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**Datasheet for the decision
of 28 April 2022**

Case Number: T 1235/19 - 3.2.01

Application Number: 13150479.7

Publication Number: 2614910

IPC: B23C5/06, B23C5/22, B23C5/20

Language of the proceedings: EN

Title of invention:
A milling tool as well as a milling insert

Patent Proprietor:
Sandvik Intellectual Property AB

Opponent:
Iscar Ltd.

Headword:

Relevant legal provisions:
EPC Art. 52(1), 54, 56

Keyword:
Novelty - main request (yes)
Inventive step - main request (no)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1235/19 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 28 April 2022

Respondent Sandvik Intellectual Property AB
(Patent Proprietor) 811 81 Sandviken (SE)

Representative: WSL Patentanwälte Partnerschaft mbB
Postfach 6145
65051 Wiesbaden (DE)

Appellant: Iscar Ltd.
(Opponent) P.O. Box 11
24959 Tefen (IL)

Representative: Vossius & Partner
Patentanwälte Rechtsanwälte mbB
Siebertstrasse 3
81675 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
13 February 2019 concerning maintenance of the
European Patent No. 2614910 in amended form.**

Composition of the Board:

Chairman G. Pricolo
Members: V. Vinci
A. Jimenez

Summary of Facts and Submissions

- I. The appeals were filed by the appellant (opponent) and the appellant (patent proprietor) against the interlocutory decision of the opposition division to maintain the European patent N° 2 614 910 in amended form.

In its decision the opposition division held that the subject-matter of independent claim 10 as granted and according to the auxiliary requests I and II lacked novelty in the meaning of Articles 52(1) and 54 EPC and that the subject-matter of claim 1 of the auxiliary request III lacked inventive step in the meaning of Articles 52(1), 54 and 56 EPC. The auxiliary request IV filed in the course of the oral proceedings was deemed to meet all the requirements of the EPC and the patent was thus maintained in this amended form. Novelty and inventive step were assessed by the opposition division inter alia in view of document:

D1: WO 2010/023659 A1.

- II. With the communication according to Article 15(1) RPBA dated 12 February 2021 the Board informed the parties of its preliminary assessment of the case.

With the letter dated 10 March 2021 the patent proprietor withdrew their appeal, thereby acquiring the status of respondent in the appeal proceedings.

Oral proceedings pursuant to Article 116 EPC were held before the Board on 28 April 2022 by videoconference.

III. The appellant (opponent) requested that the decision under appeal be set aside and that the European patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed.

IV. Independent claim 8 according to the patent as maintained by the opposition division reads as follows (labelling according to decision under appeal and the written submissions of the parties):

(c) *"Double-sided, indexable milling insert having a round basic shape defined by an imaginary cylinder (CY), which is concentric with a centre axis (C2) and extends between two reference planes (RP), which individually extend perpendicular to the centre axis (C2) and are equidistantly separated from a neutral plane (NP),*

(d) *comprising a pair of opposite chip faces (18), which are located in said reference planes (RP) and between which an envelope surface (19) concentric with the centre axis extends, a plurality of identical and alternately usable cutting edges (20) along the peripheries of the chip faces (18),*

(f) *as well as lock means (28, 29) for rotationally securing the milling insert in one of several predetermined index positions, wherein*

(g) *the individual cutting edge (20) has the shape of a wave trough subsiding from a reference plane (RP), when the milling insert is regarded in side elevation, and includes two edge segments (22, 23), which transform into each other via a bottom point (24) and a primary*

one (22) of which is longer than a secondary one (23) and

(h) falls toward the bottom point (24) at a slope angle (η) that is smaller than an analogous slope angle (θ) at which the secondary edge segment (23) falls toward the bottom point (24),

characterized in that

(k) the cutting edges (20) along one chip face (18) are rotation-angularly displaced at an acute arc angle (A) in relation to the cutting edges along the other chip face, wherein

(j) the primary edge segment of the individual cutting edge has an arc length that amounts to at least 60% and to at most 85% of the total arc length of the cutting edge.

