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Datasheet for the decision of 20 March 2007

Case Number: T 1291/05 - 3.2.06

Application Number: 97850164.1

Publication Number: 0852169

IPC: B23P 15/32

Language of the proceedings: EN

Title of invention:
Drill with coolant channels and method for its manufacture

Patentee:
SANDVIK AKTIEBOLAG

Opponent:
Verhasselt, J.

Headword:
-

Relevant legal provisions:
EPC Art. 100(c), 76(1), 123(2)

Keyword:
"Extension of subject-matter by omitting an essential feature - divisional application - main request (rejected)"
"Clarity - auxiliary request (yes)"

Decisions cited:
T 0331/87

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1291/05 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 20 March 2007

Appellant: (Patent proprietor)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 9 August 2005 revoking European patent No. 0852169 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Alting van Geusau
Members: G. Pricolo
K. Garnett

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division posted on 9 August 2005 revoking European patent No. 0 852 169, which was opposed to the extent of claim 6 only, and which was granted in respect of European patent application No. 97 850 164.1 filed as a divisional application to parent application No. 96 850 040.5.

II. In the decision under appeal the Opposition Division held that the subject-matter of claim 6 as amended according to the proprietor's main and auxiliary requests filed with letter dated 23 September 2003 extended beyond the content of the parent application as filed, because it omitted features described as essential in document

D1: EP-A1-0 729 803,

which was the publication of the parent application as filed.

III. The appellant (patent proprietor) lodged an appeal, received at the EPO on 5 October 2005, against this decision and paid the appeal fee on the same day. The statement setting out the grounds of appeal was received at the EPO on 27 October 2005.

IV. Oral proceedings took place on 20 March 2007, at the end of which the decision of the Board was announced.

The appellant (patentee) requested that the decision under appeal be set aside and that the patent be

maintained in accordance with the main request filed with the letter dated 23 September 2003, alternatively on the basis of the auxiliary request filed during the oral proceedings.

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

V. Claim 1 according to the main request, which is the same main request considered in the decision under appeal, reads as follows:

"A spiral drill for indexable inserts, comprising: a rear shank (15), a front tip with a pocket for a center insert (13) and a pocket for a peripheral insert (14), a spiral part extending between the rear shank part (15) and the tip, the spiral part having two spirally curved ribs, each rib having a spiral coolant channel (17, 18) disposed therein; the spiral coolant channels being spirally curved with the same curvature as the ribs, each channel communicating with a rear end of the drill and extending to the front tip, characterised in that the coolant channels are diverging towards the drill tip at an angel (α) all the way to the end face (31) and that each coolant channel (17, 18) is spaced from a centerline of the drill by a distance which becomes larger toward the front tip".

[Note: "angel" in claim 1 should read "angle"]

Claim 1 according to the auxiliary request reads as follows:

"A spiral drill for indexable inserts, comprising: a rear shank part (15), a front tip with a pocket for a center insert (13) and a pocket for a peripheral insert (14), said pockets being spaced by different respective distances from a centerline of the drill; a spiral part extending between the rear shank part (15) and the tip, the spiral part having two spirally curved ribs, each rib having a spiral coolant channel (17, 18) disposed therein; the spiral coolant channels being spirally curved with the same curvature as the ribs, said cooling channels communicate with exit openings located at different distances from the central axis at the front tip of the drill, each channel communicating with a rear end of the drill and extending to the front tip, characterized in that the coolant channels are diverging towards the drill tip at an angle (α) all the way to the end face (31) and that each coolant channel (17, 18) is spaced from a centerline of the drill by a distance which becomes larger toward the front tip and in the shank part the coolant channels are straight and located at different radial distances from the center line (CL)".

VI. The arguments of the appellant in support of its requests, insofar as they are relevant to this decision, can be summarized as follows:

Claim 1 according to the main request did not include the features recited in claim 1 of the parent application, according to which the coolant channels were located at different radial distances from the

centre line and the exit openings were located at different distances from the centre line. The omission of these features did not introduce additional subject-matter because the skilled person would directly and unambiguously recognise (i) that they were not explained as essential in the disclosure, (ii) that the features were not, as such, indispensable for the function of the invention in the light of the technical problem the invention served to solve, and (iii) that their removal required no real modification of other features to compensate for the change (see T 331/87). As a matter of fact, the parent application disclosed two embodiments of a spiral drill: a first embodiment, in which the cooling channels were mutually parallel but located at different distances from the centre line, and an alternative embodiment in which the cooling channels diverged towards the drill tip but were not necessarily located at different distances from the centre line. This alternative embodiment was shown in Fig. 4, were the diverging cooling channels were positioned symmetrically with respect to the central axis, and was mentioned in the abstract of D1, which referred to cooling channels extending conically from the centre line. Moreover, the parent application did not disclose that the exit openings must, but only that they should, be located at different distances from the central axis. Accordingly, this feature was presented as optional.

