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**Datasheet for the decision
of 13 November 2018**

Case Number: T 1885/15 - 3.2.08

Application Number: 07744701.9

Publication Number: 2022584

IPC: B23C5/06, B23C5/20

Language of the proceedings: EN

Title of invention:
CUTTING TOOL AND CUTTING INSERT

Patent Proprietor:
Mitsubishi Materials Corporation

Opponent:
Sandvik Intellectual Property AB

Headword:

Relevant legal provisions:
EPC Art. 107, 123(2), 123(3), 84

Keyword:

Reformatio in peius - main request, auxiliary requests 1-8 -
admissible (no)

Amendments - allowable (no) - auxiliary requests 9,10,14,15 -
extension beyond the content of the application as filed (yes)
- broadening of claim - auxiliary requests 11,13 (yes)

Claims - clarity after amendment - auxiliary request 12 (no)

Decisions cited:

Catchword:



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Case Number: T 1885/15 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 13 November 2018

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Decision under appeal: **Interlocutory decision of the Opposition**
Division of the European Patent Office posted on
9 July 2015 concerning maintenance of the
European Patent No. 2022584 in amended form.

Composition of the Board:

Chairwoman P. Acton
Members: M. Foulger
C. Brandt

Summary of Facts and Submissions

I. With the decision dated 9 July 2015, the Opposition Division found that the patent in amended form according to the then valid 2nd auxiliary request met the requirements of the EPC.

II. The appellant (opponent) filed an appeal against this decision.

III. Oral proceedings before the Board took place on 13 November 2018.

IV. The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent (patent proprietor) requested that the patent be maintained in amended form according to the main request, or in the alternative, according to one of auxiliary requests 1-15.

V. i) Claim 1 of the main request reads as follows:

"**(1.1)** A cutting insert (20) that is mountable removably on a cutting tool (10), comprising:
(1.2) a front/back-reversal symmetric substantially regular polygonal planar shape having two polygonal faces (21) parallel with each other;
(1.3) a side face (22) which is continuous with the polygonal faces (21) at right angles; and
(1.4) a cutting edge (23) provided on each ridge line between the polygonal face (21) and the side face (22), wherein
(1.4a) the cutting edge (23) includes a main cutting edge (23a) projected onto the side of the regular polygon, and

(1.4b) sub-cutting edges (31a, 31b) that extend from opposite ends of the main cutting edge (23a) so as to incline from the main cutting edge (23a) toward the center of the polygonal face when viewed from the side facing the polygonal face, and

(1.4c) connect the adjacent main cutting edges (23a), **characterised in that**

(1.5) the cutting insert has a substantially regular heptagonal planar shape, having two heptagonal faces (21) parallel with each other and

(1.6) the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to ~~139.34°~~ 139.43° ."

(Feature references in bold added by the Board. Additions over claim 1 as granted are underlined and deletions are struck through.)

ii) First auxiliary request (claim 1 as granted):

Feature 1.6 reads "the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 139.34° ."

iii) Second auxiliary request:

Feature 1.6 modified as follows:

"an angle (θ) formed by two adjacent main cutting edges (23a, 23b) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is larger or equal to 1.43° and less than or equal to 5.43° . ~~the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43°~~ "

iv) Third auxiliary request

Feature 1.6 modified as follows:

"an angle (θ) formed by two adjacent main cutting edges (23a, 23b) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is set to $1.43^\circ \leq \beta \leq 5.43^\circ$, wherein one of the sub-cutting edges (31a) of the cutting edge facing forward in the cutting direction is located at right angles to the axis (O). ~~the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43°~~ "

v) Fourth auxiliary request:

Feature 1.1 modified as follows:

"A cutting insert tool (1020) comprising: a tool body (11) which rotates about an axis (O) thereof; and a cutting insert (20) which that is mountable removably on a cutting tool (10), comprising:

Feature 1.6 modified as follows:

"an angle (θ) formed by two adjacent main cutting edges (23a, 23b) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is set to $1.43^\circ \leq \beta \leq 5.43^\circ$, and wherein:
the tool body (11) is equipped with a mounting seat (13) that retains the cutting insert (20) such that one of the main cutting edges (23a) is directed toward the tip of the tool body (11) and in a radial-outer direction in order to make it work in cutting, one of the sub-cutting edges (31a) is located substantially at right angles to the axis (O) and a corner angle α between said one of main cutting edges (23a) and the axis satisfies a relation $40^\circ \leq \alpha \leq 44^\circ$.~~the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal~~

~~to 135.43°"~~

vi) Fifth auxiliary request:

Feature 1.6 reads "the angle formed by two adjacent sub-cutting edges (31a, 31b) when viewed from the side facing the heptagonal face (21) is larger than or equal to 131.43° and less than or equal to 139.43°."

