have these functions in mind when reading the last sentence of paragraph [0088] that "*other gap sizes are possible*".

However neither the general wording of claim 1 nor the disclosure of paragraph [0088] that other gap sizes are possible, limits the size of the gap to a specific range. Furthermore, the patent in suit itself allows the pores of the porous heating element support to form the claimed gaps. In paragraph [0013], the patent in suit defines that the pores are able to store liquid ("*Having a porous support enables liquid to be stored in the porous support.*"). The liquid storage actually is one of the functions of the gaps, see paragraph [0010] cited in the preceding paragraph of this decision.

In fact, the function of the pores in D3 (paragraph [0043], last sentence) is the same as described for the pores or gaps in the patent in suit.

- 1.7 In its written submissions (statement of grounds of appeal, page 4, last paragraph), the appellant (patent proprietor) additionally denied that the porous member 81 of D3 necessarily supports the heating element. However the appellant (patent proprietor) fails to explain why the decision of the opposition division, chapter 15.2 (ad point a) is not correct. The board does not see any reason why the findings of the opposition division should be put into question and confirms the reasoning of the opposition division, that based on the disclosure in paragraph [0055] of D3 ("*the heating wire is wound on the porous component 81*") the

porous component 81 can be regarded as the heating element support according to claim 1.

2. Auxiliary request 2 - patent as maintained by the opposition division

2.1 Sufficiency of disclosure

2.1.1 The appellant's (opponent's) submissions in respect of insufficient disclosure correspond to those considered by the opposition division in the contested decision (point 12) with regard to the patent as granted.

Notwithstanding the question raised in the patent proprietor's reply to the opponent's statement of grounds of appeal (page 4) as to the admissibility of this objection in the appeal proceedings, the board holds that the invention is sufficiently disclosed.

2.1.2 The objection that the invention of claim 1 could not be put into effect across its full range because the wicking element 18 as an essential feature for gathering and storing liquid was missing in claim 1, is not convincing.

2.1.3 The board refers to paragraph [0075], last sentence, of the patent in suit, wherein the mechanism by which liquid is gathered and stored in the gaps is described: "*The gaps 80 are configured to facilitate the wicking of liquid onto and along the length of the support 20 through capillary action at the gaps 80.*"

Considering the porous ceramic material of the heating element support 20 defined in original claim 4 and incorporated in claim 1 of all auxiliary requests on file, capillary action is the most obvious mechanism. No additional wicking element is essentially necessary to put the invention into practice.

2.2 Admission of the objection under Article 84 EPC

2.2.1 The board granted the request of the appellant (patent proprietor) to hold the new line of attack inadmissible according to Article 12(4) RPBA 2007.

2.2.2 The objection according to which claim 1 and the description of auxiliary request 2 were inconsistent, in particular with regard to how the claimed coil wire was provided on the support, was raised for the first time with the appellant's (opponent's) statement of grounds of appeal.
In particular, the appellant (opponent) argued that it was unclear if a coil wire provided on one surface of a flat planar heating element support was within the scope of the invention or not as paragraph [0026] of the patent in suit recited that "*the heating element support may be a flat planar substrate. Moreover, the heating element can be on one surface of the heating element support*".

2.2.3 The opposition division found the claims according to auxiliary request 2 allowable and the description was adapted accordingly during the opposition hearing. The opponent was explicitly asked about necessary adaptations of the description but no clarity objections were raised at this stage. As can be seen from the minutes, the opponent explicitly agreed to the adapted description (see page 4 of the minutes: "*The parties were asked if adaptations of further paragraphs of the description are necessary. The opponent agreed that only paragraphs [0013] and [0089] of the description would have to be amended.*").

2.2.4 Thus, the clarity objection against claim 1 of auxiliary request 2 could and should have been

presented in the first instance proceedings when the description was adapted during the oral proceedings before the opposition division.

