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D E C I S I O N
of 11 December 2002

Case Number: T 0575/02 - 3.2.4

Application Number: 95936157.7

Publication Number: 0957997

IPC: A62C 2/06

Language of the proceedings: EN

Title of invention:

Shut-off device for ducts and the like

Applicant:

Geuken, Stefan, et al

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 56, 84, 123(2)

Keyword:

"Main request - clarity (no)"

"First auxiliary request - added subject-matter (yes)"

"Second auxiliary request - inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0575/02 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 11 December 2002

Appellant: Geuken, Stefan
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 27 November 2001
refusing European patent application
No. 95 936 157.7 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: C. D. A. Scheibling
C. Holtz

Summary of Facts and Submissions

- I. By its decision dated 27 November 2001 the Examining Division refused the application. On 25 January 2002 the appellant (applicant) filed an appeal, paid the appeal fee and simultaneously filed the statement setting out the grounds of appeal.
- II. The patent application was refused by the Examining Division on the ground that the subject-matter of claim 1 did not involve an inventive step as requested by Articles 52(1) and 56 EPC with respect to document D1: FR-A-2 254 182.
- III. Oral proceedings took place on 11 December 2002. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims filed with letter of 6 December 2000 (main request), or that a patent be granted on the basis of the claims (entitled "amended auxiliary request") filed with letter of 11 November 2002 (first auxiliary request), or that a patent be granted on the basis of the claims filed during the oral proceedings (second auxiliary request).
- IV. Independent claim 1 of the main request reads as follows:
- "1. A shut-off device for preventing the spreading of gaseous substances in ducts including preventing the spreading of fire in ventilation systems, wherein a duct section (1) or channel section (2) of a ventilation system is fitted with plates (3) coated with an expandable material which will

expand when a state parameter is exceeded or when in the presence of a given substance, such as to fill the space between and externally of the plates (3) with expanded material and therewith close-off said section and prevent the throughflow of said gaseous substance, characterized in that the plates have an extension in the flow direction which is greater than the largest dimension of the duct (1) perpendicular to the longitudinal direction of the duct".

Claim 1 of the first auxiliary request reads as follows:

- "1. A shut-off device for preventing the spreading of gaseous substances in ducts including preventing the spreading of fire in ventilation systems, wherein a duct section (1) or channel section (2) of a ventilation system is fitted with plates (3) coated with an expandable material which will expand when a state parameter is exceeded or when in the presence of a given substance, such as to fill the space between and externally of the plates (3) with expanded material and therewith close-off said section and prevent the throughflow of said gaseous substance, characterized in that the plates have an extension in the flow direction which is greater than the largest dimension of the duct (1) perpendicular to the longitudinal direction of the duct, and in that the coating has the ability to expand its thickness to at least 50 mm".

Claim 1 of the second auxiliary request reads as follows:

"1. A shut-off device for preventing the spreading of gaseous substances in ducts in ventilation systems, including preventing the spreading of fire in ventilation systems, wherein a duct section (1, 2) of a ventilation system is fitted with plates (3) coated with an expandable fire-protection material which will expand when a state parameter is exceeded, such as to fill the space between and externally of the plates (3) with expanded material and therewith close-off said section and prevent the throughflow of said gaseous substance, characterized in that the plates have an extension in the flow direction which is greater than the largest dimension of the duct (1) perpendicular to the longitudinal direction of the duct, and in that the coating of said fire-protection material will expand to a minimum of 50 mm when heated to a temperature above 160°C".

Reasons for the Decision

1. The appeal is admissible.
2. *Main request*
- 2.1 Amendments

Claim 1 of the main request differs from claim 1 as published in WO-A-96/12525 in that the expression "the spreading of gaseous substances in ducts or like elements, for instance for preventing the spreading of fire" has been changed to read "the spreading of gaseous substances in ducts including preventing the

spreading of fire". This amendment is a limitation of the suitable use of the device to "ducts" excluding now other "like elements" and thus, does not contravene the provisions of Article 123(2) EPC.

2.2 Novelty

None of the cited documents discloses a shut-off device comprising plates having an extension in the flow direction which is greater than the largest dimension of the duct perpendicular to the longitudinal direction of the duct.

Thus, the subject-matter of claim 1 is novel.

2.3 Closest prior art

The Board, in agreement with the appellant and the Examining Division, considers D1 to be the closest prior art document.

From D1 there is known a shut-off device disclosing the features of the prior art portion of claim 1 of the main request. This point was not disputed by the appellant.

2.4 Problem to be solved by the invention

2.4.1 The shut-off device according to claim 1 of the main request differs from the one known from D1 in that:

- the plates have an extension in the flow direction which is greater than the largest dimension of the duct perpendicular to the longitudinal direction of the duct.

