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Datasheet for the decision of 6 July 2022

Case Number: T 0401/21 - 3.2.01

Application Number: 15724970.7

Publication Number: 3145346

IPC: A24F47/00

Language of the proceedings: EN

Title of invention:
AN AEROSOL-GENERATING SYSTEM COMPRISING A PLANAR INDUCTION COIL

Patent Proprietor:
Philip Morris Products S.A.

Opponent:
Nicoventures Trading Limited

Headword:

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
Novelty - main request (yes)
Inventive step - main request (yes)

Decisions cited:

Catchword:

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Beschwerdekammern

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Case Number: T 0401/21 - 3.2.01

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

Appellant: (Opponent)	Nicoventures Trading Limited Globe House 1 Water Street London WC2R 3LA (GB)
Representative:	Dehns St. Bride's House 10 Salisbury Square London EC4Y 8JD (GB)
Respondent: (Patent Proprietor)	Philip Morris Products S.A. Quai Jeanrenaud 3 2000 Neuchâtel (CH)
Representative:	Siepmann, Felix Abitz & Partner Patentanwälte mbB Arabellastraße 17 81925 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 15 February 2021 rejecting the opposition filed against European patent No. 3145346 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	G. Pricolo
Members:	S. Mangin
	P. Guntz

Summary of Facts and Submissions

I. The appeal was filed by the appellant (opponent) against the decision of the opposition division to reject the opposition filed against the patent in suit (hereinafter "the patent").

II. The opposition division rejected the opposition. It held that:
- the subject-matter of claim 1 was new over E1 (WO2015/131058 Al),
- the subject-matter of claim 13 was new over E1, E5 (EP2477197 A1) and E13 (CN 201957275 U) and
- the subject-matter of claim 15 was new over E1 and E10 (US 2005/0011883 A1).
- The subject-matter of claim 13 involved an inventive step
  - starting from E3 (WO 95/27411) in combination with
    - common general knowledge,
    - E3 (remaining embodiments),
    - E4 (US 2002/0078956 Al),
    - E5
    - E6 (US 2008/0122367 Al),
    - E7 (IEEE TRANSACTIONS ON POWER ELECTRONICS, VOL. 26, NO. 10, OCTOBER 2011. "Printed Spiral Winding Inductor With Wide Frequency Bandwidth", Chi Kwan Lee, Member, IEEE, Y. P. Su, Student Member, IEEE, and S. Y. Ron Hui, Fellow, IEEE),
    - E8 ("PCB Multi-Track Coils for Domestic Induction Heating Applications", I. Lope, C. Carretero, J. Acero, J.M. Burdio and R. Alonso)
    - E9 (Circuits and Systems, 2013, 4, 237-244 Scientific Research, http://dx.doi.org/10.4236/cs.2013.42032 Published Online April 2013

(http://www.scirp.org/journal/cs), "Design and Optimization of Printed Circuit Board Inductors for Wireless Power Transfer System", Ashraf B. Islam, Syed K. Islam, Fahmida S. Tulipor) or
- E12 (US 6,651,651 Bl) or
- starting from E2, E10, E11 (US 2003/0062042 Al) or E13.

- The subject-matter of claims 1 and 15 involved an inventive step starting from E2, E3, E10 or E11.

III. Oral proceedings were held before the Board on 6 July 2022 per videoconference.

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

The respondent (patent proprietor) requested that the appeal be dismissed or, in the alternative, that the patent be maintained in amended form on the basis of one of auxiliary requests 1 to 14.

V. Independent claim 1 of the main request with the feature numbering of the opposition division (see annex 1 of the appealed decision) reads as follows:

[1.1] An electrically heated aerosol-generating system
[1.2] comprising an aerosol-generating device (100) and
[1.3] a cartridge (200) configured to be used with the device,
[1.4] the device (100) comprising:
a device housing (101);
[1.5a] a flat spiral
[1.5b] inductor coil (110); and
[1.6] a power supply (102)

[1.6.1] connected to the flat spiral inductor coil (110) and
[1.6.2] configured to provide a high frequency oscillating current to the flat spiral inductor coil;
[1.7] the cartridge (200) comprising:
a cartridge housing (204)
[1.7.1] containing an aerosol-forming substrate and
[1.7.2] configured to engage the device housing; and
[1.7.3] a susceptor element (210) positioned to heat the aerosol-forming substrate.

