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D E C I S I O N
of 2 December 2003

Case Number: T 0632/01 - 3.2.3

Application Number: 92202380.9

Publication Number: 0515004

IPC: E21B 29/00

Language of the proceedings: EN

Title of invention:

Cutting tool for removing materials from well bore

Patentee:

Tri-State Oil Tool Industries Inc.

Opponent:

Smith International (North Sea) Limited

Headword:

-

Relevant legal provisions:

EPC Art. 83

Keyword:

"Sufficiency of the disclosure - no"

Decisions cited:

T 0409/91, (OJ 1994, 653)

Catchword:

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Case Number: T 0632/01 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 2 December 2003

Appellant: Tri-State Oil Tool Industries Inc.
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Respondent: Smith International (North Sea) Limited
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Representative: Frankland, Nigel Howard
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 29 March 2001
revoking European patent No. 0515004 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: C. T. Wilson
Members: J. B. F. Kollar
J. P. B. Seitz

Summary of Facts and Submissions

- I. The appellant is the proprietor of European patent 0 515 004 (European patent application 92 202 380.9).

Claim 1 as granted reads as follows:

"A cutting tool adapted to be positioned downhole in a well bore for cutting away members within the well bore, said cutting tool comprising:

a generally cylindrical tool body (18) adapted to be received within a said well bore and to be supported at its upper end for rotation about a longitudinal axis;

a plurality of blades (32) on the body (18) and extending outwardly therefrom, each of said blades having a base with a leading surface (34) relative to the direction of rotation;

and a plurality of closely spaced cutting elements (42) of hard cutting material secured in side by side relation to said leading surface (34) of the base;

each of said cutting elements (42) being of identical size and shape; said cutting elements (42) being arranged in a plurality of transversely extending uniform rows in a symmetrical uniform pattern: and the cutting elements (42) in adjacent rows being offset with respect to each other, said cutting elements (42) in corresponding rows on

adjacent blades being offset with respect to each other;

characterised in that:

each of said cutting elements (42) has a front face (42A) with a chip-breaking groove (42K) in said front face (42A), with said chip-breaking groove (42K) having an arcuate radius positioned to receive an end of a turning and direct it forwardly with respect to the direction of rotation."

II. Notice of opposition was filed by Smith International (North Sea) Limited requesting revocation of the entire patent on the grounds of Article 100(a), (b) and (c) EPC. During the procedure before the Opposition Division altogether more than twenty documents were filed by the parties, out of which the following remained relevant in the appeal proceedings:

D1: EP-A-0 231 989

D3: EP-A-0 234 697

D4: US-A-4 717 290

D10: US-A-4 259 033.

III. The Opposition Division held that the requirements of Articles 100(b), and (c) EPC were met but revoked the patent on the ground of lack of novelty (Article 100(a) EPC) of the subject-matter of claim 1 in view of D3.

- IV. The appellant (the proprietor of the patent) filed an appeal against the decision on 29 May 2001 with the payment of the fee and submitted a statement of grounds on 30 July 2001.
- V. In the written submissions and during the oral proceedings on 2 December 2003 the appellant argued that the subject-matter of claim 1 as granted was sufficiently disclosed in the specification of the patent in suit in order to be carried out by a skilled person. In particular, the patent contained several examples which demonstrated how the desired cutting tool could be obtained.

As to the characterizing feature "arcuate radius" in claim 1 of the patent in suit reference was made to column 5, lines 25 and 26, column 14, lines 27 to 50, claim 4 of the application as filed (publication A1) and column 2, lines 57 and 58, column 4, lines 9 and 10, columns 15, lines 10 to 31 of the patent specification (publication B1) as well as Figures 7 to 11, 16 and 17 of the patent in suit. It was argued that these passages disclosed several embodiments of the invention which clearly demonstrated both the radius of the groove and the groove contour in the cutting discs, so that the subject-matter of claim 1 of the invention was disclosed sufficiently clearly in order to be carried out by a skilled person. In the context of the characterizing feature of claim 1 specifying "a chip breaking groove having an arcuate radius" the appellant stressed, with a reference to publication B1, column 11, line 34 ff and column 12, lines 25 ff that a chip breaker in the face of the cutting discs was optional. Consequently the embodiment according to

Figures 1 to 6 falls in the scope of the invention. Claim 1 of the patent in suit thus defined the shape of the radius which had to be arcuate, i.e. curved in the cross section, as originally disclosed in claim 4 as filed (publication A1).

