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**Datasheet for the decision
of 2 December 2011**

Case Number: T 0179/10 - 3.2.03
Application Number: 02803370.2
Publication Number: 1446537
IPC: E04B 1/62, E04B 1/76,
E04B 1/82, E04B 2/74
Language of the proceedings: EN

Title of invention:

Dividing wall element for room partitions and the like with a filling of heat insulating material, especially mineral wool

Patentee:

SAINT-GOBAIN ISOVER

Opponent:

ROCKWOOL INTERNATIONAL A/S

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Relevant legal provisions (EPC 1973):

-

Keyword:

"Admissibility of late filed evidence and submissions - no"
"Novelty and inventive step - yes"

Decisions cited:

-

Catchword:

-



Case Number: T 0179/10 - 3.2.03

DECISION
of the Technical Board of Appeal 3.2.03
of 2 December 2011

Appellant: ROCKWOOL INTERNATIONAL A/S
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Representative: Wanischek-Bergmann, Axel
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Respondent: SAINT-GOBAIN ISOVER
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
25 November 2009 concerning maintenance of
European patent No. 1446537 in amended form.

Composition of the Board:

Chairman: U. Krause
Members: E. Frank
K. Garnett

Summary of Facts and Submissions

- I. The appeal lies from the decision of the Opposition Division, dated 9 September 2009 and posted on 25 November 2009, to maintain the European patent No. 1 446 537 in amended form according to auxiliary request I (filed as auxiliary request II with Proprietor's (Respondent's) letter of 4 August 2009) pursuant to Article 101(3)(a) EPC.
- II. The Appellant (Opponent) filed a notice of Appeal on 22 January 2010, paying the appeal fee on the same day. The statement of grounds of appeal was submitted on 23 March 2010.
- III. A communication pursuant to Article 15(1) RPBA was issued after a summons to attend oral proceedings, which were duly held on 2 December 2011.
- IV. The Appellant requested that the decision under appeal be set aside and the patent be revoked.

During the oral proceedings, the Respondent withdrew its then auxiliary requests leaving, as its sole request, a request that the appeal be dismissed.

- V. The wording of claim 1, as maintained by the Opposition Division, reads as follows:

"1. A dividing wall element for room partitions and the like, made up of at least two outer skins (2, 3), especially gypsum plaster boards, arranged at a certain distance from each other, and a filling of heat insulation material (4, 5, 6), especially mineral wool,

arranged in the hollow space between the outer skins (2, 3) where the filling of heat insulation material between the outer skins (2, 3) is structured into several insulating layers that are differently specified as far as their heat insulation, sound absorption and/or elastic properties are concerned, characterized in that at least one inner (5) of the insulating layers of the filling of heat insulating material, having a porous and/or open structure, in contact with a further (4, 6) of the insulating layers of the filling of heat insulating material adjacent to one of the outer skins (2, 3) is designed to possess such good elastic properties and is arranged oversize between the outer skins (2, 3) or the neighbouring insulating layers (4, 6) of the filling of heat insulating material, so that the inserted inner layer is compressed and will build up restoring forces so that said insulating layer/layers (4, 6) consisting of mineral wool adjacent to the outer skin/skins (2, 3) are permanently pressed against the outer skin/skins (2, 3), wherein the filling consist of mineral wool."

VI. The following evidence has been considered for the purposes of the present decision:

E12 = DE 101 47 831 A1, published 19 September 2002;

E31 = DE 201 09 037 U1;

E35 = US 4 306 396 A;

As filed with Appellant's grounds of appeal:

E36 = Isover brochure "Lo Maximo en tabiques" (and translation into English);

- E37 = Excerpt from daily "La Vanguardia" page 29, dated 12 March 1998 (and translation into English);
- E38 = Announcement "BOE num 72" of the Ministry of Transport and Public Works, Miércoles, pages 9.985 to 9.987, 25 March 1998 (and translation into English);

Offer of Mr. Tricas as a witness to prove the public availability of E36;

