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Beschwerdekammern **Boards of Appeal**

Office

Chambres de recours



of the European Patent

refusing European patent

pursuant to Article 97(1)

Case Number: T 135 / 82

DECISION of the Technical Board of Appeal 3.2.1

of 24 November 1983

United Kingdom Atomic Energy Authority Appellant: Patents Branch, 11 Charles II Street, London SW1Y 4QP (GB)

Representative: Neukom, John Ulysses, Patents Branch United Kingdom Atomic Energy Authority 11 Charles II Street London SW1Y 4QP (GB)

Decision under appeal:

Decision of Examining Division 118 13 May 1982 Office dated 79 301 757**.5** application No EPC

Composition of the Board:

G. Andersson Chairman: M. Huttner Member:

P. Ford. Member:

SUMMARY OF FACTS AND SUBMISSIONS

- European patent application No. 79 301 757.5 filed on 28 I. August 1979, published on 2 April 1980 under publication No. 0 009 335 and claiming priority of 5 September 1978 from a previous application filed in Great Britain, was refused by decision of the Examining Division 118 of the European Patent Office dated 13 May 1982. That decision was based on Claims 1 to 4 as received on 15 December 1981 and Claims 5 to 7 as received on 4 April 1981.
- II. The reason given for the refusal was that in view of the prior art disclosed by DE-B-2 013 741 and US-A-4 021 146 the subject matter of claim 1 did not involve an inventive step within the meaning of Article 56 EPC. Further, claim 1 did not meet the requirements of Article 84, since it did not specify clearly all the essential features needed to define the inventive concept. Another objection raised was that Claim 1 was not drawn in twopart form as required by Rule 29(1) EPC.

The independent Claim 3 was likewise found unacceptable in view of Article 84 and Rule 29(1) EPC because it also did not contain all the essential features and was likewise not drawn in two-part form.

III. The appellants lodged an appeal against this decision on 9 July 1982 and duly paid the appeal fee and the Statement of Ground was received in due time.

The appellants argued that the person skilled in the art could not deduce the subject matter of the invention from anything disclosed in the state of the art. They

argued further that there is no basis in Article 84 EPC or elsewhere in the Convention for requiring that a claim shall itself convey to the reader a complete picture of the invention and that the essential features are merely those required to define the inventive step in terms which will satisfy the requirements of Article 69 EPC.

They further argued that a claim in two-part form would be inappropriate for the present subject matter.

They also requested the reimbursement of the appeal fee in view of an alleged procedural violation (Article 113 (1) EPC) because the decision was purportedly not based on grounds on which the appellants have had an opportunity to present their comments. Finally, the appellants further requested oral proceedings to be held.

IV. By the two communications issued by the Board of Appeals, the appellants were advised that, in the rapporteur's opinion, GB-A-1 300 406 introduced by the appellants, represents the closest prior art from which the invention sets out, and it was indicated that the two independent Claims 1 and 3 could be brought into the two-part form without undue difficulties in order to comply with Rules 29(1)(a) and (b) EPC.

The presence of an inventive step as required by Article 52(1) EPC was also questioned in view of a possible lack of the essential features of the invention for solving the problem posed; this objection was raised on the ground that the technical problem and its solution could not be understood. Consequently, Rule 27(1)(d) EPC was not satisfied, from which fact it would follow that an invention within the meaning of Article 52 EPC could not exist.

V. Oral proceedings were appointed for the 24 November 1983. In the oral proceedings, the appellants requested the decision under appeal be set aside and that a European Patent be granted on the basis of:

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Description with amended pages 1, 1a, and 2 submitted in the oral proceedings, pages 3-5 as originally filed but with amendments as requested by the appellants,

Claims 1-4 as submitted in the oral proceedings,

Claims 5-7 as received on 4 April 1981,

1 drawing (sheet 1/1) as filed,

Claims 1 and 3 have the following wording:

1. A method of arresting a mainstream flow of fluid which method comprises placing the mainstream in permanently open communication with a control stream, reciprocating the control stream as a body back and forth across a lateral outlet so that virtually no escape through the outlet occurs, the back and forth flow of the control stream being in each direction along the same path and acting to build up back pressure in the mainstream for inhibiting access by the mainstream to the outlet, and discontinuing reciprocation of the control stream when it is required that the arresting function should cease for resumption of full flow of the mainstream to and through the outlet.

3. A fluidic valve device for arresting a mainstream flow of fluid which device comprises a control stream passage (16,17) a mainstream inlet (10) and a mainstream

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outlet (11) both in permanently open communication with the passage but with one of them branched so as to open into that passage at locations (22,23) disposed symetrically to either side of a lateral opening (12) of the other into the same passage, means (18,19) to reciprocate a control stream as a body of fluid in the passage back and forth across the lateral opening so that virtually no escape through the outlet occurs, the control stream acting to build up a back pressure in the mainstream for inhibiting access of the mainstream from the inlet to the outlet, and means to discontinue selectively the reciprocation of the control stream so that full flow of the mainstream to and through the outlet may occur.