2.4.2 As confirmed by the appellant during the oral proceedings and as deducible from the description of the WO-A-96/12525, page 1, lines 35 to 37, the Board considers that the problem to be solved by the invention is to provide a duct shut-off device which in a non-activated state will offer the lowest possible resistance to flow in ducting.

2.5 Clarity of claim 1 of the main request with respect to the essential features needed to define the invention.

2.5.1 As explained by the appellant during the oral proceedings, the problem of the invention is solved by using a coating of fire-protection material (paint) that expands far more than the material normally used in the art (for example in the application a paint that expands to a minimum of 50 mm when heated to a temperature above 160°C is used, exhibiting an expansion factor of more than hundred when taking into account the preferred paint thickness indicated in the application, whereas in D1 the expansion factor is indicated to be around ten; see D1, page 1, lines 36, 37). The use of this material allows in turn for a given cross-section of the duct to reduce the number of plates of the device by increasing the space between two neighbouring parallel plates. However, the resistance to the axial medium flow of the layer of expanded material decreases the more the thickness of the expanded layer becomes larger. Therefore, since a higher expansion implies less foam coherence and since therefore separate additional measures are needed in order to fulfil the resistance requirements of the device, the extension of the plates in the flow direction has according to the claimed invention to be substantially increased.

Thus, summing up, the increase of the extension of the plates is a prerequisite for the use of a coating of material with a high expansion factor resulting in a device comprising less plates, widely interspaced and thus, offering less resistance to flow.

2.5.2 However, in view of the problem to be solved, the Board is convinced that the mere use of plates having an extension in the flow direction which is greater than the largest transversal dimension of the duct, is not sufficient to solve the problem of the invention since to solely use such plates does neither automatically imply the use of a specific fire-protection material, nor allow to increase the spacing of the plates.

2.5.3 Therefore, the Board comes to the conclusion that not all of the essential features needed to define the invention are specified in independent claim 1 of the main request and that therefore, the requirement of clarity of Article 84 EPC is not met.

Consequently, the main request is not allowable.

3. *First auxiliary request - compliance with Article 123(2) EPC:*

3.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request by the addition of the sentence "the coating has the ability to expand its thickness to at least 50 mm".

3.2 Concerning the introduction of the word "coating", the prior art portion of claim 1 already discloses the

following: "...plates (3) coated with an expandable material...". Thus, it is clear that said "coating" is made of "expandable material". Furthermore, the ability to expand to a thickness of at least 50 mm is not only dependent on the material itself but also on the quantity of material applied. Therefore, "coating" is a more appropriate term than "material" or "expandable material" in the given context. Thus, the use of the word "coating" does not contravene the requirements of Article 123(2) EPC.

- 3.3 According to the appellant the assertion that said coating has "the ability to expand to a thickness of at least 50 mm" is based on the passage of the description of WO-A-96/12525, page 3, lines 32 to 34. Said passage reads: "an expandable fire-protection material which will expand, or swell, to a minimum of 50 mm when heated to a temperature above 160°C".

The appellant argued that it is the **ability** to expand to a thickness of at least 50 mm which is claimed and not the thickness of 50 mm itself and that therefore, there is no need to indicate a temperature.

However, in the view of the Board, the ability of the material to expand to a minimum of 50 mm is only disclosed in WO-A-96/12525 as being dependent on the temperature effectively reached (see "when heated to a temperature above 160°C"), i.e. it is not disclosed in WO-A-96/12525 that the coating will be able to expand to a thickness of 50 mm also for temperatures lower than 160°C. Therefore, in the view of the Board, the ability to reach a thickness of the expanded coating of 50 mm is a generalisation of the original disclosure (see WO-A-96/12525) and can therefore not be claimed

independently of the temperature effectively needed to reach said thickness as disclosed in WO-A-96/12525.

3.4 Furthermore, in the preamble of claim 1 it is stated "plates (3) coated with an expandable material which will expand when a state parameter is exceeded or when in the presence of a given substance". However, WO-A-96/12525 only discloses that a thickness of 50 mm can be reached in relation to a temperature rise above 160°C and there is no indication in its description that a thickness of 50 mm can be obtained in relation to any other kind of state parameter or in relation to the presence of a given substance.

3.5 Thus, claim 1 of the first auxiliary request does not meet the requirements of Article 123(2) EPC.

3.6 Consequently, the first auxiliary request is not allowable.

4. *Second auxiliary request*

4.1 Compliance with Article 123(2) EPC

4.1.1 Claim 1 of the second auxiliary request differs from claim 1 of the main request (see also section 2.1 above) by the addition of the sentence "and in that the coating of said fire-protection material will expand to a minimum of 50 mm when heated to a temperature above 160°C".

