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Datasheet for the decision of 1 June 2021

Case Number: T 0179/18 - 3.2.03

Application Number: 06754306.6

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Language of the proceedings: EN

Title of invention:
FLOOR PROVIDED WITH STRUCTURAL JOINT

Patent Proprietor:
Hengelhoef Concrete Joints NV

Opponents:
HSD Industriebeläge GmbH
Peikko Group Corporation

Headword:

Relevant legal provisions:
EPC Art. 56, 123(3)
RPBA Art. 12(4)

Keyword:
Inventive step - (no) - secondary indicia - commercial success (no) - technical prejudice in the art (no) - long felt need (no) - bonus effect
Late-filed request - admitted (no)

Decisions cited:
T 0779/02, T 1165/10, T 0301/11, G 0010/91

Catchword:

Europäisches Patentamt
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Office européen des brevets

Beschwerdekammern

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Case Number: T 0179/18 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 1 June 2021

Appellant: (Patent Proprietor)	Hengelhoef Concrete Joints NV Hengelhoefstraat 158 Zone B1 3600 Genk (BE)
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Respondent: (Opponent 1)	HSD Industriebeläge GmbH Klosengartenstrasse 32 50374 Erftstadt (DE)
Representative:	btb IP Bungartz Baltzer Partnerschaft mbB Patentanwälte Im Mediapark 6A 50670 Köln (DE)
Respondent: (Opponent 2)	Peikko Group Corporation Voimakatu 3 15170 Lahti (FI)
Representative:	Boco IP Oy Ab Itämerenkatu 5 00180 Helsinki (FI)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 17 November 2017 revoking European patent No. 2027340 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairwoman	E. Kossonakou
Members:	B. Goers
	C. Donnelly

Summary of Facts and Submissions

I. European Patent No. 2 027 340 (hereafter: "the patent") relates to an industrial floor with a number of slabs provided with structural joints which comprise two profile elements each being integral with one of the slabs.

II. The opposition division's decision, dated on 17 November 2017 and revoking the patent on the ground of Article 100(a) EPC in conjunction with Article 56 EPC, was appealed by the patent proprietor (hereafter: appellant).

III. With the consent of the parties, oral proceedings before the Board were held on 1 June 2021 by video conference using the Zoom platform.

IV. At the end of the oral proceedings, the parties confirmed the following requests:

The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted or alternatively that the patent be maintained on the basis of one of the sets of claims filed as auxiliary requests 2 and 3 with the statement of the grounds of appeal. Auxiliary request 1 was withdrawn.

Both opponents 1 (HSD Industriebeläge GmbH) and 2 (Peikko Group Corporation) (hereafter: respondents 1 and 2) requested that the appeal be dismissed.

V. The following prior art documents are relevant to the decision:

(a) Submitted with the notice of opposition

D1: US 6,558,071 B1;
D2: DE 35 33 077 A1;
D4: DE 37 35 687 A1;
D5: AT 113 488 B;
D6: US 4,332,504;
D7: JP 08-239803;
D8: BE 1 015 453 A3 ;
D9: DE 1 959 941 U;
D10: DE 20 2005 008 762 U1;
D12: FR 2 785 632 A1;

(b) Submitted with the statement setting out the grounds of appeal:

Annex 1: Cziesielski, E.(ed.), "Lehrbuch der Hochbaukonstruktionen", 1997, pages 632, 633, 744;
Annex 2: Scharping, P., "Normengerechte Ausführung von Belagstrennfugen, Rand und Anschlussfugen im Innen- und Außenbereich", Estrichtechnik & Fußbodenbau, 2005, pages 7 to 10;
Annex 3: "Concrete floor slabs on grade subjected to heavy loads", Department of the Army and the Air Force, Technical Manual TM 5-809-12 and AFM 88-3, 1987, pages 5-10 and 5- 11;
Annex 4: "Joints in Concrete Construction", ACI 22 4. 3R-95 , 2001, page 224. 3R-20;
Annex 5: Nawy, E. G.(ed.), " Concrete Construction Engineering Handbook", 2008, chapter 17;
Annex 6: "Guide for Concrete Floor and Slab Construction", ACI 302.1R-04 , 2004;
Annex 7 : "Concrete industrial ground floors", Concrete Society Technical Report No.34, 2013, chapter 11;
Annex 15: Van Riet, N., "Evaluation of whole body

vibrations when passing concrete joints with material handling equipment", Sirris, 2010;