VII. The parties submitted the following arguments:

VII.1 Late filed documents and submissions

- (a) The Appellant argued that document E35 related to a multi-layer partition wall and had been admitted by the Opposition Division as being relevant. The material properties of the described wooden fibres were quite similar to those of mineral wool. Moreover, E36 to E38 were available to the public and *prima facie* relevant, since in particular on page 5 of E36's English translation, an "ACUSTIVER R" mineral wool layer was described as being inserted oversized between spaced metal uprights, each face of it being resiliently pressed against the outer plasterboard sheets of the wall element. Therefore, E35 and E36 to E38 should be admitted to the proceedings. As to the amendments of the main request the Appellant submitted that the wording "a further of the insulating layers of the filling" of claim 1 now encompassed a filling of up to five layers, which was not derivable from the application as filed, and also the term "insulating material" in the characterising

portion of claim 1 was not originally disclosed. Moreover, with respect to inventive step, the sound and heat damping properties of relatively light weight mineral wool of claim 1 would have been obvious from documents E28 or E29, if document E31 formed the closest prior art.

- (b) The Respondent argued that E35 was late filed and, albeit admitted into the proceedings by the Opposition Division, its multi-layered structure was not *prima facie* relevant, since no pre-stressed oversized layer and no filling entirely consisting of mineral wool was derivable from E35. Moreover, the public availability of E36 was disputed, and on page 5 of its English translation no oversized compressed elastic mineral wool layer, let alone a plurality of filling layers, was disclosed. Thus, E36 was not highly *prima facie* relevant, as required at that late stage of the proceedings. E35, and E36 to E38, therefore, should not be admitted. As for the Appellant's objection of extended subject-matter, this had been raised for the first time during the appeal proceedings, and also should not be admitted into the proceedings by the Board. Furthermore, E28 and E29 had never been addressed in the appeal proceedings before.

VII.2 Novelty

- (a) The Appellant argued firstly that the dividing wall element of document E31 deprived claim 1 of novelty, since in particular the sound and heat insulating layer embodiment of lightweight

concrete described on page 4 of E31, constituted an implicit disclosure of a further mineral wool layer of the wall element's filling according to claim 1 of the patent. The material properties of E31's lightweight concrete, ie its bulk density, porous pumice aggregate material and synthetic binder corresponded to relatively lightweight porous rock wool, ie mineral wool, which was also made of binder and volcanic ash. Secondly, if the patent's priority could not be validly claimed, the sound and heat insulating dividing wall element of document E12 had also to be taken into consideration. As could be gleaned from figure 1 of E12, after a first mineral wool layer ("*Bereich 7*") had been installed between two spaced C-profiled uprights behind the first facing of the element, a second mineral wool layer ("*Bereich 8*") was arranged on the outsides of the flanges of adjacent C-profiles, and would then be screwed to the profiled uprights, together with the second facing. According to column 7, lines 50 to 51 of E31, the inherently elastic second mineral wool layer, although not being prone to too great compression, was however compressed during assembly. In this way, restoring forces caused by its oversize prior to its being fixed onto the profile flanges were built up. Since claim 1 did not define any particular strength of the restoring forces, E12 inevitably disclosed that the second (ie, the at least one inner) elastic layer ("*Bereich 8*") permanently presses the first (ie, the further) layer ("*Bereich 7*") of the filling against the first facing of E12's wall

element. Therefore, claim 1 also lacks novelty over E12.

- (b) The Respondent submitted that E31's description of aggregate material, also in the form of lightweight concrete, neither explicitly nor implicitly disclosed panels, ie layers, of mineral wool, and also good heat insulating properties were not derivable therefrom. As for E12, this document clearly suggested that the fixing screws of the wall element's second mineral wool layer ("*Bereich 8*") were dimensioned so that their unthreaded shaft portion corresponded exactly to the layer's material thickness, ie to the distance of the second facing to be kept from the profile flanges. Moreover, the second mineral wool layer had high bulk density and, therefore, even if such a layer comprised some compressibility, no restoring forces whatsoever could be built up, since its mineral wool fibres broke when being compressed. Thus, no teaching was derivable from E12 that the described minor compressions built up restoring forces of the second layer ("*Bereich 8*"), much less that the first layer ("*Bereich 7*") thereby was permanently pressed against the first facing of the wall element. Therefore, claim 1 was novel over E31 and, if it had to be considered, also over E12.

