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D E C I S I O N
of 17 December 2001

Case Number: T 0944/98 - 3.2.2

Application Number: 93250364.2

Publication Number: 0606687

IPC: A61M 16/00

Language of the proceedings: EN

Title of invention:

Inhalation/Exhalation respiratory phase detection circuit

Applicant:

PURITAN-BENNETT CORPORATION

Opponent:

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Headword:

-

Relevant legal provisions:

EPC Art. 83, 84

Keyword:

"Clarity (yes), after amendment"

"Disclosure of invention (yes), after amendment"

Decisions cited:

-

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0944/98 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 17 December 2001

Appellant: PURITAN-BENNETT CORPORATION
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 29. April 1998
refusing European patent application
No. 93 250 364.2 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: W. D. Weiß
Members: R. Ries
J. C. M. De Preter

Summary of Facts and Submissions

- I. The present appeal is against the decision of the examining division to refuse European patent application No. 93 250 364.2 (EP-A-0 606 687). The examining division reasoned that the claimed subject-matter lacked clarity (Article 84 EPC) and the application did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC).
- II. In a communication by the Board dated 3 July 2001 sent following a summons to attend oral proceedings, the appellant was informed that the revised set of claims enclosed with the grounds of appeal still did not satisfy the requirements of Article 84 EPC and attention was drawn to amendments which, when applied, would possibly overcome this objection.
- III. In response, the appellant submitted a set of amended claims 1 to 7 to be substituted for all earlier requests and requested that:
- the impugned decision be set aside;
 - the case be remitted to the examining division to proceed further with substantive examination;
 - oral proceedings be held should a negative decision be contemplated by the Board on the basis of the written submissions.

Independent claims 1 and 8 read as follows:

"1. Apparatus for controlling the pressure of a

respiratory gas delivered to a patient in the inhalation and exhalation phases of the patient's respiratory cycle, in particular to prevent obstructive sleep apnea, the apparatus comprising:

- a) a gas supply (12) for supplying a respiratory gas under pressure from a source to the patient, connected through a valve (14) to a pressure sensor (16) and a flow sensor (18) which can generate a gas flow sensor signal (S) representative of the instantaneous respiratory gas flow delivered to the patient;

- b) an inhalation/exhalation phase detection circuit (24) including (i) a signal production circuit (32) and (ii) a signal processing circuit (34); in which the signal production circuit (32) has means for receiving the flow sensor signal from the flow sensor (18) and means for transforming the flow sensor signal into an offset signal (S_d) which is time delayed and scaled in magnitude relative to the flow sensor signal (S), both signals (S) and (S_d) having respective signal levels with respect to the same reference level, the flow sensor signal (S) presenting the higher level during at least a portion of the inhalation phase and the offset signal (S_d) presenting the higher level during at least a portion of the exhalation phase, and both signals being delivered to a signal processing circuit (34) which includes means for comparing the levels of the signals, for producing a first output when flow sensor signal (S) presents a higher level than the offset signal (S_d), and for producing a second output when the offset signal presents a higher level than the

flow sensor signal;

c) a pressure controller (26), coupled with the gas supply (12) and the signal processing circuit (34), having means for receiving the said outputs for controlling the respiratory gas pressure delivered to the patient in a predetermined manner in response to the flow sensor and offset signals correlated with a respective respiratory phase."

"7. A method for controlling the quantity of breathing gas supplied under pressure from a source (12) to a patient through a conduit (20) in the inhalation and exhalation phases of a patient's respiratory cycle, the method comprising the steps of

a) measuring the gas flow rate delivered to the patient by conduit (20);

b) generating a flow sensor signal (S) which is representative of the measured gas flow;

c) generating a offset signal (S_d) delayed in time and scaled in magnitude relative to the flow sensor signal (S), the signal levels of the flow sensor signal and offset signals being such that the flow sensor signal (S) presents the higher level during at least a portion of the inhalation phase and the offset signal (S_d) presents the higher level during at least a portion of the exhalation phase, and delivering both signals to a signal processing circuit (34);

d) comparing the signal levels of the flow sensor and offset signals in a signal processing

circuit (34) for producing a first output when the flow sensor signal (S) presents a higher level than the offset signal (S_d), and for producing a second output when the offset signal presents a higher level than the flow sensor signal; and

e) generating in response to these outputs a control signal for a pressure controller (26) coupled with the supply (12) and the signal processing circuit (34), for controlling the respiratory gas pressure delivered to the patient in a predetermined manner correlated with the patient's respiratory phases."