Annex 16: "Darstellung der Kraftverläufe infolge Radlasten im Fugenbereich für unterschiedliche Fugenarten", Roxeler Ingenieurgesellschaft;

Annex 17: "Fugenausbildung für ausgewählte Baukörper aus Beton", DBV-Merkblatt, 2011, page 27;

Annex 19: Lohmeyer, G. and Ebeling, K.,"Betonböden für Produktions- und Lagerhallen: Planung - Bemessung - Ausführung", 2012, page 129;

Annex 23: "Belastungsprüfungen an Musterplatten zur Feststellung der Leistungsfähigkeit der Sinus-Fuge mit und ohne Dübel", Roxeler Baustoffprüfstelle, Untersuchungsbericht Nr. 040180-17, 18 July 2017, 21 pages.

VI. Claims

(a) Claim 1 in accordance with the main request reads as follows (feature numbering added in "[]"):

"[1.1] *A floor for fork lift trucks or other transport means, composed of a number of slabs of moldable material having a circumference which is provided with structural joints comprising two profile elements each being integral with one of the edges of the two adjacent slabs*
[1.2] *of the type in which*
[1.2.1] *one of the joint profile elements has a vertical flange provided with a horizontal groove*
[1.2.2] *for accommodating a horizontal flange*
[1.2.3] *connected to the vertical flange of the cooperating joint profile element,*
and characterized in that

[1.3] *the top edge of each vertical stem of the profile elements has a undulating shape as seen along the main direction of the joint between two neighbouring slabs.*"

(b) Claim 1 in accordance with auxiliary request 2 has the following amendments made to features [1.1] and [1.3] of the main request (marked in bold and strike through):

"... *two adjacent slabs,* ***each profile having a substantial vertical stem extending at least partially along the edges up to a sharp edge of an upper surface of the slab and***

...
a groove-like separation is formed between *the* ~~*top edge of each*~~ *vertical stem****s*** *of the profile elements* ***wherein the groove-like separation*** *has a undulating shape as seen along the main direction of the joint between two neighbouring slabs.*"

(c) Claim 1 in accordance with auxiliary request 3 has the following features added to feature [1.3] of auxiliary request 2 (marked in bold):

"... *between two neighbouring slabs,* ***such that the wheel of the fork lift truck is always in contact with the upper surface of any of the adjacent slabs.***"

VII. The appellant's arguments relevant to the present decision may be summarised as follows:

(a) Novelty

The subject-matter of claim 1 is novel over each of D10 and 12.

(b) Inventive step - Combination of D8 and D5

The subject-matter of claim 1 is inventive. The skilled person starting from D8 would not consider D5 for the assessment of inventive step without the benefit of hindsight. D5 concerns the technical field of road construction and is primarily focused on expansion joints whereas D8 relates to contraction joints for industrial floors. The teeth disclosed in figures 1 to 3 of D5 are not vertical stems in the sense of feature [1.3]. The embodiment of figures 4 and 5 does not disclose the distinguishing features in a sufficiently clear and unambiguous manner. Further, even when combining the teachings of D5 and D8, the dimensions of the teeth to be added do not match with the dimensions of the horizontal flange, particularly given the usual dimensions of the respective gaps applied in contraction and expansion joints. Therefore, the embodiment resulting from this combination would not function with respect to the vertical alignment and the horizontal load distribution.

(c) Inventive step - Secondary indicia

Up until the filing date of the patent it was common practice to form only straight joints between slabs. This is evident from the common general knowledge as proven by Annexes 1 to 7, 17 and 19. Accordingly, efforts to protect the edges against damage were limited to reinforcing the straight joints. Therefore, the invention overcomes a long-standing technical prejudice that joints between slabs have to be straight.

The long-felt need for the solution according to the invention in industrial flooring was apparent from the marketing success of the appellant's product on the one hand and the subsequent marketing of similar products by the competitors on the other.

The combination of features of claim 1 provided not only the surprising additional technical effect of improved load distribution in comparison to both joints according to D8 and D5 as documented in Annex 16 and 21, but also reduced vibrations as shown in Annex 15. The solution claimed was not the result of a "one-way - street" situation since other alternatives were possible to solve the objective technical problem such as reinforcement of the edges.

