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**Datasheet for the decision
of 1 December 2022**

Case Number: T 0011/21 - 3.2.01

Application Number: 12706328.7

Publication Number: 2670552

IPC: B23C5/06, B23C5/22

Language of the proceedings: EN

Title of invention:

MILLING CUTTER WITH A TANGENTIAL CUTTING INSERT

Patent Proprietor:

Iscar Ltd.

Opponent:

AB Sandvik Coromant

Headword:

Relevant legal provisions:

EPC Art. 123(2)

Keyword:

Amendments - main request - extension beyond the content of the application as filed (yes) - intermediate generalisation

Decisions cited:

Catchword:



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Case Number: T 0011/21 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 1 December 2022

Appellant: Iscar Ltd.
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Respondent: AB Sandvik Coromant
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Representative: WSL Patentanwälte Partnerschaft mbB
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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
17 November 2020 concerning maintenance of the
European Patent No. 2670552 in amended form.**

Composition of the Board:

Chairman G. Pricolo
Members: V. Vinci
S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeal filed by the appellant (patent proprietor) is directed against the interlocutory decision of the opposition division to maintain the European patent No. EP 2 670 552 in amended form.

II. In its decision the opposition division found that the ground for opposition under Article 100(c) in combination with Article 123(2) EPC was prejudicial to the maintenance of the patent as granted and decided to maintain the patent in amended form according to the auxiliary request 0 filed during oral proceedings.

III. With the communication according to Article 15(1) RPBA dated 21 March 2022 the Board informed the parties of its preliminary assessment of the case.

Oral proceedings pursuant to Article 116 EPC were held before the Board on 01 December 2022 by videoconference.

IV. The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted (main request).

The respondent (opponent) requested that the appeal be dismissed.

V. Independent Claim 1 as granted reads as follows:

1. *"A milling cutter (52) comprising:*

2. *at least one insert pocket (54) for retaining a tangential cutting insert (10); and*

3. *at least one tangential cutting insert (10), the tangential cutting insert (10) comprising:*

4. *two opposing side surfaces (12) and a peripheral surface (14) extending there between,*

5. *the peripheral surface (14) comprising four identical end surfaces (18), each end surface (18) extending between and adjacent to two end surfaces (18);*

6. *each end surface (18) and each side surface (12) intersect at a major edge (20), at least a portion of the major edge (20) being a major cutting edge (22);*

7. *each end surface (18) and each adjacent end surface (18) intersect at a minor edge (24), at least a portion of the minor edge (24) being a minor cutting edge (26),*

8. *the major cutting edges (22) being longer than the minor cutting edges (26),*

9. *the major cutting edge (22) having first and second major cutting edge sections (22a, 22b);*

10. *each of the major and minor cutting edges (26) of a respective end surface (18) have a rake surface (34) associated therewith in the respective end surface (18), the rake surface (34) extending in a inward direction of the cutting insert (10);*

characterised in that

11. *in a side view of the cutting insert (10) the major cutting edges (22) are concave*

12. *whereby when the cutting insert (10) is mounted in the insert pocket (54) one of the major cutting edges (22) is an operative major cutting edge having operative first and second major cutting edge sections (22a, 22b),*

13. *the first major cutting edge section (22a) having a positive axial rake and the second major cutting edge section (22b) having a negative axial rake; and*

14. *wherein the rake surface (34) extends to an inner end surface (43) of the end surface (18)."*

Reasons for the Decision

MAIN REQUEST: PATENT AS GRANTED

Article 100(c) in combination with Article 123(2) EPC

1. The Board confirms the decision of the opposition division that the ground for opposition under Article 100(c) in combination with Article 123(2) EPC is prejudicial to the maintenance of the patent as granted.
- 1.1 With their appeal the appellant (patent proprietor) contested the conclusion of the opposition division that the omission in feature 13. of claim 1 as granted of the technical effect that the vertical components F_v of the cutting forces acting on the first and second major cutting edge sections of the major cutting edge "*cancel each other out so that the cutting insert is balanced*" resulted in an unallowable intermediate generalisation of the embodiment disclosed on page 9, lines 19-27 of the originally filed application on

which, according to the appellant (patent proprietor), the introduction of feature 13. in claim 1 was based.

