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**Datasheet for the decision
of 27 January 2022**

Case Number: T 2595/19 - 3.2.01

Application Number: 11775713.8

Publication Number: 2563172

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A24B15/16, H05B3/40, G06F19/00,
B65D85/00

Language of the proceedings: EN

Title of invention:
ELECTRONIC SMOKING DEVICE

Patent Proprietor:
Fontem Holdings 4 B.V.

Opponent:
British-American Tobacco (Investments) Limited

Headword:

Relevant legal provisions:
EPC Art. 100(b), 54, 56

Keyword:

Grounds for opposition - insufficiency of disclosure (no)

Novelty - (yes)

Inventive step - (yes)

Decisions cited:

Catchword:



Beschwerdekammern

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Chambres de recours

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Case Number: T 2595/19 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 27 January 2022

Appellant: British-American Tobacco (Investments) Limited
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
15 July 2019 concerning maintenance of the
European Patent No. 2563172 in amended form.**

Composition of the Board:

Chairman G. Pricolo
Members: S. Mangin
O. Loizou

Summary of Facts and Submissions

- I. The appeal was filed by the appellant (opponent) against the interlocutory decision of the opposition division finding that, on the basis of the auxiliary request 2, the patent in suit (hereinafter "the patent") met the requirements of the EPC.
- II. In particular, the opposition division held that
- (1) the subject-matter of the claims of this request did not extend beyond the content of the application as filed and
 - (2) the patent, on the basis of this request, disclosed the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art and
 - (3) the subject-matter of claim 1 of this request was novel over D3 (US 5666977), D4 (WO 00/50111 A1) and D6 (WO 2010/045671 A1) and involved an inventive step over D4 or D6 in combination with D3.
- III. Oral proceedings were held before the Board on 27 January 2022 per videoconference.
- IV. The appellant (opponent) requested the decision under appeal to be set aside and the patent to be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed (main request) or in the alternative that the patent be maintained in amended form on the basis of one of the auxiliary requests 1 and 2 as filed with the reply to the statement of grounds of appeal or auxiliary requests 2a and 2b as filed with letter dated 17 September 2021, or one of

the auxiliary requests 3 to 20 filed with the reply to the statement of grounds of appeal

V. Independent claim 1 with the feature numbering used by the parties (see pages 7-9 of the statement of grounds of appeal) reads as follows:

- a- An electronic smoking device (100) comprising:
 - b- a first sensor (132) for detecting a user's action for smoking;
 - c- an air inlet (120);
 - d- an air flow path (122) extending from the air inlet (120);
 - e- a liquid compartment (140) storing a smoking liquid;
 - f- a dispensing control device (141) configured to selectively dispense the smoking liquid from the liquid compartment (140);
 - g- a vaporizing compartment (124) connected to the liquid compartment (140) and the air flow path (122);
 - h- a heater (146) located at the vaporizing compartment (124);
 - i- a controller configured to activate the heater (146) to vaporize the smoking liquid dispensed from the liquid compartment (140) when the user's action for smoking is detected by the first sensor (132); and
 - j- a smoke outlet (126) connected to the vaporizing compartment (124),
 - k- wherein an amount of the smoking liquid dispensed by the dispensing control device (141) is responsive to an amount of air flowing in the vaporizing compartment (124),

l- wherein the controller is configured to limit an amount of the smoking liquid vaporized by the heater (146) per predetermined period of time, characterized in that

m- the controller is configured to disable the electronic smoking device (100) when an accumulated period of time the heater (146) has been turned on reaches a predetermined value.

VI. The decision refers to the following additional documents:

D1: US 2005/0016550

D2: US 7131599 B2

D5: WO 95/01137 A1

D6a: US 2011/0226236 (family member of D6)

D8: US 2011/0036346 A1

Reasons for the Decision

1. Sufficiency of disclosure - Articles 100(b) and 83 EPC

The Board confirms the decision of the opposition division holding that the invention is disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

1.1 The appellant was of the opinion that the invention was not sufficiently disclosed for the following reasons:

1.1.1 The patent (especially paragraphs [0028] and [0029]) did not sufficiently teach the skilled person how to implement a working version of a device in which a passive or an active dispensing control device was configured to selectively dispense an amount of smoking

liquid responsive to an amount of air flowing in a vaporizing compartment.

