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Datasheet for the decision of 4 August 2010

Case Number: T 1243/09 - 3.3.06

Application Number: 05018038.9

Publication Number: 1614461

IPC: B01J 19/00

Language of the proceedings: EN

Title of invention:
Acoustic ejection of fluids from reservoirs

Applicant:
Picoliter, Inc.

Opponent:
-

Headword:
Acoustic ejection of fluids/PICOLITER

Relevant legal provisions:
EPC Art. 76(1), 111(1)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Subject-matter of divisional application extending beyond the content of the earlier application (no)"
"Remittal (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 1243/09 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 4 August 2010

Appellant: Picoliter, Inc.
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Representative: Bevan, Emma
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 20 January 2009 refusing European patent application No. 05018038.9 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: P.-P. Bracke
Members: L. Li Voti
J. Geschwind

Summary of Facts and Submissions

I. This appeal lies from the decision of the Examining Division to refuse European patent application no. 05 018 038.9, relating to a method for acoustically generating fluid droplets and being filed with a set of 5 claims as a divisional application of parent application 01 985 239.1 (published as WO 02/24325).

Claim 1 of the divisional application as filed reads as follows:

"1. A method for acoustically generating fluid droplets, the method comprising:
(a) acoustically coupling a reservoir containing a fluid to an ejector that produces acoustic radiation;
(b) activating the ejector to generate acoustic radiation and direct the radiation into the fluid in a manner effective to eject a fluid droplet from the reservoir; and
(c) repositioning the ejector with respect to the reservoir so as to enable activation of the ejector to eject an additional droplet of fluid from the reservoir."

II. In its decision, the Examining Division found that claim 1 regarded a generic method of generating fluid droplets not requiring a plurality of reservoirs whilst claim 40 of the parent application, allegedly supporting the wording of said claim 1, was directed to generating an array of chemical entities on a surface involving the application of focused acoustic energy to each of a plurality of reservoirs in order to eject droplets. Moreover, the description of the parent

application did not relate to a repositioning of the ejector with respect to the reservoir for each and every new droplet ejected.

Therefore, the divisional application did not satisfy the requirements of Article 76(1) EPC.

III. An appeal was filed against this decision by the Applicant (Appellant).

With the fax of 21 July 2010 the Appellant submitted amended sets of claims according to the main and the auxiliary request.

The set of claims according to the main request reads as follows:

" 1. A method for determining the location or orientation of a fluid surface in a reservoir between ejection events, comprising the steps of:
(a) acoustically coupling a fluid-containing reservoir to an acoustic radiation generator;
(b) activating the acoustic radiation generator to produce a detection acoustic wave capable of travelling to the fluid surface and being reflected as reflected acoustic radiation;
(c) analyzing the reflected acoustic radiation to assess the spatial relationship between the acoustic radiation generator and the fluid surface,
wherein step (c) involves at least one of:
(i) if the location is being determined, determining the distance between the acoustic radiation generator and the fluid surface; and

(ii) if the orientation is being determined, determining the orientation of the fluid surface in relationship to the acoustic radiation generator."

"2. A method for ejecting at least one droplet of fluid from a reservoir, comprising the steps of:
(a) acoustically coupling a fluid-containing reservoir to an acoustic radiation generator;
(b) activating the acoustic radiation generator to produce a detection acoustic wave capable of travelling to the fluid surface and being reflected as reflected acoustic radiation;
(c) analyzing the reflected acoustic radiation to assess the spatial relationship between the acoustic radiation generator and the fluid surface,
wherein step (c) involves at least one of:
(i) if the location of the fluid surface is being determined, determining the distance between the acoustic radiation generator and the fluid surface; and
(ii) if the orientation of the fluid surface is being determined, determining the orientation of the fluid surface in relationship to the acoustic radiation generator;
and
(d) generating an ejection acoustic wave having a focal point near the fluid surface in order to eject at least one droplet of the fluid, wherein the intensity and direction of the ejection acoustic wave is determined from the analysis."

"3. A method according to claim 2, wherein when the analysis shows an ejection acoustic wave having a focal point near the fluid surface cannot be produced the acoustic radiation ejector is repositioned with respect

to the fluid surface to ensure that an ejection acoustic wave can be produced."

"4. A method according to claim 3, wherein the acoustic radiation generator is repositioned using:
(i) vertical;
(ii) horizontal; or
(iii) rotational movement."

"5. A method according to any preceding claim, wherein the detection acoustic wave is a low energy acoustic wave that is insufficiently energetic to eject a droplet from the fluid surface."