Claim 1 of the patent in suit did not disclose an "annular" groove contained in the original claim 4 because this feature was not essential for the invention.

The appellant concluded that the patent in suit contained sufficient information to carry out the invention and that the requirements of Article 83 EPC were satisfied. The objection against the patent pursuant Article 100(b) EPC was thus not justified.

At the end of the oral proceedings the Appellant filed an auxiliary request according to which the expression "and downwardly" was inserted between the word "forwardly" and "with" in the characterising portion of claim 1 (column 19, line 12 of B1) in order to more clear disclose the invention.

VI. The counter-arguments submitted in writing and orally by the respondent (opponent) were essentially the following:

Taking into account the appellant's statement according to which the chip-breaking groove in the cutting discs of the tool according to the contested invention is optional, the technical contribution made by the invention to the state of the art shown in Figure 1B and described in the patent specification in suit was

questioned. In case that this contribution was seen in the chip-breaking "groove having an arcuate radius" as specified in claim 1 in suit it was submitted that because of the vague expression "arcuate radius" the patent did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art - Article 100(b) EPC.

The expression "arcuate radius" was not used at all in the detailed description - it appeared only twice, namely in claim 1 and in the corresponding statement of the invention in the description of the B1 publication. The only "radius" that was mentioned in the detailed description was the "radius" related to the reference sign "42L" in column 15 of B1. However, no specific properties of the radius were disclosed. As to the phrase "arcuate radius" the term "arcuate" could not be used to refer to the fact that the "radius" was "arcuate" in cross-section ; it would be like saying a "round arch" or a "triangle with three corners". The word "arcuate" must have a specific meaning, probably to describe a radius which is different from, for example, a "straight" radius. A "straight" radius would be provided when two planar surfaces intersect at right angles, such as at the edge of a standard desk or table.

Since the wording "arcuate radius" in the patent in suit left the skilled man in doubt which kind of limitation the attribute "arcuate" involved on the shape of the groove the afore-mentioned requirement on the European patent pursuant to Article 100(b) EPC was not met and the patent thus could not be maintained.

VII. Several declarations were filed by both parties which however concerned the question of novelty and inventive step according to Articles 54 and 56 EPC, issues which are not dealt with in this decision.

VIII. The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted, (main request), or on the basis of the auxiliary request filed during the oral proceedings.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Sufficiency*

Main request

- 2.1 An attack on the ground of insufficiency under Article 100(b) EPC is based on Article 83 EPC which requires that the disclosure of the invention must be "sufficiently clear and complete for it to be carried out by the person skilled in the art". It is understood that this means that any embodiment of the invention, as defined in the broadest claim, must be capable of being realized on the basis of the disclosure.

In order to be able to decide upon this issue, it is necessary to establish what the invention is, in essence, about.

2.2 Having regard to the state of the art presented in the introductory part of the patent specification with reference to D1, D4 and D10 it appears appropriate to the Board to consider the technical problem described in column 2, lines 37 to 40, to be the objective problem identified, namely the provision of a cutting tool for removing materials downhole from a well bore by first reducing the materials into turnings or small chips for removal.

The characterizing features of claim 1 specify that this problem is solved in that each of the tool's cutting elements has a front face with a chip-breaking groove in said front face with said chip-breaking groove having an arcuate radius positioned to receive an end of a turning and direct it forwardly with respect to the direction of rotation.

The last part of this claim, which only indicates the desired result to be achieved by the invention, "...positioned to receive...and direct...the direction of rotation.", does not represent a true technical feature.

2.3 The underlying purpose of the requirements of sufficient disclosure of the invention according to Article 83 EPC is to ensure that the patent monopoly should be justified by the actual technical contribution to the art made by the disclosure of the invention described therein, which excludes that the patent protection be extended to subject-matter which, after reading the patent specification, would still not

be at the disposal of the skilled person (see also T 409/91 OJ 1994, 653 points 3.4 and 3.5).