The patent did not disclose any example of how to implement an active dispensing control device. It only disclosed an electro-permeable membrane which was a semi-active dispensing control device not well known or commonly used in smoking devices. The patent did not disclose how to configure an electro-permeable membrane which was based on the osmotic transfer of ions between two liquids, to dispense liquid from a liquid compartment.

The patent did not disclose either how to implement a working version of a micro liquid screen as a passive dispensing control device. The patent only disclosed the working principles of a micro liquid screen without disclosing the details of its implementation such as the number, the size and the shape of the apertures having regard to the viscosity and surface tension of the liquid to be dispensed.

1.1.2 Furthermore, the patent did not sufficiently teach the skilled person how to limit the amount of smoking liquid vaporized by the heater per predetermined period of time (feature 1). In particular the patent did not disclose how to determine if the amount of smoking liquid vaporized by the heater was at the limit, and how to determine if this happened within a predetermined period of time.

The patent did not disclose any examples of how the amount of smoking liquid dispensed by the dispensing control device on to the heater could be determined. The two approaches described in paragraphs [0044] and [0045] of the patent shown respectively in figures 19 and 20 did not provide any limit on the amount of the smoking liquid that could be vaporized by the heater per predetermined period of time.

1.2 The Board does not agree.

1.2.1 The patent discloses in paragraphs [0028] and [0029]:

- the use of a *"micro liquid screen"* as a passive device,
- the use of an *"electro-permeable membrane or the like which does not allow liquid to flow therethrough unless an electrical field is applied thereto"* as semi-active dispersive device, or
- the use of an active dispensing device to dispense the smoking liquid from the liquid compartment to the vaporizing compartment.

The appellant alleges that the skilled person would not be able to implement a liquid dispensing control device despite the information provided in the patent in paragraphs [0028] and [0029] and the micro liquid screen depicted in figures 3 and 4 as no details for their implementation were provided. However, the appellant fails to provide any evidence that the skilled person would not be able to implement a dispensing control device with the information provided in the patent complemented by the skilled person's common general knowledge in the field. Indeed dispensing control devices are common components in electronic devices as can be seen in the prior art. D1 and D2 disclose ejections means employing a fluid jet method (e.g. an ink jet method) according to the thermal jet method (figure 3), the piezoelectric method and the electrostatic method (figure 4), D3 discloses a liquid jet delivery system according to the thermal jet method in figures 4A-4F and a valve delivery system (figure 7) and D4 and D5 disclose Droplet Ejection Devices (DED) according to the thermal jet method and piezoelectric method. Therefore, the skilled person is familiar with liquid dispensing control devices and

will be able to implement it with the information in the patent and their common general knowledge with, if necessary, a limited number of trials and errors.

1.2.2 As regard to feature 1, *"the controller is configured to limit an amount of the smoking liquid vaporized by the heater (146) per predetermined period of time"*, it does not require to determine the amount of the smoking liquid vaporized by the heater, it only requires limiting its amount per predetermined period of time. Feature 1 does not require means for measuring the amount of smoking liquid vaporized by the heater but requires means to stop after a fixed period of time the vaporisation of smoking liquid. This can simply be done by turning off the heater as mentioned by the respondent. Indeed, when the heater is off, no smoking liquid can be vaporised. This is shown in figure 20 at the step 2040 and described in the corresponding paragraph [0045], *"The HEATER ON TIME may indicate a period of time the heater 148 has been turned on since the last time the heater 148 has been turned off. The RECENT TIME may be a constant that sets a limit for the time period the heater 146 may stay turned on during any given period of time, thereby establishing a limit for the dosage per unit time that may be delivered"*.

2. Novelty over D3-D6

The Board confirms the findings of the opposition division that the subject-matter of claim 1 is novel over D3, D4, D5 and D6.

The subject-matter of claim 1 differs from any of D3-D6 in that *"the controller is configured to disable the electronic smoking device (100) when an accumulated*

period of time the heater (146) has been turned on reaches a predetermined value" (feature m).

2.1 Novelty over D3

2.1.1 The appellant considered that an *"accumulated period of time"* meant a running total time and that there was no basis for interpreting it as the running total time over several separate events. i.e. there was no basis for concluding that the notion of an accumulated period of time excluded the accumulation being in a single continuous period. The appellant referred in particular to paragraphs [0044] where the expressions "CUMULATIVE TIME" referred to one single continuous period, namely the life time of the electronic smoking device. The appellant then referred to D3, column 6, lines 55-59, disclosing that *"the purpose of the timing network circuit is to provide a shut-off signal to the logic circuit after the heater has been activated for a predetermined time period, depending upon the amount of energy that is delivered to the heater"* and concluded that D3 disclosed feature m.