"6. A method according to any one of claims 2 to 5, where claim 5 is according to any one of claims 2 to 4 only, wherein the analysis further involves:
(i) geometric data associated with the fluid-containing reservoir;
(ii) fluid property data associated with the fluid to be ejected; or
(iii) using historical droplet ejection data associated with any previous ejection sequence."

IV. The Appellant submitted in writing *inter alia* that the amended claims were supported by pages 42 and 43 of the description of the parent application.

Therefore, the amended application would comply with the requirements of Article 76(1) EPC.

V. The Appellant requests that the decision under appeal is set aside and that a patent be granted on the basis of any of the main or auxiliary request submitted with fax of 21 July 2010.

Reasons for the Decision

1. *Main request*

1.1 Article 76(1) EPC

1.1.1 The introduction of the passage of the description of the parent application from page 42, line 18 to page 43, line 27, reads "In order to ensure the accuracy of fluid ejection, regardless of the type of array being prepared, it is important to determine the location and the orientation of the fluid surface from which a droplet is to be ejected with respect to the ejector... Thus, another embodiment of the invention relates to a method for determining the height of a fluid surface in a reservoir between ejection events. The method involves...".

This passage thus relates explicitly to a separate generic embodiment of the invention and can be considered to constitute by itself support for a generic method having the features disclosed therein; the passages preceding and following this part of the description, relating to the formation of chemical arrays, thus have to be considered as a possible field of application of this more general teaching.

1.2 The method for determining the height of a fluid surface in a reservoir between ejection events reported in the above mentioned passage involves the essential steps of

– (a) acoustically coupling a fluid-containing reservoir to an acoustic radiation generator (page 42, lines 23 to 24);

– (b) activating the generator to produce a detection acoustic wave that travels to the fluid surface and is reflected thereby as a reflected acoustic wave (page 42, lines 23 to 26)

and

– (c) analyzing the parameters of the reflected acoustic radiation in order to assess the spatial relationship between the acoustic radiation generator and the fluid surface by determining the distance between the acoustic radiation generator and the fluid surface and/or the orientation of the fluid surface in relationship to the acoustic radiation generator (page 42, lines 26 to 30).

It results from these passages that the described analysis regards a fluid surface in a reservoir between ejection events. In particular, it regards the determination of the location or height of the fluid surface, i.e. of the distance between the acoustic radiation generator and the fluid surface, and of the orientation of the fluid surface with respect to the acoustic radiation generator but not necessarily both of them.

This passage of the description thus relates to a generic embodiment of the invention which does not require the presence of a plurality of reservoirs or the generation of an array of chemical entities.

The Board thus concludes that this disclosure correctly supports the wording of claim 1 according to the main request.

1.3 The introduction of the description of the parent application reads "This invention relates generally to the use of focused acoustic energy in the generation of fluid droplets" (page 1, lines 5 to 6) and seems to relate to a generic method for generating fluid droplets.

Moreover, the above mentioned passage on pages 42 and 43 discloses further the step (d) of generating an ejection acoustic wave having a focal point near the fluid surface, once the analysis has been performed, in order to eject at least one droplet of the fluid (page 43, lines 12 to 13).

Therefore, these passages support, in the Board's view a generic method for ejecting fluid droplets from a reservoir comprising the steps of the analysis discussed in point 1.2 above and the additional step (d) reported above.

The Board thus finds that claim 2 according to the main request is supported by the disclosure of the parent application.

1.4 Moreover, the dependent claims 3 and 4, relating to an optional additional step of the method of claim 2, find support in the passage on page 43, lines 21 to 27, relating to the generic method for ejecting fluid droplets from a reservoir discussed in point 1.3 above.

Claims 5 and 6, relating to further embodiments of steps (b) and (c) of the methods according to claims 1 and 2, find support in the passages on page 43, lines 1 to 3 and 17 to 21, respectively, relating to the generic method of analysis dealt with in point 1.2 above.

1.5 The Board thus concludes that the claims according to the main request comply with the requirements of Article 76(1) EPC.

2. *Remittal*

In the present case the decision under appeal was based on the grounds of lack of compliance with the requirements of Article 76(1) EPC only.

Therefore, it has still to be assessed whether the claims satisfy the other requirements of the EPC, for example, whether novelty and inventive step are involved.

The Board thus finds that in order not to deprive the Appellant of the opportunity to argue the remaining issues at two instances, it is appropriate in the present case to make use of its powers under Article 111(1) EPC to remit the case to the Examining Division for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division for further prosecution.

The Registrar: The Chairman:

G. Rauh P.-P. Bracke