VII.3 Inventive step

- (a) The appellant argued that starting from the "mass-spring-mass" system of E31, the subject-matter of claim 1 differed there from only in that E31's

further layers of aggregate material ("*haufwerksporiges Material*") were replaced by mineral wool layers. Since the aggregate material layers of E31 had to be considered extremely heavy and difficult to handle because of their described high specific weight, the problem to be solved by this distinguishing feature could be seen in the facilitation of the wall element's assembly. Faced with this problem and based on his common technical knowledge, the skilled person would search for lighter material whilst maintaining the layer's good sound insulation properties, which would directly lead to the replacement of E31's aggregate material by mineral wool of the lowest possible specific weight. For instance, E12 gave generally known information on different bulk densities of mineral wool. Even if it was asserted that E31's sound attenuation was not attributable to a "mass-spring-mass" system in the case of provision of heavy aggregate material, a "mass-spring-mass" damping system in any event was formed according to the embodiment of lightweight concrete layers. Since the bulk density of lightweight concrete was known to be as low as 350 kg/m^3 in the art, it would be immediately apparent to the skilled person that such low bulk densities were also common for mineral wool, see, eg, E12. The lightweight concrete layer of E31's embodiment thus would readily be replaced by a mineral wool layer, without the need of inventive skill. Furthermore, a suitable starting point was the partition wall of document E35. The subject-matter of claim 1 differed from this disclosure merely in that further layers of the filling were

formed of mineral wool rather than agglomerated wooden fibres. Thus, faced with the problem of fire protection, the skilled person would replace these layers by generally known mineral wool layers, thus also to arrive at the subject-matter of claim 1. Hence, the subject-matter of claim 1 lacked an inventive step in the light of documents E31 and E35.

- (b) The Respondent replied that E31 did not teach a "mass-spring-mass" system, due to the infinite high mass of further layers of heavy aggregate material. In fact, the sound-dampening principle of E31 was invariably realised by means of massive layers of aggregate material, also in context with the preferred use of lightweight concrete, which might have a bulk density of up to 1000 kg/m³. Hence, there was no incentive for the skilled person to deviate from that damping principle and to foresee a filling entirely made up of mineral wool as required by claim 1 of the patent. As for document E35, this partition panel was irrelevant, since no oversized inner layer of the panel's filling in order to press a further layer against the outer skin was taught, but rather, binding straps to be locked around the filling, cf. figures 1 to 5. Therefore the subject-matter of claim 1 involved an inventive step.

Reasons for the Decision

1. The appeal is admissible.

2. *Admissibility of late filed evidence*

2.1 Document E35 was filed after expiry of the opposition period. The Opposition Division however held that E35 was *prima facie* relevant and thus decided to admit E35 into the proceedings in its discretion, based on the Appellant's argument that an inner layer of E35's partition wall was in state of compression between two further layers such as to build up restoring forces against the outer skins: cf. decision of the Opposition Division, point 2.2.6, and the minutes of the oral proceedings before the Opposition Division, point 4.1.3. The question for the Board is not whether it would have exercised such discretion in the same way, but whether the Opposition Division exercised its discretion according to the correct principles. The basis on which the Opposition Division exercised its discretion, ie having regard to the *prima facie* relevance of E35, was not criticised by the Respondent, and thus the decision on this point is not open to objection.

2.2 As to documents E36 to E38 the Board notes that, even assuming the brochure E36 had been publicly available, and the insertion of "ACUSTIVER R" glass wool into the metal structures after cutting it to the total height of the partition would in fact build up restoring forces due to the oversize of the inserted panel (cf. E36; pages 4 and 5 of the English translation, and tables and figures), E36 *prima facie* would not be more relevant than the disclosure of document E31, where a compressed single glass fibre mat ("*Zwischenschicht 5*") is already described (cf. E31; page 9, first paragraph, and figure 1). Moreover, E36 would teach away from the provision of a plurality of glass wool layers, ie from

several insulating layers consisting of mineral wool as required by claim 1 as requested.