VI. Independent claim 13 with the feature numbering of the opposition division (see annex 1 of the appealed decision) reads as follows:

[13.1] An electrically heated aerosol-generating device comprising:
[13.2] a device housing (101); a
[13.3a] flat spiral
[13.3b] inductor coil (110)
[13.3c] within the device housing; and
[13.4] a power supply (102)
[13.4.1] connected to the flat spiral inductor coil (110) and
[13.4.2] configured to provide a high frequency oscillating current to the flat spiral inductor coil.

VII. Independent claim 15 with the feature numbering of the opposition division (see annex 1 of the appealed decision) reads as follows:

[15.1] A method of generating an aerosol comprising:

[15.2] providing a cartridge (200)
[15.2.1] comprising a susceptor and
[15.2.2] an aerosol-forming substrate
[15.2.3] in contact with or proximate to the susceptor;
[15.3a] positioning the cartridge so that the susceptor is proximate to a
[15.3b] flat spiral
[15.3c] inductor coil (110); and
[15.4] passing a high frequency oscillating current through the flat spiral induction coil (110)
[15.4.1] to induce a current in the susceptor
[15.4.2] to thereby heat the aerosol-forming substrate.

Reasons for the Decision

1. Novelty of the main request

The subject-matter of claims 1, 13 and 15 is novel over E5 and E1.

1.1 Novelty of the subject-matter of claim 13 over E5 (Article 54(2) EPC)

1.1.1 The appellant is of the opinion that E5 discloses all the features of claim 13 in particular:
- feature 13.1, *"an electrically heated aerosol-generating system";*
According to the appellant, this feature should be given its broadest technically sensible meaning: i.e., that the device is capable of generating an aerosol, which is the case for the electromagnetic induction device of E5. Claim 13 does not define the cartridge, such that depending on the substance inserted in the electrically heated device of claim 13, an aerosol will

be generated or not, just like in E5, depending on the substance placed in the pot, an aerosol will be generated or not.
- feature 13.2, *"a device housing";*
The top plate 104 in figure 1 of E5, which is part of the device, defines a housing. The appellant notes that claim 13 does not define the form of the housing that would support a meaningful distinction over E5. Moreover, at least when the system in E5 is installed it is provided within an overall housing.
- features 13.4, 13.4.1 and 13.4.2: *"a power supply (102) connected to the flat spiral inductor coil (110) and configured to provide a high frequency oscillating current to the flat spiral inductor coil"*.
The inverter circuit 107 controlled by control portion 108 forms part of the device shown in figure 1 of E5 (paragraph [0022]). The power supply in E5 is therefore part of the overall device, which is not required to be within the device housing according to claim 13.

1.1.2 The respondent is of the opinion that the above-mentioned features are not disclosed in E5.
- In their view the induction heating cooker of E5 is not an aerosol-generating device as the device of E5 is neither structurally nor functionally configured for aerosol generation.
- In E5, the top plate cannot be considered as a device housing. E5, figures 1 and 4 only discloses that the induction coil 100 is placed under the top plate 104.
- E5 is silent about the power supply. The inverter circuit cannot be considered as a power supply.

1.1.3 The Board is of the opinion that the electromagnetic device of E5 may be considered as *"an electrically heated aerosol-generating system"* considering that claim 13 does not define the cartridge and its

components. Indeed, the electrically heated aerosol-generating device of claim 13 and the electromagnetic induction device on figure 1 of E5 will only generate an aerosol once an aerosol generating substance is added to the devices.
However, the top plate 104 of figure 1 cannot be considered as a device housing. A device housing is a container enclosing at least partially the device. The top plate 104 in figure 1 of E5 is a structural element that does not even form a partial enclosure. When the device of figure 1 is installed, the components under the top plate may become enclosed, but there is no disclosure in E5 of how the device of figure 1 is to be installed. Furthermore, the enclosure would not necessarily pertain to the electromagnetic device of E5 but might be a piece of furniture enclosing other components as well.
Figure 1 of E5 does not disclose an electrically heated aerosol-generating system comprising a power supply. The converter circuit 107 cannot be considered as the power supply as alleged by the respondent. Indeed, the inverter will change a DC current into an AC current and provide high frequency power to the induction coil but will not be a power supply itself. The power supply in figure 1 of E5 is external to the device.