In the present case, which, as mentioned in point 2.2 above relates to the invention concerning a cutting tool characterized by cutting elements with a chip-breaking groove having an arcuate radius, the reason why the invention defined in claim 1 does not meet the requirement of Article 83 EPC is thus that the invention extends to technical subject-matter not made available to the person skilled in the art by the patent in suit, since in the patent specification taken as a whole no sufficiently clear and complete information is given to perform the claimed cutting tool provided with a groove having an "arcuate radius". The phrase "arcuate radius" only appears twice in the patent specification - in claim 1 (column 19, line 11) and in the paragraph corresponding to claim 1 (column 4, line 10).

In this respect, the Board does not accept the appellant's submission that sufficiency should be acknowledged simply because one way of performing the invention was disclosed in the embodiment according to Figures 7 to 11, where a reference sign 42L relating to a "radius" should, in the appellant's view, as well constitute the disclosure concerning the feature "arcuate", since, as argued by the appellant during the oral proceedings, the radius 42L was meant to define a portion of a circle, this portion thus having an arcuate form.

However, in the Board's view the disclosure of the patent specification relating to Figures 7 to 11, which commences with the first paragraph of column 15, reveals that the generally planar front surface of the cutting elements includes an annular flat 42J adjacent edge 42I for reinforcement of edge 42I, and an annular groove 42K tapering inwardly from the flat 42J to define a radius at 42L adjacent a circular centre portion 42M of front face 42F. The specification teaches that the cutting or shaving is received in and "rides along" the tapered groove. This tends to indicate that the cutting or shaving moves "along the groove" and passes in an axial direction between the sides of the groove. This description continues to say that the extending end of the metal shaving is directed forwardly and downwardly by a radius to facilitate breaking of the metal turning. There is no teaching whatsoever of an "arcuate" radius, and the interpretation of this characterising feature is thus difficult with the consequence that the invention is not sufficiently complete and clearly disclosed.

The Board also disagrees with the appellant's statement made during the oral proceedings, that the embodiment according to figures 1 to 6 of the patent specification falls in the scope of claim 1. In a passage starting at line 54 of column 11 it is stated that "front face 42A is preferably provided with a depressed area or recess therein receiving metal turning or chip to aid in breakage of the chip thereby to form a chip-breaker". There is no additional description of the chip-breaking feature of the cutting element of the embodiment of Figures 1 to 6. Thus the specification here teaches the skilled man that it is only "preferred" to provide the

front face with a "depressed area or recess" and does not include any description whatsoever of a chip-breaking groove having an arcuate radius positioned to receive an end of a turning and direct it forwardly with respect to the direction of rotation, as required in the main claim. The object of the invention is to provide an improved cutting tool the use of which results in the formation of relatively short length turnings or chips. Figure 1B illustrates the typical length of cuttings generated using a prior art technique. Figures 4 and 6 show typical cuttings generated using the first embodiment of the invention. These cuttings appear to be of virtually the same length as the cuttings generated using the prior art technique. Thus, the alleged embodiment of the invention of Figures 1 to 6 does not appear to provide any technical contribution over the prior art.

- 2.4 In the Board's judgment, the disclosure of performing the invention is only satisfied within the meaning of Article 83 EPC if it allows the person skilled in the art to perform the invention over the whole scope that is claimed. In the present case a cutting tool having a number of features is claimed; with the above considerations in mind not all of the claimed features are sufficiently clearly and completely disclosed in the patent specification in order to enable the skilled person to obtain the invention within the ambit of the claims. For these reasons the main request must fail.

Auxiliary request

2.5 The reasons set out above for the main request would obviously apply to the claim 1 according to the auxiliary request so that this request filed at the very ultimate stage of the proceedings is not clearly allowable and accordingly should not be considered. This is in accordance with the established jurisprudence of the Boards of Appeal, see for example Decision T 0153/85, OJ EPO 1988, 001.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Counillon

C. T. Wilson