(d) Admission of auxiliary requests 2 and 3

The appellant only realized from the appealed decision that the opposition division construed feature [1.3] of claim 1 in such a way, that it could be read onto the embodiment of figures 1 to 3 of D5. The amendments in auxiliary requests 2 and 3 were an attempt to delimit the invention from this embodiment.

VIII. The respondents' arguments relevant to the present decision may be summarised as follows:

(a) Admittance of Annex 1 to 7, 15 to 17, 19 and 21

Annexes 1 to 7, 15 to 17, 19 and 21 submitted with the statement of grounds of appeal are also late filed and should not be admitted into the proceedings.

(b) Novelty

The subject-matter of claim 1 is not novel over the disclosure of any of D10 and D12.

(c) Inventive step - Combination of D8 and D5

The subject matter of claim 1 is obvious from the combination of the teachings of D8 and D5. The respective technical fields from which these documents come are not remote. D5 is a relevant document since neither D8 nor claim 1 of the patent (directed to "*other transport means*") would generally exclude vehicles with pneumatic tyres. D5 explicitly addresses the underlying objective technical problem. Therefore D5 provides the skilled person with a direct hint simply to replace the straight flat irons 3 and 8 of D8 by the undulated flat irons c and c^1 of the embodiment of figure 4 and 5 of D5. The skilled person would modify the profile elements of D8 accordingly without compromising the intended technical functions of the joint by incorporating the features.

(d) Inventive step - Secondary indicia

The secondary indicia are only to be applied in case of doubts. This was not the case here since the problem-solution approach unambiguously leads to the conclusion that there is no invention.

There was further no technical prejudice against non-linear joints between slabs using profile elements as evidenced by numerous documents in the state of the art, such as D1, D2, D4, D6, D7, D8, D10 or D12 which all disclose solutions with undulated joints. Insofar, the skilled person was not limited solely to the

reinforcement of straight line profile elements in view of the technical problem.

It has not been sufficiently shown that the commercial success of the non-linear joints was causally linked to the efforts of the appellant only. The prior art shows that the competitors also considered non-linear joints before the filing date of the patent.

The evidence D15, D16 and D21 brought forward to show an unexpected technical contribution relates solely to a bonus effect resulting from the obvious combination of features of claim 1.

(e) Admittance of auxiliary requests 2 and 3

Auxiliary requests 2 and 3 were filed late without reasoning. The inventive step objection under which the patent was revoked was known since the notice of opposition was filed. At no time in the opposition procedure were auxiliary requests submitted. During oral proceedings before the opposition division the appellant explicitly refused to file further requests when offered the opportunity.

The late amendments submitted in appeal do not rely on features from the granted claims, but are based on the description, which does not comply with the "clear allowability criteria" commonly applied at this stage of the procedure. Furthermore, auxiliary requests 2 and 3 are prima facie not allowable since they do not meet the requirements of Article 123(2), 123(3) and 84 EPC.

Reasons for the Decision

1. Applicable legal provisions

The statement of grounds of appeal was filed before the entry into force of the revised version of the Rules of Procedure of the Boards of Appeal (RPBA 2020) on 1 January 2020. In accordance with the transitional provisions laid down in Article 25(2) RPBA 2020, Article 12(4) to 12(6) RPBA 2020 shall not apply. Instead, Article 12(4) RPBA 2007 applies.

2. Admittance of Annexes 1 to 7, 15 to 17, 19 and 23

The Board does not agree that Annexes 1 to 7, 15 to 17, 19 and 23 are late-filed as alleged by respondent 1. It can be inferred from the file:

- that the appellant originally filed Annexes 1 to 7, 15 to 17 and 19 in the examination proceedings with letters dated 6 January 2015 and 4 February 2015;
- that the appellant referred to Annexes 4 and 6 in its reply to the opposition notices;
- that respondent 2 filed Annex 6 in the opposition proceedings with letter of 28 October 2016, after expiry of the opposition period;
- that the appellant filed Annex 23 in the opposition proceedings with letter dated 31 August 2017, in response to the summons to oral proceedings. The question of the admissibility of Annexes 6 and 23 into the opposition proceedings was neither discussed nor decided upon in the opposition proceedings.