- 1.2 The appellant (patent proprietor) argued that the person skilled in the art reading the application as filed and in particular the whole passage on page 9, lines 19-30 with a mind willing to understand directly and unambiguously realized that the balancing of the vertical component of the cutting forces acting on the first and second major cutting edge sections mentioned was presented therein as a mere advantageous, non-mandatory technical effect of the claimed concave design of the major cutting edge which could be achieved only under certain cutting conditions, i.e. when cutting a shoulder in a workpiece. In this respect the appellant (patent proprietor) pointed out that in the originally filed application the use of the milling cutter according to the contested patent was not limited to shoulder cutting operations, but that it was clear to the person skilled in the art that the cutter could be also employed under different cutting conditions where the vertical components of the cutting forces did not necessarily cancel each other out. The appellant (patent proprietor) asserted that the word "*thus*" at the beginning of the second paragraph of the cited passage of page 9 of the original description introducing the technical effect under discussion should not be read, as the opposition division and the respondent (opponent) did, as establishing a direct and inextricable technical link between the concave design of the main cutting edge resulting in the claimed positive and negative rake angles of the first and second major cutting edge sections and the achievement of the balance of the cutting forces, but rather as the mere indication of a potential advantage occurring only under some specific cutting conditions, for example in

the case shoulder cutting, to which however the contested patent was in no way limited. In the appellant's (patent proprietor's) view, this is confirmed by the last passage on page 9, lines 27-30 stating that according to "*some embodiments*" no full balancing of the cutting forces took place. Furthermore, it was put forward that, contrary to the view of the opposition division, balancing of the vertical component of the cutting forces was presented in the originally filed application (reference was made to the last paragraph on page 3 and the first 3 paragraphs of page 4) as the last of four objects to be possibly but not mandatorily achieved by the contested patent. The appellant (patent proprietor) thus concluded that the skilled person, in the light of the technical context of the patent, clearly appreciated that the disclosed balancing of forces was not inextricably linked to the claimed concave design of the main cutting edge allowing for positive and negative rake angle design, and as such could be omitted in claim 1 without infringing Article 123(2) EPC.

- 1.3 The arguments submitted by the appellant (patent proprietor) are not convincing for the following reasons:

The introduction of feature 13. in claim 1 as granted is uncontestably based on the cited passage on page 9, lines 19-27 of the originally filed description describing the cutting insert represented in figure 2, wherein the vertical components of the cutting forces F_v acting on the first and second major cutting edge sections (22a) and (22b) are clearly shown to be balanced. No other embodiment, i.e. an embodiment in which balancing of the cutting force components F_v does

not occur, is disclosed in the originally filed application. The Board concurs with the respondent (opponent) that the person skilled in the art reads the term "*thus*" at the beginning of line 22 of the passage on page 9 of the original description disclosing the force balancing effect as implying that this effect is the direct consequence of the geometry of the major cutting edge described in the paragraph above (see lines 19 to 22) and not, as alleged by the appellant (patent proprietor), as a mere exemplary advantage limited to the specific case of shoulder cutting. Therefore the assertion of the appellant (patent proprietor) that the information relating to the geometry of the major cutting edge given in lines 19 to 22, namely the concave design of the major cutting edge and the positive and negative rake angles formed by the first and second major cutting edge sections respectively, are not mandatorily linked to the technical effect presented in the immediately following paragraph introduced by the word "*thus*" is not convincing. Furthermore, the Board follows the arguments of the opposition division and the respondent (opponent) that the person skilled in the art reading the passage on page 9, line 19-27 directly and unambiguously gather the information that the cutting insert at stake does not only need to be provided with a concave major cutting edges resulting in positive and negative rake angles, but that it must be also potentially suitable, at least under certain cutting condition, for balancing the vertical components of the cutting forces applied. As convincingly argued by the respondent (opponent) this functional requirement is not presented in the cited passage of page 9 of the originally filed description as a mere optional technical effect or advantage which may or may not be achieved depending on the kind of cutting operation to

be performed as asserted by the appellant (patent proprietor), but it rather inherently implies for the person skilled in the art further technical limitations required for achieving, at least under certain cutting condition, balancing of the cutting forces, i.e. a specific mounting orientation of the cutting insert with respect to the axis of rotation of the toolholder (see tilting angle α in figure 2), a minimal total length of the major cutting edge and an appropriate relationship between the lengths of the first and second major cutting edge sections. It is not denied that the milling cutter according to claim 1 as granted may not achieve balancing of the vertical component of the cutting forces under certain cutting conditions, for example in case of a limited cutting depth. However the passage on page 9 directly and unambiguously contains the information that at least under certain cutting condition this technical effect must be achieved. This in turn directly and unambiguously implies the further geometrical and operational limitations presented above which are not reflected in claim 1 as granted. Finally, regarding the statement on page 9 lines 27-30 of the originally filed description also cited by the appellant (patent proprietor) in support of their view, the Board is of the opinion that this statement disclosing the possibility to have the vertical components of the cutting forces "*approximately balanced*" cannot support the subject-matter of claim 1 as granted which covers the undisclosed situation where said components are not balanced at all.

- 1.4 It follows that the omission in claim 1 as granted of the information that the vertical components F_v of the cutting forces acting on the first and second major cutting edge sections of the major cutting edge cancel

each other out so that the cutting insert is balanced results in an unallowable intermediate generalisation as correctly stated by the opposition division in the decision under appeal.

2. In view of the above the Board does not see any reason to deviate from the conclusion of the opposition division that the subject-matter of claim 1 as granted does not meet the requirements of Article 123(2) EPC with the consequence that the main request is not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Voyé

G. Pricolo

Decision electronically authenticated