Reasons for the Decision

Novelty: Article 52(1) and 56 EPC

1. The subject-matter of independent claims 1 and 8 of the patent as maintained by the opposition division is novel over the prior art as stated by the opposition division in the decision under appeal.
- 1.1 With their appeal, the appellant (opponent) contested the positive assessment of novelty of the subject-

matter of independent claim 8 only. It was essentially alleged that the milling insert disclosed in D1, besides features (c) to (k), also comprised feature (j) of claim 8 thereby, contrary to the findings of the opposition division, thereby being prejudicial to novelty. In support of this allegation the appellant (opponent) asserted that the various segments of the cutting edge represented in figure 5 of D1, if not even shown in their real length, were at least shown in their real relative proportions. Starting from this assumption the person skilled in the art would have directly and unambiguously derived the information that the primary cutting edge segment (32,34) of the known milling insert was embodied longer than the secondary cutting edge segment (44,50), this resulting in the primary cutting edge segment having an arc length laying between 50% and 100% of the total arc length of the individual cutting edge. The appellant (opponent) further alleged that in view of the proportions depicted on figure 5 the person skilled in the art would have assumed that according to the teaching of D1 the length of the primary cutting edge segment actually laid in a range comprised between about 55% and about 95% of the total arc length of the individual cutting edge. The appellant (opponent) pointed out that the range defined in claim 8 at stake, i.e. 60% to 85%, was a sub-range selected from the broader range derived, as explained above, from figure 5, i.e. 55% to 95%, and concluded that the claimed range could not be considered novel over D1 because none of the two criteria adopted by established Case Law of the Boards of Appeal for assessing novelty of a numerical sub-range with respect to a prior art broader range were met.

1.2 The Board does not follow the arguments submitted by the appellant (opponent) for the following reasons:

It is undisputed that D1 does not disclose any numerical range of the length of the primary cutting edge segment relative to the total length of the individual cutting edge. Despite this the Board agrees with the appellant (opponent) that it can be directly and unambiguously derived from figure 5 that the primary cutting edge segment has an arc length laying somewhere between 50% and 100% of the total arc length of the individual cutting edge. However, the Board is of the opinion that the disclosure of figure 5 is not equivalent to that of a range, as the latter is a teaching that any value between two end values is possible, whereas from figure 5 it can only be inferred that an undefined value greater than 50% and smaller than 100% might be selected, not that any values between these end values should be selected. Nor can it be derived from figure 5 how to select the particular value between 50% and 100%. In any case, the range assumed by the appellant (opponent) in their argumentation on the basis of figure 5, i.e. a length of the primary cutting edge segment between about 55% and about 95% of the total length of the individual cutting edge is speculative and not derivable from the proportions depicted in figure 5 and therefore, as such, cannot be considered directly and unambiguously derivable from this prior art document. It follows that the reasoning of the appellant (opponent) which is based on the unjustified assumption that a relative length of the primary cutting edge segment comprised between 55% and 95% is directly an unambiguously derivable from D1, is moot.

1.3 With their written submission the appellant (opponent) proposed a calculation of the length of the primary cutting edge segment essentially based on the information/dimensions that the person skilled in the art would have allegedly gathered from figure 5. As no further comments have been presented during the oral proceedings in this respect, the Board does not see any reason to deviate from the assessment of this line of arguments provided with the preliminary opinion which is thus hereby confirmed and reads as follows:

Even by assuming as the appellant (opponent) that on the basis of the passages on page 12, lines 14-20 and 23-24 of D1 both portions of the primary edge segment (34) follow a single radius of curvature (i.e. $MR_{11}=MR_{21}$, see figure 5), the calculation of the secondary cutting edge segment carried out by the appellant (opponent) and applied to arrive to their conclusions is incorrect. In fact, in order to calculate the length of the secondary cutting edge segment, the appellant (opponent) assumed that the virtual angle length underlying the straight segment (50), which identifies the secondary cutting edge segment according to claim 8, could be calculated by subtracting the angle portions MP_{11} and MP_{21} from 180° . However, as convincingly argued by the respondent (patent proprietor), this assumption would be correct only if point (38) in figure 5 was located at the intersection point of the individual cutting edge with a 180° extension of a line between point (42) and the center axis (A2). This is however not the case as it can be seen in figure 5. Therefore, the Board concurs with the respondent (patent proprietor) that the uncorrect result of the calculation of the the virtual angular length underlying the secondary cutting edge segment (50) results in a larger and thus wrong total

angular length of the individual cutting edge which also affects the calculation of the relative arc length ratio proposed by the appellant (opponent) and all the conclusions derived therefrom. It follows that, regardless of the contested application of the angle bisector theorem used by the appellant (opponent) for taking into account that the primary and secondary cutting edge segments are not planar but have a wave trough shape, also this reasoning of the appellant (opponent) is moot. Also the further attack of the appellant (opponent) based on the embodiments in figure 15-18 cannot be followed because it presupposes that feature (j) can be directly and unambiguously derived from the embodiment in figure 5 and this is not the case here as explained above.