The appellant has re-submitted these documents as evidence of common general knowledge in the technical field of concrete industrial floors at the date of filing the patent (Annexes 1 to 7, 17 and 19), and as evidence of the technical effects of the feature distinguishing the claimed subject-matter from D8 (Annexes 15, 16 and 23).

The Board sees no reason to disregard these documents under Article 12(4) RPBA 2007, because they have been filed in direct reaction to the evaluation of the inventive step of the claimed invention in the decision under appeal, and only serve to substantiate first-instance arguments of the appellant.

3. Construction of feature [1.3]

Feature [1.3] of claim 1 requires that the top edge of each vertical stem of the profile elements has an undulated shape as seen along the main direction of the joint between two neighbouring slabs. How the terms "*vertical stem*" and "*the top edge*" should be construed was a matter of dispute between the parties.

3.1 Feature "*vertical stem having an undulated shape*"

3.1.1 Claim 1 defines that the joint between the slabs comprises two profile elements. Such profile elements are shown in figure 1 as being separated by border line 10. It is further clear from the claims that both profile elements comprise a "*vertical flange*" and a "*vertical stem*". However, the patent does not provide a clear-cut definition of the two features. A distinction between a vertical stem and a vertical flange is also not derivable from figure 1. From paragraph [0018] it can only be concluded that the top view of figure 2

shows that the top edge of each vertical stem has a non-linear, in particular an undulated shape.

3.1.2 On a normal reading, the term "vertical stem" defines an upright elongate object projecting from a surface. However, since the vertical stem referred to in feature [1.3] of claim 1 and the corresponding features of claims 2 and 3 lacks an antecedent in the corresponding claim, the skilled person is left in doubt as to how it is to be construed in the context of the further features of the claim. The skilled person would try to resolve this ambiguity by referring to the description of the patent from which they would understand that the expression "vertical stem" has to be understood as referring to an upright portion of the profile element "*extending at least partly along the edges up to a sharp edge of an upper surface of the slab*" (paragraph 1 of the patent specification), whereby this upright portion does not correspond to the "vertical flange".

This becomes apparent from the joint disclosed in D8 which is incorporated by reference in the patent (paragraphs [0002] and [0014]). D8 discloses profile elements with vertical flanges 4 ("*tôle verticale*") comprising vertical stems 3 and 8 ("*plat continu/ longitudinal*"). Moreover, in light of the technical problem addressed in the patent (paragraphs [0007] to [0011] and [0018]), the skilled person understands that the top edge of the vertical stem forms part of the upper surface of the floor.

3.1.3 Further restrictions such as a defined vertical/ horizontal aspect ratio of the stem or an integral connection with the further parts of the profile elements are not specified in the patent itself, or in D8.

3.2 Feature "the top edge"

3.2.1 The Board construes the term "the top edge" as referring to the complete upper end of the vertical stem and not only to one of the side edges. This is also supported by the use of the definite article. If the feature only related to at least one side edge of the stem the claim language would have used the indefinite article ("**a** top edge").

3.2.2 The "top edge" is not to be confused with "*a sharp edge*" of the slab mentioned in paragraph [0001] of the patent which relates to an edge of the slab which it is intended to be protected from damage by means of the profile elements (see paragraph [0008] of the patent). A corresponding sharp edge ("*arête vive supérieure des dalles de beton*") is also mentioned in D8.

3.2.3 The undulated top edge is only visible from the top view shown in figure 1 of the patent, which shows that the undulations of the top edge extend along both side walls of the vertical stem. The profile elements disclosed in document D9, figure 1, in document D6, figures 9 to 11 or in document D5, figure 4 all show arrangement comprising a vertical stem which has an undulated top edge in the sense of feature [1.3].

4. Whether the subject-matter of claim 1 is novel over D10 and D12 can remain undecided since it is at least not inventive (infra, point 5).

5. Inventive step - Claim 1 of the main request

5.1 Closest prior art, distinguishing feature and objective technical problem

5.1.1 The Board agrees with the parties that D8 is the closest prior art since it discloses an industrial floor comprising the features of the preamble of claim 1. Furthermore, the patent itself relies to a great extent on references to D8 when detailing the embodiments.

5.1.2 As outlined above the profile elements 3 and 8 in the embodiments of D8 can be regarded as vertical stems. However, D8 does not disclose that the top edges of these vertical stems have an undulated shape along the main direction of the joint as required by feature [1.3] of claim 1.

