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D E C I S I O N
of 27 November 2002

Case Number: T 0746/01 - 3.4.2

Application Number: 94917464.3

Publication Number: 0699373

IPC: H05B 3/00, H05B 3/44, A47J 37/06

Language of the proceedings: EN

Title of invention:
Apparatus and method for uniformly cooking food with asymmetrically placed radiant energy sources

Applicant:
QUADLUX, INC.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 123(2), 54, 56

Keyword:
"Extension beyond the application as filed - no (after amendment)"
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:
T 0331/87

Catchword:
-

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Case Number: T 0746/01 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 27 November 2002

Appellant: QUADLUX, INC.
47817 Fremont Boulevard
Fremont, CA 94538-6506 (US)

Representative: Blumbach, Kramer & Partner GbR
Patentanwälte
Alexandrastrasse 5
D-65187 Wiesbaden (DE)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 9 February 2001 refusing European patent application No. 94 917 464.3 pursuant to Article 97(1) EPC. (A correction of the decision was made by the Examining Division under Rule 89 EPC on 10 April 2002 and posted 10 May 2002)**

Composition of the Board:

Chairman: E. Turrini
Members: M. P. Stock
G. E. Weiss

Summary of Facts and Submissions

I. The present appeal is against the decision of the examining division to refuse European patent application 94 917 464.3 based on international application PCT/US94/05 753 published as WO 94/28 692, since it did not meet the requirements of Articles 123(2), 84 and 56 EPC and of Rule 86(4) EPC. Reference was made to the following documents:

D1: GB-A-2 152 790

D2: US-A-5 036 179

The argumentation of the examining division can be summarised as follows:

Claims 9, 11 and 16 of a set of claims underlying the decision were related to subject-matter which extends beyond the application as originally filed due to the omission of the feature that the lamps are above the food support.

The various definitions of the invention in five independent claims directed to an apparatus and three independent claims directed to a method are not clear and concise.

According to the original claims on which the search of the application was based, the lamps are arranged asymmetrically with respect to a plane containing the axis of rotation. According to claim 11 which was filed later and not searched a symmetric arrangement of the lamps is not excluded. Therefore there is lack of unity between the subject-matter of claim 11 and the subject-

matter of the original claims.

Claim 9 is not limited to an arrangement where there is at least one lamp on either side of the plane containing the axis of rotation. Hence the subject-matter differs from what is disclosed in D1 only in that the length of the lamps is smaller than the widest dimension of the food support. However, the selection of lamps with smaller length than the diameter of the food support is obvious if more than one lamp is used, see Figures 3A, 3B, 5A and 5B of the present application.

II. In his statement setting out the grounds of appeal the appellant requested the decision be set aside and a patent be granted on the basis of amended claims according to a main request or auxiliary requests 1 to 18. If the main request were not granted, oral proceedings were requested. The arguments of the appellant, supporting the *main request* can be summarised as follows:

Disclosure of subject-matter not limited to "above"

Expressions like "above the food support" and "below the food support" are only used from a practical point of view. The general presentation of the problem and the solution in the description, page 4, line 27 to page 5, line 13, does not require a limitation to lamps being positioned (at least) above the food support. This analysis is particularly supported by the wording of original claims 8 and 9 which define a first surface of the food item and second surface on an opposite side of the food item, and elongate lamps (tubes) "above at least one of said surfaces". Moreover

it is a matter of point of view whether the lamps are positioned above or below the food support in Figures 2A to 5B and 9. It follows from "Summary of the Invention" (page 5, lines 4 to 13) that the invention is directed to asymmetrical irradiation of a surface, no matter from which side the surface is irradiated. The word "beneath" used in the context of positioning the lamps also has the meaning "beside" or "subject to" making it clear that the lamps cannot only be positioned above but also only below the food support.

The subject-matter of claim 9 involves an inventive step

According to the present invention the asymmetrical arrangement of the lamps provides uniform cooking whereas D1 tries to achieve "an optimum browning effect". The skilled person does not learn from D1 how the asymmetrical arrangement above or below the rotating food support should be modified to achieve "an optimum browning effect" over the whole food surface. The arrangement of the lamps in D1 does not provide the effects on uniformity demonstrated with Figures 4A and 9 of the present application. Therefore it did not make sense for the skilled person to use lamps which are shorter than the widest dimension of the food support, as is defined in claim 9.