Claim 1 according to the auxiliary request included the above-mentioned features and clearly related to an embodiment in which the coolant channels were diverging throughout the whole length of the drill, including its rear shank part.

VII. The respondent essentially argued as follows:

The features according to which the coolant channels were located at different radial distances from the centre line and the exit openings were located at different distances from the centre line were to be regarded, in principle, as essential features, because they were recited in claim 1 of the parent application (D1). The other parts of D1, including the abstract, which was not to be taken into account for determining the content of the parent application as filed, did not support the appellant's argument that these features were not essential. In particular, even if Fig. 4 was schematic and did not permit technical features to be derived from measurements taken from the drawing, it showed two different references signs R_1 and R_2 for the distances of the cooling channels from the central axis. R_1 and R_2 were identified in the description as being of varying distances. Accordingly, Fig. 4 indicated that the cooling channels were at different distances from the central axis. Moreover, in view of this and of the fact that in Fig. 4 the cooling channels diverged at same angle α, Fig. 4 indicated that the exit openings had to be at different distances from the central axis.

The wording of claim 1 according to the auxiliary request was not clear because it left open whether the cooling channels were diverging or parallel in the shank part. This latter possibility was not disclosed in the parent application.

Reasons for the Decision

1. The appeal is admissible.

2. *The content of the earlier (parent) application as filed*

2.1 In order to assess the content of the earlier application as filed reference can be made to the claims, description and figures of D1, which is the publication of the specification of the earlier application as filed. Pursuant to Article 85 EPC, the abstract of D1 cannot be used for determining the content of the earlier application as filed. Accordingly, the appellant's arguments relying on the abstract for interpreting the content of the earlier application as filed are not taken into consideration.

2.2 Since the independent claim 1 of the earlier application recites the feature that the "*coolant channels in the shank part*" are "*provided as two channels located at different radial distances from the centre line which are arranged for communication with the channels*" (whereby these latter channels are the spirally curved channels provided in the ribs), the skilled person reading the claims is given the information that the feature according to which the coolant channels are located at different radial distances from the centre line is an essential feature of the invention disclosed by D1. Since this feature is not mentioned in claim 6 of the patent in suit (main request), the question arises whether there is a basis in the description and drawings of D1 to consider that this feature is, in fact, not essential.

2.3 In the introductory portion of the description of D1 two general embodiments are described:

– a first embodiment, see the passage at column 1, lines 49 to 50, in which "the cooling channels are drilled mutually parallel but located at different distances from the central line in the cylindrical drill blank that is subjected to twisting whilst heated at a predetermined angle"; and

– a second embodiment, see the immediately following passage at column 1, lines 53 to 57, in which "the cooling channels are drilled at an oblique angle in relation to the central axis of the drill blank such that they terminate at different distances from the central axis at their exit openings".

From the latter passage it can be derived that the second embodiment differs from the first embodiment (not encompassed by claim 6 of the patent in suit) in that the cooling channels are divergent rather than mutually parallel. This passage leaves open whether in the alternative embodiment the diverging cooling channels are located at different distances from the central line of the drill blank, as in the first embodiment, or not. This alternative embodiment is further described, in connection with Fig. 4, on column 2, lines 26 to 33 of the description of D1. There it is stated that "i*n accordance with an alternative embodiment these channels have a straight extension whilst diverging towards the drill tip at an angle (α) all the way to the end face of the shank part".* Due to the reference to *"an"* angle (α), which is

confirmed by the presence in Fig. 4 of one single reference (α) for this angle, the skilled person would infer from the description of D1 that the two cooling channels are arranged at a same angle (α) with respect to the centre line of the drill blank. Accordingly, having regard to the previous disclosure (column 1, lines 56, 57) of the cooling channels terminating at different distances from the central axis at their exit openings, the skilled person would infer from the description of D1 that also in the alternative embodiment the cooling channels must be located at different distances from the central line of the cylindrical drill blank. This is confirmed by the fact that the same references R1 and R2, used in the detailed description of the first embodiment (see column 2, lines 21 to 26) to indicate the "*varying distances*" of the cooling channels from the centre line, are used in Fig. 4.