5.1.3 The objective technical problem related to this distinguishing feature is one of how to avoid undesirable damage to the upper circumferential edges of the slabs when the wheel of a vehicle passes over the groove-like separation between two adjacent slabs (see paragraph [0007] of the patent).

Contrary to the opinion of the appellant, the problem is not limited to the smaller and harder wheels of fork-lift trucks, but also encompasses any kind of wheeled vehicle including those with larger pneumatic tyres.

The problem is solved by the distinguishing feature, since the tendency of a wheel to lower into an undulated groove-like separation while passing over it

is reduced since the wheel is always supported by both slabs (patent, paragraph [0018]).

5.2 Combination of documents D8 and D5

5.2.1 The skilled person starting from D8 as closest prior art would consider the teaching of D5. D8 is generally directed to concrete surfaces ("*surfaces en béton*"). It is not apparent that the embodiments or the subject matter of the independent claims of D8 include explicit or implicit restrictions towards "industrial floors" excluding applications such as disclosed in D5.

5.2.2 The appellant argued that D5 is directed to slabs having "true" expansion joints, i.e. wherein the profile elements provide an initial gap when the slabs are cast to allow for expansion under high temperatures, such as encountered in roads which are exposed to direct sunlight. As against this, D8 is directed to slabs of industrial flooring (figure 6) with contraction joints in which the adjacent profile elements are initially mounted without a gap. Therefore the technical concepts are different.

The Board does not agree that these two concepts inherently result in incompatible differences. According to Annex 1, chapter 13.6.1 "Fugenarten", the sole reason to provide a gap (figure 13.16 "Raumfuge") is to provide for specific conditions such as significant temperature changes under which expansion beyond the initial shrinking is expected. The claimed invention is not restricted to any of the two concepts. While paragraph [0009] mentions that a "*groove-like separation*" is formed, it is not specified previously whether this separation is present initially or only after shrinking.

5.2.3 Furthermore, it is not correct that the teaching of D5 is solely focused on road construction applications. D5 is generally directed to floors formed from slabs (see title: "*Belagflächen*") made e.g. from concrete ("*Beton*"). Roads are only mentioned as an embodiment. Both technical fields are furthermore closely interrelated. In Annex 3, which inter alia focuses on floors for fork lift trucks, it is explicitly mentioned that experience gained from roadway construction was useful (chapter 1.4).

5.3 Obviousness in view of the disclosure of D5

5.3.1 The subject matter of claim 1 of the main request is obvious in view of the teaching of D8 in combination with D5 for the following reasons:

- D5 provides a general teaching for joints of floor slabs reinforced by profile elements and subjected to loading by wheels of passing vehicles.
- The solution to the objective problem is directly applicable to the embodiment of D8 without the necessity of any further modification.

5.3.2 D5 provides (see page 1, lines 1 to 13) the general teaching that straight profile elements ("*geradlinige Begrenzungsstreifen*"/ "*Kanteneinfassungen*") for forming an extension groove for slabs ("*Belagsflächen*") should be avoided for use with wheeled vehicles. Instead adjacent profil elements should generally provide matching undulated shapes ("*Verzahnung*") such that a passing wheel is supported at all times by both adjacent slabs. The term "Verzahnung" used in D5 is not limited to teethed plates, but also comprises slabs with intermeshing undulated edges as shown in figure 4.

The technical problem mentioned in D5, line 2 to 6 corresponds to the objective technical problem.

5.3.3 The embodiment of figures 4 and 5 teaches that the problem can be solved by providing undulated vertical profile elements. The Board does not accept the argument of the appellant that the embodiment of figures 4 and 5 is not disclosed in a sufficiently clear and unambiguous manner.

5.3.4 Although it might be argued that the terms used for c, c^1, d and d^1 as profile elements ("*Winkeleisen*") and undulations ("*Zähne*") taken alone are not clear, figures 4 and 5 clearly and unambiguously disclose to the skilled person that the profile elements have undulated vertical parts (flanges or stems) and the concrete is molded such that the undulations are filled. Figure 4 of D5 is at least as detailed as figure 1 of the patent and discloses further anchoring elements (not part of claim 1) in dotted lines.

