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Bezeichnung der Erfindung: Lance for fluidizing slow-moving material
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : B65G 69/06; B01J 8/18; B01F 3/06; F27B 15/10; F28C 3/12

ENTSCHEIDUNG / DECISION

vom / of / du 21 September 1989

Anmelder / Applicant / Demandeur : Norvalve AB

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56 EPC

Schlagwort / Keyword / Mot clé : "Inventive step (yes)"

Leitsatz / Headnote / Sommaire

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Case Number : T 185/87 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 21 September 1989

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SUEDE

Decision under appeal : Decision of Examining Division 83 of the European Patent Office dated 4 December 1986 refusing European patent application No. 81 902 428.2 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : F. Gumbel
Members : C. T. Wilson
O. P. Bossung

Summary of Facts and Submissions

I. European patent application No. 81 902 428.2 filed on 19 August 1981 as an international application No. PCT/SE 81/00232 and published under the international publication No. WO 83/00681, was refused by decision of the Examining Division dated 4 December 1986. The Decision was based on Claim 1 received on 15 August 1986.

The reasons given for the refusal were that the claim was not drafted in the correct two-part form, and that the subject-matter of the claim is lacking in inventive step in the light of the disclosure of GB-A-1 478 053 and the prior art fluidizing lance discussed in the present application.

II. On 29 January 1987 the Applicant lodged an appeal against the Decision by telex (duly confirmed by letter received 30 January 1987). The appeal fee was also paid on 29 January 1987.

In his Statement of Ground received 3 April 1987, the Appellant filed a new Claim 1 which he considers to be in the correct two-part form with respect to the disclosure of GB-A-1 478 053, and to be clearly distinguished therefrom by the characterising features of the claim.

III. In response to a communication from the Board pointing out inter alia that the subject-matter of Claim 1 appeared to involve an inventive step but that the claim did not comply with Rule 29(7) EPC, the Appellant filed on 26 August 1989 duly amended Claims 1 to 4 and accordingly amended description pages 1, 1a and 1b.

Claim 1 reads as follows:

"A device for fluidizing flowable pulverulent material, comprising a connection piece (10) defining an air passage extending between an air outlet (13) at one end thereof connected to a fluidizing activator, and an air inlet at the other end thereof for connection to a source of pressurized air transmitted thereto in a series of pulsations, said activator having a frame (14; 14A, 14B; 19; 22; 26) connected to the outlet end of the connection piece and an air permeable diaphragm (16) disposed across the air outlet (13) in a manner such that pressurized air discharged through the air outlet must pass to and through the diaphragm (16) which is supported by and covers the frame but is free to move in a pulsating movement when struck by pressurized air in pulses passing through the air outlet, characterized in that the connection piece (10) forms an elongated shaft with the activator at the outlet end thereof forming an axial extension of the shaft so as to provide together with the activator a lance to be inserted in a mass of slow-moving pulverulent material at the activator end thereof, and in that the frame (14; 14A, 14B; 19; 22; 26) together with the diaphragm (16) defines an elongated space the bounding walls of which include at least two opposite side walls having outlet openings covered by the diaphragm, and which is connected at one end thereof to the air outlet (13)."

IV. The Appellant requests grant of a European patent on the basis of the following documents:

i) Claims 1 to 4 received 26 August 1989, and Claims 5 to 9 received 13 February 1985,
ii) description, pages 1, 1a, 1b received 26 August 1989 and original pages 2 to 7, and
iii) drawings, original sheets 1/2 and 2/2.

Reasons for the Decision

1. The appeal is admissible.

2. There are no formal objections to the claim.

According to the opening pages of the application, and the new Claim 1, the invention relates to a device for fluidizing flowable pulverulent material of the type disclosed in GB-A-1 478 053. Such device comprises a connection piece (13) defining an air passage extending between an air outlet (14) at one end thereof connected to a fluidizing activator, and an air inlet at the other end thereof for connection to a source of pressurized air transmitted thereto in a series of pulsations, said activator having a frame (11) connected to the outlet end of the connection piece and an air permeable diaphragm (12) disposed across the air outlet in a manner such that pressurized air discharged through the air outlet must pass to and through the diaphragm which is supported by and covers the frame but is free to move in a pulsating movement when struck by pressurized air in pulses passing through the air outlet, corresponding to the first part of Claim 1. The claim is correctly drafted in the two-part form with respect to this prior art.