Therefore the Board exercised its discretion under Article 12(4) RPBA not to admit the late filed documents E36 to E38 into the proceedings, and not to hear the evidence of Mr. Tricas as to the public availability of brochure E36.

3. *Admissibility of late submissions*

3.1 Although documents E28 and E29 were filed with the Appellant's notice of opposition, they had never been addressed in the written stage of the appeal proceedings. The Appellant's argument that, starting from document E31, the choice of sound and heat damping properties of mineral wool of low specific weight would have been obvious in the light of E28 or E29, was raised for the first time during oral proceedings. According to Article 12(2) RPBA, the statement of grounds of appeal and the reply should contain a party's complete case and, in the exercise of its discretion under Article 13(3) RPBA, the Board decided not to allow the Appellant to amend its case in this way at such a late stage of the proceedings.

3.2 The Appellant's argument concerning whether or not the wording "a further of the insulating layers of the filling" in the characterising portion of claim 1 was originally disclosed, was not only different from the objections of added subject-matter raised during the opposition proceedings (cf. decision of the Opposition Division, point 2.1; and minutes of the oral proceedings before the Opposition Division, point 3)

but was also only raised for the first time during the oral proceedings before the Board. This new submission of the Appellant amounted to a fresh case. Furthermore, the Appellant's argument, raised in the opposition proceedings that "insulating material" in the characterising portion of claim 1 was not derivable from the application as filed (cf. decision of the Opposition Division, point 2.1.4; and minutes of the oral proceedings before the Opposition Division, page 2, last paragraph) was not mentioned again until the oral proceedings before the Board.

Once again, therefore, the Board exercised its discretion not to allow the Appellant to amend its case by bringing these Article 123(2) EPC objections into the proceedings at such a late stage: Article 13(3) RPBA.

4. *Novelty*

(Article 54 EPC)

- 4.1 According to the wording of claim 1 of the patent, one of the insulating mineral wool layers of the dividing wall element's filling is oversized and possesses sufficiently good elastic properties that, when arranged between the outer skins of the wall element during assembly, this elastic layer is compressed and builds up restoring forces, so that further insulating layer(s) between the elastic layer and the outer skin(s) are permanently pressed against the outer skin(s). Contrary to the Appellant's view, this functional feature of claim 1 requires a restoring force deliberately applied and invariably sufficient to press the further layer(s) against the outer skin due to

appropriate oversize arrangement of the elastic inner layer, but not any restoring force accidentally built up by arbitrary compression of an (elastic) inner layer. The Board notes that, according to the description, the restoring force of claim 1 thus permanently provides an oscillation coupling between the outermost insulating layer(s) and the outer skin(s) of the wall element. See patent, paragraph [0006] and in particular paragraph [0012], lines 7 to 19.

- 4.2 The parties agreed that document E31 relates to a sound-damping multi-layer element ("*Schichtenaggregat*"), which may form a dividing wall element, that is, a wall element designed for room partitions usually not bearing a static load. This element is made up of two outer skins and a filling therebetween, which filling comprises at least one inner layer and an intermediate layer. The intermediate layer consists of compressible, preferably resilient, mineral wool ("*zweckmäßigerweise federnde Zwischenschicht 5 aus Mineralwolle*"). During assembly, all layers of the filling are pressed together when being fitted between the two outer skins and, because of the oversize arrangement ("*mit der Maßgabe zusammengepresst*"), the intermediate layer of mineral wool will be compressed and pre-stressed to permanently press the at least one inner layer of aggregate material ("*Innenschicht(en) aus haufwerksporigem Material 3,4*") against one of the outer skins, such as plasterboards ("*Außenschichten 1,2 aus der Gruppe Gipskarton-platten, ...*"): cf. E31, page 1, line 27 to page 2, line 23; page 3, lines 20 to 26; and figures 1 and 2.

The subject-matter of claim 1 of the patent, however, also requires that all layers of the filling are both heat insulating and consist of mineral wool. As argued by the Respondent and accepted by the Board, E31's description of an inner layer of aggregate material ("*haufwerksporiges Material*"), in particular formed by a light-weight concrete layer ("*innenschicht(en) aus Leichtbeton*") which may comprise (porous) pumice as aggregate and cement or synthetic material as binder, does not include an implicit disclosure of a mineral wool layer: cf. E31, page 3, line 28 to page 4, line 12. Mineral wool, as a furnace product based on spun molten glass or rock, is known to the person skilled in the art to be fundamentally different from cured light-weight concrete.