1.2 Novelty of the subject-matter of claims 1, 13 and 15 over E1 (state of the art under Article 54(3) EPC)

Regarding claim 13, the only disputed features are features 15.3b and 15.3c, in other words whether a *"flat spiral inductor coil"* is disclosed in E1.

1.2.1 The appellant is of the opinion that a *"flat spiral inductor coil"* is disclosed in E1, paragraphs [0023] and [00160] as well as claim 20, as an alternative to

the spiral coil. In their view the term "planar coil" in the context of E1 has to be interpreted as a planar helical or spiral sequence of multiple concentric rings. An undulated shape, a zig-zag shape or a mesh planar coil would not be envisaged by the skilled person as the generated magnetic field should remain in the same direction as the one induced by the induction coil wound about the cylindrical core 37 in figure 18A. Furthermore, an annular coil with one loop only, would not generate an electromagnetic field with an intensity high enough when fed with the power supply used for the helix induction coil 36 of figure 18A. For the annular coil to generate a magnetic field with an intensity high enough, the intensity and the frequency of the current supplied would need to be adjusted.
From the teaching of E1 as a whole and in particular paragraph [00134], the skilled person would only consider placing a flat spiral coil coaxial to the ferrite core 37 in the middle of it, with the winding extending away from the ferrite core.

1.2.2 The respondent contests that E1 discloses a flat spiral coil. In their view a multitude of coil geometries exist, and the coil may be planar but not spiral and not flat (such as undulated shape, zig-zag shape, or mesh shape).

1.2.3 The Board does not agree with the appellant. The end of paragraph [00160] referring to figure 18A reads "*The inductive coil 36 may be a helix wound about the cylindrical core 37, however in an alternate example embodiment, the inductive coil 36 can be a planar coil wherein the planar coil may surround the cylindrical core 37*".

The appellants' allegation that the skilled person would understand from paragraph [00160] that the flat coil would require several windings and would be placed in the middle of the ferrite core is not directly an unambiguously disclosed in E1. Neither the number and the shape of the loops, nor the position of the alternative flat coil are disclosed in paragraph [00160]. Furthermore, the implementation of such a flat spiral inductor coil in the device of figure 18A would also require numerous changes to be made such as increasing the space between the ferrite core 37 and the induction source 35.

The alternative planar coil disclosed in paragraph [00160] of E1 may be a single loop induction coil, which would be planar but not helical. This type of inductor would generate a magnetic field in the same direction as the inductive helix coil 36 of figure 18A. Such an inductor coil may require adjusting the intensity and the frequency of the current supplied to the annular coil for the magnetic field to have the same intensity as with the induction coil 36 wounded around the ferrite core, but such adjustments are foreseen in paragraph [00134] depending on the parameters of the induction coil 36. Thus, not being the only possibility to implement the alternative embodiment mentioned at the end of paragraph [0160], a flat *spiral* coil cannot be considered implicitly disclosed.

1.3 Claims 1 and 15 also comprise the feature of the "flat spiral inductor coil". Therefore at least for the same reasons stated above their subject-matter is novel over E1.

1.4 In view of the above, the issue of admissibility of the novelty attack based solely on figure 18A and not anymore on figure 3 in combination with figure 18A of E1, as in opposition proceedings, raised by the respondent, can be left unanswered as it does not change the outcome of the decision.

Similarly, the issue of admissibility of the counter argument of the appellant in the statement of grounds of appeal (see paragraph 6 on page 4) that non-helical shaped coils would not work in the device of E1 raised by the respondent can be left unanswered.

2. Inventive step of the main request

The subject-matter of claims 1, 13 and 15 involves an inventive step starting from E2, E3, E10 and E13 (Article 56 EPC).

2.1 Inventive step starting from E2 in combination with common general knowledge (represented by documents E4-E10 and E12) or with E4.

The parties agree that E2 discloses all the features of claim 13 except for the "flat spiral inductor coil".

