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D E C I S I O N
of 15 November 2005

Case Number: T 1088/04 - 3.2.05

Application Number: 00128144.3

Publication Number: 1110700

IPC: B29C 65/08

Language of the proceedings: EN

Title of invention:
Ultrasonic adhering method and apparatus

Applicant:
YKK CORPORATION

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty and inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1088/04 - 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 15 November 2005

Appellant: YKK CORPORATION
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Tokyo (JP)

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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 19 March 2004 refusing European application No. 00128144.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: W. Moser
Members: P. E. Michel
W. Widmeier

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal against the decision of the Examining Division refusing European patent application No. 00 128 144.3.

The Examining Division held that the subject-matter of claim 6 of a main request contains subject-matter extending beyond the content of the application as filed and claim 1 of an auxiliary request lacks an inventive step.

II. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the following documents:

(a) claims 1 to 4 presented as main request during oral proceedings; or
(b) claims 1 and 4, filed as first auxiliary request on 8 July 2004, and claims 2, 3 and 5 as originally filed; or
(c) claims 1, 3 and 4, filed as second auxiliary request on 8 July 2004, and claims 2 and 5 as originally filed; or
(d) claims 1, 3 and 4, filed as third auxiliary request on 8 July 2004, and claims 2 and 5 as originally filed; or
(e) claim 1, filed as fourth auxiliary request on 14 November 2005.

III. Oral proceedings before the Board of Appeal took place on 15 November 2005.

IV. The following document is referred to in the present decision:

D1: DE-A-42 06 584

V. Claims 1 and 3 of the main request of the appellant read as follows:

"1. An ultrasonic adhering method for bringing a horn (12) of an ultrasonic oscillator (10) to contact with a sheeted resin material (22) while the sheeted resin material (22) is overlaid on an object (24) to be adhered, sensing a temperature of the horn (12), oscillating the horn (12) ultrasonically and fusing the sheeted resin material (22) to the object (24), being characterized in that an oscillation time in a state of the horn (12) being in contact with the sheeted resin material (22) is set to be in a negative correlation with respect to the temperature of the horn (12), detected immediately before the adhesion of the sheeted resin material (22) and the object (24) by the horn (12)."

"3. An ultrasonic adhering apparatus including an ultrasonic oscillator (10) for generating ultrasonic vibration, a horn (12) provided in this ultrasonic oscillator (10) for oscillating ultrasonically, a temperature sensor (18) for sensing the temperature of the horn (12), being characterized by a controlling unit (16) for detecting the temperature of the horn (12), and setting an oscillation time of the ultrasonic oscillator (10) in a state of the horn (12) being in contact with a sheeted resin material (22) in such a manner that the oscillation time has a negative

correlation with respect to the temperature of the horn (12), detected immediately before the adhesion of said sheeted resin material (22) and an object (24) by the horn (12)."

VI. The appellant has argued substantially as follows in respect of the main request:

The amendments do not contain subject-matter which extends beyond the content of the application as filed. The amendments thus comply with the requirement of Article 123(2) EPC.

The subject-matter of claims 1 and 3 is novel, in particular having regard to the disclosure of document D1, which does not disclose the feature that an oscillation time in a state of the horn being in contact with the sheeted resin material is set, i.e. fixed, to be in a negative correlation with respect to the temperature of the horn.

The subject-matter of claims 1 and 3 also involves an inventive step. The closest prior art is represented by document D1. The object of the invention is to provide a method capable of providing satisfactory adhesion whilst requiring a simple apparatus, as set out in the application as filed at paragraph [0007]. None of the prior art suggests the claimed solution to this problem.

Reasons for the Decision

Main Request

1. *Amendments*

As compared with the corresponding claims as filed (claims 1 and 4), claims 1 and 3 are amended by the introduction of the feature "detected immediately before the adhesion of the sheeted resin material (22) and the object (24) by the horn (12)" and " detected immediately before the adhesion of said sheeted resin material (22) and an object (24) by the horn (12)", respectively. This feature is disclosed in the application as filed (published version) at column 7, lines 35 to 37.

In addition, claim 3 is amended by the replacement of the word "controlling" by the word "setting". This is disclosed in the application as filed (published version) at column 7, lines 11 to 16.

The remaining amendments similarly do not contain subject-matter which extends beyond the content of the application as filed. The amendments thus comply with the requirement of Article 123(2) EPC.

2. *Novelty*

In the opinion of the Board, the reference in claim 1 to an oscillation time being *set* should be construed as requiring that the oscillation time is determined and not subsequently altered in response to the temperature of the horn as detected immediately before the adhesion

of the sheeted resin material and the object by the horn. In particular, it is noted that claim 1 specifies that the detected parameter is the temperature of the horn before adhesion and not the temperature of the horn during adhesion. The temperature of the horn before adhesion is, of course, a single value which is used to determine and set the oscillation time. This would not be possible if the temperature of the horn was used as the detected parameter, since this value varies continually during the adhesion process.

Similarly, claim 3 specifies the presence of a control unit which sets an oscillation time in response to the temperature of the horn as detected immediately before the adhesion of the sheeted resin material and the object by the horn.

Document D1, on the other hand, discloses an ultrasonic adhering method in which the temperature of the weld and/or the temperature of the horn is continuously monitored during the welding procedure (column 2, lines 9 to 12). In response to a signal representing the temperature, a control unit controls welding parameters, which may include the welding time (column 3, lines 37 to 46 and 53 to 67). This document thus does not suggest a method or apparatus in which the welding time is set in response to a temperature detected before the welding is commenced.

The subject-matter of claims 1 and 3 is thus novel.

3. *Inventive Step*

The closest prior art is represented by document D1.

A problem associated with the method and apparatus disclosed in this document is that they are comparatively complicated. The object of the invention is accordingly regarded as being to provide a method capable of providing satisfactory adhesion whilst requiring a simple apparatus, as set out in the application as filed at paragraph [0007].

In the case of the method, this object is solved by virtue of the fact that an oscillation time is set in response to the temperature of the horn as detected immediately before the adhesion of the sheeted resin material and the object by the horn. In the case of the apparatus, this object is solved by virtue of the fact that a control unit is provided which sets an oscillation time in response to the temperature of the horn as detected immediately before the adhesion of the sheeted resin material and the object by the horn.

None of the prior art cited in the European Search Report suggests this feature.

The method and apparatus according to the invention represent a simplification as compared with the method and apparatus of document D1, since it is not necessary to provide a feedback control system involving monitoring the temperature of the horn during welding in order to adjust the welding parameters.

The subject-matter of claims 1 and 3 thus involves an inventive step. Claims 2 and 4 are dependant from claims 1 and 3, respectively, and relate to preferred embodiments of the method of claim 1 and apparatus of claim 4, respectively. The subject-matter of claims 2 and 4 thus also involves an inventive step.

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 a patent on the basis of the following documents:

   (a) claims 1 to 4 presented as main request during oral proceedings; and

   (b) description, pages 2 to 5, presented during oral proceedings; and

   (c) drawings, Figures 1 to 7 as filed.

The Registrar: The Chairman:

M. Dainese W. Moser