Reasons for the Decision

1. The appeal complies with the provisions mentioned in Rule 65(1) EPC and is, therefore, admissible.
2. *Amendments*

Claim 1 derives from original claims 8 and 12 to 15 and from subject-matter present in column 2, lines 24 to 43, column 3, lines 31 to 57, column 4, lines 9 to 14 and 19 to 22, column 5, lines 12 to 21, 25 to 30 and column 6, lines 6 to 12 of the description as originally filed (A-publication).

Claims 2 and 3 find support by original claims 13, 14 and column 3, line 50 to 53. Claim 4 derives from original claim 17 read in combination with column 5, lines 25 to 31. Claim 5 is based on Figure 1 and the accompanying description column 3, lines 21 to 26. Claim 6 has its basis in claims 9 and 10 as filed.

Method claim 7 finds support from claims 20 to 25 as originally filed in combination with the parts of the description aforementioned in connection with claim 1.

The requirements of Article 123(2) EPC are, therefore, satisfied.

3. *Clarity*

Having regard to the clarity objections raised by the examining division in the impugned decision, independent claims 1 and 7 as amended now specify that signal (S) is representative of the instantaneous gas flow delivered to the patient and that signal (S_d) is time delayed. In addition thereto, the claims make clear that a higher signal level of (S) is representative for "inhalation" and that, vice versa, a higher level of (S_d) signalizes "exhalation" during the patient's respiratory cycle. In order to avoid any confusion, claim 1 states that (S) and (S_d) are both scaled in magnitude with respect to the same reference level, whereby the former term "amplitude" has been replaced by "magnitude". Moreover, present claims 1 and 7 clearly specify the processing of signals (S) and (S_d).

Given that independent claims 1 and 7 are clear and concise, formulated in positive terms and supported by the description, the requirements of Article 84 EPC are met.

The dependent claims 2 to 6 refer to preferred embodiments of the apparatus claimed in claim 1 and do not comprise unclear or relative terms either. Hence, they too satisfy the requirements of Article 84 EPC.

4. *Disclosure of the invention*

Apart from the requirements for patentability set out in Articles 52 to 57 EPC, the requirement for sufficiency of disclosure and reproducibility belong to the basic prerequisites for the grant of a valid patent.

In its most general form, the present invention is expressed by apparatus claim 1 which includes not only all the essential structural parts depicted in the schematic representation of the apparatus for facilitating the respiration of a patient according to Figure 1, but also specifies how these parts are interrelated and the manner of processing the flow sensor signal (S) and offset signal (S_a). The same statement applies to method claim 7. It is, however, not the function of the claims to be complete in a sense that a person is enabled to carry out the invention this being required, pursuant to Article 83 EPC, of the patent as a whole. This is not identical with the requirements of Article 84 EPC which involve a claim to indicate all the technical features necessary for the solution of the problem to which the invention relates. In the present case, the skilled reader is - on the basis of his common general knowledge - presented with sufficient technical information and ample explanations, in particular those given in the Figures 1 to 4 and the accompanying "Detailed Description of the Preferred Embodiment" in column 3, line 17 to column 6, line 50 to put into practice the claimed invention. More specifically, Figure 2 discloses in detail the electrical connection scheme of the phase detection circuit (24) including signal production circuit (32) and signal processing circuit

(34). Moreover, the electrical block diagram according to Figure 4 illustrates the pressure controller (26) including switches (52, 54, 56), pressure sensor 16 and the manner how valve (14) is operated in response to the electrical signal received therefrom.

Having regard to this detailed technical information, the Board is unaware of any verifiable facts which could cast a serious doubt on the possibility of a skilled person to carry out the claimed invention on the basis of what was originally disclosed in the application. The Board, therefore, concludes that the requirements of Article 83 EPC are met.

5. Since the request for oral proceedings was conditional on a negative decision, which condition is not met, no oral proceedings are necessary.

Given that the reasons set out in the decision of the Examining Division for refusing the application no longer apply, the Board is setting aside the decision under appeal. The first instance has not yet examined whether or not the present application as amended meets the requirements of novelty and inventive step. It is, therefore, in the circumstances, considered appropriate, in accordance with Article 111(1) EPC and in order to avoid loss of an instance, to remit the case to the first instance 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 first instance for further prosecution.

The Registrar:

The Chairman:

V. Commare

W. D. Weiß