2.1.1 The appellant is of the opinion that the problem to be solved is to provide an alternative to a helical coil. Moreover flat spiral coils are part of the common general knowledge of the skilled person as can be seen by each of: E4, paragraph [0031]; E5, paragraph [0023] and [00160]; E6, paragraph [0012]; E7, figures 3 and 6; E8, abstract and figure 10; E9, whole document; E10, paragraph [0069]; and E12, col 3, lines 29-31.
It would thus be obvious to replace the helical coil 3 by a flat spiral coil placed in the middle of the

actual helical coil in the device of figures 1 or 2 of E1. Alternatively, the flat spiral coil could be placed on a surface of the PCB 6 that is positioned immediately below the helix heater 2 replacing the actual helical coil or in addition to the actual helical coil.

The appellant is of the opinion that claim 13 is also obvious starting from E2 in combination with E4. E4 expressly teaches in paragraph [0031] that as an alternative to using a solenoidal or toroidal coil geometry (as shown respectively in Figures 1 and 2 of E4), *"other coil designs, besides those ... can be used in the inductive heater. For example, the coils can be flat and spiral inward. Such spiral coils can be placed over the surface of the heating element, heating that region of the heating element."*
Thus, the skilled person is taught directly by E4 to use a flat spiral coil as an alternative to a helical coil.
The fact that E2 already presents a working solution using a helical coil is no disincentive to making such change when the skilled person is actively looking for an alternative coil arrangement.

2.1.2 The respondent is of the opinion that the problem to be solved is to provide a more compact inductor coil. In their view changing the shape of the helical coil 3 in the device of E2 would necessitate multiple further modifications in E2's device and is therefore not obvious. If the helical coil 3 would be changed to a flat spiral coil, then the coil 3 would no longer surround the cylindrical atomizing core 1 to optimally heat the atomizing core 1. Consequently, it would be necessary to also change the shape of the cylindrical atomizing core 1. Further, the arrangement of the

atomizing core 1 would have to be changed so that it would still be subjected to the oscillating magnetic field generated by the coil and be heated by induced eddy currents within the atomizing core 1 and/or hysteresis losses within the atomizing core 1.

2.1.3 While the Board agrees with the problem defined by the appellant to provide an alternative inductor coil, the Board does not agree that it is obvious for the skilled person to change or supplement the helical inductor coil 3 of the high-frequency induction atomization device of figure 1 of E2 with a flat spiral inductor coil.

Flat spiral inductive coils are known to the skilled person. However, they are usually arranged on flat surfaces. E5 (figure 1 and paragraph [0022]) and E6 (paragraphs [0012], [0030], [0048] and figure 4) disclose flat spiral inductive coils on flat surfaces. E7 (figures 1,2 and 3), E8 (figure 1) and E9 (figure 3) disclose Printed Circuit Board (PCB) Inductors on flat surfaces. E4 (paragraph [0031]) and E12 (column 3, lines 29-21) do not clearly and unambiguously disclose how the flat spiral coil should be implemented and E10 (paragraph [0069]) does not disclose clearly and ambiguously a flat *spiral* inductive coil and its arrangement.

Therefore, placing a flat spiral inductor coil around the atomiser core in the middle of the actual helix coil 3 is not suggested by the prior art.

Placing the flat spiral inductor coil on the PCB 6 just below the atomiser core to the extent of the annular ferrite 4 as suggested by the appellant is not an obvious alternative solution either. Indeed, the generated magnetic field would be orthogonal to the plane of the flat spiral coil only in the middle of the coil and bend on the sides of the coil right after.

This means that only the very end of the atomising core and the helix heater near the planar spiral inductor coil would be heated. The shape of the atomising core 1, the helix heater 2 and the annular ferrite 4, would need to be adapted if the flat spiral inductor coil were to be placed on the PCB. Furthermore, the skilled person would have to ensure that the magnetic field generated by the flat spiral coil on the PCB does not interfere with the other components on the PCB and that the air vents 5 are not obstructed by the inductor coil.

The combination of E2 with the teaching of E4 and in particular paragraph [0031] does not render obvious the subject-matter of claim 13. Paragraph [0031] does not directly and unambiguously disclose how the flat spiral coil should be placed over the surface of the heating element, in particular it does not disclose whether it should be placed coaxial to the heating element or flat against the heating element. In any event, starting from the device of E2, it is not obvious to implement a flat spiral coil in view of the numerous modifications required as explained above.