2.3 Article 123(2) EPC

- 2.3.1 The Board confirms the findings of the opposition division (point 18.2 of the decision) that the requirements of Article 123(2) EPC are met.
- 2.3.2 Contrary to the appellant's (opponent's) opinion, the added feature "*the heating element is a coil wire having a diameter of 0.05 mm to 0.2 mm*" based on page 17, line 21 of the A-publication WO 2010/012894, is not inextricably linked to the arrangement wherein the coil wire is wound around the heating element support.
- 2.3.3 This becomes not only apparent from the passage on page 4, lines 20 to 24, cited by the appellant (patent proprietor) but also from the original claims 8, 24 and 25 (A-publication WO 2010/012894). Therein an alternative to the wound-around-arrangement is disclosed, namely the option of a coil wire threaded in and out of the heating element support being a flat substrate.
In addition, page 6, lines 9, 10 together with originally filed claims 8 and 24 disclose the possibility that in case that the heating element support is a flat planar substrate and the heating element is a coil wire, the coil can be provided on one surface of the heating element.
- 2.3.4 The diameter of the wire is also not inextricably linked to the wound-around arrangement. The embodiments claimed in original claims 8, 24, 25 (coil wire being threaded in and out of a flat planar support) and

original claims 8, 24, 26 (coil wire being wrapped around the flat planar support) are presented as equivalent alternatives independent of the diameter.

2.4 Admission of D7, D7A-D7D, D13A, D13B, D14

2.4.1 Regarding D7, the board sees no reason not to take D7 into account. In the notice of appeal, the opponent (patent proprietor) requested to overturn the decision of the opposition division to admit the late filed document D7 into the proceedings. However the opponent (patent proprietor) did not substantiate this request neither in the notice of appeal nor in the statement of grounds of appeal.

2.4.2 The board does not make use of its power to hold the documents D7A-D7D, D13A and D13B inadmissible pursuant to Article 12(4) RPBA 2007.

2.4.3 All documents were filed with the opponent's statement of grounds of appeal in view of the inventive step discussion concerning the feature "*coil wire having a diameter of 0.05 mm to 0.2 mm*" added to claim 1 of auxiliary request 2 as maintained by the opposition division.

Auxiliary request 2 was filed with the patent proprietor's reply to the notice of opposition and is based on auxiliary request 1 with the coil wire diameter being the only feature added. Preliminarily, the opposition division was of the opinion that the selected range of diameters did not involve an inventive step. Nevertheless the opponent directly reacted in submitting (among others) document D7 to cover the additional feature in claim 1 of auxiliary request 2. Contrary to the opinion of the appellant (patent proprietor) the appellant (opponent) had no

motivation to file further evidence in view to the wire diameter before the oral proceedings took place.

2.4.4 The filing of D7A-D7D, D13A and D13B is considered as a direct reaction to the findings of the opposition division during the oral proceedings.

The documents D7A-D7D (further excerpts of the blog of D7), D13A and D13B (parts of an online catalogue of a supplier "wires.co.uk" for heating wires) fill the gap of which heating coil wire diameters were common for electronic cigarettes at the time of the filing date of the patent in suit.

2.4.5 The board also admitted D14 (a further excerpt from the E-Cigarette Forum) into the appeal proceedings. D14 was filed with the patent proprietor's reply to the opponent's statement of grounds of appeal as an immediate reaction to the new documents D7A-D7D, D13A and D13B. The admissibility of D14 was not objected by the appellant (opponent).

2.5 Inventive step - D3 with general knowledge

2.5.1 The board judges that the subject-matter of claim 1 of auxiliary request 2 is rendered obvious by the prior art.

2.5.2 D3 as closest prior art is not disputed by the parties.

2.5.3 In accordance with the findings on novelty (see point 1 of this decision) the subject-matter of claim 1 of auxiliary request 2 only differs from the device disclosed in D3 in that the coil wire has "*a diameter of 0.05 mm to 0.2 mm*".

2.5.4 The board follows the argumentation of the appellant (opponent) that the technical problem can be seen in 'How to put the D3-device into practice'. A skilled person that wants to realize the device of D3 needs to select an appropriate wire diameter as no diameter is mentioned at all.

2.5.5 The appellant (patent proprietor) argued that the objective technical problem had to be seen in providing a more efficient heating element as formulated by the opposition division. In the patent in suit, paragraphs [0010] and [0012], a finer coil wire diameter was presented as a solution to this problem.