vii) Sixth auxiliary request:

Feature 1.6 modified as follows:

"an angle (θ) formed by two adjacent main cutting edges (23a, 23b) when viewed from the side facing the heptagonal face (21) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is larger or equal to 1.43° and less than or equal to 5.43°. ~~the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43°"~~

viii) Seventh auxiliary request:

Final feature 1.6 modified as follows:

"an angle (θ) formed by two adjacent main cutting edges (23a, 23b) when viewed from the side facing the heptagonal face (21) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is set to $1.43^\circ \leq \beta \leq 5.43^\circ$, wherein one of the sub-cutting edges (31a) of the cutting edge facing forward in the cutting direction is located at right angles to the axis (O). ~~the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43°"~~

ix) Eighth auxiliary request:

Claim 1 corresponds to the fourth auxiliary request but with the addition "when viewed from the side facing the heptagonal face (21)".

x) Ninth auxiliary request:

Feature 1.6 of claim 1 of the ninth auxiliary request (as found allowable by the opposition division) reads:

"the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43° ."

xi) Tenth auxiliary request:

Claim 1 corresponds to the ninth auxiliary request but with the addition "when viewed from the side facing the heptagonal face (21)".

xii) Eleventh auxiliary request:

Feature 1.6 modified as follows:

"an angle (θ) formed by two adjacent main cutting edges (23a, 23b) when viewed from the side facing the heptagonal face (21) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is larger or equal to 1.43° and less than or equal to 3.43° . ~~the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43°~~ "

xiii) Twelfth auxiliary request:

Feature 1.6 modified as follows "an angle (θ) formed by

two adjacent main cutting edges (23a, 23b) when viewed from the side facing the heptagonal face (21) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is larger or equal to 1.43° and less than or equal to 3.43°. ~~the angle formed by two adjacent sub cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43°"~~

xiv) Thirteenth auxiliary request:

The following part of feature 1.6 has been modified compared to the eighth auxiliary request: "an angle (θ) formed by two adjacent main cutting edges (23a, 23b) is 128.57° and an angle (β) between the sub-cutting edge (31a) and the main cutting edge (23a) is set to 1.43° $\leq \beta \leq \underline{3.43^\circ}$ "

xv) Fourteenth auxiliary request:

Feature 1.6 modified as follows:
"the angle formed by two adjacent sub-cutting edges (31a, 31b) is 131.43° or 135.43° ~~larger than or equal to 131.43° and less than or equal to 135.43°.~~"

xvi) Fifteenth auxiliary request:

Feature 1.6 modified as follows:
"the angle formed by two adjacent sub-cutting edges (31a, 31b) when viewed from the side facing the heptagonal face (21) is 131.43° or 135.43° ~~larger than or equal to 131.43° and less than or equal to 135.43°.~~"

VI. The appellant argued essentially the following:

a) Admissibility of the main request and auxiliary

requests 1-8

These requests were wider in scope than the request found to be allowable by the opposition division and would thus put the appellant in a worse position than if it had not appealed. Thus, according to the principle of prohibition of *reformatio in peius* (cf. G9/92, OJ EPO 1994, 875, headnote), these requests should not be admitted into the proceedings.

b) Admissibility of the ninth auxiliary request

This request did not converge with other requests in the proceedings and should therefore not be admitted.

c) Extension of subject-matter (Article 123(2) EPC) - ninth auxiliary request

The formula used in the attacked decision of $\theta + 2\beta$ to derive the angle between the adjacent sub-cutting edges was incorrect because the two sub-cutting edges were not parallel to the clamping face. As was visible from Fig. 5 of the application, the sub-cutting edge 31b was inclined to the clamping face. This resulted in the angle between the sub-cutting edges not being $\theta + 2\beta$.

Feature 1.2 of claim 1 which required a front/back-reversal symmetry was to be understood in that the insert could be removed, turned round and replaced on the tool. This was shown in Fig. 5 where edge 31a was positioned to the right of edge 31b in the lower portion and to the left in the upper portion.

Paragraph [0035] of the application only specified that sub-cutting edge 31a and the corner R edge 30 were formed parallel with the clamping face. Sub-cutting

edge 31b was specifically not mentioned in this context.