2.1.2 The Board does not agree with the interpretation made by the appellant of the term "accumulated" in the expression "accumulated period of time the heater has been turned on". The Board considers the term "accumulated" as an aggregation, a combination of periods of time the heater has been turned on, requiring the addition of several distinct periods of time. This interpretation is in line with step 2050 of figure 20 and the corresponding paragraph [0045], where *"THE CUMULATIVE ON TIME may be a count value that indicates the total time the heater has been turned on during the produce life of the ESD 100"*. This is also the only

sensible technical meaning of the term "accumulated" in the context of the invention. The skilled person would not implement an Electronic Smoking Device (ESD) which would be disabled after one puff. Indeed, a puff is limited to the user's drawing capability which is generally a few seconds and cannot be theoretically considered over this time range as argued by the appellant.

Moreover, the reference by the appellant to figure 19 and the corresponding paragraph [0044] for the interpretation of the expression "accumulated period of time" cannot be followed since the embodiment in figure 19 described in paragraph [0044] does not fall under claim 1. Indeed, figure 19 and paragraph [0044] deal with the total life time of the electronic smoking device and not with the count of time the heater has been turned on.

Therefore, the electronic smoking device of D3 whereby *"The timing network circuit is to provide a shut-off signal to the logic circuit after the heater has been activated for a predetermined time period, depending upon the amount of energy that is delivered to the heater"* does not anticipate feature m as it refers to a single period of time as opposed to an "accumulated period of time the heater has been turned on" (feature m of claim 1).

2.2 Novelty over D4 and D5

2.2.1 Referring to D4, page 11, lines 8-30, the appellant alleged that the skilled person would readily understand that the heater in D4 was to be turned on when a dose was being delivered (since the purpose of the heater was to heat the dispensed liquid dose) and

D4 disclosed that the dose delivery may have a fixed duration (i.e. a predetermined period of time). Therefore disabling the device when the number of doses issued in a given time reached a predetermined limit as in D4 necessarily meant that the device was disabled when the accumulated period of time the heater had been turned on reached a predetermined value (i.e. a value corresponding to the time taken to deliver a dose multiplied by the limit for the number of doses before the device is disabled).

Referring to D5, page 19, lines 2-14 and page 20, lines 2-7, the appellant drew the same conclusion for D5 as for D4 and considered that D5 anticipated feature m.

2.2.2 The Board does not agree.

D4, page 11, lines 12-16 discloses *"the control means may also be provided for counting and storing the total number of dose signals issued with a predetermined time interval and if the total dose succeeds a predetermined limit then the control circuit prevents further dose issue until a period has elapsed"*.

In D4 an accumulated number of doses is measured but not an accumulated number of time period the heater 20 has been turned on and no comparison between an accumulated heater turned on time and a predetermined period of time is made. Furthermore D4 does not disclose that for each dose, the heater would be heated the same amount of time.

Therefore, counting the number of doses is not equivalent to calculating the accumulated time the heater is turned on. As argued by the respondent, the dosage control in D4 limits the liquid provided to the heater 20 irrespective of the accumulated time for

which the heater has been turned on. Therefore D4 does not anticipate feature m of claim 1.

2.2.3 D5 does not anticipate feature m either. D5 is an electronic smoking device similar to the one of D4, whereby the controller is *"provided with means for counting and storing the total number of dose signals issued within a predetermined time interval and if the total exceeds a predetermined limit then the control circuit prevents further dose issue until a further period has elapsed"* (p.19, lines 8-15). Like the electronic smoking device of D4, the controller of the device in D5 is not configured to disable the electronic smoking device when an accumulated period of time the heater 20 has been turned on reaches a predetermined value, but D5 prevents further doses to be issued for a certain time when a total number of doses has been reached.

2.3 Novelty over D6 (with reference to D6a which is a corresponding US patent in English cited by the appellant for translation purposes only)

2.3.1 The appellant argued that in D6 the number of activations was counted to determine when a changeover interval was reached, and the inhalator component was rendered unusable after reaching the changeover interval (reference was made to paragraph [0157] of D6a). Because energy was supplied to the heater for a fixed time per activation, e.g. a value in the range 1.5 to 1.8 seconds (reference was made to paragraphs [0154] of D6a), when the number of activations reached the changeover interval the accumulated period of time the heater had been turned on would have reached a predetermined value (i.e. the number of activations

multiplied by the duration of each activation). D6 would therefore anticipate feature m.