The board is not convinced. The wording of paragraph [0010] ("*Having a separate heating element and support allows a finer heating element to be constructed.*") and of paragraph [0012] ("*The heating element support may for example be a rigid support and/or the heating element support may be solid. This has the advantage that a rigid or solid support enables a more fragile, more efficient heating element to be used.*") does not describe a specific technical effect of the selected range of wire diameters but the advantage of having the heating element and the rigid support separately. In the device of D3 these features are already incorporated by providing the porous ceramic component 81 and the heating wire 83. The fact that a finer wire heats up more quickly and thus is more efficient, but more fragile, is part of the skilled person's general knowledge.

2.5.6 The claimed range for the diameter of the coil wire constitutes an obvious choice from the available diameters commonly used for heating wires in electronic cigarettes. In particular it is known from D13B that

heating wires with diameters of 0.132 mm, 0.15 mm, 0.16 mm, 0.17 mm and 0.2 mm, all falling within the claimed range, were available and "popular with people mending electric cigarettes" before the priority date of the patent in suit. Thus the skilled person would select a heating wire with a diameter available on the market to put the device of D3 in practice.

2.5.7 The patent in suit does not disclose any specific advantage of the claimed wire diameters, nor does the prior art contain any prejudice against thin wires with diameters at the lower end of the available diameters (see D13B, wherein diameters up to 3,25 mm are offered). Also D14 cited by the appellant (patent proprietor) does not advise against the use of wire diameter between 0.05 mm to 0.2 mm even if the users therein mention larger diameters (post #10: 0.25 mm, 0.30 mm, 0.32 mm, 0.35 mm) which are considered to be easier to wrap around the heating element.

3. Opponent's submissions regarding auxiliary requests 5 to 12

3.1 The appellant (opponent) stated in its reply to the appellant's (patent proprietor's) statement of grounds of appeal that the auxiliary requests and the supporting arguments filed by the patent proprietor corresponded to those of the first instance. The appellant (opponent) referred to and intended to enclose the written submissions filed in response during the opposition proceedings. However no enclosure was actually submitted.

3.2 The board took into consideration the written submissions referred to by the appellant (opponent), since it was clear that only the opponent's letter of

8 March 2019 could be meant, it being the sole letter filed by the opponent in reply to the filing of the auxiliary requests of the patent proprietor during opposition proceedings.

- 3.3 The appellant (opponent) did not object the missing enclosure in the opponent's reply to the appellant's (patent proprietor's) statement of grounds of appeal.

4. Auxiliary request 5 - Article 123(2) EPC

- 4.1 The board agrees with the appellant (opponent) that the amendments made to claim 1 of auxiliary request 5 contravene the requirements of Article 123(2) EPC.

- 4.2 Claim 1 of auxiliary request 5 specifies that "*the heating element is on a support circumferential outer surface of the heating element support*" and that "*the support circumferential outer surface of the heating element support is pitted to form depressions that provide the gaps*".

- 4.3 The passage that comes closest to the introduced amendments can be found on page 14, lines 19 to 27 (WO-A-2014/012894). Therein the gaps are disclosed as being formed where the coil 23 overlaps depressions 70 in the circumferential outer surface of the support (see also figures 5, 6). The board follows the argument of the appellant (opponent) that depressions formed by pits to provide the gaps in combination with a heating element other than a coil wire are not directly and unambiguously derivable from the original disclosure but would fall under the claimed-subject matter. The amendment thus leads to an unallowable intermediate generalisation.

- 4.4 The passage on page 5, lines 17 to 20, cited by the appellant (patent proprietor) according to which the heating element support may have a pitted surface, can not be seen isolated from the directly following passage, in particular lines 24 to 26. Therein the pitted surface is disclosed as providing "*gaps between a cylinder-like support and the coil in the pit regions*". Thus also on page 5, pits that provide the gaps are only disclosed in combination with the coil wire.
- 4.5 Additionally the appellant (opponent) objected that the features
- the coil wire is "helical"
 - the support 20 is "substantially cylindrical" and
 - "the gap 80 is provided between the wire and the area of the surface 28 immediately under the wire"
- were not present in claim 1, but were, in accordance with the disclosure on page 14, lines 19 to 27, of the original description (A-publication WO 2014/012894), inextricably linked to the feature "the outer surface of the heating element support being pitted to form depressions".
- 4.6 The board does not agree. A coil wire, a feature that indeed needs to be included in claim 1 (see point 4.3 above), used as heating element in a vaporizer for an electric vapour provision device typically is helical. Claim 1 of auxiliary request 5 specifies that the heating element is on a support circumferential outer surface. The term "circumferential" by definition refers to a curved geometry. In combination with a coil wire, the skilled person is implicitly given the information of a substantially cylindrical support.
- Finally the feature described on page 14, lines 25, 26,

that "*the gap 80 is provided between the wire and the area of the surface 28 immediately under the wire*" is a direct consequence of the coil wire being provided on the support circumferential outer surface such that the gaps are provided between the heating element and the heating element support.