III. In preparation of the oral proceedings the board made the following preliminary non-binding comments with respect to the *original disclosure* of claimed subject-matter not limited to lamps being above the food support:

It is evident for a person skilled in the art that in

an oven for cooking, gravity has an effect on the cooking result, eg due to convection of heated air, a possible deformation of the food during cooking or production of liquid from the food accumulating in a dish containing the food or having a tendency to drop from the lower surface when no dish is used. Therefore in such an arrangement the position of the lamps above the food support has a different effect on the uniformity of the cooking than a position below the food support. Hence the skilled person would assume that the word "above" indicated in all original independent claims is used by purpose for defining a spatial arrangement in a technical sense, and not as a formal designation of one of two equivalent positions. This interpretation is consistent with further arrays of lamps positioned below the food support as defined in the original dependent claims 2, 4 and 5. "Above at least one of said surfaces" indicated in original claims 8 and 9 related to methods is not clear and would have to be interpreted along the lines of the original independent apparatus claims 1, 3 and 7. The "Summary of the Invention" at page 5, lines 4 to 12 includes the expression "rotation of the food item beneath the asymmetrical placed lamps". "Beneath" normally means "below", "under" or "underneath" (see The Concise Oxford Dictionary, 6th edition, page 90, which was enclosed in this summons). Since "below" and also "underneath" are used at other places of the application, there is no indication that "beneath" should be understood in a more general sense.

Since there was no explicit disclosure of subject-matter without the lamps being positioned above the food support, it had to be examined whether this feature could be omitted from the claims as a feature

not being essential to the invention under the conditions outlined in decision T 331/87 (OJ 1991, 22):

(1) The feature was not explained as essential in the disclosure.

(2) It was not, as such, indispensable for the function of the invention in the light of the technical problem it served to solve, and

(3) the replacement or removal required no real modification of other features to compensate for the change.

Condition (1) is not fulfilled since the feature in question "above" is found in all original independent claims and in equivalent form in "Summary of the Invention" ("rotation of a food item beneath the asymmetrically placed lamps").

As far as condition (2) is concerned, it is noted that within the general problem of uniform cooking also a browning effect is intended, see page 1, line 29 to page 2, line 6. It is evident for the skilled person that this applies primarily to the upper surface of the food item (eg when a dish is used) above which the lamps should at least be placed. Therefore condition (2) is also not fulfilled.

Therefore the board concluded that the subject-matter of any of independent claim not limited to "lamps positioned above the food support" extends beyond the content of the application as originally filed (Article 123(2) EPC).

IV. In the oral proceedings on 27 November 2002 the appellant emphasised again that it was derivable from the original application documents, in particular claims 7 and 8 as originally filed, that the lamps are located above or below the food support. Therefore no limitation as to the location should be made. This argument, however, was not accepted by the board stating that original claims 7 and 8 were not clear. An appropriate interpretation by other claims and the description would lead to the conclusion that the lamps are arranged at least above the food support.

During the oral proceedings the appellant submitted a new main request. He requested that a patent be granted on the basis of claims 1 to 8 according to this main request or on the basis of auxiliary requests 1 to 5 filed with letter dated 28 October 2002 or on the basis of auxiliary requests 6 and 7 filed during the oral proceedings. At the end of the oral proceedings the decision of the board was given. The independent claims according to the main request read as follows:

"1. An oven (10) for cooking a food item (32), the oven comprising:

a food support (31) rotatable about an axis of rotation (r); and

a radiation source for directing radiant energy having a significant portion of the radiant energy in the visible and near visible light range of the electromagnetic spectrum onto the food support (31), the radiation source including an array of elongate lamps (18a-18e), each lamp having a longitudinal axis parallel to the longitudinal axes of the other lamps, the lamps positioned above the food support (31) such that the perpendicular distance between each lamp and a

plane containing the axis of rotation (r) and extending parallel to the longitudinal axes of the lamps differs from the distance between the plane and the other lamps, there being at least one lamp positioned on each side of the plane."

"3. An oven (10) for cooking a food item, the oven comprising:

a food support (31) rotatable about an axis of rotation (r); and

a radiation source for directing radiant energy having a significant portion of the radiant energy in the visible and near visible light range of the electromagnetic spectrum onto the food support (31), the radiation source comprising:

an array of first lamps (18a-18c), each first lamp having a longitudinal axis parallel to the longitudinal axes of the other first lamps, the first lamps positioned above the food support (31) such that the perpendicular distance between each first lamp and a plane containing the axis of rotation (r) and extending parallel to the longitudinal axes of the first lamps differs from the distance between the plane and the other first lamps, wherein all of the first lamps are positioned on one side of the plane, and

an array of second lamps (18d-18e), each second lamp having a longitudinal axis parallel to the longitudinal axes of the other second lamps and to the plane, the second lamps positioned above the food support (31) such that the perpendicular distance between each second lamp and the plane differs from that of the other second lamps, wherein all of the second lamps are positioned on the side of the plane opposite to the side on which the first lamps are located and wherein the array of first lamps (18a-18c)

includes at least one more lamp than the array of second lamps (18d-18e)."

