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D E C I S I O N
of 19 May 1999

Case Number: T 0641/95 - 3.3.5

Application Number: 90900242.0

Publication Number: 0445205

IPC: B01F 3/04

Language of the proceedings: EN

Title of invention:
Mixing device

Applicant:
Nytek A/S

Opponent:
-

Headword:
Device for gasification of liquids

Relevant legal provisions:
EPC Art. 123(2), 84, 56

Keyword:
"Clarity (yes): essential features"
"Inventive step (yes): combination of features, non obvious effect"

Decisions cited:
-

Catchword:
-

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Case Number: T 0641/95 - 3.3.5

D E C I S I O N
of the Technical Board of Appeal 3.3.5
of 19 May 1999

Appellant: Nytek A/S
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Representative: Perry, Robert Edward
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 22 February 1995 refusing European patent application No. 90 900 242.0 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: R. K. Spangenberg
Members: A. T. Liu
J. H. van Moer

Summary of Facts and Submissions

I. The appeal is from a decision of the Examining Division refusing the European patent application No. 90 900 242.0.

II. The decision under appeal was based on a set of claims 1 to 11 consisting of claim 1 directed to a device, claims 2 to 9 depending thereon, and method claim 10 with claim 11 depending thereon.

III. Six documents were cited in the examining procedure, inter alia:

D1: FR 72 132

The examining division held that, in the view of the available prior art, the device claimed in claim 1 lacked an inventive step.

It was also remarked that claim 1 was open to objections under Article 123(2) EPC.

Furthermore, the examining division found that the requirements of Article 84 EPC were not met, in particular for the following reasons:

- technical features essential to the performance of the invention were missing from claim 1,

- claims 1 and 5 were directed to contradictory alternatives.

IV. During the oral proceedings on 19 May 1999, the appellant filed a new main request and an auxiliary request consisting of claims 1 to 7 and claims 1 to 9, respectively.

V. Claim 1 of the main request is essentially a combination of claims 1 and 5 of the set of claims underlying the decision under appeal. It reads:

"A device adapted for use in the gasification of liquids, comprising, rotatably mounted in the device, an elongate member (10) including an internal passage open to the atmosphere; an eductor tube (30); and, rotatable within the tube, one or more venturi members (13) each mounted on an arm (11,12) extending radially from the elongate member and each defining, with the internal wall of the tube, a convergent-divergent duct whose axis is substantially tangential to the circle of rotation of the respective venturi member, and in which the neck of the duct has an opening in communication, via the respective arm, with the internal passage; whereby rotation of the or each venturi member in a liquid causes the liquid to circulate through the tube".

VI. The appellant argued that the objections raised during the examining procedure were met by the present amendments to the claims. In addition, it was submitted that the newly defined device was energetically more efficient than known gasification devices.

VII. The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the main request or, alternatively, the auxiliary request submitted at the oral proceedings, and a description and drawings to be adapted.

Reasons for the Decision

Main request

1. *Amendments*

Claim 1 meets the requirements of Article 123(2) EPC. It is essentially based on claim 1 as filed, with the additional amendments derived from the description as follows:

internal passage	page 3, lines 32 to 33,
"open to the atmosphere"	page 4, lines 13 to 15
incorporation of "an eductor tube (30)"	page 5, lines 25 to 26
venturi member(s)	page 2, lines 32 to 33,
"rotatable within the tube"	page 5, lines 27 to 28 and page 8, lines 27 to 30
each defining, "with the internal wall of the tube," a convergent-divergent duct	page 8, lines 30 to 32
opening in communication, via the respective arm, with the internal passage	page 5, lines 5 to 6
rotation of the "or each" venturi member in a "liquid" causes the "liquid" to circulate through the tube	page 5, lines 28 to 30

Claims 2 to 7 correspond to claims 2, 6, 8, 9, 10 and 11 as filed.

2. *Clarity*

2.1 The stipulation that the elongate member (10) includes "an internal passage open to the atmosphere" makes it clear as to the means which is apt for introducing gas (air) into the venturi member.