- VI. Clear copies of the documents (description pages 1, la and 2 and Claims 1 to 4) submitted in the oral proceedings were received on 6 December 1983.
- VII. For the original claims, description and drawings, reference should be made to publication No. 0 009 335.

REASONS FOR THE DECISION

- The appeal complies with Articles 106 and 108 and Rule 64 EPC and is therefore admissible.
- 2. The amendments effected in the description and the claims do not extend beyond the content of the application as filed. The addition of the wording "as a body" in the Claims 1 and 3 for better defining the control stream can be gathered by the man skilled in the art

from page 1, paragraph 4 of the original description, wherein the mutually interconnected reservoirs containing the control fluid are disclosed. It is clear to a skilled practitioner that this system is filled with a predetermined quantity of fluid which, without question, constitutes a body of fluid actually providing the control stream fluid.

As far as the added qualification that the back and forth flow of the control stream proceeds "along the same path", is concerned, it must be noted that this feature is inherently covered in Claim 1 by the term "reciprocation back and forth" in view of the description and drawing disclosing nothing else than a single control stream passage within which the control fluid inevitably must reciprocate along the same path.

The remaining features added to the Claims 1 and 3 are expressedly stated in the description.

There can be no objection to the amendment of the present description in its introductory portion to sufficiently acknowledge the closest prior art devices and their disadvantages and to reformulate the problem accordingly. Other parts of the description have been corrected as requested by the Board and approved by the appellants.

Therefore, all the amendments are allowable under the terms of Articles 84 and 123(2) EPC.

3. In the particular circumstances of this case, having regard to the remoteness of the prior art from the alleged invention, considered below, the Board has also made use of its discretion and waived objection to the one-part form of the Claims 1 and 3.

- 4. The subject matter of the method Claim 1 and of the apparatus Claim 3 is novel with respect to the art dealt with in the proceedings, since none of the citations reveals a fluidic flow control method or valve device employing a control stream which upon reciprocation across a lateral outlet builds up back pressure in the main stream to inhibit access by the mainstream to the outlet and, while reciprocating, virtually no escape from the control stream through the outlet occurs. Therefore, the requirement of Article 54 EPC is fulfilled.
- 5. In a flow control device according to GB-A-1 300 406 a virtual shut-off function of the mainstream flow is achievable by a perpendicularily injected control stream flow whirling in a vortex motion thereby sufficiently strangling the main stream. The control stream is arranged so as to be in permanently open communication with the main stream. Upon discontinuation of the control stream flow a resumption of the full main stream is effected. However, in the device disclosed by this citation, the control stream fluid is lost through the main-stream outlet, a fact which the appellants consider to be a serious disadvantage. The same holds true for the distributor according to FR-A-2 038 513.

In contradistinction to the vortex type of valve employing a strangling effect on the main stream flow, there is also known, for example, a vented amplifier device as shown in GB-A-1 240 751 (= DE-B-013 741, mentioned in the Decision of the Examining Division) in which the mainstream flow is diverted by a unidirectional control stream flow, whereby the two streams merge and leave through a vent output. Thus, neither of the streams are actually suppressed and both do escape. US-A-4 021 146 discloses a fluid pump having a rectifiertype reserve flow divertor connected to a pressure cylinder on the one hand and to an outlet duct on the other hand and being submerged in an externally situated liquid to be pumped through the outlet duct to a tank. A reverse flow stream made up by a proportion of the liquid in the outlet duct is made to flow back into the divertor through a duct provided with a gap through which new external liquid is drawn in and which is entrained so as to refill the pressure cylinder. In the subsequent forward flow state the liquid is propelled in the opposite direction across the gap to the outlet duct into the collecting tank.

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From the above, it becomes evident that this device is not destined to perform any shut-off function for either the reverse or the forward flow stream and thus serves an entirely different purpose.

- Therefore, the problem to be solved is, according to the appellants, to achieve a shut-off function of a main stream without substantial loss of the control stream.
- 7. The problem underlying the application is solved by the features of the Claims 1 and 3 respectively and they thus do contain the minimum features that are necessary to define the invention sufficiently.
- 8. It remains to be examined whether the subject matter of the claims 1 and 3 respectively involve an inventive step and the question now arises whether the publications cited would give the skilled person an indication how the method and means for shutting-off the mainstream in a fluid control device according to GB-A-1 300 406 could be adapted to avoid any loss of the control stream.