- 1.4 With their statement of the grounds of appeal and/or the reply to the appeal of the appellant (opponent), the respondent (patent proprietor), while supporting the view of the opposition division that feature (j) of claim 8 at stake was not disclosed in D1, contested the findings of the decision under appeal that features (c), (d), (g) and (h) were disclosed in combination in D1. As no further comments have been submitted during the oral proceedings by the respondent (patent proprietor) in this respect, the Board does not see also in this case any reason to deviate from the assessment of these submissions as presented in the preliminary opinion which is thus hereby confirmed and reads as follows:

Feature(c) "milling insert having a round basic shape"

The Board shares the view of the opposition division and of the appellant (opponent) that the wording of feature (c) of claim 8 "milling insert having a round

basic shape" does not limit the claim to so-called ISO-R type inserts, namely to milling inserts having a perfectly round shape of the cutting edge. Such a limitation cannot be implied by the passages of the description referred to by the appellant (opponent) either since no explicit or implicit reference to the above mentioned ISO standard in association with the milling insert according to the contested patent can be found. The Board also concurs with the opposition division and with the appellant (opponent) that, contrary to the respondent's (patent proprietor's) view, the term in claim 1 "*round basic shape*" is not synonym of "*perfect round shape*", but is rather understood by the person skilled in the art in the context of the patent as merely defining a generally round shape which may include deviations from a perfectly round, i.e. slight local variations of the radius of curvature, flattened portions or the like. This interpretation is also supported by the embodiments in figures 6-9 of the contested patent. Therefore, in the Board's view, the opposition division correctly held that D1 also disclosed a "*milling insert having a round basic shape*" in the meaning that the person skilled in the art would give to this expression. This is also confirmed by the title of D1 which reads: "*Cutting tool and round double sided insert therefor*".

Feature (d): "envelope surface concentric with centre axis"

The Board concurs with the opposition division and the appellant (opponent) that the statement of the antecedent feature (c) of claim 8 that the envelope surface must be concentric with the center axis of the "*imaginary cylinder (CY)*" does not necessarily imply,

unlike the respondent's (patent proprietor's) view, that the envelope surface must be perfectly cylindrical as well. For this reason a generic "envelope surface concentric with centre axis" according to feature (d) is also directly and unambiguously disclosed in document D1 (see for example figures 3 and 15).

Features (g) and (h)

The Board agrees with the assessment of the opposition division that it can be directly and unambiguously derived from the description, page 19, line 24 to page 20, line 11 in combination with figures 14 to 16 of D1 that the milling insert disclosed therein comprises two primary cutting edge segments (132,134) having a first length and two secondary cutting edge segments (144,150) having a second, shorter length, wherein the primary cutting edges and the secondary cutting edges may have the same respective length. Furthermore, contrary to the view of the respondent (patent proprietor), the Board concurs with the opposition division that, based on general geometrical considerations, as the primary and secondary cutting edge segments are continuous and start from the same high end and fall down to a similar bottom point, the slope angle of the primary and longer cutting edge segment must be less than the slope angle of the secondary and shorter cutting edge segment. This is also confirmed by the representation of the slope angles in figure 16. The Board thus agrees with the opposition division and with the appellant (opponent) that features (g) and (h) of claim 8 are implicitly derivable from document D1.

Feature (k)

- 1.5 With their reply to the appeal of the appellant (opponent), the respondent (patent proprietor) put forward that feature (k) of claim 8 could not be directly and unambiguously derived from the figures of D1. In support of their view the respondent (patent proprietor) pointed out that according to the relevant jurisprudence of the Boards of Appeal the drawings only offer a schematic representation of the invention not necessarily reflecting the effective disclosure. However, the Board supports the view of the opposition division expressed in the decision under appeal that the feature that *"the cutting edges along one chip face are rotation-angularly displaced at an acute arc angle in relation to the cutting edges along the other chip face"* is directly and unambiguously derivable from figures 15, 16 and 18, and this in particular when observing the relative displacement of the cutting edge portions 142 on the upper chip face in relation to the corresponding cutting edge portions one on the lower chip face, this displacement clearly resulting in an acute arc angle in the meaning of feature (k).
- 1.6 In the course of the novelty discussion at the oral proceedings the respondent (patent proprietor) did no longer refer to feature (k) as an additional distinguishing feature, neither during the inventive step discussion was this feature presented as providing, in combination with feature (j), an inventive contribution over the prior art. In fact at the oral proceedings the respondent (patent proprietor) only relied on feature (j) for supporting their position regarding novelty and inventive step.
- 1.7 In conclusion, the Board confirms the view of the opposition division that the subject-matter of claim 8 of the patent as maintained differs from the milling

insert disclosed in D1 in the feature (j) only whereby, as no further novelty attack has been submitted by the appellant (opponent), the requirements of Article 52(1) and 54 EPC are met.