5. Auxiliary request 6

5.1 The objections raised by the appellant (opponent) against auxiliary request 6 are not convincing.

5.2 Claim 1 of auxiliary request 6 corresponds to claim 1 of auxiliary request 5 wherein the feature of claim 1 of auxiliary request 2 that "*the heating element is a coil wire having a diameter of 0.05 mm to 0.2 mm*" is reintroduced. This amendment meets the requirements of Article 123(2) EPC, as explained under point 2.3 of this decision, and overcomes the objection under Article 123(2) EPC raised for claim 1 of auxiliary request 5 (see point 4.3 of this decision).

5.3 Novelty

5.3.1 The subject-matter of claim 1 is new over D3.

5.3.2 The board does not agree with the appellant's (opponent's) interpretation that the pores of the porous element 81 of D3 (figures 17, 18 with paragraph [0055]) are equivalent to the claimed depressions. Claim 1 clearly defines the gaps as being formed by the depressions, not by the pores. Contrary to the appellant's (opponent's) opinion, the board considers the pits that form depressions as being intentionally provided in addition to the pores and as such being distinguishable from open pores on the surface of a

porous support. The pits form gaps in addition to the intrinsic, randomly distributed open pores of the porous element which are e.g. shown in D5, page 8. As D3 does not disclose depressions that form gaps in addition to the pores, the subject-matter of claim 1 is not anticipated by D3.

5.3.3 The same is valid with regard to the novelty objection in view of D1. Also D1 only discloses pores at the surface intrinsic to the capillary wick 117 (figure 1).

5.3.4 The distinguishing feature of claim 1 (compared to D3 and D1), that "*the support circumferential outer surface of the heating element support is pitted to form depressions that provide the gaps and the heating element is a coil wire having a diameter of 0.05 mm to 0.2 mm*", is also added to claim 9 directed to a vaporizer, configured for use with an electric vapour provision device according to claim 1. Hence, claim 9 is also new over D3 and D1.

5.4 **Inventive step**

5.4.1 Auxiliary request 6 meets the requirements of Article 56 EPC.

5.4.2 D3 is considered as closest prior art. Claim 1 differs from this known device by a heating element support whose surface is pitted to form depressions that provide the gaps and by defining a coil wire diameter in the range of 0.05 mm to 0.2 mm.

5.4.3 The technical effect of the additional depressions is that more gaps and thus a greater surface area of the heating element is exposed as described in paragraph [0010] of the patent in suit. The technical problem can

be seen in providing a more efficient electronic vapour provision device as proposed by the appellant (patent proprietor).

It is noted that in accordance to point 2.5 of this decision, coil wires with diameters in the claimed range are an obvious choice from commonly used coil wires in electronic cigarettes (see D13B).

5.4.4 None of the cited prior art documents discloses pits to form depressions at the surface of the heating element support additionally to the pores of the porous component. By providing a greater surface area more liquid can be gathered at the surface of the heating element. Thus more liquid is available for heating and vaporisation making the claimed device more efficient (see paragraph [0010] of the patent in suit).

5.4.5 The board agrees with the appellant (opponent) that the depressions have the same function as the open pores, however they improve and intensify the functionality of the open pores at the surface of the heating element. D3 does not disclose such a teaching and gives no indication to the skilled person to modify the porous heating element to arrive at the claimed subject-matter.

Therefore the subject-matter of claim 1 is not rendered obvious by the evidence on file.

5.4.6 For the same reasons the subject-matter of claim 9 also involves an inventive step over the prior art.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside
2. The case is remitted to the opposition division with the order to maintain the patent as amended on the basis of the claims of auxiliary request 6 filed with the statement of grounds of appeal and a description to be adapted.

The Registrar:

The Chairman:



A. Voyé

G. Pricolo

Decision electronically authenticated