Both claim 1 and 15 comprise the feature of the flat spiral inductor coil. Therefore, at least for the reasons stated above their subject-matter is not obvious starting from E2.

2.1.4 The respondent raised an objection regarding the admissibility of the attack starting from E2 as far as the suggestion is concerned that the skilled person would place the planar coil on the PCB 6 of figure 1 in E2. This arrangement was only suggested with letter of 30 May 2022 and was therefore in their view late filed.

The Board notes that the appellant suggested on page 8 penultimate paragraph of their statement of grounds that *"the flat spiral coil could simply be placed immediately below the core, with substantially the same effect"*. Therefore, the possibility of placing a flat spiral inductor coil on the PCB 6 or between the PCB and the core of figure 1 was envisaged with the statement of grounds of appeal.

2.2 Starting from E3 in combination with common general knowledge (represented by E4-E10 and E12) and in combination with E4

2.2.1 The appellant is of the opinion that the only distinguishing feature between the subject-matter of claim 13 and the embodiment of figure 4 of E3 is the flat spiral inductor coil.
According to the appellant, the outer shield 110 of figure 4 constitutes the housing. Moreover, a device housing (housing 500) is clearly shown at least in figures 11 and 13, and it is stated in E3, page 18, lines 1-2, that the induction heating source in these figures can be any induction heating source according to E3. Thus, the induction sources in figures 1 and 4 are also disclosed as part of an overall smoking article including a housing.

According to the appellant, the problem relating to the use of a flat spiral coil starting from E3 must be considered in terms of finding a mere alternative coil arrangement.

The skilled person when looking for an alternative coil arrangement for use with the arrangement in figure 4 of E3 would as a matter of common knowledge (represented by documents E4-E10 and E12) obviously consider using

flat spiral coils, as these were notoriously well known.
The skilled person would either replace the coil units in figure 4 of E3 with a respective flat spiral coil coaxial to pole of ferrite. The cigarette would then be received within the hole in the middle of the spiral, in exactly the same manner it is received within the hole in the middle of the coils, and the device would function in exactly the same way. Flattening the coils would also help provide a relatively localised heating, as desired in figure 4 of E3.
Or the skilled person would place the flat spiral coil on the inner surface of the outer shield.

Furthermore, in view of E4, the skilled person would obviously replace the coil units in E3 with flat spiral coils in the manner described in E4, paragraph [0031]. The arrangement of the solenoidal coil in figure 1 of E4 is similar to the arrangement of the individual coils in figure 4 of E3.

2.2.2 The respondent is of the opinion that further to the flat spiral inductor coil, E3 does not disclose a housing device. In their view, the outer shield 110 is described on page 9 of E3 as a "split stainless steel magnetic collar" and not as a device housing and the figure 11 embodiment does not disclose any kind of device housing.

Furthermore, the skilled person would not turn to the teachings of any one of documents E4 to E10 and E12 for the same reasons outlined above with respect to E2. E3's device has a very specific construction technically necessitating a helical coil (to optimally heat the susceptor surrounding the cylindrical cigarette). The further prior art documents E4, E10 and

E12 do not clearly disclose how a flat spiral induction coil can be employed and E5 to E9 are from remote technical fields.

2.2.3 The Board agrees with the appellant that the only difference between the subject-matter of claim 13 and E3 is the flat spiral inductor coil and that the problem to be solved is to provide an alternative arrangement of the inductor coil. However, the Board does not consider that starting from the figure 4 of E3 a flat spiral inductor coil would be an obvious alternative to the inductor coil formed by wound wires 104.

As mentioned above while flat spiral inductor coils arranged on a flat surface are known to the skilled person, flat spiral inductor coil spiralled around a ferrite core are not directly and unambiguously disclosed in documents E4 to E10 and E12 as submitted by the appellant.

Furthermore, if the skilled person would replace the inductor coils 104 by a flat spiral inductor coil spiralled around the ferrite pole, then the region heated by the coil would be very narrow, thus heating an insufficient amount of aerosol generating substance. The appellant then suggested that several flat spiral inductor coils could be placed next to each other. But again, no teaching in E4-E10 and E12 of such an arrangement is suggested and this solution would be more complex and raise a number of questions, such as how many flat spiral inductor coils should be used? Should they be separated by a gap? How should the pole of ferrite 106 and the shielding be arranged?