Hence, the subject-matter of claim 1 was not unambiguously and directly derivable from the application as originally filed.

d) Admissibility of tenth to fifteenth auxiliary requests

These requests were *prima facie* not allowable and some of them at least offended against the prohibition of *reformatio in peius*. Moreover they were not converging. Hence, these requests should not be admitted.

e) Clarity, extension of subject-matter and extension of protection - tenth to fifteenth auxiliary requests (Articles 84, 123(2) and (3) EPC)

i) Tenth and fifteenth auxiliary requests

Either the addition of the viewing direction did not change the scope of the claim, in which case these request were clearly not allowable for the same reason as the ninth auxiliary request, or this feature was not originally disclosed.

ii) Eleventh, twelfth and thirteenth auxiliary requests

In these requests feature 1.6 has been deleted. In the eleventh auxiliary request it has been replaced by the feature whereby an angle between the sub-cutting edge and the main cutting edge is larger than or equal to 1.43° and less than or equal to 3.43° . This feature defined the angle between one of the sub-cutting edges and the main cutting edge. However to fully replace the

deleted feature it was necessary to define the angle of both sub-cutting edges.

The thirteenth auxiliary request also suffered from this problem. Consequently, these requests infringed Article 123(3) EPC.

The twelfth auxiliary request was not clear. The axis (O) was a feature of the cutting tool and did not have any particular meaning with respect to the cutting insert when viewed in isolation. Thus without the cutting tool and its axis (O), the cutting insert of claim 1 was not clearly defined.

iii) Fourteenth auxiliary request

As claim 1 of this request retained the end points of the range defined in feature 1.6 objected to above, it did not comply with Article 123(2) EPC.

VII. The respondent argued essentially the following:

a) Admissibility of the main request and auxiliary requests 1-8

In the patent as granted there was a typographical error in claim 1 (the angle 139.34° should have read 139.43°). Furthermore, in other jurisdictions there was no concept of *reformatio in peius*. The EPO was there to grant patents and it was in accordance with the principle of equity that these requests should be admitted because they were reasonable attempts to correct the mistake and to protect the invention.

b) Admissibility of the ninth auxiliary request

Claim 1 of this request corresponded to that found allowable by the opposition division, it was only reasonable that it should be defended. This request was therefore admissible.

c) Extension of subject-matter (Article 123(2) EPC)-
ninth auxiliary request

The subject-matter of claim 1 was directly and unambiguously derivable from the application as originally filed.

Fig. 7 showed a view on the corner of the insert. As the insert was a regular heptagon it followed that the angle θ between adjacent main cutting edges was 128.57° (see paragraph [0036]). Additionally, the angle between the sub-cutting edge and the plane at right angles to the axis O was in the range $1.43^\circ \leq \beta \leq 5.43^\circ$ (see paragraph [0041]). The value of $\beta = 3.43^\circ$ was also disclosed in paragraph [0041] so that the range $1.43^\circ \leq \beta \leq 3.43^\circ$ was disclosed. The sub-cutting edge had to be parallel to this plane at right angles to the axis O. The corner 26 was symmetrical relative to the base line S (paragraph [0034] and Fig. 7). Thus, the angle between the sub-cutting edges was $\theta + 2\beta$, i.e. larger than or equal to 131.43° and less than or equal to 135.43° .

The subject-matter of claim 1 was therefore disclosed in the application as originally filed in accordance with Article 123(2) EPC.

d) Admissibility of tenth to fifteenth auxiliary requests

These requests were filed together with the reply to

the grounds of appeal, that is at the earliest possible moment in appeal proceedings.

The appellant had brought forward several different attacks with regard to added subject-matter. As the respondent did not know which, if any, of these would be found to be relevant by the Board, it was only reasonable to allow several auxiliary requests even if they were divergent. The requests should therefore be admitted into the proceedings.

e) Clarity, extension of subject-matter and extension of protection - tenth to fifteenth auxiliary requests (Articles 84, 123(2) and (3) EPC)

i) Tenth and fifteenth auxiliary requests

These requests defined from which viewing angle the angle was measured. Without such a definition the angle would be arbitrary as it would change depending on the position of the observer. These requests attempted to clarify this.

ii) Eleventh, twelfth and thirteenth auxiliary requests

These requests defined the same subject-matter as for the ninth auxiliary request but with an alternative definition which was directly and unambiguously derivable from the application as originally filed.

iii) Fourteenth auxiliary request

As argued above for the ninth auxiliary request, the end points of the range of the angle formed by two adjacent sub-cutting edges were directly and unambiguously disclosed in the application as filed.

Reasons for the Decision

1. Admissibility of the main request and auxiliary requests 1-8

It is established case law of the Boards of Appeal (see G9/92, OJ 1994, 675, Order 2) that an amended claim, which would put the opponent and sole appellant in a worse situation than if it had not appealed, must be rejected except in the situations set out in G1/99, OJ 2001, 381, see Order.

In the current case, the Board considers that the main request and auxiliary requests 1-8 would put the opponent and sole appellant in a worse situation than if it had not appealed. Nor has it been argued that any of the exceptions set out in G1/99 apply. It may well be that these requests are indeed an attempt to correct aspects from the procedure prior to appeal. However, in this case it was open to the proprietor to challenge this by filing an appeal.

