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Bezeichnung der Erfindung: Flow Regulator and its use
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : F24F 11/04

ENTSCHEIDUNG / DECISION

vom / of / du 21 September 1989

Anmelder / Applicant / Demandeur : Halten Oy

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence : Flow Regulator/Oy

EPÜ / EPC / CBE Art. 56 EPC

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

Leitsatz / Headnote / Sommaire

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Case Number : T 64/87 - 3.2.1

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

Appellant : Halton Oy
47400 Kausala (FI)

Representative : Higgins, Michael Roger
Marks & Clerk
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London WC2A 3LS (GB)

Decision under appeal : Decision of Examining Division 73 of the European Patent Office dated 21 November 1986 refusing European patent application No. 84 902 009.4 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : F. Gumbel
Members : C.T. Wilson
F. Benussi

Summary of Facts and Submissions

I. European patent application No. 84 902 009.4 filed on 17 May 1984 as an international application No. PCT/FI84/00038 and published under the international publication No. WO 84/04804 was refused by a Decision dated 21 November 1986. The Decision was based on Claims 1-12 as filed with a letter dated 26 August 1986.

II. The reason given for the refusal was that in view of the prior art revealed in document GB-A-2 073 404, the subject-matter of Claim 1 did not involve an inventive step.

III. On 10 January 1987 the Appellant lodged an appeal against the Decision. The appeal fee was paid on 9 January 1987 and the statement of grounds was received on 21 March 1987, together with five requests and an alternative amendment to each request.

The main request was based on a new set of Claims 1 to 13 and new pages 1, 1a and 10b to 14 of the description, filed with the statement of grounds together with proposed amendments to Figures 2, 7 and 9, and to page 3.

IV. In response to a communication from the Board expressing doubt about the allowability of Claim 1 of the main request in the light of Article 123(2) EPC, the Appellant requested in a letter received on 23 December 1988 to proceed on the basis of Claim 1 of the second request, and filed a new Claim 1 amended accordingly. All other requests were withdrawn on condition that the new request is allowable.

Claim 1 of this main request reads as follows:-

"A flow regulator (10) for gaseous substances, in particular for air in air-conditioning and ventilation installations, and comprising an envelope (11) and a regulating member (12) disposed in a flow passage confined by the envelope (11), which regulating member (12) moves automatically in response to changes in gas flow between a normal maximum opening position and a normal minimum opening position and between these positions maintains the volumetric flow of the gaseous substance at a desired magnitude with sufficient accuracy when the differential pressure (Δp) acting across the flow regulator (10) varies within given limits, and also a limiting member (26b) which limits the movement of the regulating member (12), characterised in that the flow regulator (10) is provided with two limiting members (26a, 26b) which are positioned, or can be positioned, so as to prevent the regulating member (12) reaching its normal maximum opening position or reaching its normal minimum opening position, respectively, relative to the envelope (11), thereby restricting the differential pressure range in which the flow regulator will operate automatically to maintain the volumetric flow at the desired magnitude, and in that the maximum and the minimum limits of opening of the regulating member (12), as determined by the limiting members (26a, 26b), are adjustable."

V. The Appellant argues that the purpose of the invention is to limit the differential pressure range of the flow regulator in which the regulating member operates while maintaining the airflow constant. No prior art is known where it appeared necessary to limit the range of the differential pressure, and there is no existing knowledge in the art that this was desirable. GB-A-2 073 404 does not operate in this manner. There is no body of prior knowledge that can be read with GB-A-2 073 404 to suggest operating

in this manner. On this basis, the subject-matter of Claim 1 is according to the Appellant inventive.

He therefore requests that the Decision be set aside and that a European patent be granted on the basis of the following documents:-

a) Claim 1 received 23 December 1988 and Claims 2 to 12 received 11 August 1989

b) Description, pages 1, 1a, 10b, 11, 12, 13, 13a, 13b and 14 received 21 March 1987,
pages 2-5, 5a, 5b, 5c, 8-10 and 10a received 28 August 1986, and original pages 6 and 7

with the following amendments:

page 7 line 12, cancel "large" and insert "small",
page 9 line 11, cancel "knobs" and insert "knob",
page 10a line 22, cancel "shafts 3" and insert "shafts 35",
page 10b line 4, cancel "fixed, but" and delete the comma after "adjustable",
page 13 line 8, insert reference numeral "42" after the word "end",
line 9, cancel "42" and insert "41".

c) Drawings: original pages 1/9 to 9/9, with the following amendments:

Figs. 2 and 7 to be amended as shown in red on the copies received 21 March 1987, and
Fig. 3F to be amended by replacement of "113f" by "112f".

Reasons for the Decision

1. The appeal is admissible and is based on the new single request.

2. The present invention relates to flow regulators particularly for use in air-conditioning systems, of the type set out in the first part of Claim 1. Such regulators are known for example from GB-A-2 073 404, and include a regulating member (2) disposed in a flow passage (1) to move automatically in response to changes in gas flow to maintain the volumetric flow at a desired magnitude when the differential pressure acting across the regulator varies within given limits. In this known regulator a stop (13) or limiting member is positioned in the flow channel to stop the regulating member (2) when it closes rapidly (see page 2, lines 26-29).

3. Since GB-A-2 073 404 represents in the opinion of the Board the nearest prior art, and the subject-matter of Claim 1 differs therefrom by the features of the characterising part of the claim, the subject-matter of Claim 1 is novel. Since this has never been contested, no further detailed explanation is necessary.

4. It remains therefore to examine the question of inventive step. The following observations arise in this respect:

4.1 The object of the invention is to limit in an adjustable manner the differential pressure range of the flow regulator in which the regulating member operates.

4.2 The Appellant has argued (see for example page 7, paragraph 20 of his Statement of Grounds) that it would not be obvious to restrict the range if a regulator was operating satisfactorily over the whole range. No prior art

has been found in which the range is restricted, and no indication has been found to suggest that such restriction is desirable.

Certainly in the regulator of GB-A-2 073 404 the stop (13) is not intended to limit the range at all, but rather merely to define an end point to prevent the regulating member from rotating beyond its closed end position.

However, as explained in the application, (see particularly the description relating to Figure 11), since the movement of the regulating member can be steplessly limited, the regulators can be used for mere balancing without incurring the risk of binding, and for restricted and controlled correction. Moreover, the regulators can be used to great advantage in air-conditioning installations where the air quantities are varied, for example where different air quantities are used in daytime and nighttime running.

In the opinion of the Board, the setting of this problem already contributes to the inventive step.

4.3 The solution to this problem according to Claim 1 is to provide two limiting members (26a, 26b) cooperating with the regulating member to prevent it from reaching its normal maximum and minimum operating positions. Moreover, it is also stated in the claim that the maximum and minimum limit of opening of the regulating member as determined by the limiting members are adjustable.

4.4 There is no suggestion in the revealed prior art to adjust the maximum or minimum limit of opening of the regulating member. Moreover, as pointed out above, it does not appear to the Board to be an obviously desirable improvement to a flow regulator.

4.5 The subject-matter of Claim 1, in the light of the problem posed plus the solution, is therefore considered to involve an inventive step.

5. Dependent Claims 2 to 9 are directed to further embodiments of the flow regulator of Claim 1, and Claims 10 to 12 to the utilisation of these flow regulators in an air-conditioning installation, and are also therefore allowable.

Order

For these reasons, it decided that:

1. The decision under appeal is set aside.

2. The application is remitted to the first instance for grant of a European patent on the basis of the documents specified in paragraph V of the Summary of Facts and Submissions.

The Registrar: The Chairman:

S. Fabiani F. Gumbel