2.4 The appellant argued that D1 had to be read through the eyes of the skilled person, who would have understood that in the embodiment with diverging cooling channels these were not necessarily spaced at different distances from the central axis. In support of this argument, the appellant submitted that in the drawing of Fig. 4 the cooling channels were clearly located symmetrically with respect to the central axis of the drill blank. In the Board's judgment, this information cannot be clearly and unambiguously derived from Fig. 4 because the drawing is schematic. Indeed in Fig. 4 the position of the lead lines corresponding to the distances R1 and R2 is not consistent (one corresponds to the radial *inner* wall of the channel 23 and the other to the radial *outer* wall of the channel 24); the

channels seem to be at the same distance from the centre line but the length of the arrow corresponding to R1 is clearly different from that of the arrow corresponding to R2; the lines are not precise; and the references are clearly handwritten. The appellant further referred to the fact that the skilled person would recognize that with diverging cooling channels the solution of the problem underlying D1, consisting in providing a spiral drill with coolant channels which for the greater part of their length are placed where they detract as little as possible from the strength and stiffness of the drill (see column 1, lines 29 to 33), did not require that the cooling channels were spaced at different distances from the central axis. This view cannot be accepted, because there is no reason for the skilled person to consider that the arrangement of cooling channels at different distances from the central axis does not play a role in respect of the strength and stiffness of the drill even in the alternative embodiment of D1 in which the cooling channels are diverging.

2.5 From the above it follows that there is no basis in the earlier application as filed to conclude that the feature according to which the coolant channels are located at different radial distances from the centre line is not an essential feature of the invention(s) disclosed in the earlier application as filed.

Therefore, by omitting this essential feature, claim 6 of the patent in suit as amended in accordance with the appellant's main request introduces subject-matter extending beyond the content of the earlier application as filed (Articles 76(1), 100(c) EPC). The main request

cannot therefore form the basis for the maintenance of the patent in amended form and must be rejected.

3. *The auxiliary request*

3.1 Claim 6 according to the auxiliary request includes the features of claim 6 as granted and additionally the features according to which the cooling channels communicate with exit openings located at different distances from the central axis at the front tip of the drill, and the coolant channels are straight and located at different radial distances from the centre line. These features are disclosed both in the divisional application as filed and in the earlier application as filed (see point 2.3 above; note that the technical content of the description and the figures of D1 is identical to that of the divisional application as filed).

Furthermore, claim 6 differs from claim 6 as granted in that the expressions "spiral channels" in the characterizing portion are replaced by "coolant channels". Considering that in accordance with the wording of claim 1 the coolant channels extend from the end face ("*the coolant channels are diverging towards the drill tip at an angle all the way to the end face*"), i.e. from the end face of the drill which is opposed to the front tip and which is the end face of the shank, to the front tip of the drill ("*each channel … extending to the front tip*"), the wording of claim 1 leaves no doubt that the term "*coolant channel*" is intended to refer to a coolant channel as a whole. In contrast thereto, the term "*spiral coolant channel*" (see preamble of claim 1) refers to the portion of the

coolant channel provided in the rib, which is spirally curved. Accordingly, contrary to the respondent's opinion, claim 1 makes clear that the claimed drill has coolant channels which are diverging along their whole length, i.e. also in the shank portion where they are straight but not parallel.

3.2 From the above it follows that claim 6 is clearly based on the alternative embodiment disclosed by D1, in which (see column 1, lines 53 to 57) the cooling channels are drilled at an oblique angle in relation to the central axis of the drill blank such that they terminate at different distances from the central axis at their exit openings and the cooling channels are located at different distances from the central line.

3.3 The description has been amended to bring it into conformity with the amendments made to claim 6.

3.4 Accordingly, the amendments do not introduce additional subject-matter extending beyond the content of the divisional application as filed (Article 123(2) EPC) or beyond the content of the earlier application as filed (Article 76(1) EPC). They also do not give rise to objections under Article 84 EPC.

3.5 In the decision under appeal (see point 5) the Opposition Division has given a positive opinion on novelty and inventive step of the subject-matter of claim 6 (main and auxiliary requests) which is independent of the presence of the feature that the diverging spiral coolant channels are at different radial distances from the centreline. This opinion of the Opposition Division also applies to claim 6

according to the auxiliary request now under consideration, because claim 6 includes all the features of claim 6 according to the requests considered by the Opposition Division.

Since the Board sees no reason itself to take a different view and the respondent did not question the novelty and inventive step of the claimed spiral drill, the Board holds the subject-matter of claim 6 to be both novel and based on an inventive step (Articles 54(2) and 56 EPC).

3.6 Therefore, considering that claims 1 to 5 are the same claims of the patent as granted that they were not opposed, the patent specification amended in accordance with the appellant's auxiliary request forms a suitable basis for maintenance of the patent in amended form.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The main request is rejected.

3. The case is remitted to the Opposition Division with the order to maintain the patent on the basis of the amended description columns 1 to 3 filed during the oral proceedings, claims 1 to 5 as granted and claim 6 as filed during the oral proceedings and the figures according to the granted patent.

The Registrar: The Chairman:

M. Patin P. Alting van Geusau