The basis for this amendment can be found in the passage of the description of WO-A-96/12525, page 3,

lines 31 to 34 which reads "The plates of the duct shut-off device may be coated with an expandable fire-protection material which will expand, or swell, to a minimum of 50 mm when heated to a temperature above 160°C for instance".

4.1.2 Claim 1 furthermore clarifies now that the ducts concerned are used in ventilation systems, which fact is also clearly disclosed in WO-A-96/12525 (page 1, lines 5 to 9; page 3, lines 8 to 10).

4.1.3 The following alternatives present in claim 1 of the main request are deleted in the present claim 1; namely

"or channel section"; and

"or when in the presence of a given substance".

These deletions do not result in an extension.

4.1.4 The modifications made in the description relate to adaptations of the present claim 1 and to clarifications.

4.1.5 Consequently, claim 1 of the second auxiliary request meets the requirements of Article 123(2) EPC.

4.2 Novelty

None of the cited documents neither discloses a shut-off device comprising plates having an extension in the flow direction which is greater than the largest dimension of the duct, nor discloses that the coating of the fire-protection material can expand to a minimum of 50 mm when heated to a temperature above 160°C.

Thus, the subject-matter of claim 1 of the second auxiliary request is novel.

4.3 Inventive step

4.3.1 The shut-off device according to claim 1 of the second auxiliary request differs from the one known from D1 in that:

- the plates have an extension in the flow direction which is greater than the largest dimension of the duct perpendicular to the longitudinal direction of the duct, and in that the coating of said fire-protection material will expand to a minimum of 50 mm when heated to a temperature above 160°C.

4.3.2 The problem to be solved is to provide a shut-off device which in a non-activated state will offer the lowest possible resistance to flow in the ducting (see description of the WO-A-96/12525, page 1, lines 35 to 37; see section 2.4.2 above).

4.3.3 This problem is solved by increasing the extension of the plates in the flow direction so as to have an extension which is greater than the largest dimension of the duct perpendicular to the longitudinal direction of the duct, in order to provide the necessary resistance of the coating once expanded, in combination with a coating material with a high expansion factor such that said fire-protection material will expand to a minimum of 50 mm when heated to a temperature above 160°C, resulting in a device comprising plates which can be more widely interspaced, which makes it possible to reduce the number of them for a given cross-section and therefore, to offer less resistance to flow.

4.3.4 As pointed out by the Examining Division, D1, page 2, lines 17 to 23, teaches that the extension in the flow direction of the device is chosen so as to obtain the thermal insulation that is to be achieved and that more than one screen can be disposed one after the other in the same tubing to achieve a good insulation.

Therefore, the Examining Division was of the opinion that when applying the teaching of D1 to smaller ducts, in order to achieve a better insulation, the extension of the plates in the flow direction could become comparable to the largest transversal dimension of the duct.

However, D1 neither discloses nor suggests to use a fire-protection material able to expand to a minimum of 50 mm when heated to a temperature above 160°C. On the contrary, D1 only discloses a material having an expansion factor of about ten. Thus, even if a skilled person would consider the teaching of D1 in order to improve the insulation, D1 cannot contribute to solve the problem of reducing the resistance to flow by reducing the number of plates for a given cross-section and cannot give a skilled person any indication or hint to extend the longitudinal dimension of the plates of the device and simultaneously to coat them with the specific fire-protection material as claimed, in order to solve the problem of reducing the flow resistance. D1 can thus not lead a skilled person to the object of claim 1 of the second auxiliary request.

4.3.5 Furthermore, none of the documents cited in the search report neither discloses a shut-off device comprising plates having an extension in the flow direction which is greater than the largest dimension of the duct

perpendicular to the longitudinal direction of the duct, nor discloses a device comprising plates with a coating of a fire-protection material which expands to a minimum of 50 mm when heated to a temperature above 160°C. Thus, any possible combination of the cited documents would likewise be lacking said features.

Even the fact alone, that such fire-protection materials (able to expand to a minimum of 50 mm when heated to a temperature above 160°C) have to be considered as prior art in the meaning of Article 54(2) EPC would not lead a skilled person to the claimed combination, since there seems to be no suggestion in the prior art to use such materials in combination with longer plates in order to be able to use them in a sensible manner for the purpose indicated in claim 1.

4.3.6 Consequently, the subject-matter of claim 1 of the second auxiliary request involves an inventive step.

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 patent on the basis of the following documents:

Claims: 1 to 5 of the second auxiliary request as filed in the oral proceedings,

Description: pages 1 to 5 as filed in the oral proceedings,

Drawings: Figures 1A to 1C and 2 to 4 as published (WO-A-96/12525).

The Registrar:

The Chairman:

G. Magouliotis

C. Andries