2.2 The stipulation in claim 1 that the elongate member (10) is "rotatably mounted" immediately makes it clear that, when in use, this elongate member should be connected to an appropriate means of rotation so that it can function as required. Further, it is also clear to the skilled person that, when applied to the intended "use in the gasification of liquids", the claimed device should be immersed in a liquid so that "rotation of the or each venturi member in a liquid causes the liquid to circulate through the tube" (see claim 1). The fact that this liquid is contained in a tank or any other kind of liquid holder would not change anything to the functioning of the claimed device. In the Board's judgement, the inclusion of a rotation means and a tank into the subject-matter of independent claim 1 is thus not necessary for further clarification.

Claim 1 as amended therefore satisfies the requirements of Article 84 EPC.

3. *Novelty*

The subject-matter of claim 1 is new since none of the cited documents discloses or suggests a device comprising a rotatable venturi member within a tube wherein the internal wall of the tube replaces the external wall of the venturi duct.

4. *Inventive step*

4.1 The subject-matter of claim 1 is directed to a device incorporating particularly designed venturi member(s) for the gasification of liquids.

The Board considers that the closest prior art is represented by D1 which also discloses a device for dispersing fluid(s) into a liquid with the use of venturi members (see title; page 1, left hand column, first paragraph; page 3, left hand column, last paragraph to right hand column, first paragraph, Résumé and Figure 8). It is conceded that D1 does not specifically describe the use of the known device for the gasification of liquids but only in relation with the dispersion of liquids into a liquid. However, it is clearly stated in the introductory part of the citation that liquids are only examples of fluids that can be dispersed by the device (see in particular page 1, left hand column, last paragraph: "pouvoir disperser simultanément plusieurs fluides, par exemple plusieurs liquides, au sein d'une même masse liquide."). In the Board's judgement, the disclosure of D1 therefore encompasses the possible use of the device for the dispersion of gas, which is also a fluid, into a liquid.

4.2 The applicant has submitted that, with respect to D1, the object of the invention is inter alia the provision of a device for dispersing gas into a liquid in a more efficient way.

4.3 As is indicated above, the solution according to claim 1 is to dispense with the external wall of the venturi member and to have the venturi member placed within a tube. The internal wall of the tube itself then partially defines the venturi duct, functioning in place of the left-out external wall of the venturi member (see "Novelty").

4.4 The appellant has submitted that, by leaving out the outer wall of the venturi member so that it is open to the internal wall of the tube, less resistance is encountered by the venturi when it is rotated in a liquid. As a result, less energy needs be applied to rotate the device as compared to a device using conventional venturi member(s) having both walls defining a convergent-divergent duct fixed on, for example as known from D1.

Although the above statements are not supported by experimental data, the Board accepts the applicant's explanation as plausible. It therefore has no reason to doubt that the present technical problem is indeed solved by the claimed device.

4.5 The Board also finds that the solution proposed by the invention is not obvious in the light of the state of the art.

Although D1 discloses various embodiments of venturi members which it considers appropriate for the known devices, there is not even a suggestion in the citation to modify the disclosed venturi members in such a way as to arrive at the present design, let alone to do so

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 maintain the patent on the basis of the main request submitted at the oral proceedings and a description and drawings to be adapted.

The Registrar: The Chairman:

G. Rauh R. Spangenberg

in order to obtain a device with improved efficiency. The other documents cited during the opposition proceedings do not contain any more relevant information so that the solution proposed by the invention cannot be derived from any of these documents, either separately or in combination with D1.

4.6 As a consequence, the Board has come to the conclusion that an inventive step can already be recognised for the subject-matter of claim 1, based on the design of the new venturi. Therefore, the question as to whether the present combination of the particular venturi with an eductor tube is obvious in view of the available prior art needs not be investigated.

Claims 2 to 5 are dependent claims relating to specific embodiments of that subject-matter. Claims 6 and 7 relate to the use of the devices according to any of the claims 1 to 5.

From the above, it follows that the auxiliary request submitted by the appellant needs not be considered.