Thus, the prohibition of *reformatio in peius* applies in this case and these requests are not admitted into the proceedings as they are neither appropriate nor necessary (G9/92, Order 2).

2. Admissibility of the ninth auxiliary request

Independent claim 1 of this request corresponds to that found allowable by the opposition division. The Board considers that defending this claim is appropriate behaviour on the part of the respondent. The Board therefore admitted this request.

3. Extension of subject-matter (Article 123(2) EPC) - ninth auxiliary request

The respondent argues that feature 1.6, whereby "the angle formed by two adjacent sub-cutting edges (31a, 31b) is larger than or equal to 131.43° and less than or equal to 135.43° ", is derivable directly and unambiguously from the application as originally filed.

It is common ground that the angle mentioned above is not literally disclosed in the application as filed. The respondent argues that the angle between the two main cutting edges is 128.57° (see application, paragraph [0036]) as the insert has a regular heptagonal shape (feature 1.5 of the claim). The application further discloses that the angle β is that between the plane at right angles to the cutting axis and the cutting edge 23B (see Fig. 8 and paragraph [0041]). The angle between two adjacent sub-cutting edges is then $\theta + 2\beta$.

Fig. 7 shows the insert when viewed from the side facing the heptagonal face on the insert. As shown there the insert is linearly symmetrical relative to the base line S (paragraph [0034]). According to paragraph [0035], the sub-cutting edge 31A and the corner R edge 30 are parallel with the clamping face 21. However, as can be seen in Fig. 5, edge 31b is not parallel to the clamping face but is rather inclined. Thus, although in the view represented in Fig. 7 edges 31A and 31b appear to be symmetrical, when viewed from the side (as in Fig. 5) the edge 31b recedes from the clamping surface 21. As argued by the respondent, the angle between the sub-cutting edge 31a and the plane at right angles to the axis O may well be set to $1.43^\circ \leq \beta \leq 3.43^\circ$. However, because of the fact that

the edge 31b recedes away from the clamping surface, it will not hold true for the angle between the edge 31b and the clamping surface.

Hence, the claimed range of angles between sub-cutting edges is not clearly and unambiguously disclosed in the application as originally filed. The subject-matter of claim 1 therefore extends beyond that of the application as originally filed.

4. Admissibility of tenth to fifteenth auxiliary requests

It is correct that the requests do not converge. However in the present case, in order to overcome added subject-matter objections, it is reasonable to expect that the respondent would file diverging requests in order to cover for possible opinions of the Board and also to reply to the objections filed by the appellant. Moreover, the requests were filed with the reply to the grounds of appeal, i.e. the earliest possible moment in appeal proceedings, and according to Article 12(1)b) form the basis of the appeal proceedings. The Board therefore admitted these requests.

5. Clarity, extension of subject-matter and extension of protection - tenth to fifteenth auxiliary requests (Articles 84, 123(2) and (3) EPC)

5.1 Tenth and fifteenth auxiliary requests

These requests differ from the ninth and fourteenth auxiliary requests respectively in that the phrase "when viewed from the side facing the heptagonal face (21)" has been added.

The respondent suggests that looking at an angle from a

different direction actually changes the angle. Whilst an observer's perception of angle may change depending on their point of view, the angle itself, being defined by solid edges of the insert, remains constant. It cannot be the angle when viewed from an arbitrary point because such an interpretation would denude this feature of the claim of any sensible meaning. Thus, the added phrase does not essentially change the interpretation of the claim and hence the subject-matter of claim 1 of these requests extends beyond that of the application as originally filed for the reasons given above for the ninth auxiliary request.

5.2 Eleventh, twelfth and thirteenth auxiliary requests

In these requests feature 1.6 has been deleted. In the eleventh auxiliary request it has been replaced by the feature whereby an angle between the sub-cutting edge and the main cutting edge is larger than or equal to 1.43° and less than or equal to 3.43° . This feature however only defines the angle between one of the sub-cutting edges and the main cutting edge whereas to fully replace the deleted feature it is necessary to define the angle of both sub-cutting edges. Consequently, this request infringes Article 123(3) EPC.

The twelfth auxiliary request includes the feature that an angle formed between a plane at right angles to the axis (O) and the cutting edge is set to $1.43^\circ \leq \beta \leq 5.43^\circ$. The claim however concerns a cutting insert and not the complete cutting tool. The axis (O) does not have a meaning when one only regards the insert. Hence, the claim is unclear (Article 84 EPC).

The thirteenth auxiliary request suffers from the same

problem as the eleventh auxiliary request and therefore also does not comply with the requirements of Article 123(3) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. European patent No. 2022584 is revoked.

The Registrar:

The Chairwoman:



C. Moser

P. Acton

Decision electronically authenticated