- 2.3.2 The Board does not agree. Similarly to D4 and D5, document D6 discloses a counter which counts the number of inhalations (D6a, paragraph [0157] corresponding to D6, page 69, lines 4-8). The duration of the supply of energy to the heater depends on several factors: the inhalation or drawing duration and the duration of the heating-up period depending inter alia on the quantity and the composition of the liquid material to be evaporated (D6a, paragraph [0154] corresponding to page 67 of D6). Therefore counting the number of drawings or inhalations is not equivalent to calculating an accumulated period of time the heater has been turned on and comparing it to a predetermined value. D6 thus does not anticipate feature m.

3. Inventive step; D1-D5 in combination with D8.

The subject-matter of claim 1 involves an inventive step in view of any of D1-D5 in combination with D8.

- 3.1 The appellant was of the opinion that starting from the electronic smoking device of D4, the subject-matter of claim 1 differed from D4 in that the controller was configured to disable the electronic smoking device when an accumulated period of time the heater has been turned on reaches a predetermined value (feature m). The appellant defined the objective technical problem as preventing a user from overusing the smoking device. Starting from D4, the skilled person would be motivated to consider D8 as it concerned regulating the operation of electronic smoking device (see paragraphs [0002] and [0004]). From D8, and in particular paragraph [0044], the skilled person was taught that a user could be

prevented from overusing the electronic smoking device by tracking cumulative on-time for the atomizing device (which in D8 is a heater - see paragraph [0031]), and when the cumulative on time reaches a predetermined value (through one or more puffs), turning off the device so it is not activated even if the user puffs on the device (i.e. disabling the device). Therefore the skilled person would find claim 1 obvious starting from D4 in view of D8.

The appellant further referred to his written submission regarding his objections of lack of inventive step starting from D1, D2, D3 or D5 in combination with D8. The same reasoning was presented as above starting from D4. The appellant concluded that the skilled person combining either one of the documents D1, D2, D3 and D5 with the teaching of D8 would arrive at the subject-matter of claim 1.

- 3.2 The Board does not agree. Paragraph [0044] of D8 discloses an approach to meter the maximum number of doses discharged during a period of time: *"Yet another approach would be to use the clock 122 to track cumulative on-time of the atomizing device 108. When the cumulative on-time of the atomizing device 108 reaches a predetermined value (through one or more puffs), then the atomizing device 108 would be turned off (i.e., not activated even if the user puffs on the inhalation device 10 and triggers the pressure transducer 38) for a predetermined period of time. That is, the logic circuit 126 would not activate the atomizing device 108 even if the user puffs on the inhalation device 10 during the predetermined period of time. Once the predetermined period of time elapses, the cumulative on-time is reset to zero and the logic*

circuit 126 again allows the atomizing device 108 to be activated".

Starting from D4, the skilled person would not apply the above teaching to the heating means 20 of D4, which unlike the heater 108 in D8, is optional and serves to reduce the size of the droplet ejected from the Droplet Ejection Device (DED) (page 9, lines 17-21). To meter the maximum number of doses discharged in D4, the skilled person would rather track the cumulative on-time of the Droplet Ejection Device (DED) which may either be a piezoelectric device or a thermal device (D4, page 2, lines 7-9) than the cumulative on-time of the heating means 20.

But even if the skilled person would track the cumulative on-time of the heater 20, the skilled person would not arrive at the subject-matter of claim 1 when combining the teaching of D4 with the teaching of D8. Indeed D8 discloses to turn off the atomizing device 108 for a certain time before it can be used again. But the device is thus not disabled as required by feature m of claim 1. As mentioned by the respondent in the smoking device of D8 the logic still functions during the switch-off of the atomizing device and the clock continues to run.

Similarly, none of the documents D1, D2, D3 or D5 in combination with the teaching of D8 leads the skilled person to the subject-matter of claim 1 as in D8 the electronic smoking device is not disabled, but the atomizing device 108 is only turned off for a predetermined period of time when an accumulated period of time the heater has been turned on reaches a predetermined value.

4. From the above it follows that the question raised by the respondent in respect of the admissibility of

document D8, filed by the appellant with the statement of grounds of appeal, can be left unanswered as D8 combined with either document D1 to D5 as closest prior art does not render the subject-matter of claim 1 obvious.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Voyé

G. Pricolo

Decision electronically authenticated