Inventive Step: Articles 52(1) and 56 EPC

2. Contrary to the conclusion of the opposition division, the subject-matter of claim 8 of the patent as maintained lacks inventive step in the meaning of Articles 52(1) and 56 EPC.

3. As stated under point 1.7 above, the subject-matter of claim 8 at stake differs from the milling insert disclosed in D1 in that:

(j) the primary edge segment of the individual cutting edge has an arc length that amounts to at least 60% and to at most 85% of the total arc length of the cutting edge.

3.1 The parties agree that starting from D1 and in view of the technical effects allegedly attained by the distinguishing feature above, the problem addressed by the contested patent can be seen in implementing the cutting edge geometry of the known round double-sided milling insert in order to achieve efficient milling at comparatively larger cutting depth while maintaining easy cutting conditions and reducing rough and high sounds in operation (see paragraphs [0004], [0006], [0007] and [0010] of the patent specification).

3.2 The respondent (patent proprietor) essentially pointed out that even if it would be considered obvious to apply the milling insert geometry of the embodiment shown in figure 5 to the milling insert according to

the embodiment of figures 15-18 of D1, which in the opposition division's view comprised all features (c) to (k) of claim 8, the person skilled in the art would have had no motivation to dimension the length of the primary cutting edge segment relative to the total length of the individual cutting edge in such a way to fall within the range defined by feature (j) of claim 8. In this respect the respondent (patent proprietor) essentially pointed out that the appellant (opponent) failed to prove that adopting a relative length of the primary cutting edge segment according to claim 8 belonged to common general knowledge.

3.3 The Board does not agree for the following reasons:

It is true, as stated by the opposition division and supported by the respondent (patent proprietor), that document D1 does not provide any explicit and specific information regarding which numerical ratio of the length of the primary cutting edge segment relative to the total length of the individual cutting edge should be adopted when implementing this prior art milling insert. However, the Board agrees with the appellant (opponent) that it would be obvious for the person skilled in the art aiming to implement the known milling insert and starting from the proportions directly and unambiguously derivable from figure 5, namely from the teaching that the length of the primary cutting edge segment is somewhere between 50% and 100% of the total length of the individual cutting edge (see point 1.2 above), to identify a specific and workable value to be adopted for the length of the relative primary cutting edge. Furthermore, as pointed out by the appellant (opponent), document D1 already suggests that *"a major portion of each major cutting edge (MP11,MP12) extends along an angle equal to or*

larger than 120° as seen along the first axis of symmetry" (see claim 9 as maintained and description, page 3, lines 23-24). The Board agrees with the appellant (opponent) that this information, read in combination with the representation of the cutting edge segments in figure 5, contrary to the view of the respondent (patent proprietor), would indeed motivate the person skilled in the art to tentatively set the lower end of the relative primary cutting edge length significantly above 50% in view of the suggested angle $\geq 120^\circ$. At the same time, as correctly pointed out by the appellant (opponent), the person skilled in the art is aware that a primary cutting edge segment length close to 100% of the total length of the individual cutting edge would result in a secondary cutting edge segment that is no longer wave-trough shaped, but very steep and rather step-like shaped having an unusable short length. In view of the above the Board concurs with the view of the appellant (opponent) that it would be obvious for the person skilled in the art to also tentatively limit the relative primary cutting edge segment length to a value well below 100% in order to avoid such a short and step-like shaped secondary cutting edge segment. In view of the above geometrical and operational considerations based on common general knowledge and of the information provided in D1, the Board concurs with the appellant (opponent) that, contrary to conclusion of the opposition division, the most technically reasonable and straightforward choice for the person skilled in the art aiming to dimension the primary cutting edge segment of the milling insert disclosed in D1 (which is completely silent in this respect) would be to select a value of its relative length lying within, for example in the middle, the range defined by feature (j), thereby arriving to the subject-matter of claim 8 as maintained by the

opposition division without the exercise of inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



A. Voyé

G. Pricolo

Decision electronically authenticated