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**Datasheet for the decision
of 13 February 2023**

Case Number: T 0959/21 - 3.2.04

Application Number: 13005127.9

Publication Number: 2868242

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A47J31/54, F24H1/12, F24H9/18,
F24H9/20, G05D23/19, H05B6/10

Language of the proceedings: EN

Title of invention:
Device and method for heating water in a machine for making
and dispensing drinks

Patent Proprietor:
Rheavendors Services S.P.A.

Opponent:
Carimali S.p.A.

Headword:

Relevant legal provisions:
EPC Art. 83, 56

Keyword:

Sufficiency of disclosure - (yes)

Inventive step - (yes)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0959/21 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 13 February 2023

Appellant:

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 19 April 2021
rejecting the opposition filed against European
patent No. 2868242 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman

A. de Vries

Members:

G. Martin Gonzalez

K. Kerber-Zubrzycka

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.
- II. The division held inter alia that granted claims 1 and 12 were new and involved an inventive step over the cited prior art.
- III. In preparation for oral proceedings the board issued a communication, dated 8 September 2022, setting out its provisional opinion on the relevant issues.

Oral proceedings were held before the Board by videoconference on 13 February 2023.

- IV. The appellant opponent requests that the decision under appeal be set aside and that the patent be revoked.

The respondent proprietor requests that the decision under appeal be set aside and the patent be maintained according to one of the auxiliary requests 2 to 4 (filed with its reply of 29 December 2021) or according to one of the auxiliary requests 5 or 6 (filed with letter of 25 October 2022).

- V. Claim 1 of the second auxiliary request reads as follows:

"A machine for preparing and dispensing beverages comprising a device (1) for heating water, said device (1) comprising at least one metal duct (2) for the water flow between an inlet (2a) and an outlet (2b) and at least one winding of electromagnetic induction (3),

wherein the loops of said winding (3) are wound around a spool (4) made of an electrically insulating material having a cavity (5) inside which said metal duct (2) is housed and in that said metal duct (2) and said spool (4) are at least partially separated by a gap inside said cavity (5), wherein the gap is configured as a space without mechanical constraints; the machine being characterized in that said device (1) comprises at least one electric power supply circuit (7) applying an AC voltage at a frequency higher than 20 kHz between the terminals (3a, 3b) of said winding of electromagnetic induction (3)."

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

- (O1) US 5,262,621 A
- (O2) DE 103 50 064 A1
- (O10) US 2002/0078956 A1

VII. The appellant's arguments can be summarised as follows:

The invention is not sufficiently disclosed. Claim 1 of the second request lacks an inventive step, starting from O1 or O2 in combination with common general knowledge or O10.

VIII. The respondent's arguments can be summarised as follows:

The invention as claimed is sufficiently disclosed. The independent claims of the second auxiliary request are new and involve an inventive step over the cited prior art.

Reasons for the Decision

1. The appeal is admissible.
2. Background

The invention is directed to a device for heating water in a machine for making and dispensing beverages, for example a coffee machine, see specification paragraph [0001]. The device comprises a metal duct for the water flow and a surrounding winding of electromagnetic induction. The electromagnetic induction winding generates eddy currents in the metallic duct, thereby heating the duct and the water in contact with it. The winding is wound around a spool made of an electromagnetic insulating material which houses the metal duct. The spool and the metal duct are separated by a gap, so that the duct can loosely slide inside the spool cavity. In case of malfunction, for instance blocking of the heating duct due to limescale deposits, it is possible to replace only the duct simply and rapidly. There is no need to replace the whole heater, thus facilitating device maintenance, see paragraphs [0008], [0017], [0018], [0030], [0033].

3. Sufficiency of disclosure
 - 3.1 The appellant challenges the conclusions of the opposition division for the granted claims, that also hold for the second auxiliary request that the invention according to claims 1 and 4 is sufficiently disclosed, section 1.1 of the impugned decision.

3.2 As noted by the Board in its written communication:

"4.2 The requirement of sufficiency of disclosure is about the capability of the skilled person to reproduce in practice the claimed features including their different variants. The board sees no sufficiency issue in the broad formulation of the feature of a duct and a spool that are "at least partially separated by a gap" in claim 1. The feature is clear in itself. Embodying any variant of a gap (partial or complete) between two elements does not pose for the skilled person any technical difficulty.

The objections raised by the appellant are immaterial for the issue of sufficiency of disclosure, Article 83 EPC. Embodiments with a partial gap may not achieve the effect of having two physically-separable parts for easier maintenance. This may lead to a lack of clarity, Article 84 EPC, for absence of features of the invention that appear to be explained as essential in paragraphs [0017]-[0018] of the specification. That the remaining features do not solve the technical problem identified in the description, and may not even be associated with a technical effect, is not an issue of sufficiency, though possibly relevant for inventive step, Article 56 EPC.

4.3 The same conclusion holds for the alleged lack of technical effect of the electrically insulating material of the claimed spool, or for the different variants defined in paragraph [0085] of the specification where the respective axes of symmetry of the different elements are not coincident.

4.4 A skilled person reading claim 4 with a mind willing to understand and with the support of paragraph [0043] pages 47-51 of the specification readily realises that this claim defines inlet and outlet of the duct as depicted in figure 3A. Figure 3A shows at least one way to carry out this feature. Claim 4 is thus sufficiently disclosed.

4.5 It thus appears that the patent is sufficiently disclosed."

3.3 During the oral proceedings, the respondent commented only on an argument in respect of paragraph [0085] of the patent, in particular that it would suggest an example where the respective axes of symmetry of the different elements are not coincident and so would not achieve the described induction heating effect. The Board sees it differently.