8.1 The device disclosed in GB-A-1 300 406 discloses a chamber in which a flow shaper body confines the mainstream flowing from an inlet duct to the coaxially arranged outlet duct to the outer annular part of the chamber. The outlet duct is shaped to form a diffuser. One or a plurality of ports are circumferentially arranged within the range of the flow shaper for directing a control flow of fluid tangentially into the outer annulus of the chamber to interact with the main flow stream and inhibit access of the main stream to the outlet. Since the control stream inevitably leaves the chamber through the outlet and becomes lost, no hint or indication whatsoever can be found in this publication that could possibly stimulate the skilled person likewise to stop the loss of the control stream.

Even though the appellants acknowledge that the reciprocation of a fluid stream per se is known in the art, it cannot be seen how the control stream of GB-A-1 300 406 could be adapted by a skilled person to reciprocate due to the fact that once having left the port, it would unquestionably escape through the outlet. Thus no fluid ever would remain available for imparting a reciprocation.

8.2 It must be emphasised that US-A-4 021 146 teaches nothing more than a passage containing a mainstream which is drawn in through the gap, entrained and merged with the rest of the mainstream previously drawn in, both of which are subsequently expelled in reverse direction through the sole outlet duct. Hence, no control stream at all is present. As a consequence no hint or indication whatsoever is discernable in this publication that could possibly lead to the idea of using a reciprocating control stream for building up back pressure to inhibit main stream access to the outlet. Rather the contrary is the case since, in the reverse phase, the liquid is drawn in and then proceeds in company with the remaining stream from the previous phase to and through the outlet duct in order to constitute a pump delivery.

- 8.3 Thus the skilled person reading either of these publications would have no reason to be induced to use a control fluid stream being in open communication with a mainstream to build up back pressure for shutting off the mainstream while reciprocating.
- 8.4 It must be further inferred from these facts that in view of US-A-4 021 146 the employment of a reciprocating control stream for shutting off a mainstream without any loss of fluid in a method according to GB-A-1 300 406 does not follow logically for a person skilled in the art from the combination of these two citations, and as a consequence it would also be of no avail to try to apply the teachings of the one to the other.
- 8.5 Still further, applying the teachings of GB-A-1 240 751 which discloses a vented amplifier using a diverting function of the control stream by defecting the mainstream from one outlet to another to the method used in GB-A-1 300 406 would also not be feasable and consequently likewise not be logical in view of the fact that in the latter a deflection of the mainstream confined to outer annulus of the chamber would, as becomes immediately evident, not be possible for the simple reason that the latter lacks an alternative outlet.

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- 8.6 The Boards' view therefore, is that the subject matter of Claim 1 would not be obvious from either citation cited in the search report or during the proceedings taken singly or combined. Hence, the required inventive step is not lacking and Article 56 EPC is fulfilled. Claim 1 is therefore allowable having regard to Article 52(1) EPC.
- 8.7 Claim 3, apart from stating the branched symetrical arrangement of the mainstream inlet to the control stream passage, is now directed to an apparatus including means to reciprocate a control stream as a body of fluid in the control stream passage across a lateral opening so that virtually no liquid escapes through the outlet and the control stream acts to build up back pressure in the mainstream. Since this functional limitation is specifically drawn to the same salient features as in the method Claim 1 the same reasoning with respect to the assessment of obviousness holds true. Hence, the subject matter of Claim 3 likewise involves an inventive step (Artcle 56 EPC), and therefore is also allowable (Article 52(1) EPC).
- 9. The dependent Claims 2, and 4 to 7 having as subject matter special embodiments of the invention as claimed in the independent claims on which they depend, are also allowable since their acceptance is contingent on the allowability of Claims 1 and 3, which has been approved.
- 10. The appellants' application for reimbursement of the appeal fee (Rule 67 EPC) is not accepted because they have shown no sufficient cause to justify a procedural violation. They have put forward an amendment to their claim

supported by arguments in order to meet an objection raised, and this has been assessed by the Examining Division. Consequently, they did have an opportunity to present their comments and Article 113(1) EPC was complied with.

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The Board thus cannot find a substantial procedural violation by reason of which the reimbursement would appear equitable.

ORDER

For these reasons

it is decided that:

- The decision of the Examining Division 118 dated 13 May 1982 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 following documents:

Description, pages 1, 1a and 2 as amended in handwriting during the oral proceeding on 24 November 1983 and of which clear copies have been received on 6 December 1983, with the reference numeral 15 inserted on page 2, line 21, after "diffuser", and deleted after "casing",

page 3, as filed, with the insertion at the end of line 3 of the words: "back and forth along the same path, i.e.", page 4, as filed, with the reference numerals "22, 23" in line 2 deleted and replaced by "24, 25",

page 5 as filed,

Claims 1 to 4 as submitted during the oral proceedings on 24 November 1983, Claims 5 to 7 as received on 4 April 1981, drawing, sheet 1/1, as filed.

3. The request for the reimbursement of the appeal fee is refused.

/ P.F.

The Registrar:

J. Hu

The Chairman: