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D E C I S I O N
of 5 December 1994

Case Number: T 0029/92 - 3.2.3

Application Number: 86905452.8

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F24C 7/04

Language of the proceedings: EN

Title of invention:
Heat Treating Oven

Applicant:
Tri Innovations AB, et al

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - (yes) after amendment"

Decisions cited:
T 0077/87

Catchword:
-



Case Number: T 0029/92 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 5 December 1994

Appellant: Tri Innovations AB
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Decision under appeal: Decision of the Examining Division 2.3.01.073 of
the European Patent Office dated 26 August 1991
refusing European patent application
No. 86 905 452.8 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: H. Andrä
L. C. Mancini

Summary of Facts and Submissions

I. European patent application No. 86 905 452.8 filed on 13 August 1986 as International application PCT/SE86/00363 and published on 26 February 1987, was refused by a decision of the Examining Division dated 26 August 1991.

II. The decision was based on Claims 1 to 3 as filed on 27 November 1989.

The reason given for the refusal was that the subject-matter of Claim 1 did not involve an inventive step having regard to the prior art disclosed in EP-A-0 133 847 and in DE-B-2 248 640.

III. The Appellant appealed against the decision on 22 October 1991, paid the appropriate fee on the same day and filed the Statement of Grounds of Appeal on 19 December 1991.

In his statement, the Appellant argued essentially that the reason why the invention had not been found sofar by anyone except for the inventor was that combining ovens of the air convection and infra-red radiation type would also mean combining the drawbacks of both oven types and this was believed to have deterred the experts both in the field of infra-red ovens and in the field of convection heating systems from seriously contemplating combining the two systems.

IV. At the oral proceedings held on 5 December 1994, the Appellant submitted amended documents comprising Claims 1 to 3, pages 1 to 7 of the description and

Figures 1 to 7 of the drawings and requested that the patent be granted with these documents.

V. Claim 1 reads as follows:

"A heat treating oven incorporating at least one oven section (8, 8a, 8b), built in a modular system, and where the inner sides (13, 17) of the oven walls at least partly are provided with reflecting material and support a number of infra-red radiating tubes (15) connectable to a current source, and which oven section is equipped with supply air terminal devices (10, 14, 18),

c h a r a c t e r i z e d t h e r e i n ,
that the air supply terminal devices incorporate air nozzles (18) shaped in the reflecting material of the oven walls and combined with infra-red radiating tubes (15), and that at least one heating unit (3, 11) is connected to the supply air terminal devices (10, 14, 18) and adapted to be optionally switched in for heating the supply air to an optional temperature, in order to impart upon the goods in one section a combination of heating by optional proportions of radiation heat caused by the infra-red tubes and convection heat caused by the heated supply air."

Reasons for the Decision

1. The appeal is admissible.
2. *Article 123(2) EPC*

Claim 1 is supported essentially by the original Claims 1 and 2.

The use of the term "... in order to impart upon the goods in one section a combination of heating ..." in the second part of Claim 1 instead of the term "... in order to impart upon the oven section a combination of heating ..." according to the original Claim 1 constitutes an obvious clarification. This amendment does not give rise to an objection under Article 123(2) EPC since it is clear that heating in a heat treating oven is effected for the purpose of imparting heating to the goods to be treated. The feature that the air nozzles are combined with infra-red radiating tubes, is supported by page 4, lines 30 to 36 of the original description.

Claim 2 derives from the original Claim 2 and Claim 3 corresponds to the original Claim 3. Therefore, Claims 1 to 3 comply with Article 123(2) EPC.

3. *Novelty*

In agreement with the opinion of the Appellant and the view expressed in the contested decision, the Board considers the closest prior art with regard to Claim 1 to be described by EP-A-0 133 847.

This citation which corresponds with the features according to the preamble of Claim 1 discloses a heat treating oven incorporating at least one oven section built in a modular system (box-shaped unit 4). The inner sides of the oven walls are provided with reflecting material (1, 14 to 16) and support a number

of infra-red radiating tubes (3, 17) connectable to a current source, the oven section being equipped with supply air terminal devices (14, 18, 19).

The heat treating oven according to Claim 1 differs from the oven known from EP-A-0 133 847 in that

- (a) the air supply terminal devices incorporate air nozzles (18) shaped in the reflecting material of the oven walls and combined with infra-red radiating tubes (15), and that
- (b) at least one heating unit (3, 11) is connected to the supply air terminal devices (10, 14, 18) and adapted to be optionally switched in for heating the supply air to an optional temperature, in order to impart upon the goods in one section a combination of heating by optional proportions of radiation heat caused by the infra-red tubes and convection heat caused by the heated supply air.

Hence, the subject-matter of Claim 1 is novel and complies with Article 52 EPC as far as novelty is concerned.

4. *Inventive step*

- 4.1 In accordance with the introductory part of the description of the application in suit, in particular page 1, last paragraph to page 2, paragraph 2, conventional infra-red ovens such as that known from EP-A-0 133 847, have a number of drawbacks, especially the necessity of high establishment investments and the disadvantage that the circulation of the oven

atmosphere by blowers merely brings about a cooling and/or an equalization of the air temperature in the different regions of the oven.

Considering the prior art, the inherent problem to be solved consists in utilizing besides heating by infra-red radiation also the merits of convection heating and keeping investment costs at a low level.

By the provision of a heating unit adapted to be optionally switched in for heating the supply air to a selected temperature, heat may be supplied, additionally to the generation of heat by infra-red radiation, also by convection heating. The feature concerning the incorporation of air nozzles shaped in the reflecting material of the oven walls and combined with infra-red radiating tubes brings about utilization of the reflecting material both for reflecting purposes and for the forming of the air nozzles whereby the expensive shaping of nozzles being separate from the oven wall reflector can be avoided.

Thus, the Board is satisfied that the inherent problem is solved by the combination of features contained in Claim 1.

- 4.2 Having regard to the contested decision, the first instance relied primarily on the disclosure of DE-B-2 248 640, column 2, lines 24 to 38. This passage indicates in fact that it is known from DE-B-1 757 892 to heat the goods to be baked with infra-red radiation and simultaneously with circulated heated air.

Reviewing the disclosure of DE-B-1 757 892 reveals, however, that this citation does not describe heating of goods by a combination of infra-red radiation and hot air convection heating but by microwave heating in combination with hot air convection heating (cf. Claim 1 and column 3, line 42 to column 4, line 12 of the citation). Thus, there exists manifestly a contradiction between the disclosure of DE-B-2 248 640 as far as it relates to the prior art known from DE-B-1 757 892 and the factual disclosure of the latter document.

In a similar case (cf. Decision T 77/87, OJ EPO 1990, 280) it was decided that a document containing a cross-reference to a further document should be interpreted by reference to that further document for the purpose of ascertaining the technical reality of what has been disclosed. The erroneous disclosure of the document containing the cross-reference should not be considered as part of the state of the art.

In agreement with the cited decision, the Board considers that the above-cited passage of DE-B-2 248 640 has to be ignored as being erroneous and that the effective disclosure of DE-B-1 757 892 has to be taken account of.

- 4.3 As already stated above, DE-B-1 757 892 teaches an oven in which the goods are heated by a combination of microwave heating and hot air convection heating whereby these two heating devices may be operated individually or in combination. The inherent problem according to the citation is seen essentially in safeguarding that within a short period of time food is

sufficiently cooked internally and is consistently brown-coloured on the surface.

Any application of the teaching according to DE-B-1 757 892 to the oven disclosed in EP-A-0 133 847 may not dispense with microwave heating as this type of heating is essential to the problem underlying DE-B-1 757 892. Such an application would not, therefore, readily lead to an oven combining infra-red radiation and hot air convection heating.

Furthermore it has to be noted that Claim 1 has been limited exclusively to an oven combining infra-red radiation and hot air convection heating and includes a further feature relating to a particular adaptation of such an oven. Having regard to the further feature (a) of the characterising part of Claim 1 (cf. above section 3), DE-B-1 757 892 does also not provide any clue. There is no suggestion of the air supply terminal devices incorporating air nozzles shaped in the reflective material of the oven walls and combined with infra-red radiating tubes. Due to the absence of an infra-red radiation device in the oven according to DE-B-1 757 892 there is clearly no reason for providing means for reflecting such radiation. Any combination whatsoever of the teachings according to EP-A-0 133 847 and DE-B-1 757 892 cannot, therefore, lead in an obvious manner to the subject-matter of Claim 1 without substantial further development to which neither the above cited documents nor the general knowledge of the skilled person give any incentive.

The Board considers that in particular the concept of incorporating air nozzles shaped in the reflecting

material of the oven walls and combined with infra-red radiating tubes provides the basis for a structurally simple and inexpensive configuration, which contributes primarily to the acknowledgment of an inventive step.

- 4.4 The Board has also considered the further documents cited in the Search Report and is convinced that none of these documents contains a lead to adapt the arrangement of the nearest prior art to include all the features of Claim 1.
- 4.5 For the foregoing reasons, the subject-matter of Claim 1 has to be considered as implying an inventive step in the meaning of Article 56 EPC and the claim can be allowed having regard to Article 52(1) EPC.
5. Dependent Claims 2 and 3 concern particular embodiments of the oven according to Claim 1 and comply with Rule 29 EPC.
6. The description is in agreement with the wording and scope of the claims. It complies with Rule 27 EPC and is therefore also allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant the patent with the documents submitted during the oral proceedings.

The Registrar:

The Chairman:

N. Maslin

C. T. Wilson