5.3.5 In view of this teaching, the only modification necessary for the profile elements of D8 is to change the straight shape of vertical stems 3 and 8 in D8 to an undulated profile. Optionally, the adjacent vertical flanges 4 and 9 could also be provided with an undulated shape, although claim 1 does not require that the vertical flanges are undulated too. Further modifications are not necessary.

5.3.6 This modification is within the common practice of the skilled person. This view is further supported by the fact that the patent does not provide a detailed figure of the joint of the invention. The description provides no further information how to construct the vertical stem other than referring to D8 (paragraph [0014]:

"...*the structural joint ... may be of the type described in more detail in ...*[D8]"). Therefore, also the patent relies for details of the embodiment of the profile elements on the skilled person's general knowledge.

5.3.7 Such a modification of the joint of D8 does not inherently result in a widening of the gap such that the vertical alignment means become dysfunctional, as argued by the appellant. The joint can still be mounted such that the groove is initially closed in order to provide a contraction gap as shown in figure 6 of D8. Any arguments of the appellant with respect to typical dimensions of expansion and contraction gaps are thus not relevant.

5.3.8 It is also not relevant that D5 does not provide a means for vertical alignment of the slabs since this feature is not interrelated with the design of the vertical stems. In any case D8 already discloses such an alignment means (figure 6, reference 5 and 10) as an essential feature (claim 1: "*moyens permettant le déplacement horizontal des dalles les unes par rapport aux autres tout en évitant un déplacement vertical entre les bords des dalles*").

5.4 Secondary indicia claimed by the appellant

5.4.1 The appellant also submitted that the following secondary indicia show the presence of an inventive step:

(a) the existence of a technical prejudice in the field of concrete floors against the claimed invention;
(b) the wide commercial success of the invention showing a long-felt need;

(c) the efforts of market competitors to imitate the invention and
(d) the existence of a surprising technical effect achieved by the invention.

5.4.2 The Board is not persuaded that any of the secondary indicia claimed by the appellant confers inventiveness on the subject matter of claim 1. Secondary indicia such as the satisfaction of a long-felt need, the overcoming of a prejudice in the professional world, or economic success, are auxiliary considerations in assessing inventive step. However, in this case, application of the problem-solution approach has led to the clear result that the subject-matter of claim 1 does not involve an inventive step.

5.4.3 Nevertheless, for the sake of completeness, the Board would comment as follows:

(a) The existence of a technical prejudice (indicium a) indicative for a long-felt need has not been sufficiently proven. The filing date of the patent is only three years after the filing date of the closest prior art document D8, which is not considered a long period indicative of a technical prejudice (see T 0779/02, catchword 2, referred to by the appellant). Annexes 1 to 7, 17 and 19 merely document that it was standard practice to form continuous straight joints where concrete slabs meet each other. It may be true that the provision of rectangular slabs with corresponding straight joints for forming large area floors is obvious for reasons of reduced costs and required technical effort (see e.g. Annex 4, chapter 5.2.2). However, none of the cited references provides a teaching that straight joints were considered the only

feasible possibility. The references to cut/sawed joints made by the appellant are not relevant, since in the present case the gap is provided by the profile elements.

Furthermore solutions other than straight joints are commonly known in the prior art. The application of intermeshing profile elements which create an undulated gap as a measure to protect the joint edges from loads resulting from passing vehicles is, in addition to the early teaching of D5, known from various other documents and applied in the art on industrial floors, see for example:

- D2, column 1, lines 44 to 52;
- D6, column 1, lines 42 to 49;
- D9, page 1 and page 5, second paragraph;
- D12, page 2 lines 22 to 26.

(b) Commercial success (indicium b) alone is in principle not to be regarded as indicative of inventive step. The following requirements must first be met: a long-felt need must have been fulfilled and the commercial success must result from the technical features of the invention and not from other influences (e.g. selling techniques or advertising). In the present case, in view of the lack of a long-felt need (see above) the submissions made by the appellant are not sufficient to establish that the wide commercial success is only due to the technical features of the floor as claimed.

(c) With respect to indicium (c), the appellant has merely shown that some similarity exists between the claimed invention and competitors' products.

However, this does not rule out that these products may have been developed to satisfy new market demands. Moreover, in view of the prior art it is not convincing that this development was only made possible due to the invention disclosed in the patent.