The present contested feature is directed at a broadly defined concept expressed in terms of generic structural or functional features of an apparatus or of a method. That is the inductive heating of a liquid flowing through a metallic duct. In such cases it normally suffices to provide a single detailed example or embodiment to illustrate how this concept can be put into practice, cf. CLBA 10th. edition, II.5.2., in such a way that the underlying principles can be understood by the relevant skilled person and they can reproduce the claimed invention using their common general knowledge without undue burden, CLBA, II.4.1. It is thus not enough to demonstrate insufficiency to conceive of an example falling within the terms of the claim that does not work because it does not achieve the claimed effect fully or at all. Such an example

does not prove that the claimed concept does not work; rather it reflects the limitations that are inherent in any technological endeavour and which may provide the scope for future (inventive) development. To successively argue insufficiency in a case such as this a very high burden of proof applies: the party must demonstrate through cogent argument based on the underlying principles, if necessary supported by evidence, that the claimed concept does not work, because it does not achieve the desired effect in any measure or indeed is counter to the laws of nature. Or they must demonstrate that the disclosure lacks information on an important aspect of the claimed invention, without which the skilled person cannot realize the claimed invention without undue burden. The appellant has failed to present any such arguments in the present case.

3.4 Absent any further argument, the Board sees no reason to deviate from its preliminary opinion that the claimed invention is sufficiently disclosed.

4. Inventive step

4.1 The respondent argues lack of inventive step for claim 1 of auxiliary request 2. In the Board's view, claim 1 involves an inventive step, Article 56 EPC, for the following reasons.

4.2 It is not in dispute that either O1 or O2 are suitable starting points for the assessment of inventive step.

Either document discloses a machine for preparing and dispensing beverages comprising an induction heating with a metal duct (duct 6 in O1; 3 in O2) for the water flow and one winding of electromagnetic induction (coil

7 in O1; 5 in in O2), wound around a spool (4 in O2). The spool 4 of O2 is made of an electrically insulating material, cf. par [0010]. This is not disputed. While O1 does not explicitly mention that the depicted spool is made of insulating material, the board considers such choice of material to be implicitly disclosed in O1 for the heating device to be able to function. Both documents also disclose a one electric power supply circuit (18 in O1, 7 in O2) applying an AC voltage to the winding of electromagnetic induction.

- 4.3 It is common ground that neither O1 nor O2 discloses that the electric power supply circuit applies the AC voltage at a frequency higher than 20 kHz.
- 4.4 The use of frequencies higher than 20 kHz achieves two advantages. The vibrations produced by the device 1 fall within the ultrasound field, beyond the audible frequencies, avoiding audible noise or humming. In addition, the generated ultrasounds are said to hinder limescale deposition on the inner walls of the duct, cf. paragraph [0042] of the patent specification. These two effects are seen to address a two pronged problem of hindering limescale deposition in the heating duct while reducing audible humming of the device.
- 4.5 The Board is not convinced by the respondent's arguments that this choice of frequency would be obvious in the light of O10 or common general knowledge.
- 4.6 Document O10 is concerned with the very different field of aerosol generators, in particular with the generation of aerosols containing medicated material for inhalation, cf. paragraphs [0001]-[0002]. The invention described in O10 provides an inductively

heated arrangement to heat fluid to temperatures high enough to volatize the fluid. The volatized fluid is then released or expelled from the device such that when the vapor comes in contact with the cooler air outside the device, the vapor forms into miniature droplets that create an aerosol, cf. paragraph [0021]. Document O10 does teach a frequency range for the electric current that overlaps the claimed range of higher than 20 kHz, cf. O10 paragraph [0026], for heating efficiency reasons. However, in the Board's view, the skilled person starting from O1 or O2, concerned with beverage making, would not as a matter of obviousness consider a teaching such as O10 in the rather remote field of aerosol generators. That aerosol generation and beverage preparation are rather different fields of human endeavour goes without saying. This is not changed by the fact that beverage making machines may also supply steam, used there for frothing milk, as opposed to the rather different purpose of producing fine aerosol droplets in an aerosol generator.

- 4.7 Nor is the Board convinced that the skilled person would arrive as a matter of obviousness at the claimed frequency range from common general knowledge. The respondent submits no evidence supporting their allegation that it is generally known to avoid frequencies lower than 20 kHz for flow through induction heaters as claimed in order to avoid humming. The Board does not doubt that it is generally known that acoustic frequencies above 20kHz are in the ultrasonic range, or that it is generally known to design household appliances so that they do not hum or buzz or vibrate. This common knowledge however does not render obvious the insight that for heating water by electromagnetic induction in a beverage making device

by a judicious choice of electromagnetic frequency formation of limescale can be reduced while avoiding humming.

In the Board's view the above difference vis-a-vis O1 or O2, is not an arbitrary design choice but an intentional one that hinders limescale deposition and humming, which is not trivial and goes beyond the average skills and knowledge of the skilled person. It thus confers the necessary inventive step required by Article 56 EPC to claim 1 of the second auxiliary request.

5. For the above reasons the Board holds that the claims as amended according to the second auxiliary request meet the requirements of the EPC. The Board concludes that, pursuant to Article 101(3)(a) EPC, the patent can be maintained on the basis of these claims and a description to be adapted thereto.

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 with the following claims and a description to be adapted thereto:

Claims:

1-15 according to the auxiliary request 2 filed with the letter of 29 December 2021.

The Registrar:

The Chairman:



G. Magouliotis

A. de Vries

Decision electronically authenticated