The thermal insulation properties of E31's at least one inner layer of aggregate material can in fact be implicitly attributed to its embodiment of light-weight concrete comprising pumice, as argued by the Appellant. The dividing wall element of claim 1 therefore in any event differs from E31's disclosure in that all layers of the filling between the outer skins consist of mineral wool instead partly of cured aggregate material.

- 4.3 As to the discussion of novelty with respect to the disclosure of document E12, reference is made to point 6 of this decision. A heat and sound insulating dividing wall element ("*Gebäudewand, insbesondere eine Ständerwand*") made up of mineral wool ("*insbesondere Steinwolle und/oder Glaswolle*") between two outer skins, eg, facings in the form of plasterboards ("*Verkleidung,*

vorzugsweise in Form von Gipskarton-platten"), is described by E12: cf. paragraph [0001].

This wall element is supported by means of spaced sheet metal upright profiles ("*Stützgerüst aus Blechprofilen*"), particularly C-shaped ("*C-förmige Profile 2*"). After the first facing has been fixed to one side of two previously installed C-shaped upright profiles, mineral wool elements ("*Dämmstoffelemente 6*") are mounted, thus entirely filling the cavity between the facings' predetermined horizontal separation to obtain good sound and heat insulation. In particular, these mineral wool elements consist of two different layers, one of which is slid in sideways between the two small flanges of one of the two vertical C-profiles until it abuts against the first facing's surface, whereas the second layer will be vertically positioned on the outsides of the small flanges of two adjacent C-shaped upright profiles, prior to its being finally screw-fastened onto the flanges together with the second facing of the wall element: cf. E12, paragraphs [0004],[0012],[0019] and [0020]; and figure 1.

However, the Board shares the Respondent's view that E12 teaches the installation of both layers of the mineral wool element ("*Dämmstoffelement 6*") in an uncompressed state between the two facings of the wall element. To this end, the first layer fits precisely between two adjacent C-profiles ("*Bereich 7*") and, solely to facilitate sliding in between the small profile flanges at one side, it is somewhat compressible. Moreover, the second layer ("*Bereich 8*") has reduced compressibility due to increased mineral wool bulk density to provide sufficient stability

during assembly of the wall element. Apart from its compressive rigidity, first and foremost a particular kind of fixing element ("*Befestigungselemente 17*") for attachment of the second mineral wool layer without oversize is suggested by E12. An unthreaded shaft portion ("*Schaft 18*") of the fixing elements ensures mounting of the second facing at a certain separation from the upright C-profiles ("*Abstand 16*"), which separation corresponds exactly to the material wall thickness of the second layer of rigid mineral wool ("*Bereich 8*"). Thus, when the second layer is being screwed onto the outside portions of the profile flanges together with the second facing, an unacceptable compression of the second mineral wool layer ("*Bereich 8*") is prevented, and the second facing will never come into contact with the upright C-profiles, resulting in an improvement of sound and (or) heat insulation: cf. E12, paragraphs [0015], [0020],[0023],[0038],[0039],[0041], [0044] and [0045]; and figures 1 and 3.

Therefore, even if a middle portion of the second mineral wool layer's ("*Bereich 8*") surface accidentally were to exert some load on the first mineral wool layer ("*Bereich 7*") when being screw fastened (something which is, in the Board's view, highly unlikely because the second layer ("*Bereich 8*") is rigid and fixedly abuts two metal uprights during assembly (cf. E12; figure 1)), such an effect moreover had to be caused by only minor compression of the rigid second layer, which would be even less technically meaningful to the skilled person. Furthermore, although minor compression of the second layer might sometimes occur as argued by the Appellant (cf. E12; column 7, lines 50 to 52), this