3. This type of activator can be mounted on the sides or the bottom of containers or discharge chutes in order to fluidize the material so as to facilitate emptying from the container or flow along the chute. According to the application, the activator has been found to be very efficient in practice and can be used in containers and chutes of different types because it can be easily adapted to the shape of the surface where it is to be mounted. However, it has apparently been found that there are nevertheless occasions where even this prior art activator

fails, viz. where the slow-moving material has to be flown through passages which are too narrow to allow the activator to effectively actuate and fluidize the material in the passage.

4. The object of the invention is therefore to provide a device which, according to the application, is intended to be complementary to the prior art activator, and which also allows such locations in a container or a discharge chute that are difficult to master to be reached for an efficient fluidization of the slow-moving material. In effect this problem is to adapt the device according to GB-A-1 478 053, to render it suitable for use in the above referred to narrow spaces.

5. In order to achieve this object there is provided a lance having the characteristics appearing in Claim 1.

6. Since the Board is of the opinion that the disclosure of GB-A-1 478 053 represents the nearest prior art, and the subject-matter of Claim 1 is correctly differentiated therefrom by the characterising features thereof, the subject-matter of the claim is novel. This has never been contested and need not therefore be explained in greater detail.

7. It remains therefore to be seen whether the subject-matter of the claim involves an inventive step.

7.1 Attempts to improve known devices to eliminate faults or drawbacks which become apparent during their operation forms part of the normal considerations of the person skilled in the art, so that the problem posed cannot be considered to contribute to any possible inventive step.

7.2 The question therefore remains whether the solution as set out in the characterising part of the claim, namely:

"that the connection piece forms an elongated shaft with the activator at the outlet end thereof forming an axial extension of the shaft so as to provide together with the activator a lance to be inserted in a mass of slow-moving pulverulent material at the activator end thereof, and in that the frame together with the diaphragm defines an elongated space the bounding walls of which include at least two opposite side walls having outlet openings covered by the diaphragm, and which is connected at one end thereof to the air outlet.",

involves an inventive step.

7.3 In GB-A-1 027 622 (corresponding to SE-C-226 519 cited in the ISR), a pulsator lance is described for stimulating granular flow. The lance constitutes an elongated shaft with a number of outlets pointing in opposite directions, which outlets should be distributed over the total effective length of the shaft.

In contrast to the teaching of the present invention however this prior art suggests alternately opening and closing either all of the holes together or preferably only some of them at the same time in accordance with a given sequence. To perform this, the lance consists of two concentrically arranged tubes provided with holes which can be brought into alignment by rotating or reciprocating the inner tube relative to the outer tube. The compressed air supplied to the shaft may be of constant pressure or, by means of a valve, provided in short blasts. Hence, this known device suggests a working principle for producing fluidizing air jets which is basically different from that taught by GB-A-1 478 053 forming the starting point of the

present invention. The Board is not, therefore, of the opinion that a skilled man would even consider combining the teachings of those two documents.

Even if he did, he would not arrive at the solution specified in present Claim 1 but would end up with a fluidizing device having the form of a lance with openings along its shaft which are covered by a diaphragm.

7.4 There is no teaching in any of the available documents, nor in the prior art referred to at the end of the description, as to the idea of arranging a fluidizing activator at the outlet end of the lance shaft, thus forming an axial extension, and there is also no teaching to design the activator as claimed, i.e. with an elongated free space formed by a frame and a diaphragm.

7.5 The subject-matter of Claim 1 therefore involves an inventive step, and the claim is allowable.

8. Claims 2 to 9 concern further embodiments of the invention and are also allowable.

9. The amendments to the description brings this into accordance with the invention as now claimed, and are allowable.

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 European patent on the basis of the documents specified in paragraph IV of the Summary of Facts and Submissions above.

The Registrar | The Chairman

S. Fabiani | F. Gumbel