The other alternative suggested by the appellant is to place the flat spiral inductor coils on the inner curved surface of the outer shield. However, this kind of arrangement would change the orientation of the

magnetic field, which would be perpendicular to the outer shield. Keeping in mind that the aim of the device of figure 4 is to heat a portion of the inserted cigarette, the suggested arrangement raises a number of questions: How many coils should be placed around the inner side of the outer shield? What size should the coils have? Where should they be placed on the inner surface of the outer shield? How should the pole of ferrite and the shielding be arranged?
Both arrangements of the flat spiral inductor coil suggested by the appellant are not disclosed in documents E4-E10 and E12 and would require modifications of the device of figure 4 or E3. Starting from the device of figure 4, where only a portion of the cigarette is to be heated, it is therefore not obvious for the skilled person to implement a flat spiral inductor coil.

The appellant suggests that the skilled person would combine the teaching of E3 with the teaching of E4, figure 1 and paragraph [0031] and arrive at the subject-matter of claim 13.

However as mentioned above, paragraph [0031] does not clearly disclose how the spiral coils should be placed over the surface of the heating element. The general teaching of this alternative does not give any details as to its implementation. Furthermore, it is not clear how this teaching would be applied to the device of figure 4, where a certain portion of the cigarette is to be heated. Consequently, the combination of the teaching of E3 with the teaching of E4 does not render the subject-matter of claim 13 obvious.

2.3 Starting from E13 in combination with common general knowledge or with E5

For the objection of lack of inventive step of the subject-matter of claim 13 starting from E13, both parties relied during oral proceedings on their written submissions.

2.3.1 The appellant is of the opinion that E13 is an equally promising springboard for arriving at the subject matter of claim 13. E13 only fails to disclose the use of a flat spiral coil. The exact form of the coil in E13 is not specified. The problem may thus be formulated in terms of selecting a suitable coil arrangement for the device of E13. The use of flat spiral coils in this type of induction cooking device was notoriously well known (see, e.g. E5). Further, E13 itself already acknowledges induction cooker devices (such as E5) in its background section, in paragraph [0004].
The appellant is of the opinion that the skilled person starting from E13 would naturally consider using a flat spiral coil arrangement. This would be the most obvious type of coil arrangement to use in the device of E13, as this is typically what is done in the type of device described in the background section of E13.
Accordingly, as a matter of common knowledge, and/or in view of E5, the skilled person would arrive at the subject matter of claim 13 starting from E13 without inventive activity.

2.3.2 The respondent is of the opinion that E13 does not relate to an aerosol-generating device but to a cooking appliance. This document further does not disclose the use of a flat spiral inductor coil or the provision of a power supply supplying a high frequency current to the flat spiral inductor coil. E13 is thus not a suitable closest prior art document.

2.3.3 The Board notes that E13 is a less promising starting point. Indeed, E13 is directed to a portable electromagnetic heating device and not specifically to an aerosol generating system E13 and does not disclose:
- a flat spiral inductor coil (features 13.3a and 13.3b);
- a power supply connected to the flat spiral inductor coil and configured to provide a high frequency oscillating current to the flat inductor coil (features 13.4, 13.4.1 and 13.4.2).
Moreover, it seems that the combination of E13 with common general knowledge or E5, would still not result in the subject-matter of claim 13 as the power supply would still be missing.
The Board notes that the power supply and the inductor coil cannot be considered separately as it is the combination of the power supply, the intensity and frequency of the current supplied, in combination with the type of inductor coil that will generate the electromagnetic field, its specific intensity and shape.

2.4 Starting from E10 in combination with common general knowledge or E4

2.4.1 The appellant alleges that E10 represents another suitable closest prior art. E10 discloses all the features of claim 15, other than the coil being a flat spiral coil. The problem is to provide an alternative to the coil disclosed in E10 in relation to the magnetic field generator. In this respect, paragraph [0069] of E10 already suggests that various alternative coil arrangements are contemplated, including those including flat coil configurations. The skilled person when looking for a suitable alternative coil

arrangement would obviously consider using a spiral coil, since this is a typical coil shape for induction heating arrangements.
Thus, as a matter of common knowledge, the skilled person would obviously select to use a flat spiral coil within the system of E10, at least as an alternative. This also follows specifically from the combination of E10 with E4, which teaches in paragraph [0031] that flat spiral coils are a suitable alternative to the cylindrical coils that are preferred in E10.
Accordingly, claim 15 is obvious starting from E1 as the closest prior art, either in view of the skilled person's common knowledge, and/or in view of E4.