(d) The appellant also cited unexpected effects (indicium d) achieved with the invention as evidenced by Annexes 15, 16 and 23. They argued that in addition to the solution to the above discussed objective technical problem the combination of features of claim 1 produced the surprising technical effects of significantly improving the transfer of load from one slab to another during a vehicle's crossing over the joint and of reducing the vibrations.

According to established case law (cf. Case Law of the Boards of Appeal, 9th edition, 2019, I.D.10.8) an additional effect achieved inevitably by the skilled person as the result of an obvious measure without any effort on his part simply represents a bonus effect.

The improved load transfer and the reduction of vibrations are bonus effects inherently resulting from the obvious configuration of the vertical stems with an undulated top edge. Therefore these effects do not confer inventiveness on the obvious solution.

6. Admittance of auxiliary requests 2 and 3

6.1 Article 12(4) RPBA 2007 provides the Board with the discretionary power to hold inadmissible requests which

could have been presented already in the opposition proceedings. This applies in particular to requests which a patent proprietor could have submitted during the opposition proceedings, but deliberately refrained from doing so (see Case Law of the Boards of Appeal, 9th edition, 2019, Chapter V.A.4.1.1, in particular cited decisions T 1165/10, point 1.2 and T 301/11, point 2).

6.2 The appeal procedure is a judicial procedure, separate from the preceding purely administrative opposition procedure, in which an administrative decision of an opposition division is reviewed. Its function is mainly to give the losing party an opportunity to challenge the administrative decision against it and to obtain a judicial ruling on whether this decision is correct (G 10/91, OJ EPO 1993, 420, Reasons point 18) and not to start the opposition anew. Therefore, fallback positions in response to objections raised during opposition have to be brought forward as a direct response where possible.

This was not done in the present case. During the whole opposition procedure no auxiliary requests were filed. It can be inferred from the file that, in the oral proceedings, the appellant has deliberately chosen not to file any amendment after the opposition division had informed the parties of its intention to revoke the patent based on the lack of an inventive step in view of the combined teaching of D8 and D5 (points 26 and 27 of the minutes of oral proceedings before the opposition division). Further in the statement setting out the grounds for appeal, the appellant has not given any reason for submitting auxiliary requests 2 and 3 only at the appeal stage.

6.3 It is also not persuasive that the reasoning in the appealed decision took the appellant by surprise. The appellant argued for the first time during oral proceedings before the Board, that they only realized with the decision, point 3.5.6, that the opposition division had construed feature 1.3 in such a way that the teeth disclosed in D5, figures 1 to 3, were also regarded as being a vertical stem with an undulated top edge.

6.4 However, the opposition division already pointed out in the summons to oral proceedings (points 3.3.1.3 to 3.3.2), that the combination of documents D8 and D5 was a relevant objection to be discussed. The embodiments of D5 were also discussed during oral proceedings before the opposition division, see points 18 to 20 of the minutes. Furthermore the question of how feature [1.3] has to be construed was under dispute since the notices of opposition were filed (see respondent 1, points 1.8 to 1.10). Insofar, an adverse decision based on the combination of D8 and D5 could not be a surprise to the appellant who should have been aware of the necessity to submit respective fallback positions even prior to the oral proceedings before the opposition division.

6.5 In addition both auxiliary requests 2 and 3 lack prima facie relevance. Both have been amended by omitting the restriction that the top edge of the vertical stem has to have an undulated shape. Instead the feature of a groove-like separation between the stems having an undulated shape was introduced. However, the fact that this undulated groove-like separation is formed between the vertical stems does not require that the upper edge of the vertical stems has an undulated shape, too (see also construction of the feature under point 3.).

Instead, solutions as provided in D12, figure 2 could now be read on to this added feature. Due to this replacement by an aliud, the independent claims have been amended in such a way as to extend the protection (cf. Case Law of the Boards of Appeal, 9th edition, 2019, II.E.2.4.13). Therefore, auxiliary requests 2 and 3 are prima facie at least not allowable under Article 123(3) EPC.

6.6 The Board therefore exercises its discretion under Article 12(4) RPBA 2007 such that auxiliary requests 2 and 3 are not admitted into the procedure.

7. As the main request fails due to subject-matter which is not inventive and further requests are not admitted in the proceedings, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairwoman:

C. Spira E. Kossonakou

Decision electronically authenticated