"6. An oven (10) for cooking a food item, the oven comprising:

a food support (31) rotatable about an axis of rotation (r), the food support (31) having edges and a widest dimension d (d) extending between the edges in a direction perpendicular to the axis of rotation (r);

an array of elongate lamps (18a-18e) for directing radiant energy having a significant portion of the radiant energy in the visible and near visible light range of the electromagnetic spectrum onto the food support (31), each lamp having a filament length L substantially equal to 10/12d, each lamp further having a longitudinal axis parallel to the longitudinal axes of the other lamps, the array including;

a first lamp (18c) positioned above the food support (31) such that the perpendicular distance between the first lamp and a plane containing the axis of rotation (r) and extending parallel to the longitudinal axes of the lamps is substantially equal to 1/10L,

a second lamp (18b) positioned above the food support (31) such that the perpendicular distance between the second lamp and the plane is substantially equal to 4.5/10L,

a third lamp (18a) positioned above the food support (31) such that the perpendicular distance between the third lamp and the plane is substantially equal to 5.5/10L,

a fourth lamp (18d) positioned above the food support (31) such that the perpendicular distance between the fourth lamp and the plane is substantially equal to 3.5L, and

a fifth lamp (18e) positioned above the food support (31) such that the perpendicular distance between the fourth lamp and the plane is substantially equal to 5.9/10L;

said first, second and third lamps (18c, 18b, 18a) being located on one side of the plane and said fourth and fifth lamps (18d, 18e) being located on the side of the plane opposite said one side, and

rotation means (35) for rotating the food support (31) about the axis of rotation (r)."

"7. A method of cooking a food item positioned on a food support (31) having an axis of rotation (r) and a plane containing the axis of rotation (r), the method comprising the steps of:

directing radiant energy having a significant portion of the radiant energy in the visible and near visible light range of the electromagnetic spectrum onto the food;

initiating said radiant energy from a plurality of spaced apart lamps (18a-18e) having substantially parallel longitudinal axes, the longitudinal axes parallel to the plane containing the axis of rotation (r) of the food support (31), the lamps positioned above the food support and spaced different distances from said plane, at least one of the lamps (18a) positioned on one side of the plane and at least one of the lamps (18d) on an opposite side of the plane; and

rotating the food support (31) about the axis of rotation (r)."

"8. A method of cooking a food item positioned on a food support (31) having an axis of rotation (r) and a plane containing the axis of rotation (r), the method comprising the steps of:

directing radiant energy having a significant portion of the radiant energy in the visible and near visible light range of the electromagnetic spectrum onto the food;

initiating a first portion of said radiant energy from a first array (18d-18e) of a number N of spaced apart first lamps having substantially parallel longitudinal axes, the longitudinal axes parallel to the plane containing the axis of rotation (r) of the food support (31), the first lamps (18d-18e) positioned above the food support on one side of the plane, and spaced different distances from said plane;

initiating a second portion of said radiant energy from a second array (18a-18c) of a number more than N of spaced apart second lamps having substantially parallel longitudinal axes, the longitudinal axes parallel to the plane containing the axis of rotation (r) of the food support (31), the second lamps positioned above the food support on the side of the plane opposite to the side on which the first lamps are located, and spaced different distances from said plane; and

rotating the food support (31) about the axis of rotation (r)."

Reasons for the Decision

1. *Admissibility of the appeal*

The appeal complies with the provisions of Articles 106 to 108 and Rule 64 EPC and is therefore admissible.

2. *Original disclosure of subject-matter according to the main request*

For the documents as originally filed reference is made to the published application WO 94/28 692.

2.1 The subject-matter of claim 1 is derived from the original claim 1 and the original description, page 7, line 29 to page 8, line 2.

2.2 Claims 3 and 6 are clarified versions of original claims 3 and 7, respectively.

2.3 The methods defined in claims 7 and 8 are based on the disclosure in original claims 8 and 9, respectively. The feature "positioned above the food support" is disclosed eg in original claims 1, 3 and 7 (see also item III above).

2.4 As far as the dependent claims are concerned, they correspond to dependent claims as originally filed. Therefore the board is satisfied that the amendments made do not lead to subject-matter which extends beyond the content of the application as filed and are thus in agreement with Article 123(2) EPC.

3. *Novelty and inventive step*

The subject-matter of the main request had been included in subject-matter forming the basis of an advanced notice for grant issued by the examining division under Rule 51(4) EPC on 25 March 1996. The board has no reason to doubt whether this subject-matter is novel and involves an inventive step. An adapted description had also been enclosed in the above communication under Rule 51(4) EPC. Therefore the main request meets the requirements of Article 52(1) in connection with 54(1) and (2) and 56 EPC.

4. *Auxiliary requests*

Since the main request meets the requirements of the EPC, there is no need to consider the auxiliary requests.

Order

For these reasons it is decided:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent in the following version:

- claims 1 to 8 filed during the oral proceedings as main request;

- description, pages 1 to 9 enclosed in the communication under Rule 51(4) EPC, dated 25 March 1996;

- drawings, sheets 1/5 to 5/5 enclosed in the communication under Rule 51(4) EPC, dated 25.03.96.

The Registrar: The Chairman:

P. Martorana E. Turrini