In relation to claims 1 and 13, the presence of the power supply is independent of the form of the coil, such that it is appropriate to consider these two missing features using a partial problems approach. The solution to the first partial problem relating to the use of a flat spiral coil as an alternative coil arrangement is obvious for the same reasons as claim 15. The use of a power supply simply allows the device to be made more portable. The second partial problem thus relates to improving the portability of the device of E10. However, E10 itself already teaches the solution to this, in particular in paragraph [0066], where it is disclosed that the device *"might be configured as a battery-powered portable or table-top unit"*. Thus, providing a power supply within the device of Figure 3A would be obvious.

2.4.2 The respondent argues, for all independent claims of the opposed patent, that E10 is silent about a flat spiral inductor coil.
For independent claims 1 and 13 of the opposed patent, E10 additionally does not disclose a power supply that

is connected to the flat spiral inductor coil and that is configured to provide a high frequency oscillating current to the flat spiral inductor coil. E10 rather discloses that the charging device 6 is utilized for powering the magnetic field generator 52. Further, E10 specifically teaches in [0068] frequencies of between 20 kHz and 100 kHz.
For independent claims 1 and 15 of the opposed patent, E10 additionally does not disclose a cartridge comprising a susceptor. The whole aerosol dispenser assembly 300 cannot be considered as the cartridge. If E10 discloses a cartridge then it has to be the container 30 comprising flowable product. The container 30, however, does not comprise a susceptor since the heating element 10 of E10's device is arranged in the overcap 40 as a permanent heater.
For independent claim 15 of the opposed patent, E10 additionally does not disclose to position the cartridge so that the susceptor is proximate to the flat spiral inductor coil. Since the cartridge of E10 (container 30) does not comprise a susceptor, the placement of the container 30 does not in any way influence the placement of the susceptor (heating element 10). The heating element 10 is arranged distanced from the container 30 in the overcap 40 of E10's device.
The respondent considers that E10 is not a suitable closest prior art document due to the different structure of E10's device. A skilled person does not find an incentive in E10 to fundamentally change the structure of E10's device in order to arrive at the teaching of any of the independent claims of the opposed patent. A skilled person would particularly not consider the teachings of any one of E4 to E9 and E12 for the same reasons outlined above in the inventive step discussion of E2 and E3. Thus, the independent

claims of the opposed patent are inventive in light of E10.

2.4.3 The Board agrees with the respondent that the device of E10 and the method of generating an aerosol is further away from the system and device of claims 1 and 13 and the method of claim 15 and does not constitute the closest prior art.
The method of generating an aerosol of claim 15 not only differs from the method of E10 in the use of a flat spiral inductor coil, but also in the cartridge comprising a susceptor. Indeed, in figures 3A and 3B of E10, the pressurized container 30 of the aerosol dispenser assembly 300 is the cartridge containing the flowable product. The susceptor is the heatable element 10, which is placed in the housing 40 of the aerosol dispenser assembly 300 and not in the removable container 30.
The system and the device of claims 1 and 13 respectively differs from E10 not only in the flat spiral inductor coil, but also in the power supply connected to it. In E10, the power supply comes from the electricity power grid.
Should E10 be nevertheless considered as a suitable starting point, the use of a flat spiralled inductor coil in the device of E10 is not obvious for the skilled person. Paragraph [0069] of E10 reads: *"Induction coils can have either flat or curved configurations, but a cylindrical coil is preferred because it provides the most efficient heating"*. Paragraph [0069] does not disclose directly and unambiguously a *"a flat spiral inductor coil"*. As for the teaching of E1, the flat coil could be an annular coil which would not be a spiralled inductor coil. Furthermore, the skilled person would not combine the teaching of E10 with E4 considering the differences in

the two devices and especially the position of the susceptor in relation to the inductor coil. At least for this reason the combination of E10 with common general knowledge or with E4 does not render the subject-matter of claims 1, 13 and 15 obvious.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar: The Chairman:

A. Voyé G. Pricolo

Decision electronically authenticated