is however unintended, since E12 invariably suggests arranging the second layer in an uncompressed state as possible, ie without oversize between the uprights and the second facing, since unacceptable compression of the second layer's material thickness is prevented *expressis verbis* by the corresponding length of an unthreaded shaft portion of E12's fixing element (cf. E12; paragraph [0023]). Hence, contrary to the Appellant's view, E12's teaching does not directly and unambiguously disclose a deliberate (or inevitable) provision of an oversized second mineral wool layer (within the "*Bereich 8*"). Even more, it does not disclose an appropriate oversize arrangement in connection with a second mineral wool layer's good elastic properties, such that, when being compressed after assembly, restoring forces will be built up by this second layer (within the "*Bereich 8*"), which will always remain sufficient to press the first layer ("*Bereich 7*") against the first facing as required by claim 1 of the patent. See point 4.1 of this decision.

- 4.4 Novelty of claim 1 over the remaining known prior art was not disputed by the Appellant, and is also acknowledged by the Board.

Therefore the subject-matter of claim 1 meets the requirements of novelty.

5. *Inventive step*
(*Article 56 EPC*)

- 5.1 The Board agrees with the parties that document E31 can be considered the closest prior art, since it describes a dividing wall element, which provides an effective

sound attenuating arrangement of filling layers due to a compressed inner mineral wool layer ("*Zwischenschicht 5*"), which permanently presses further layers ("*Innenschichten aus haufwerksporigem Material 3,4*") against the outer skins. See E31: page 7, lines 8 to 19, page 9, first paragraph, and figure 1. As discussed under point 4.2 of this decision, the subject-matter of claim 1 differs from E31's disclosure in that the further layers adjacent to the outer skins consist of mineral wool instead of aggregate material, ie the filling entirely consists of mineral wool.

In the Appellant's view, the problem underlying this distinguishing feature is to facilitate the assembly of E31's wall elements, since the specific weight of their further layers' aggregate material (between 1000 and 2000 kg/m³) must be considered exceptionally high and, therefore, E31's wall elements are heavy and unwieldy. See E31: page 4, lines 12 to 20.

However, irrespective of whether or not the acoustic sound-damping principle derivable from E31 actually constitutes a "mass-spring-mass" system as argued by the Appellant, the Board shares the Respondent's view that, throughout E31, sound-damping is invariably achieved by means of massive further layers of aggregate material having high specific weight. Contrary to the Appellant's view, this is likewise suggested in the context of lightweight concrete, since E31 provides no information on its specific weight, other than that given for the aggregate material, cf. E31: page 3, line 28 to page 4, line 20.

Hence, starting from the advantageous sound-damping properties taught by E31, which are based on the principle of high specific weight of layers ("*Innenschichten 3,4*") of aggregate material ("*haufwerksporiges Material*"), the skilled person would not get any motivation, based on his ordinary common technical knowledge or the available prior art, to deviate from this concept and to replace these massive layers by relatively lightweight materials such as mineral wool layers if he wished to facilitate assembly of E31's wall elements. He would thus not arrive at the subject-matter of claim 1.

5.2 Finally, in the view of the Board, document E35 cannot form a suitable starting point for the assessment of inventive step as argued by the Appellant, since firstly the filling layers of the described partition panel are held under compression stress by means of binding straps "9", instead of being held under compression between the outer skins due to an oversized elastic layer of the filling as required by claim 1 of the patent. The previously strapped filling layers of E35 are eventually bonded to the outer skins, which are formed by external lining layers "5a, 5b". See E35: abstract; column 2, lines 36 to 43; column 3, lines 49 to 59; and figures 1 to 5. Secondly, the filling of E35's wall element again does not consist entirely of mineral wool, but also of agglomerated wooden fibres: see E35, column 4, lines 29 to 37. Thus, the Board does not consider document E35 to be relevant with respect to the subject-matter of claim 1.

5.3 The subject-matter of claim 1 therefore complies with the requirements of inventive step.

6. *Right of priority*

The Board considered the case on the basis that the Appellant was given the benefit of doubt about the priority issue, but even on this basis the main request of the Respondent fulfils the requirements of novelty and inventive step. The question of whether priority of the patent can be validly claimed, therefore, does not have to be decided.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

D. Hampe

U. Krause